# Leadership Clarity and Team Innovation in Health Care

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**Abstract**

The relationships between leadership clarity (i.e. team members' consensual perceptions of clarity of, and no conflict over leadership of their teams), team processes and innovation were examined in health care contexts. The sample comprised 3,447 respondents from 98 primary health care teams, 113 community mental health teams, and 72 breast cancer care teams. The results revealed that leadership clarity is associated with clear team objectives, high levels of participation, commitment to excellence and support for innovation. Team processes consistently predicted team innovation across all three samples. Team leadership predicted innovation in the latter two samples and there was some evidence that team processes partly mediated this relationship. The results imply the need for theory that incorporates clarity and not just style of leadership. For health care teams in particular, and teams in general, the results suggest a need to ensure leadership is clear in teams when innovation is a desirable team performance outcome.

**Introduction**

Whether the context is producing TV programmes, training for war, managing health and illness in hospitals, developing new products in manufacturing organizations, or providing financial services, the use of work teams is both ubiquitous and increasing (Guzzo, 1996). Team working is associated with improved financial performance (Macy & Izumi, 1993) and with improvements in organizational efficiency and quality (Applebaum & Blatt, 1994). One reason why organizations are creating team-based structures is that this form of working provides the flexibility needed to respond effectively, appropriately and quickly to the constantly changing demands in the organization's environment (Zaccaro, Rittman, & Marks, 2001).

Researchers have focused on investigating the factors that influence the effectiveness of work groups or teams, from the shop floor through to top management teams (see for reviews West, 1996; Cohen & Bailey, 1997; West, Borrill, & Unsworth, 1998). Much of the research on team effectiveness has focused on task outputs (products and services provided by the team) but much less has been devoted to investigating what factors influence whether teams generate and implement ideas for new and improved products, services and ways of doing things at work (West, 2002).

The writings of researchers investigating creativity and innovation amongst work teams have focused on three main themes (West, 2002): a) the group task and the demands and opportunities it creates for creativity and innovation; b) diversity in knowledge and skills among team members; and c) team integration – the extent to which team members work in integrated ways to capitalise on their diverse knowledge and skills. Whether and how leadership in teams influences team innovation has not been explored. Little is also known about how leaders create and manage effective teams and promote effective team processes (Cohen & Bailey, 1997, Zaccaro et al 2001), and how leaders create and maintain favourable performance conditions for the team (Hackman, 1990, 2002).

The research reported in this paper investigated the contribution of leadership to promoting team innovation in multidisciplinary health careteams.   We focus on the role of leadership in developing team processes that facilitate innovation. These include developing clear objectives, encouraging participation, a focus on quality, and support for innovation  (West & Anderson, 1996; West, 2002). We also examine whether team leadership, specifically clarity about, and conflict over, who is responsible for leadership in the team, predicts team innovation. Recent research in hospitals has established a clear link between staff working in teams and patient mortality (West et al., 2002), so issues of leadership team processes and innovation in health care contexts have important practical as well as theoretical implications.

Innovation is the introduction of new and improved ways of doing things at work. It is a process that is distinct from creativity, which encompasses the processes leading to the generation of new and valued ideas. A fuller, more explicit definition of innovation is "… 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).  Various processes and products may be regarded as innovations. They include technological changes such as new products, but may also include new production processes, the introduction of advanced manufacturing technology or the introduction of new computer support services within an organization.  Administrative changes are also regarded as innovations.  New human resource management (HRM) strategies, organizational policies on health and safety, or the introduction of teamwork are all examples of administrative innovations within organizations. Innovation implies novelty, but not necessarily absolute novelty (West & Farr, 1990).

Team performance (including innovation) is determined by a wide range of factors - team composition (size, skills, knowledge, diversity), the team's task, organizational context, team processes, the level effort on the task, appropriateness of the strategies for achieving the task and the resources available to the team (Hackman, 1990; West, 2002). The behavior of the team leader has the potential to influence all the factors that contribute to team innovation but particularly the team processes we describe above (clarifying objectives, and encouraging participation, commitment to quality, and support for innovation) (Tannenbaum, Salas, & Cannon-Bowers, 1996).  The leader brings task expertise, abilities and attitudes to the team that influence the group design and group norms (Hackman, 1990, 1992, 2002), and, through monitoring, feedback and coaching, develops these processes, which enables the team to achieve its tasks (McIntyre & Salas, 1995) and to innovate.  The leader also helps to define work structures and ensures that organizational supports are in place for the team Tesluk & Mathieu, 1999). Zaccaro et al. (2001) proposed that there are three factors critical for effective team performance: firstly the ability of team members to successfully integrate their individual actions, and secondly, their ability to operate adaptively when coordinating their actions.  They argued, however, that the third factor, team leadership, is most critical for success. The extent to which the leader defines team objectives and organizes the team to ensure progress towards achieving these objectives, contributes substantially to team innovation

Much of the research on team leadership has focused on the contribution made by a single leader. However, leadership can also be provided one or more individuals who are either formally appointed to the role, or emerge from within the team. Leadership is important even in self-managed teams, affecting both organizational factors such as acquiring resources for the team, and team member behavior such as encouraging the team to take control of its own activities (Nygren & Levine, 1996). Indeed, research on self managed cross-functional project teams shows that they are less likely to be successful if they do not have a leader (Cohen & Bailey, 1997). We propose that irrespective of the team type and team task, a factor that is critical to the role of leadership in fostering team innovation, is that team members are clear about who is in this role (regardless of whether leadership is shared). In contrast to classic leadership research (cf. Yukl., 2002), where usually attributes of an individual in a leading position are conceptualized as leadership (e.g. leadership style, leadership behaviour) the concept used here is on the team level of analysis. Leadership clarity pertains to the shared perceptions of group members about the extent to which leadership roles are clear within the team. We argue that lack of clarity about or conflict over the leadership role will be negatively associated with team innovation.

*Hypothesis 1 – Lack of clarity about team leadership is associated with lower levels of innovation.*

Innovation implies that to certain extent, standardised methods and routines are not readily available within a team to address, for example, unforeseen changes, newly discovered implications, or problems unknown before. Addressing such issues requires conscious and immediate attention of all group members. Whether the issues that become apparent to particular group members are relevant for other group members' tasks (and in what respect) needs to be decided quickly. Here leadership comes into play (whether it is shared or not), e.g., in terms of proper alignment with the overall team goals and objectives and coordination of problem solving activities. To the extent that it is unclear who takes the lead - and in the case of shared leadership, who takes the lead for what particular task - responsibility for the advancement of innovations is diffused and the likelihood that relevant issues are not addressed is high. More specifically, we argue that lack of leadership clarity is negatively associated with the team processes known to be relevant for innovation (Anderson & West, 1994).

Hypothesis 1 – Lack of leadership clarity and conflict over team leadership is negatively associated with team processes (clarity of objectives, level of participation, commitment to quality and support for innovation).

The team's task, and the opportunities and demands it creates for innovation, and diversity and knowledge and skills among team members are both important for team innovation (Amabile, 1983; Amabile & Conti, 1999, Milliken and Martin, 1996; Simons, Pelled, & Smith, 1999). However, there is strong research evidence to suggest that integrating group processes (clear objectives and high levels of participation,

commitment to excellence and support for innovation) are factors that are critical for team innovation (for a review, see West, 2002).

In the context of group innovation, leaders who ensure *clarity of team objectives* are likely to facilitate innovation by enabling focused development of new ideas, which can be filtered with greater precision than if team objectives are unclear.   Pinto and Prescott (1987), in a study of 418 project teams, found that a clearly stated mission was the only factor which predicted success at all stages of the innovation process (conception, planning, execution and termination). Research evidence from studies of the top management teams of hospitals (West & Anderson, 1996) provides support for the proposition that clarity of and commitment to team goals is associated with high levels of team innovation.

There are obvious reasons for supposing that when team leaders encourage *participation* there will be relatively high levels of team innovation. To the extent that information and influence over decision-making are shared within teams, and there is a high level of interaction amongst team members, the cross fertilization of perspectives which can spawn creativity and innovation (Cowan, 1986; Mumford & Gustafson, 1988; Pearce & Ravlin, 1987; Porac & Howard, 1990) is more likely to occur.  Studies of teams in oil companies, health care, TV programme production organization, and in top management, support this proposition (Burningham & West, 1995; Borrill, West, Shapiro & Rees, 2000; Carter & West, 1999; Poulton & West, 1999; West, Patterson & Dawson, 1999).

Leaders who effectively encourage a *commitment to excellence* by managing competing team perspectives are likely by these means to encourage the generation of creativity and innovation (Mumford & Gustafson, 1988; Nemeth & Owens, 1996; Tjosvold, 1998).  Team members are then more committed to performing their work effectively and excellently than they are either to bland consensus or to personal victory in conflict with other team members over task performance strategies or decision options. Dean Tjosvold and colleagues (Tjosvold, 1982; Tjosvold & Field, 1983; Tjosvold & Johnson, 1977; Tjosvold, Wedley, & Field, 1986; Tjosvold, 1998) have presented cogent arguments and strong supportive evidence that such constructive (task-related) controversy in a co-operative group context, improves the quality of decision-making and the implementation of new ideas.

Innovation is more likely to occur in teams when the leader models and encourages *support for innovation*, and where he or she rewards rather than punishes innovative attempts (Amabile, 1983; Kanter, 1983).  Support for innovation is implied by the leader's expectation, approval and practical support of attempts to introduce new and improved ways of doing things in the work environment (West, 1990).  In a longitudinal study of 27 hospital top management teams, support for innovation emerged as a powerful group process predictor of team innovation (measured by independent evaluations of implemented innovations) (West & Anderson, 1996).

***Hypothesis 2 – Team processes (clarity of objectives, levels of participation, commitment to excellence and support for innovation) are positively associated with team innovation***

The key task for team leaders, in order to ensure that they build and maintain teams that are innovative, is to develop effective integration processes. Thus the team leader has a key role in ensuring that team members are clear about their shared objectives and are provided with feedback on the achievement of these objectives and that processes are in place within the team to ensure that team members can share information and ideas, and contribute to decision-making.  The leader has to ensure that the team develops an emphasis on excellence so that team members are able to challenge and debate each others' ideas, and provide the practical and social support to develop innovation.   If leadership is not clear to the team, no matter how skilled or qualified the person is who has this role, his/her efforts would be blocked or not recognised by team members. Conflict over leadership will severely undermine integrated working, since team members are likely to be distracted by conflict and to be unclear about objectives as a consequence of differences in aims amongst those in conflict. Moreover, team members may not feel safe to learn and participate because of the team conflict (Edmondson, 1999).

***Hypothesis 3 – Lack of clarity about team leadership is associated with lower levels of innovation.***

The foregoing discussion of the relationships between clarity of team leadership, team processes and team innovation implies a mediation model. Clarity of or conflict over team leadership will influence team innovation via their influence on team processes.

Hypothesis 4 – Poor team processes mediates the relationship between lack of clarity or conflict over leadership and innovation.

The four hypotheses were tested in a study of team working and innovation conducted with three different types of multi-disciplinary teams in the UK National Health Service (NHS).  These teams were selected for two main reasons.  Firstly, the rate of change and the increasing level of demand in the NHS is such that is it critical that those delivering these services are able to respond quickly and effectively with new ways of working, new products and services.  This is, therefore, an organizational environment where innovation is important.  Secondly, the tasks carried out by these teams, and the innovations introduced, required a diverse range of professionals to work together, each with different their own philosophy of care (Toon, 1994) which result in differing approaches and priorities.  In these types of teams, therefore, both effective team processes and innovation are critical, not least because they affect the lives, health and even deaths of the patients they serve.

**Method**

The Sample

The data used in this study were extracted from the data sets of two larger projects on the effectiveness of health care teams in the United Kingdom. Three types of multidisciplinary health care teams participated in these studies: 98 primary health care teams (PHCTs), 113 community mental health teams (CMHTs) and 72 breast cancer teams (BCTs). Primary health care teams are responsible for promoting and maintaining the health of people in their local community, these needs being met through services provided by general practitioners, community nurses, and practices nurses, with the support of practice managers and administrative staff. Community mental health teams provide community-based services to people with mental illness. These teams include psychiatrists, psychiatric nurses, social workers and administrative staff. Breast cancer teams are responsible for the diagnosis and treatment of breast cancer, and include medical consultants from a range of specialties (breast surgeons, medical oncologists), breast nurses and administrative staff.

The 98 primary health care teams were randomly selected from databases provide by 19 Health Authorities in the British National Health. The Health Authorities chosen were located in different geographical areas of England to ensure that a representative sample of PHCTs could be selected taking account of a range of dimensions: size, location (rural, urban, inner city), number of general practitioners, and the size of population served by the team. The CMHTs were selected from four health regions to ensure that the sample included a representative spread of teams from different socio-economic locations, professional skill mixes and client bases. The sample of BCTs was randomly selected from the 190 breast teams listed in the UK Cancer Relief Macmillan Directory (Macmillan Cancer Relief, 2003). The number of teams in each region represented a constant sampling proportion, i.e., the proportion of teams in that region, relative to the number of teams in England. Teams were stratified within regions by their annual new cancer caseloads, with half drawn above and half below the regional mean.

Self report questionnaires were completed by 1156 respondents from 98 PHCTs, by 1443 respondents from 113 CMHTs, and 548 respondents from 72 BCTs. The questionnaires sought respondents' reports of their perceptions of team functioning, innovation, leadership and effectiveness.

Measures
*Team processes*

These were measured using four dimensions of team working, drawn from the Team Climate Inventory (Anderson & West, 1998) which has repeatedly been assessed as a measurement instrument for team processes and found to have consistently robust psychometric properties (Agrell & Gustafson, 1994; Raggazzoni, et al., 2002; West & Anderson, 1998 The measure assesses levels of:

*Clarity of and commitment to team objectives*: This was measured using 11 items to assess the extent to which team members are clear about their work-related objectives; the extent to which they perceive objectives to be worthwhile; and shared by team members. Using a seven-point response scale ranging from *'not at all'* to *'completely'*, respondents answered questions about their team's objectives. Two examples are: 'How clear are you about your team's objectives?' and 'How worthwhile do you think these objectives are?' Cronbach's alpha for the eleven items was 0.94.

*Team participation*: This was measured using 12 items that assessed the extent to which team members feel they have influence over decisions made in the team; the degree to which team members interact with each other on a regular basis; and the adequacy of information sharing amongst team members. Cronbach's alpha was 0.86. Using a five-point response scale, respondents indicated the extent to which they agreed or disagreed with items such as: "We have a 'we are all in it together' attitude", and "We keep in touch with each other as a team".

*Emphasis on quality:* A seven-item measure was used to assess the extent to which team members engage in constructive controversy to achieve excellence in decisions and actions that they take to provide health care for the local community. This is a measure of the degree to which team members feel that controversy within the team is constructive, and that team members' confidence is confirmed rather than questioned in the process of debate. Using a seven-point scale ranging from *'to a very little extent'* to *'a very great extent'*, respondents indicated how well statements described their team. Examples are: 'Do you and your colleagues monitor each other so as to maintain a higher standard of work?' and 'Is there real concern among team members that the team should achieve the highest standards of performance?' Cronbach's alpha was 0.92.

*Support for innovation*: Eight items were used to measure the degree to which there was verbalised and practical support in the team for the development of new ideas. Items in this scale refer to sharing resources, giving time and co-operating in implementing new and improved ways of carrying out tasks. Using a five-point scale ranging from '*strongly agree*' to '*strongly disagree*' respondents were asked to rate items such as 'Assistance in developing new ideas is readily available', and 'In this team we take the time to develop new ideas'. Cronbach's alpha was 0.92.

### *Leadership Clarity*

Each respondent was asked to indicate: 'To what extent is there an overall leader/co-ordinator in your team?' Respondents were requested to select one from the following options: 'There is a very clear leader/co-ordinator'; 'A number of people lead/co-ordinate the team'; 'There is no clear leader/co-ordinator'; 'There is conflict over who leads/co-ordinates the team'; and 'We all have leadership/co-ordinator roles'. To measure the clarity of leadership in teams, the proportion of respondents who said either 'There is no clear leader/co-ordinator' or 'There is conflict over who leads/co-ordinates the team' was used.

*Team innovation*

Team members were asked to write descriptions of the major changes or innovations the team had introduced in the previous 12 months. For PHCTs and CMHTs these descriptions of innovation were rated by external raters who were experts in the fields respectively of primary care or mental health care. The BCT innovations were rated by one expert from the field of breast cancer care (a breast surgeon). Interrater reliability was established in the latter case by comparing the ratings with a member of the research team who had worked in this domain with over 100 teams over a two-year period.

The raters were provided with a list of the innovations that gave information about the type and number of innovations introduced by each team, but did not provide any information about the characteristics or identity of each team. Team innovations were rated using a five point scale on four dimensions (West & Anderson, 1996): magnitude - how great would be the consequences of changes introduced; radicalness - to what extent the status quo would change as a consequence; novelty - how new in general were the changes; impact - to what extent changes would improve CMHT effectiveness. The external raters also calculated the number of innovations introduced by the teams.

## Analysis

The analysis was conducted in four stages, testing the first three hypotheses followed by a test for mediation. Regression analysis was used to test the hypotheses. First, team processes were regressed on leadership, second, innovation was regressed on team processes; and third, innovation was regressed on to leadership. As well as testing the hypotheses, the analysis attempted to establish the three prior conditions needed for mediation (Baron & Kenny, 1986). The mediation was then tested by regressing innovation on leadership, with team processes also included as a predictor.

Due to the high correlations between the four team process dimensions ($0.60 < r < 0.90$ in all cases), these were combined to form a single team processes variable (Cronbach's alpha = 0.92). The data measuring team processes were collected at an individual level, but were aggregated to the team level, since the hypotheses required analysis at the level of the team. To justify aggregation, however, it is necessary to show sufficient agreement among the members of each team, and sufficient reliability of team-level mean scores.. We calculated the values of James, Demaree & Wolf's (1984) $r_{WG(j)}$ index for the three types of team: this had mean values of 0.93 for the PHCTs and CMHTs, and 0.95 for the BCTs. This demonstrates very satisfactory inter-judge agreement. Intraclass correlations (ICC(2)) of 0.77, 0.83 and 0.70 respectively show good interrater reliability (Bliese, 2000).

The four ratings of innovation were also highly correlated (though less so than the TCI dimensions, $0.45 < r < 0.65$), and formed a single innovation scale (Cronbach's alpha = 0.82).

Agreement between external raters in ratings of team innovation within each of the three samples was calculated using James, Demaree & Wolf's (1984) $r_{WG(j)}$ index and this revealed a high level of agreement, confirming there was consensus between the external raters' assessments of team innovation.

The three types of team were analysed separately, since it was recognised that the differences in task and nature between the teams could lead to differences in results. Team size (number of team members) was used as a control variable in all analyses since there was a relationship between team size and innovation (ranging from .28; p = .019 to .40; p < .001). The analyses using the two leadership items (clarity of, and conflict over, team leadership) were run combining them and using them separately. There were no differences in the pattern or significance of the results so the data were analysed combining the proportions indicating positive responses to one or other of the two items. Within group agreement could not be calculated therefore.

## Results

Table 1 shows the means, standard deviations and correlations of study variables for the three different types of team. Percentages of team members indicating lack of clarity over leadership are also illustrated in Table 1. Team size, team processes and levels of innovation were relatively homogeneous within both the PHCT and CMHT types of team, but clarity of leadership exhibited more variation (although the distribution within each type of team was similar). The BCTs, however, were generally smaller, clearer about their leadership, and had better team processes, but their level of innovation was lower. This does not necessarily mean they are less innovative, because the criteria against which they are judged could well have differed. The pattern of correlations appeared similar for each type of team, although they were generally strongest for CMHTs.

**Table 1.**

Means, standard deviations and correlations for study variables, by type of team.

| | Mean | SD | 1. | 2. | 3. |
|---|---|---|---|---|---|
| **PHCTs** | | | | | |
| 1. Team size | 21.39 | 11.08 | | | |
| 2. Lack of clarity of leadership | 15.36% | 15.63% | .01 | | |
| 3. Team processes | 3.45 | 0.34 | -.04 | -.41*** | |
| 4. Innovation | 2.59 | 0.69 | .40*** | -.10 | .26** |
| **CMHTs** | | | | | |
| 1. Team size | 17.04 | 7.99 | | | |
| 2. Lack of clarity of leadership | 13.77% | 20.62% | -.05 | | |
| 3. Team processes | 3.45 | 0.35 | -.19* | -.50*** | |
| 4. Innovation | 2.60 | 0.75 | .34*** | -.43*** | .44*** |
| **BCTs** | | | | | |
| 1. Team size | 9.85 | 2.60 | | | |
| 2. Lack of clarity of leadership | 7.57% | 12.92% | .08 | | |
| 3. Team processes | 3.75 | 0.26 | -.02 | -.61*** | |
| 4. Innovation | 2.43 | 0.45 | .28* | -.20 | .29* |

* p < .05  ** p < .01  *** p < .001

Table 2 shows the results of regression analysis in which clarity of leadership predicts team processes. There was a highly significant, negative association in all three types of teams. The negative effect means that team processes are better in teams where fewer respondents reported there was either lack of clarity, or conflict, over leadership. This provides clear support for hypothesis 1. The effect is strongest for BCTs, but standardised coefficients of at least 0.41 in all types of team suggest a strong effect for all types.

**Table 2**

Results of regression analysis with team processes predicting innovation

|  | PHCTs | | CMHTs | | BCTs | |
|---|---|---|---|---|---|---|
|  | β | $R^2$ | β | $R^2$ | β | $R^2$ |
| Team size | .40 | .16 | .34 | .12 | .28 | .08 |
| Team processes | .27 | .23 | .52 | .38 | .32 | .18 |
| $\Delta R^2$ due to team processes | .07** | | .26* | | .10** | |

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

Table 3 shows the results of regression analysis in which team processes predicted innovation. There was a significant, positive effect in all three types of team, providing clear support for hypothesis 2. The effect was strongest for CMHTs, but even for PHCTs where it was weakest, a standardised regression coefficient (β) of 0.27 suggests a moderately substantial effect.

**Table 3**

Results of regression analysis with lack of clarity of leadership predicting team processes

|  | PHCTs | | CMHTs | | BCTs | |
|---|---|---|---|---|---|---|
|  | β | $R^2$ | β | $R^2$ | β | $R^2$ |
| Team size | -.04 | .00 | -.19 | .04 | -.02 | .00 |
| Lack of clarity of leadership | -.41 | .17 | -.51 | .30 | -.61 | .37 |
| $\Delta R^2$ due to lack of clarity of leadership | .17*** | | .26*** | | .37*** | |

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

Table 4 shows the results of regression analysis in which clarity of leadership predicted innovation. There was a significant, negative effect in CMHTs and BCTs, but the effect was not significant in PHCTs. This provides partial support for hypothesis 3. The effect is strongest for CMHTs, where a standardised coefficient of -0.41 suggested a substantial effect size, though weaker for BCTs, β = -0.24, suggesting only a moderate effect.

**Table 4**

Results of regression analysis with lack of clarity of leadership predicting innovation

| | PHCTs | | CMHTs | | BCTs | |
|---|---|---|---|---|---|---|
| | β | $R^2$ | β | $R^2$ | β | $R^2$ |
| Team size | .40 | .16 | .34 | .11 | .28 | .08 |
| Lack of clarity of leadership | -.11 | .17 | -.41 | .28 | -.24 | .14 |
| $\Delta R^2$ due to lack of clarity of leadership | .01 | | .17*** | | .06* | |

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

Table 5 shows the results of regression analysis in which clarity of leadership predicted innovation, controlling for team processes. To test for mediation (Baron & Kenny, 1986), this was  compared with the results when not controlling for team processes, shown in Table 4.  It can be seen that in all cases the effect of clarity of leadership on innovation was substantially diminished when team processes were included in the equation. This was shown by large reductions in both the standardised coefficients of the leadership variable, and the changes in $R^2$.  However, this cannot be called mediation in the case of PHCTs, as there was no significant relationship between clarity of leadership and innovation, so Baron & Kenny's (1986) conditions were not satisfied. In the case of CMHTs, although the effect was reduced substantially, it remained significant at the 0.05 level when team processes are included in the model. This means the mediation must be classed as partial. In the case of the BCTs, the effect of clarity of leadership was almost wholly removed when team processes were included in the model, although the original effect was not strong.

**Table 5**

Results of regression analysis with lack of clarity of leadership predicting innovation, mediated by team processes.

| | PHCTs | | CMHTs | | BCTs | |
|---|---|---|---|---|---|---|
| | β | $R^2$ | β | $R^2$ | β | $R^2$ |
| Team size | .406 | .162 | .409 | .115 | .315 | .078 |
| Team processes | .271 | .233 | .419 | .279 | .268 | .178 |
| Lack of clarity of leadership | .010 | .233 | -.197 | .407 | -.084 | .183 |
| $\Delta R^2$ due to lack of clarity of leadership | .000 | | .028* | | .005 | |
| Lack of clarity of leadership (unmediated model) | -.108 | .174 | -.412 | .284 | -.243 | .136 |
| $\Delta R^2$ due to lack of clarity of leadership (unmediated model) | .012 | | .169*** | | .058* | |

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

Baron & Kenny (1986) also suggest using a slightly adjusted version of Sobel's (1982) test for the significance of an indirect (mediated) effect. Using this test here, we find that for CMHTs the mediation, although only partial, was highly significant, $t_{(d.f.)} = 3.793$, $p < .001$. For BCTs, however, the mediation fell short of significance at the conventional .05 level, $t_{(d.f.)} = 1.835$, $p = .067$. Overall, the hypothesis that team processes mediate the relationship between clarity of leadership and innovation was partially supported, the degree of support varying with the type of team.

**Discussion**

Our study revealed that leadership clarity and conflict predicted team processes in the 283 health care teams that made up the sample for this research. Low leadership clarity and high leadership conflict were associated with relatively unclear objectives, low levels of participation, low emphasis on excellence in work, and low support for innovation. The effect was large, accounting for 17% of the variance among PHCTs, 26% among CMHTs, and 37% in the case of BCTs. Moreover, in the case of two of the samples (BCTs and CMHTs, n = 192 teams) clarity of and conflict over leadership predicted levels of innovation (such that lack of clarity and high conflict were associated with relatively low levels of innovation). Clarity/conflict of leadership explained 17% of the variance in innovation among CMHTs and 6% of the variance in innovation among BCTs. All analyses controlled for team size since we found statistically significant correlations between size of teams and levels of innovation across all three samples.

The results of the study also showed that, for two of the three samples of health care teams (CMHTs and BCTs), clarity/conflict of leadership was a predictor of levels of innovation. When relatively high percentages of team members reported lack of clarity of or conflict over team leadership there were low levels of innovation. Tests of mediation revealed that team processes mediated the relationship between leadership clarity/conflict and team innovation in the two samples where that relationship was found (CMHTs and BCTs).

The findings from this study suggest that team size has a relationship with team innovation. The data show that larger teams have higher levels of innovation across all three samples. This may be because larger teams process more diverse perspectives and therefore have the potential to achieve a more comprehensive processing of information and decisions, both of which processes are likely to lead to creative ideas. Another interpretation is that larger teams have the critical mass of people necessary to sustain innovation attempts such that they are implemented in practice, rather than failing at an early stage. Further examination of the relationship between lack of leadership clarity and innovation reveals that for CMHTs, it is moderated by size (this is shown in figure 1). The relationship appears to be stronger for larger teams: in particular, larger teams that have more clarity about their leadership are more innovative. However, this effect does not appear for the other types of team, or for the relationship between lack of leadership clarity and team processes. This may be because of contextual differences between they types of team, or may be because the effect is small and difficult to detect.

**Figure 1**

Graph showing moderating effect of team size on relationship between lack of leadership clarity and innovation
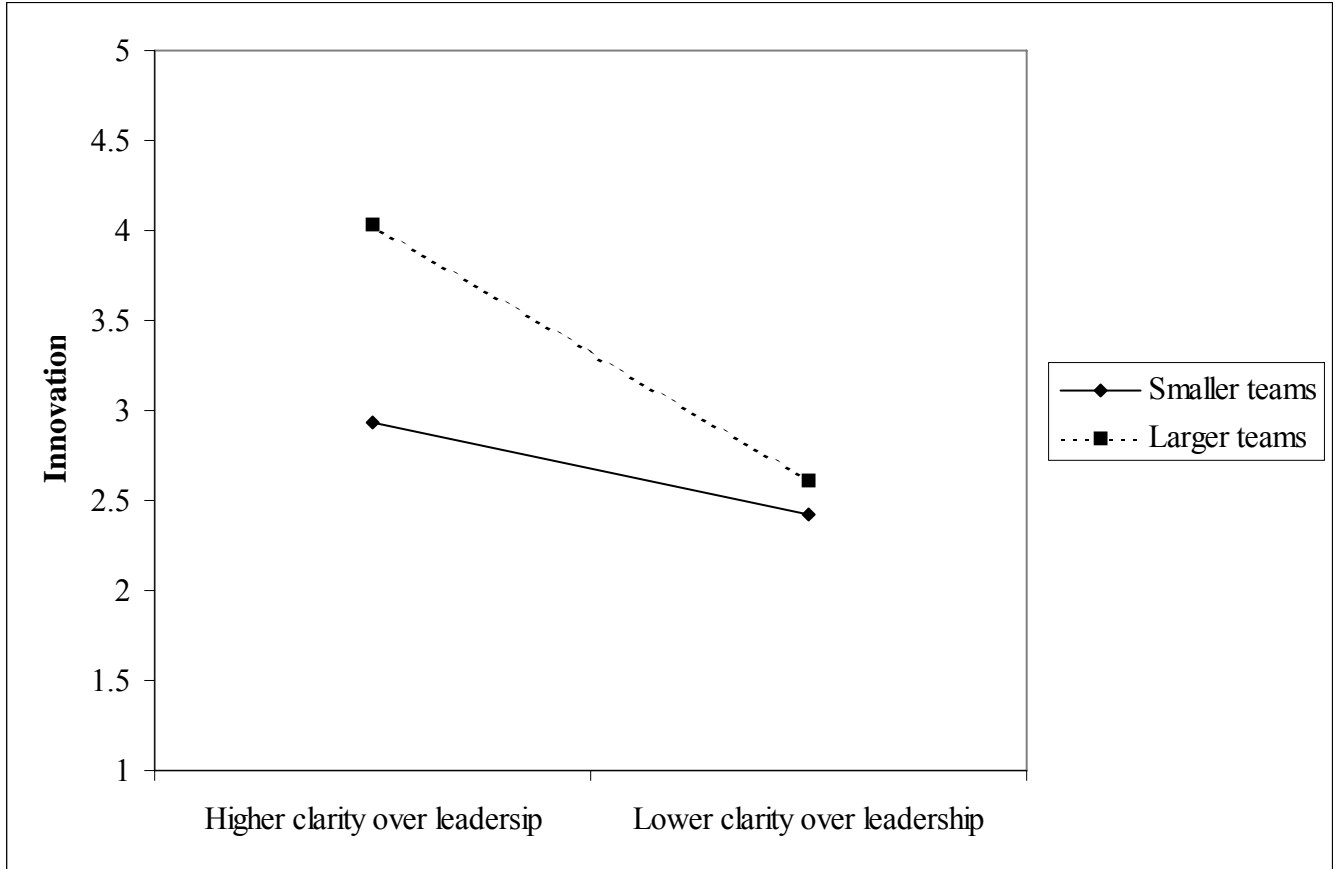
Our first hypothesis, that leadership clarity/conflict would predict team processes, was supported. This makes sense since leadership is likely to influence clarity of objectives, team members' commitment to objectives, levels of team members' participation, commitment to excellence and support for innovation. It is the role of the leader(s) to help provide a compelling direction (Hackman, 1992, 2002) and to ensure clarity of purpose and team members' commitment to the team objectives. If it is unclear who leads the team (either de facto or because of conflict over leadership), the corollary, that team objectives will be unclear, is likely to be true. At the same time, the role of the team leader is to ensure and encourage effective participation of members in the decision making process. Where it is unclear who leads the team, or there is conflict over leadership, there may be conflicting attempts to encourage participation in decision making that effectively reduce interaction, influence and information sharing.

The study was also designed to determine whether team processes predict levels of innovation, and, using external ratings of innovation as the criterion of team innovation, data from all three samples showed that team processes significantly predicted substantial variance in team innovation. This is consistent with theory (West, 1990, 2000) and with previous research (Agrell & Gustafson, 1994; West & Anderson, 1996). How health care teams function in terms of shared objectives, level of participation, emphasis on quality of performance, and support for innovation will influence levels of innovation in health care. The consistency of this finding across diverse types of health care team suggests it is axiomatic for such teams.

The final two hypotheses received some support. Leadership clarity/conflict predicted team innovation among Community Mental Health teams and Breast Cancer Care teams but not in the sample of Primary Health Care teams. Moreover, the relationship between leadership clarity and team innovation was at least partially mediated by team processes in the case of both CMHTs and BCTs.

We speculate that the failure to confirm these findings in all three team types is a result of the rather different structure and culture of Primary Health Care teams. Such teams tend to be larger than the other two types (see Table 1). Moreover, the leaders are doctors (general medical practitioners), who employ staff (practice nurses and receptionists) directly in their practices. The other teams are firmly located within the NHS and all members are directly employed by the NHS (and, in the case of some members of CMHTs, social services). In PHCTs, there may be as many as five or six partners in any one practice and there are rarely fewer than two. These general medical practitioners are not employed, though they are paid by, the NHS. Working alongside them and their staff are community nurses who are employed by the NHS (health visitors, midwives and 'district nurses') who perform an 'outreach' healthcare role in the community. Moreover, most doctors employ a 'practice manager' whose power is ambiguous (in relation to the general medical practitioners) and who have little or no authority over the community staff. Consequently, PHCTs may represent a rather unusual form of 'team' in comparison with CMHTs and BCTs. The latter tend to deal with narrower ranges of problems, all staff are mainly employed by the organization and reporting structures and processes are much clearer. It is possible, however, that this

effect was not found in PHCTs due to sampling error – the response rate for PHCTs was lower than that for CMHTs or BCTs.

Taking account of the failure to unambiguously confirm the effects across all three samples, we conclude the following. Leadership clarity (including in this lack of conflict over leadership) does predict team innovation, because leadership is needed to ensure that a team is able to persist in applying an idea for a new service or way of working over time. Such persistence is likely to require the compelling direction, motivation and guidance that clear leadership offers (Yukl, 2002). These effects of clear leadership occur at least partly because of the influence of leaders on team processes. Clear leadership leads to clear objectives, higher levels of participation than would otherwise be the case, a greater likelihood of commitment to excellence and to innovation. Presumably, lack of clarity or conflict over leadership leaves team members uncertain about the direction to which they should be targeting their efforts (which in turn undermines innovation attempts), and less likely to participate effectively in team decision making or working. Moreover, lack of clarity and conflict over leadership are likely to produce different interpretations among team members of what excellence of service means (and to unresolved differences) and what appropriate innovation consists of. In short, clear leadership and supportive team processes are vital for sustained and effective innovation. In the area of health care in particular, such insight is important.

The major limitation of the research reported here is that the data on all variables were collected contemporaneously so it is not possible to determine the primary direction of the relationships. That being acknowledged however, previous longitudinal research on the relationship between team processes and team innovation has established that the direction is from processes to innovation (West & Anderson, 1996). Nevertheless, it could be that clarity of leadership and lack of conflict over leadership are a consequence rather than an antecedent of team innovation in these samples of health care teams. Future longitudinal research will help to establish or rebut this.

Alternative explanations for team innovation, for example, group cohesion and communication density (cf. Brodbeck, 2000), were not explicitly considered in our research. However, leadership and the way it is enacted is related to these constructs, in that for example, leadership influences recruitment, staff and team development (e.g., on the basis of their communication skills, attraction to the team and its task) and also a team structure that supports intensive communication (one of the three facets of cohesion) and role clarity. Thus, leadership clarity should be positively related to cohesion and communication density. It should be noted that not all of the variance in innovation accounted for by leadership clarity is explained by team processes. Thus, although the data supports the mediated model proposed, other mediating constructs (such as cohesion and role clarity) are not ruled out.

Much may depend also on the task and organisational context within which leadership clarity is studied. Health care teams in the UK are not highly evolved in terms of their functioning as teams, since professional hierarchies and functional boundaries have traditionally impeded effective teamwork (Borrill et al., 2000). In other, more sophisticated, managerial or organizational contexts, such as high technology businesses,

leadership clarity may be less significant since the evolution of team working is likely to have reached a point where formal designated leadership is not such an issue.

The theoretical implications of the findings reported here are important for our understanding of how we function most effectively in teams. The data suggest that we should not neglect leadership as a variable in models of team innovation as has tended to be the case heretofore. Moreover, the tendency of researchers to focus on style of leadership may be premature. There is a strong case to be made for exploring leadership clarity and conflict first. These factors may well be more important in understanding team innovation than issues of style; not least, because team tasks and contexts vary considerably and this may require concomitant variation in styles. In other words, the appropriate style may be contingent on team context. Clarity of leadership and conflict over leadership are almost certainly not.

This research implies that those responsible for developing team based organizations should focus on developing clarity of leadership and avoiding conflict over leadership, especially in newly formed teams. Often, the focus is on developing teams via teambuilding (a strategy which has little empirical evidence to support its link to team performance – Hackman, 2002) rather than on settling leadership issues. Our data suggest this may be a key task for organizational leaders. Moreover, the data suggest that leaders who wish to promote team innovation need to learn how to develop teams in which there are clear, shared objectives, high levels of participation, commitment to excellence and support for innovation.

The research reported here reveals that in specialist health care teams there is a strong relationship between leadership clarity and team processes, and that team processes in turn are strongly associated with team innovation. There is some evidence that team processes mediate the relationship between team clarity and team innovation. In the context in which we studied innovation, new and improved ways of doing things, treatment methods, and patient services can mean the difference between life and death. They can also mean that patients recover from illness or have a better quality of life. This neglected line of research on leadership, team working and innovation is one we therefore think it vital others join us in following.

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