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Antecedents of team innovation in health care teams

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Antecedents of team innovation in health care teams

Abstract

We extend previous research on team innovation by looking at team-level motivations and how a prosocial team environment, indicated by the level of helping behaviour and information-sharing, may foster innovation. Hypotheses were tested in two independent samples of health-care teams (N_1=72 teams, N_2=113 teams), using self-report measures. The examples of team innovation given by the individual team members were then rated for innovativeness by independent health care experts to avoid common method bias for the outcome variable. Subsequently, the data was aggregated and analysed at team level. The study was part of a larger data-gathering effort on health care teams in the UK. Results supported the hypotheses of main effects of both information-sharing and helping behaviour on team innovation and interaction effects with team size and occupational diversity. Differences in findings between types of health-care teams can be attributed to differences in team tasks and functions. The results suggest ways in which helping and information-sharing may act as buffers against constraints in team work, such as large team size or high occupational diversity in cross-functional health care teams, and potentially turn these into resources supporting team innovation rather than acting as barriers.

Key words: team innovation, helping, information-sharing, health care teams, team diversity, prosocial climate

Classification: Research paper

Antecedents of team innovation in health care teams

Innovation is often seen as the output of ingenious individuals with exceptional skills and expertise. While creative individuals may be important for innovation, in everyday work life many tasks are done cooperatively in teams. This is certainly true for the health care sector where the majority of tasks could not be accomplished by individuals working alone. This poses the question of how innovation happens in a group context and what conditions support innovation in teams.

Here we suggest that that innovation is not restricted to inventions, such as new drugs or new surgical procedures, but that innovation in a more general sense also relates to the ability to respond to demands or pressures at work by doing things in a new way. If innovation is defined in this way it can be seen as an important team performance measure (Chen, Farh, Campbell-Bush, Wu, & Wu, 2013; West, 2002).

The degree to which teams are innovative is a crucial element of organisational success and thus is of both practical and theoretical interest. In line with recent models and studies on team innovation (see for instance, Alexander & Van Knippenberg, 2014; Chen et al., 2013; Ramirez Heller, Berger, & Brodbeck, 2014; Somech & Drach-Zahavy, 2013), we argue that team innovation is closely related to team level processes, namely to whether the team environment is prosocial, characterised by team member helping and information sharing. We propose that the degree of innovation at team level depends on the willingness of team members to help and to share information with each other beyond the immediate requirements of routine task duties and role obligations. A recent review points to the importance of what the authors called ‘team altruism’ for the understanding of motivational processes at team level (Ning, Kirkman, & Porter, 2014). In line with this, we propose that team innovativeness is fostered by a basic willingness to share views, expertise and ideas within the team and to invest time and effort in doing so. We also propose that this

willingness to help and share may act as a buffer against unfavourable constraints in team work, such as large team sizes or high occupational diversity.

With this focus of the paper, we are addressing a gap in research. While there is considerable research on team innovation (see below), there is no research to date specifically looking at the role of information sharing and helping as antecedents of team innovation. We also propose to do so in the context of health care teams as they are of particular interest because of their ubiquity across countries, the increasing demands on health care systems and the financial implications for nations of inefficiency or ineffectiveness in the delivery of health care (West, Topakas & Dawson, 2014). The teams studied here consisted of highly qualified professionals, working under high pressure. This is a work context where high adaptability and hence high innovativeness at team level are central to effectiveness under pressure.

Overview of research

Team innovation as performance outcome measure and related team processes

Innovation, that is the introduction and implementation of new ideas, processes or products (West, 2002; West & Farr, 1990), is essential for the adaptability of organisations. It is a key component of team performance. There is evidence that leadership style and characteristics can have an influence on team innovation (for example, Mumford et al., 2007). However, previous studies also show that the relationship between leadership and innovation is not straight forward. Follower characteristics as well as task characteristics and complexity have been shown to be important moderators of leadership effectiveness together with group processes such as clarity of objectives, participation and general support for innovation (Mumford & Licuanan, 2004). For health care teams in particular there is empirical evidence that leadership clarity is important for team innovation as a performance outcome (West et al., 2003). This is also related to research showing the relationship between

leadership style, team climate and performance more generally, with a number of studies especially on R&D teams (Chen et al., 2013) confirming the importance of a positive team climate (Pirola-Merlo et al., 2002), of organisational support for innovation but also of group tasks that give opportunities for creativity (Bain, Mann & Pirola-Merlo, 2001).

While there is clear evidence for the importance of leadership, organisational support and a positive team climate for innovation, there are no studies specifically looking at the influence of information sharing and helping behaviour in teams, yet both team processes we would argue are important for the skills and knowledge integration that stimulates team innovation. In a knowledge intensive economy, it is important to understand in more detail how knowledge creation and integration occur and whether they support team innovation.

It is also important to study these processes not only in R&D teams where innovation and creativity are both, the main goal and the actual content of the team work, but in other work contexts where innovation may be important but not a goal in itself. Health care teams are an interesting testing ground for this as they are knowledge-intensive and their members tend to have high levels of specialist expertise. In addition, most health care teams are composed of members with different professional backgrounds who deliver under high pressure in an environment that is often under-resourced. Studying team innovation in such a challenging work context could give important insights into the conditions under which health care teams are able to be innovative and adaptive to changing demands.

Helping and information sharing as antecedents for team innovation

In principle, high knowledge diversity in teams such as different types of expertise and different occupational backgrounds should increase team innovation because more knowledge and varying perspectives are available to the team. However, previous research has shown that the relationship between diversity and innovation is not straightforward and that diversity can have both positive and negative effects on team performance (van

Knippenberg & Schippers, 2007). For example, multi-disciplinarity as one possible indicator of knowledge diversity in a team may increase the quality of innovations but not necessarily the number of innovative ideas (Fay, Borrill, Amir, Haward, & West, 2006).

Information sharing. One crucial aspect is whether team members are motivated to give their expertise for the benefit of the team (Gagné, 2009). Research on information sharing has focused mainly on the type of information that is shared or unshared and its impact on decision quality (Brodbeck, Kerschreiter, Mojzisch, Frey, & Schulz-Hardt, 2002; Stasser, Stewart, & Wittenbaum, 1995). Some studies have also looked at antecedents of information sharing, such as trust (Butler, 1999), task and reward interdependence (Moser & Wodzicki, 2007), or how person perception might affect information exchange (de Bruin & Van Lange, 2000). There is theory but little research exploring the link between information sharing and group performance (e.g., innovation) (Basadur & Gelade, 2006; Diehl & Ziegler, 2000). The existing studies focus on decision-making in groups, but do not investigate innovation as a team output (Bonner, Baumann, & Dalal, 2002; Brand, Reimer, & Opwis, 2003). There is also a lack of research into motivational aspects of information sharing including the type of information people share and why they might or might not share information (Gagné, 2009; Wittenbaum, Hollingshead, & Botero, 2004).

Helping behaviour. More recent research stresses the importance of team level motivation for team performance in general, including innovation, and especially in contexts of high team diversity (Guillaume et al., 2014). One source of motivation is a positive team climate. A number of studies have shown how climate factors influence team performance and more specifically, team innovation (Anderson & West, 1996, 1998; Patterson et al., 2005). Studies have also shown helping behaviour to be connected to team performance, especially if collaborative norms are present (Ng & Van Dyne, 2005). Helping behaviour was

also found to be correlated with commitment and interdependence in teams (Van Der Vegt, Bunderson, & Oosterhof, 2006).

A recent review specifically about the health care sector shows that team climate has a significant impact on the quality of patient care and on patient mortality (West, Topakas, & Dawson, 2014). One of the central factors identified across studies was whether staff members felt supported both by their supervisors as well their co-workers. Another recent study investigated how relational coordination was related to the care of older patients (Hartgerink et al., 2014). The authors defined relational coordination as the quality of communication and the quality of relationships among team members which was measured as shared goals, shared knowledge and mutual respect. The results showed that the degree of relational coordination had a positive impact on the quality of integrated care, especially in teams with members from different professional backgrounds.

Based on the above, we argue that both helping behaviour and information sharing in teams are essential antecedents of team innovation:

Hypothesis 1: Information sharing in teams is positively associated with team innovation.

Hypothesis 2: Helping behaviour in teams is positively associated with team innovation.

Moderating processes: Occupational diversity and team size

We look at two important potential moderators of team innovation: size and occupational diversity. In a large team there is potentially more knowledge available and thus a higher innovation potential. However this may be diminished by higher coordination costs and a loss of cohesion and motivation .Diversity in occupational backgrounds offers more expertise, but high diversity may also imply insufficient overlap of knowledge and high coordination costs, thereby hindering team performance..

Diversity. Several studies have found that teams with members who have diverse but overlapping knowledge are the most innovative (Dunbar, 1995, 1997). An established distinction in diversity research is between characteristics that relate to work roles versus characteristics that relate to the person (van Knippenberg & Schippers, 2007). While there is empirical evidence that task-related diversity is related to better quality of decision-making in teams, occupational diversity tends to be beneficial only if group processes support team integration (Jackson, 1992). This is supported by the findings of an UNESCO study on performance of scientific teams, which showed how communication processes moderated the relationship between diversity and team innovation (Payne, 1990).

In teams with members from different occupational backgrounds, high knowledge diversity will lead to greater variation in in perspectives on the team task and the pool of potential knowledge will be greater. In particular, in teams where there is greater potential for flow of information between people from different groups, this gives more opportunities for the sharing and development of knowledge. However, without good team processes this potential cannot be exploited (van Knippenberg & Schippers, 2007). A recent review by Guillaume et al. (2013) confirms the importance of team processes and especially of a positive team climate for diversity to be beneficial to team performance. This is also supported by research based on the categorization-elaboration-model (CEM; van Knippenberg et al., 2004) which assumes that the contribution of diversity to performance outcomes such as innovation is not so much dependent on the skills and knowledge in a team, but depends primarily on the team members' elaboration of information and different perspectives. The willingness to elaborate on information and engage in perspective-taking in turn depends largely on the motivation of team members (Guillaume et al., 2014).

Occupational diversity is the most commonly used measure of knowledge diversity in teams. Within healthcare teams, different occupations bring knowledge to the team. Different

healthcare professionals, e.g. doctors, nurses, psychologists, physiotherapists and occupational therapists have distinct training and education from each other, and other non-clinical groups, such as administrative staff and general managers, may come from very different backgrounds. It is therefore appropriate to treat occupational diversity as a measure of knowledge diversity in this case.

Hypothesis 3: Occupational diversity will moderate the effects of both information sharing (Hypothesis 3a) and helping behaviour (Hypothesis 3b) on team innovation; specifically, the effects will be stronger when occupational diversity is high.

Team size. Group size influences behaviour in groups (De Cremer & Leonardelli, 2003). Larger groups generally should have a greater potential for innovation because different perspectives are represented in the group. However, some of that group potential is lost because coordination processes in communicating different perspectives and in arriving at a joint understanding of the team goal take up more time (Cruz, Boster, & Rodriguez, 1997). In larger groups it is also more difficult to hold team members accountable for their contributions and to sanction free-riding which could potentially lower innovation (Karau & Williams, 1993). There is some evidence from previous studies in the health care sector that there is a correlation between team size and team working in general (Care Quality Commission, 2017; Xyrichis & Lowton, 2008) as well as specifically with respect to team innovation (Curral et al., 2001). The study by Curral et al. (2001) with 87 cross sector teams found that large teams under high pressure to innovate had poorer team processes which impacted negatively on team innovation. Another, recent study in R&D teams found that the relation between team size and innovation was moderated by participative safety (Peltokorpi & Hasu, 2014), similar to what we are investigating here in relation to information sharing and helping in health care teams. Based on this we suggest that larger groups will need to

compensate for their size by having higher levels of both information sharing and helping behaviour to achieve similar levels of innovation as smaller groups.

Hypothesis 4: Team size will moderate the effects of both information sharing (Hypothesis 4a) and helping behaviour (Hypothesis 4b) on team innovation; specifically, the effects will be stronger in larger teams.

Method

Samples and Procedure

Two types of multidisciplinary health care teams participated in the studies presented here: 72 breast cancer care teams (BCTs) and 113 community mental health teams (CMHTs).

The two team types represent different populations with different tasks, in different settings and different team compositions. BCTs are responsible for the diagnosis and treatment of breast cancer and include mainly senior medical doctors from a range of subdisciplines (such as surgeons and oncologists), nurses, and administrative staff (Haward et al., 2003). CMHTs provide community based services to people with mental illnesses with doctors on the team compared to BCTs. CMHTs include psychiatrists, psychiatric nurses, social workers, and administrative staff.

The study was part of a larger data-gathering effort providing three large samples of health care teams throughout the United Kingdom, and the data collection procedure was similar to that described by Schippers, West and Dawson (2012), Fay, Borrill, Amir, Haward, and West (2006); Stewart (2006); and West et al. (2003). Two previous studies also looked at innovation as outcome variable, one looking at the role of multi-disciplinarity for innovation in primary health care and breast cancer teams (Fay et al., 2006), and Schippers et al. (2012) focusing the role of team reflexivity for innovation in primary health care teams only. While they used the same outcome measure of independent expert ratings for innovation, all other measures in the current studies are different, including the occupational diversity measure.

The sample of BCTs was randomly selected from the 190 breast cancer care teams listed in the UK Cancer Relief Macmillan Directory (Macmillan Cancer Relief, 2003). 113 BCTs were sampled between 1999 and 2000, of which 96 initially agreed to participate; in order to be included in the analysis, responses were needed from at least one breast surgeon, one breast nurse and two of the other three core disciplines comprising BCTs. This resulted in 72 teams being included. The CMHTs were selected from all four health regions across England to ensure that teams were representative for different socioeconomic locations, mixes of professional skills, and client bases. 162 teams were selected, of whom 113 agreed to participate. Both samples were broadly representative of their type of team in England from a geographical perspective.

Self-report questionnaires, asking respondents to report their perceptions of team processes, innovation, information sharing, and effectiveness, were completed by 548 respondents from 72 BCTs and 1443 respondents from 113 CMHTs. The 548 respondents from BCTs represented a response rate of 77%, and included 20% breast surgeons, 22% breast nurses, 20% radiologists, 17% oncologists, and 21% pathologists (these are the five main constituent groups of BCTs). The mean age was 45.5 years (standard deviation 8.1), and 47% were female. Average team tenure was 5.8 years (standard deviation 4.5 years).

The 1443 respondents from CMHTs represented a response rate of 75%, and included 39% community psychiatric nurses, 8% occupational therapists, 6 % psychiatrists, 4% counsellors, 1% clinical psychologists, 16% social workers, 7% support workers, 14% administrative staff and 5% assorted other workers. The mean age was 40.0 years (standard deviation 8.4), and 67% were female. Average team tenure was 3.1 years (standard deviation 3.2 years).

Measures

Information sharing and helping behaviour. These were measured by using two newly constructed sub-scales from the Team Climate Inventory TCI (Anderson & West, 1996). The reason for using TCI-based measures for this study was the overall strong validity of the TCI dimensions which have been used in numerous studies on team climate (Anderson & West, 1998; Haward et al., 2003; Fay et al., 2006; West, Topakas & Dawson, 2014). Looking specifically at the items referring to information sharing and helping behaviour as new sub-scales allows to test for those two team processes and their relation to team level innovation. The scale information sharing contained three items referring to information exchange in the team, and was taken from the team participation dimension in the TCI. An example item is "We share information generally in the team rather than keeping it to ourselves". 'Helping behaviour' was measured using four items from the support for innovation dimension of the TCI. The four items referred to general helping and group-serving behaviour in the team, thus providing an indicator for the climate of mutual support in the team. An example item is "People in the team co-operate in order to help develop and apply new ideas". Both scales showed acceptable internal consistency (Cronbach's alpha = 0.83 and 0.86 respectively). Confirmatory factor analysis suggested that although the two variables are highly correlated, they provide a good fit to the data (Chi-squared (13df) = 37.3; CFI = .996, TLI = .994, RMSEA = .031, SRMR = .013). In particular, it is a significantly improved fit compared with a one-factor model (Chi-squared (14df) = 809.1; CFI = .885, TLI = .827, RMSEA = .169, SRMR = .062; $\Delta\chi^2$(1df) = 772.3, $p < .001$). In addition, the average variances extracted (AVE) for the two scales were .617 (information sharing) and .610 (helping behaviour), both substantially higher than the squared correlation between them (.540), thus satisfying Fornell and Larcker's (1981) condition for discriminant validity.

Acceptable inter-team reliability was demonstrated via intra-class correlations: ICC(1) was 0.16 and 0.20 respectively, and ICC(2) 0.67 and 0.74 respectively, each above the

recommended thresholds suggested by Bliese (2000) and Klein et al. (2000). Additionally, there was also good inter-rater agreement as demonstrated by average r_{wg} values of 0.89 and 0.91 respectively, suggesting aggregation of the scales to the team level was justified statistically.

Teachman's index of occupational diversity. Occupational diversity was measured using Teachman's index (1980). This is one of two commonly-used indices of categorical diversity, the other being Blau's (1977) index (Harrison & Klein, 2007). The distinction between the two indices is not at first obvious, but whereas Blau's index is a measure of the probability of any two group members being from different categories, Teachman's index has its roots as a measure of entropy in information theory: it examines the possible routes of flow of information between different categories of team members (Shannon & Weaver, 1948). This is different from the amount of different information (which would be captured by the total number of different groups represented); it encapsulates the evenness of distribution between members from different categories, and therefore in groups with a higher value of Teachman's index, there are more possibilities for sharing information between people from different occupational groups. Therefore, given the hypotheses link information sharing with diversity, we consider this to be a more appropriate index than Blau's index in this case.

Expert ratings of team innovation. Team members were asked to write down major changes and innovations in the team in the past 12 months. Examples of innovations include staff finding ways of coordinating home visits to patients to ensure efficient use of time (most tasks could be performed by one professional this obviating the need for two or more people to visit the same person); redistribution of tasks so that administrative and clerical staff take blood pressure measures to save time for doctors and nurses; setting up men's health clinics; running clinics on teenage sexual health in local youth clubs rather than in the team premises;

and patients invited to team meetings. The descriptions of these innovations were collated for each team, and then rated by experts in the field of mental health care or breast cancer care, respectively. Team innovations were rated using a five-point scale (from "very low" to "very high") on four dimensions: magnitude, radicalness, novelty, and impact (Anderson & West, 1996). The experts were medical professionals in their respective fields who were external to the organisations being studied, and who had a good overview of the national picture in health care services in the UK. Some were academic clinicians, others senior clinicians. There were three independent external experts for the CMH teams, and four for the BC teams. ICC(2) of between 0.72 and 0.83 for these measures demonstrated adequate inter-rater reliability, and a Cronbach's alpha of 0.90 suggested that a single, overall measure of team innovation calculated from the four separate ratings was justified.

Controls

As some research (e.g. Care Quality Commission, 2017; Xyrichis & Lowton, 2008; Curral et al., 2001) has demonstrated links between health care team size and outcomes (including innovation), we included team size in all analyses, whether or not it was part of the hypothesis being tested. To ensure that occupational group diversity was not merely a reflection of the total amount of variety within a team, we also controlled for the number of occupational groups present in the team. We note that although this is unsurprisingly correlated with occupational group diversity ($r = 0.33$), it is distinct enough to warrant its inclusion as a separate variable.[1]

[1] For completeness, we also ran all our analyses with age, gender and leadership clarity as control variables. There are no theoretical grounds to expect effects of age or gender and leadership clarity has already been studied elsewhere (West et al., 2003) and is not the focus of this study so this was done purely to exclude possible confounding effects of these three variables. In order to retain theoretical clarity, and our rationale for the control variables, we have not included these additional analyses in our results reporting; instead, we have added this footnote to say that all reported results do hold also when these control variables are included.

Results

Table 1 presents the means, standard deviations and correlations for all variables in all teams. The significant correlations between team type and some of the other variables suggest it is wise to analyse the two types of teams separately.

INSERT TABLE 1 HERE

Hypotheses 1 (information sharing) and 2 (helping behaviour) were tested by multiple regression analysis, the results of which are shown in table 2. The two predictors, information sharing and helping behaviour, were entered first separately and then together. Separately, each had a significant association with innovation in community mental health teams ($\beta = .40$ and $\beta = .55$ respectively), whereas only helping behaviour had a significant association with innovation of breast cancer teams ($\beta = .32$). When entered together, only helping behaviour had a significant independent effect for both types of team ($\beta = .75$ for CMHTs, .35 for BCTs), suggesting that the effects of helping behaviour are more strongly linked with team innovation than those of information sharing. Notably the coefficient for helping behaviour in CMHTs is substantially larger for the latter analysis than the earlier analysis, suggesting a suppressor effect is caused by the large correlation between the predictors. Thus hypothesis 2 is strongly supported, with weaker support for hypothesis 1.

INSERT TABLE 2 HERE

Hypotheses 3 (occupational diversity as moderator) and 4 (team size as moderator) were tested by moderated multiple regression analysis, the results of which are shown in table

3. Separate tests were conducted for information sharing and helping behaviour, so as to avoid obfuscation of effects due to the strong correlation between the two process variables.

INSERT TABLE 3 HERE

In CMHTs, the effects of both process variables are moderated by both occupational diversity and team size. Only one of these moderated effects also exists in BCTs – the effect of team size on the information sharing-innovation relationship. The nature of these effects is shown in figures 1 to 4, which plot the four interaction effects for CMHTs. For both information sharing and helping behaviour, there is a strong main effect, but an even stronger effect when occupational diversity is high. Note that there is no main effect of occupational diversity – this is not, *per se*, necessarily a good or bad thing for team innovation, but when combined with good information sharing and helping behaviour it creates a greater degree of innovation. The effect of team size on these relationships is also clear from figures 3 and 4. The positive effect of the processes is even greater for larger teams. Team size does have a significant, positive, main effect with innovation, and this is exacerbated when processes are strong – particularly helping behaviour. In fact when helping behaviour is poor, team size makes little difference to innovation, but when it is strong, larger teams appear to have the capacity for much greater innovation. Thus both hypotheses 3 and 4 are supported by the CMHTs, while hypothesis 4 is also supported in BCTs.

INSERT FIGURES 1, 2, 3 and 4 HERE

Discussion

In the two studies presented here we argued that a climate supporting prosocial behaviour in teams is at the core of understanding team innovation. We looked at two different team processes that are both indicative of a prosocial team climate and important for innovation: helping behaviour and information sharing. that The results of this research suggested that helping behaviour had a significant independent effect on innovation for both types of teams - breast cancer care teams (BCTs) and community mental health teams (CMHTs) - while information sharing only had a significant association with innovation for breast cancer teams. There was also a significant main effect of information sharing for BCTs but not CMHTs.

The interaction effects of team size and occupational diversity were tested with moderated regression analysis again for both helping behaviour and information sharing. There was a main effect of team size on innovation, which increased especially if helping behaviour in the team was strong. This again confirms the importance of a positive prosocial climate for innovation, which is expressed in higher levels of helping behaviour. If a prosocial climate is present in a team, this seems to enable team members to make better use of their innovative potential. Helping behaviour is thus effectively acting as a buffer against the potentially negative effects of large teams, and even more so than information sharing. The importance of helping behaviour for innovation in large teams is further confirmed by the fact that the interaction effect with team size could be confirmed for both team types, and hence across very different team tasks and contexts.

In contrast, occupational diversity did not have a main effect on team innovation and the interaction with occupational diversity was only found for the mental health care teams, but not the breast cancer teams. In part this may be a reflection of the differences in team tasks between the two team types. In this case it seems that a prosocial climate indicated by

high levels of helping behaviour and information sharing enables teams to make better use of the various professional backgrounds of the team members and results in higher team innovation.

Overall, we found more significant effects of helping behaviour and information sharing for the community mental health care team than the breast cancer care teams. We attribute the differences between the two independent samples to the differences in team tasks and team structures. While community mental health teams have a stable team membership and meet less regularly than breast cancer teams, breast cancer teams are cross-functional teams with multiple team memberships. Community mental health teams with their stable team composition can probably rely more on fixed task divisions and might also show higher commitment and cohesion than the cross-functional breast cancer care teams. In the relatively stable team situation of CMHTs we find the expected impact of both information sharing and helping behaviour on innovation.

Limitations and future research

For future studies, it would be useful to include additional measures on team cohesion, commitment and identification as well as on organisational support for innovation. Both measures of the individual perception of organisational support provided and of the objective organisational support given, such as time allocated for meetings and dedicated to sharing ideas, would help in further interpreting the differences between team types and deepen our understanding of how tasks and team composition interact with the team processes of information sharing and helping behaviour. Another issue that we could not address in the current studies is that both information sharing and helping behaviour are likely to differ in their importance depending on the team development stage. In newly formed teams, social norms supporting and enforcing helping behaviour and information sharing need to be established first before they can contribute to team innovation, whereas in

long-standing teams norms will already be established, but are likely to differ in how effectively they are actually supporting prosocial behaviour. Future studies should thus consider both the team stages and the length of time a team has already worked together. A third issue of interest for future studies is to specifically look at the role of leadership behaviour in supporting both, information sharing and helping behaviour. We would also like to add as a caveat that while we could show that helping behaviour and information sharing have good discriminant validity, they are unlikely to be completely independent psychological processes in the way they relate to team innovation.

Practical implications and concluding remarks

This study has several practical implications for team management: One important implication is that managers need to make sure enough opportunity for information sharing is provided and that information sharing happens on all levels, both formal and informal. Support for formal information sharing for instance can be given by scheduling regular team meetings with the explicit propose and space for information sharing and discussion and integration of different information, and by ensuring that the right people are brought together in terms of their subject expertise and experience. Informal ways of information sharing are just as important and often some of the most effective and can be supported by physical proximity of key team members, for instance in neighbouring or shared offices, but also by providing attractive and shared meeting spaces such as coffee corners or tea kitchens. These informal opportunities for exchange also tend to support a prosocial team climate more generally and are sometimes underestimated in their effectiveness, for instance in encouraging helping behaviour in teams. A second important implication is that information sharing and helping behaviour need to be explicitly rewarded by managers as part of their feedback to both the team as well to individual team members. Recent research shows that feedback can play an important role in motivating experts to share their expertise in teams

and in particularly when sharing it with less experienced team members (Moser, 2017) which is an important aspect of helping behaviour in teams.

In conclusion, helping behaviour especially seems to be crucial for team innovation. A prosocial climate – evidenced in high helping behaviour and information sharing – enables teams to use their resources to a greater extent and is associated with higher levels of team innovation, even if teams are large and diverse in terms of occupational background. Helping behaviour acts effectively as a buffer and turns potentially problematic aspects of team innovation such as size and high diversity of cross-functional teams into a resource.

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Table 1

Means, standard deviations and inter-correlations of all study variables

	Mean	SD	1	2	3	4	5	6
1. Team size	15.84	7.08						
2. Team type[a]	0.57	0.50	0.21**					
3. Number of occupational groups in team	5.84	3.99	-0.12	-0.92**				
4. Information sharing	3.99	0.36	-0.22**	-0.26**	0.24**			
5. Helping behaviour	3.47	0.37	-0.10	-0.21**	0.20*	0.77**		
6. Occupational diversity	1.44	0.30	0.31**	-0.13	0.33**	0.05	0.04	
7. Innovation	2.53	0.56	0.33**	0.14*	-0.12	0.18*	0.38**	0.23**

Note. * $p < .05$; ** $p < .01$
[a] 1 = Community mental health team, 0 = Breast cancer team

Table 2

Results of direct regression analyses

	Hypothesis 1		Hypothesis 2		Hypotheses 1 & 2	
	CMHT	BCT	CMHT	BCT	CMHT	BCT
Control variables						
Team size	.49**	.16	.47**	.12	.41**	.12
Number of occupational groups in team	-.13	.08	-.11	.06	-.09	.05
Focal variables						
Information sharing	.40**	.19			-.26	-.04
Helping behaviour			.55**	.32**	.75**	.35*
Change in R^2 due to focal variable(s)	.13	.03	.28	.09	.30	.10

Note. Figures in main section of table are standardized regression (beta) coefficients
* $p < .05$; ** $p < .01$

Table 3

Results of moderated regression analyses

	Hypothesis 3a		Hypothesis 3b		Hypothesis 4a		Hypothesis 4b	
	CMHT	BCT	CMHT	BCT	CMHT	BCT	CMHT	BCT
Team size	.52**	.16	.49**	.11	.63**	-.06	.58**	-.02
Number of occupational groups in team	-.10	.06	-.09	.04	-.10	.09	-.08	.05
Information sharing	.48**	.18			.36**	.50**		
Helping behaviour			.60**	.21			.53**	.41**
Occupational diversity	.01	.08	.01	.05				
Information sharing*Occupational diversity interaction	.22*	.07						
Information sharing*Team size interaction					.28*	.47**		
Helping behaviour*Occupational diversity interaction			.25*	.19				
Helping behaviour*Team size interaction							.26**	.19
Total R^2	.27	.10	.44	.17	.28	.18	.43	.16
Change in R^2 due to interaction term	.13	.03	.05	.02	.04	.00	.05	.01

Note. Figures in main section of table are standardized regression (beta) coefficients
* $p < .05$; ** $p < .01$

Figure 1. Moderating effect of occupational diversity on the information sharing-innovation relationship in CMHTs

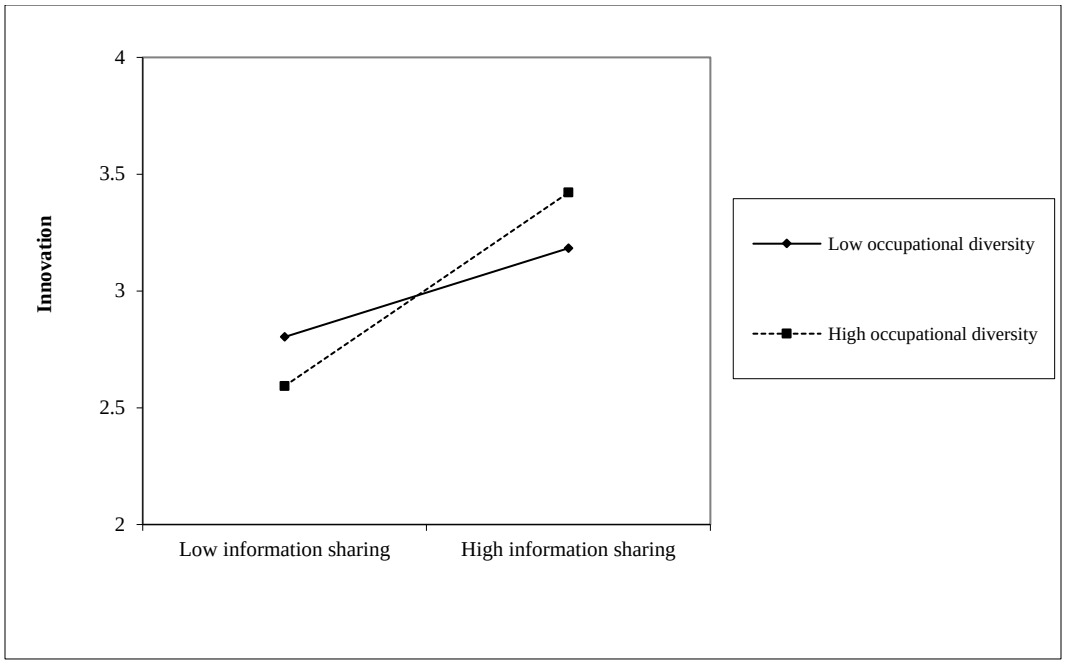

Figure 2. Moderating effect of occupational diversity on the helping behaviour-innovation relationship in CMHTs

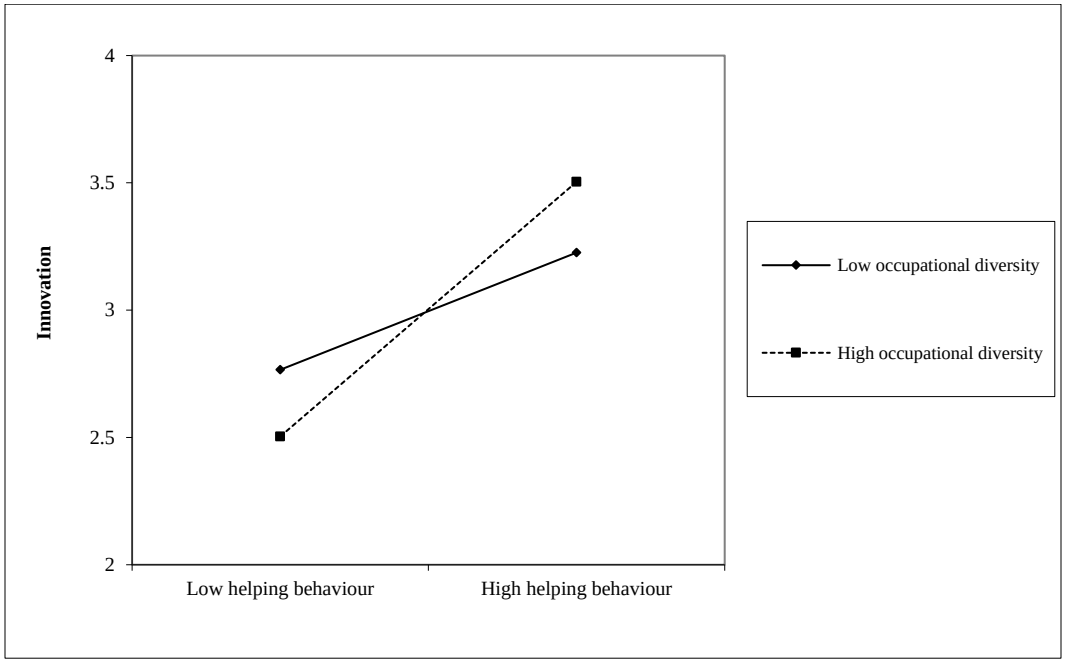

Figure 3. Moderating effect of team size on the information sharing-innovation relationship in CMHTs

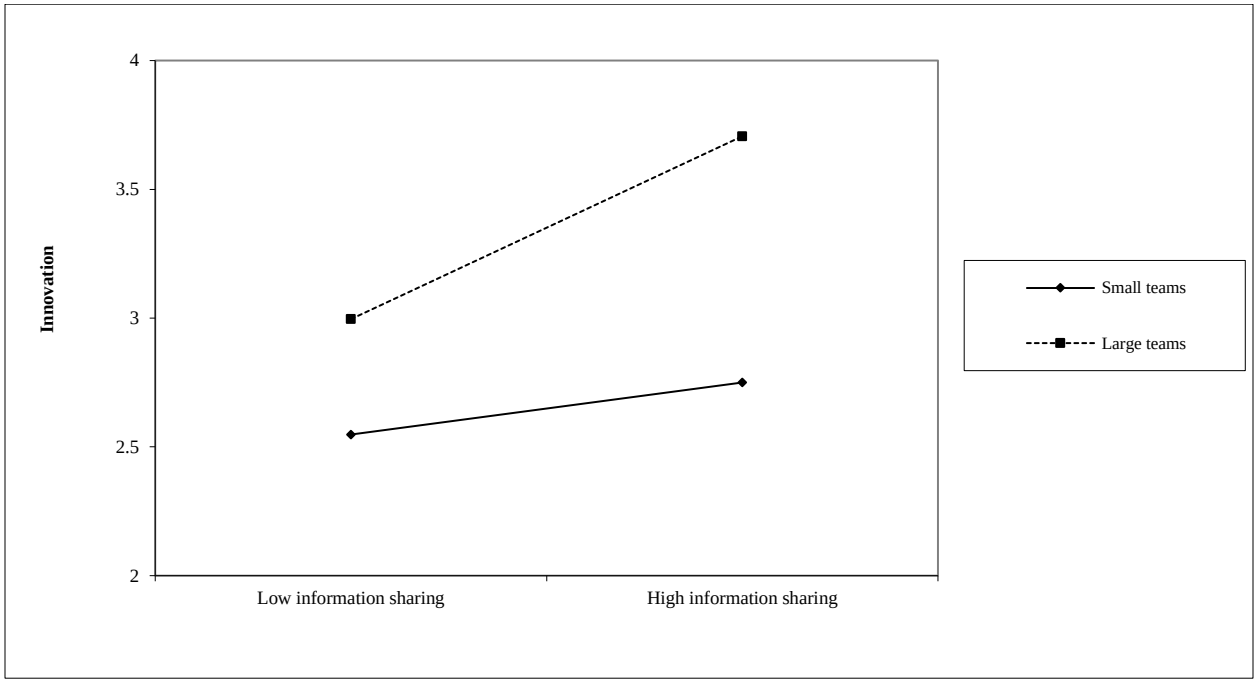

Figure 4. Moderating effect of team size on the helping behaviour-innovation relationship in CMHTs