Healthy Teams

Analyzing and Improving Team Performance in Long-Term Care

Martina Buljac- Samardžić

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Healthy Teams
Analyzing and Improving Team Performance in Long-Term Care

Gezonde teams
Het analyseren en verbeteren van teamfunctioneren in de langdurige zorg

Proefschrift

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General introduction

INTRODUCTION

The role of teams in long-term care settings

Teamwork will lead to superior outcomes in health care; is often suggested. It is expected that in synergistic teamwork, teams create something greater than the sum of the individual contributions (Andreatta, 2010; Nurmi, 1996). Due to the increasing demand of long-term care (LTC) services and the increasing complexity of clients, teams have become key players in LTC; both mono-disciplinary and multi-disciplinary teams. Research has primarily focused on multi-disciplinary teams in acute care; mono-disciplinary teams and the LTC sector have received less attention. Predictors of team performance and interventions to improve team performance in LTC remain uninvestigated. It is therefore important to gain insight into how high team performance and improvement in the LTC sector can be achieved. In the following sections we will discuss the LTC setting, teams in this setting, and the overall research aim.

Long-term care

LTC includes a broad array of supportive medical, personal, and social services delivered to people unable to meet basic living needs due to illness or disability. LTC clients have functional limitations due to impairments in, for example, communication or understanding, activity limitations that render them unable to carry out activities of daily living, or participatory restrictions such as not being able to work (WHO, 2002). Because of the variety of limitations, clients may experience, LTC organizations provide various forms of care (Sloane & Zimmerman, 2005). Their goal is to maintain the best possible quality of life for their clients with the greatest possible degree of independence, autonomy, participation, personal fulfillment, and dignity, be it at home or in care facilities (Harrington et al., 1991; WHO, 2000). Examples of LTC organizations are facilities for the disabled, nursing homes, rest homes, and home care. Box 1 gives details on LTC in the Netherlands.

Increasing demand and complexity of long-term care services

The number of people with chronic diseases and/or disabilities is increasing because of demographic and epidemiological transitions, i.e. increasing life expectancy, an ageing population (which is also applicable for the physically and intellectually disabled), and a low premature mortality, respectively (WHO, 2002; Yoo et al., 2004). In established market economies such as the Netherlands, the WHO estimated that in 2010 7.8 percent of the working adult population and 4.7 percent of the total population will require LTC and the percentages will likely increase to 10.4 and 5.3 percent respectively in 2050 (WHO, 2002). Labour trends such as staff turnover and personnel shortage will make it even more difficult to meet the demand (Harrington et al., 1991; Sloane & Zimmerman, 2005; WHO, 2000). Therefore optimal use of available resources, especially teams, is crucial. In addition, LTC is a complex setting

Box 1 LTC in the Netherlands

LTC in the Netherlands is financed by national insurance, which makes services fully accessible and financially covered. In 2010, the cost was approximately €22.3 billion. Approximately 600,000 people use LTC services: 391,000 are elderly, 113.000 people have physical or intellectual disorders, and 84,000 people have mental disorders. More than 40 percent of those people receive intramural LTC. LTC provides for 169,000 people in nursing or residential homes, 67,000 people in institutions for physical and/or mental disorders, and 23,000 people in long-term mental care accommodations. All such organizations receive a payment per client based on care needs (*in Dutch: zorgzwaartepakket*). The remaining 335,000 clients receive extra- or semi-mural LTC and can choose to receive LTC services directly (*in Dutch: zorg in natura*) or receive a budget with which they buy LTC services independently (*in Dutch: persoonsgebonden budget*) (Ministerie van Financiën, 2010).

for teams to operate as they are expected to provide care in a safe setting with maximal client autonomy and minimal physical restrains. LTC is often expected to be provided in an environment where a near-regular household situation is simulated, including a regular physical environment (e.g. a regular house in a neighborhood) in which social interactions (e.g. responsibility regarding chores, pocket money) and day schedules (e.g. assistance at the beginning and the end of the day) are similar to a regular household. Clients are also expected to be highly involved through co-makership (Harrington et al., 1991; Sloane & Zimmerman, 2005; WHO, 2000). These expectations assure the human dignity of clients but make it for the team of care providers difficult to guarantee the maximal prevention of unsafe situations.

LTC teams

LTC is a diverse setting, necessitating different kinds of teams. LTC can be provided intra-murally (e.g. residential care, assisted living accommodations), extramurally (e.g. consultations, visits), or semi-murally (e.g. daycare activities). In certain mono-disciplinary teams, members carry out similar tasks for their own clients and are thus minimally task interdependent. An example is a team of therapists who provide day treatment for a group of disabled people, in which each therapist is responsible for his/her own client. This does not rule out team synergy, as members still pursue shared team goals that relate to social processes, for example, by giving support and feedback or filling in for each other in case of vacation or illness. In other mono-disciplinary teams members are more interdependent and carry out the same tasks for the same group of clients by working in shifts, such as those who provide 24-hour care for disabled clients. The incoming team member depends on the departing colleagues report to carry out his tasks. Such teams could also divide work according to expertise such as housekeeping, assisting with nutrition, and (para)medical care, thereby adding a multi-disciplinary character. In multi-disciplinary teams members have different educational backgrounds, abilities, knowledge, and are interdependent in client treatment. The multi-disciplinary character of LTC could also be embedded in a multi-team system, whereby two or more teams interface directly and interdependently toward a shared goal while pursuing different proximal goals (Marks et al., 2005). A mono-disciplinary daycare team may requests the assistance of a paramedical team when needed. Although the mono-disciplinary team provides the bulk of care, the overall care is provided by a multi-team system with multiple disciplines.

Noteworthy are new LTC initiatives that focus on small-scale care that is provided by teams that are mainly mono-disciplinary. Examples are the *Thomashuizen* and the *Herbergier* initiatives, which are small-scale assisted living accommodations for people with intellectual disorders and elderly with mental disorders, respectively. Disciplines such as psychologists, paramedics, and physicians are not part of the daily team but are involved when needed, which facilitates cost containment. Another example is the *Buurtzorg Nederland* initiative, which provides care for elderly people through small nurse-dominated field teams that maintain contact with other disciplines such as General Practitioners (GP's) and paramedics. All three initiatives demonstrate a trend toward a multi-team system (Marks et al., 2005) in which the bulk of care is provided by mono-disciplinary teams and other disciplines are involved when needed, which emphasizes the importance of investigating mono-disciplinary teams. In sum, the lack of research in LTC and the variety of teams (Sloane & Zimmerman, 2005; WHO, 2000) underlines LTC teams as an essential research field.

Research aim

Teams are integral in providing LTC and will only become more important with increasing demand and complexity of LTC services. Therefore our research aim is to better understand teamwork in LTC by identifying the factors that influence team performance and by studying how to improve team performance.

First, we will clarify how we define a team. Next, we will present an overall theoretical framework in which we will identify the relevant factors relating to team performance in LTC and incorporate these into our research questions. Then, the methods we use to answer the research questions will be described, followed by an outline of this thesis.

What is a team?

The general premise that teamwork will generate outcomes superior to individual work renders the label 'team' appealing and it is therefore assigned to all sorts of groups (Allen & Hecht, 2004; Nurmi, 1996). But not all organizations are suited for team-based work, not all groups are teams, and not all teams are effective. Among the several definitions of a team (Table 1), none fits the LTC setting exactly. We therefore present our own definition of a LTC team: *A team is a limited group of people, whose degree of interdependency varies in nature and intensity, committed to shared and individual goals and mutually responsible for shared goals*. Our definition combines several authors' most common elements. All refer to a team as a limited group of individuals (Katzenbach & Smith, 1993; King, 2002; Manion et al., 1996; Mickan & Rodger, 2000) with a minimum of two (WHO, 2007). A group of people is not a team per se, and therefore the presence of a common purpose or performance goal is necessary (Cohen & Bailey, 1997; Katzenbach & Smith, 1993; King, 2002; Manion et al., 1996; Mickan & Rodger, 2000; WHO, 2007).

Figure 1 Team definitions

Authors	Definition	Elements			
		Limited group of people	Common purpose/ set of performance goals	Mutually accountable / responsible	Interdependence
Cohen & Bailey (1997)	A team is a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more large social systems, and who manage their relationships across organizational boundaries.	✓		✓	✓
Katzenbach & Smith (1993)	A team is a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable.	✓	✓	✓	✓
King (2002)	A team is a diverse group of people with different backgrounds, abilities, and knowledge levels to accomplish a specific task. Second, members of a team work to achieve agreed upon goals.	✓	✓		✓
Manion et al. (1996)	A small number of consistent people committed to a relevant shared purpose, with common performance goals, complementary and overlapping skills, and a common approach to their work. Team members hold themselves mutually accountable for the team's results or outcomes.	✓	✓	✓	
Mickan & Rodger (2000; 2005)	A small number of members with the appropriate mix of expertise to complete a specific task, who are committed to a meaningful purpose and have achievable performance goals for which they are held collectively responsible.	✓	✓	✓	
WHO (2007)	Two or more people working interdependently towards a common goal. Getting a group of people together does not make a 'team'. A team develops products that are the result of the team's collective effort and involves synergy. Synergy is the property where the whole is greater than the sum of its parts.	✓	✓		✓

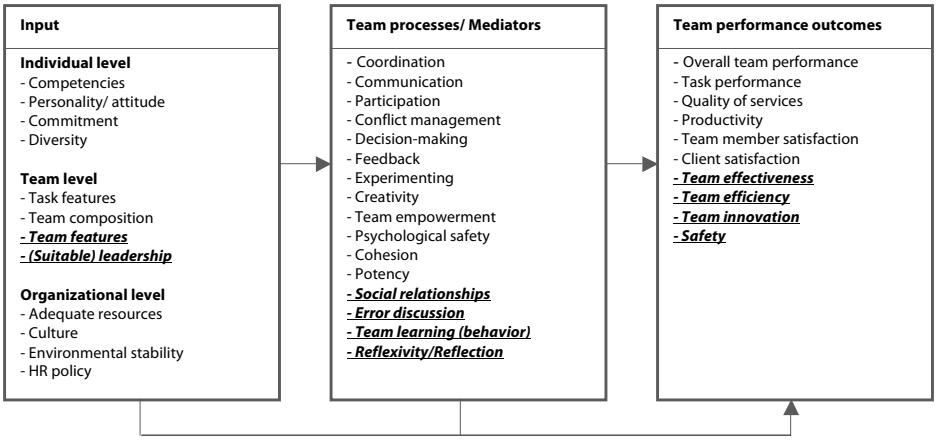
Building upon shared direction, several authors refer to a team whose members are interdependent in achieving their purpose or goals (Cohen & Bailey, 1997; King, 2002; WHO, 2007) and held mutually accountable or responsible (Cohen & Bailey, 1997; Katzenbach & Smith, 1993; Manion et al., 1996; Mickan & Rodger, 2000). We adjusted the team element 'interdependency' to LTC, because such teams vary in the nature and intensity of interdependency. LTC team members may depend on each other to achieve tasks, to receive input for self-reflection on individual performance, or to receive emotional support.

THEORETICAL FRAMEWORK

An extensive amount of literature on team performance tries to give insight into why some teams perform better than others. Literature reviews and empirical studies on teamwork regularly present a theoretical framework of factors influencing team performance. Our own framework is based on three leading reviews: (1) Lemieux-Charles and McGuire (2006) and (2) Mickan and Rodger (2000) present an overview of the main factors influencing team effectiveness in health care, and (3) Mathieu and colleagues (2008) have the same goal but review the literature for all sectors. Each presents a different overview of factors influencing team effectiveness. Mickan and Rodger (2000) divide factors for effective teamwork into three categories: (I) organizational structure, (II) individual contribution, and (III) team processes. Lemieux-Charles and McGuire (2006) list five categories: (I) social and policy context, (II) organizational context, (III) task design, (IV) team processes, and (V) team psycho-social traits. Mathieu and colleagues (2008) present five categories of studies, those that (I) feature team processes as important mediator variables, (II) feature emergent states as important mediator variables, (III) use team composition variables, (IV) employ team level variables, and (V) index types of contextual variables as drivers of mediators and outcomes.

Although they use different categories, an important similarity between Lemieux-Charles and McGuire (2006), and Mathieu and colleagues (2008) is that both overviews are based on the IPO (Input-Process-Output)/ IMOI (Input-Mediators-Output-Input) framework, which is also widely used in the socio-technical systems theory (Stewart & Barrick, 2000; Ilgen et al., 2005). In such a framework, input factors describe antecedents that enable or constrain interaction among team members. Process factors/ team processes are important drivers of performance outcomes, where team members interdependently convert input to outcomes through interaction (e.g. communication, conflict) while accomplishing their goal (Borrill et al., 2000; Cohen & Bailey, 1997; Marks et al., 2001). Some believe that team processes should also be seen as performance outcomes because they refer to the ability to adapt and improve (Mathieu et al., 2008). Team processes as performance outcomes include team process improvement by seeking feedback, discussing errors, experimentation, and learning behavior (Mathieu et al., 2008). This reasoning makes it more difficult, however, to disentangle the

Figure 2 Theoretical framework based on three literature reviews



causal threads between team characteristics and performance. The IPO seems to be a more practical and is a widely used framework. Therefore, we have combined the three literature reviews in an IPO format (Figure 2).

Most factors identified in the reviews could be incorporated in the theoretical framework as presented in Figure 2. However, some adjustments were made toward our study's relevance. We omitted Lemieux-Charles and McGuire's (2006) 'social and policy context' because it is a macro level category and we focus on the meso and micro levels, namely Dutch LTC organizations and teams. We also added safety as an outcome measure because it is an important performance outcome in health care delivery (Kohn et al., 1999; Rust et al., 2008; Wagner & Rust, 2008).

It is not our aim to study all factors in Figure 2. We selected those that seemed particularly relevant to LTC teamwork. LTC is characterized by the variety of teams, which calls for investigating features that underlie the variety, or the extent to which teams are 'real teams' rather than teams in name only. The LTC sector continues to transition from institutionalized care to small-scale assisted living settings. Different types of daycare are provided at different locations and ambulatory care is provided to clients in their homes. The situation of geographically scattered LTC organizations with LTC teams emphasizes the importance of suitable leadership and well-developed team processes. The autonomous character of teams and the geographical distance from the team manager call for examining team coaching as a suitable leadership style. Moreover, the nature of LTC teamwork (i.e. autonomous and remoteness) calls for a constructive way of dealing with errors. Since teams provide care over a long period in a setting in which pleasant social relations are perceived to be important, emotional support from team members could play an important role in achieving high performance. Given their long-term settings, teams could benefit especially from team learning

and reflection, because they have the opportunity to reflect upon team functioning and implement new insights. The selected factors are highlighted in bold in Figure 2 and will be discussed in the next paragraph. Figure 2 will function as a general framework for this thesis, to answer specific research questions several chapters will introduce a more specific framework, which will highlight parts of our general framework.

THEORETICAL CONCEPTS AND RESEARCH QUESTIONS

'Real team' characteristics

The nature of LTC teams can be considered the basic factor influencing team performance. Many studies have examined types of teams as moderating dichotomous variables, but none has used the same taxonomy (Hollenbeck, 2010). In line with Hollenbeck (2010) and Kozlowski and Bell (2003), we deem it more valuable to look at the underlying dimensions on which teams vary rather than looking at dichotomous variables. Wageman, Hackman, and Lehman (2005) define three continuous characteristics of a 'real team': clear boundaries, membership stability, and interdependency. 'Real teams' have *boundaries* that clearly distinguish team members from non-team members, have at least a moderate degree of membership *stability*, and have members who are *interdependent* in achieving a common goal. 'Real teams' are expected to perform better because members have the time and opportunity to learn how to work together, exchange information, and provide support (Wageman et al., 2005). 'Real team' characteristics can be seen as a multi-dimensional scaling approach toward describing different types of LTC teams. This makes it possible to capture the rich and varied nature of LTC teamwork.

Team coaching

Team managers are crucial to the success or failure of a team; teams will perform better if the leadership style is appropriate to their nature (Øvretveit, 1996). The autonomy and remoteness of LTC teams calls for a certain level of self-management. An empowering style of leadership might therefore improve team performance. Stewart (2006) has shown that both transformational and empowering leadership styles have a positive impact on team performance. Team coaching, as measured by Wageman and colleagues (2005), captures both these styles. Hackman and Wageman (2005, p. 269) define team coaching as "direct interaction with a team intended to help members make coordinated and task-appropriate use of their collective resources in accomplishing the team's work".

Emotional support

Emotional support is especially important in the LTC sector, where the experienced workload is high and clients and their families can be highly demanding and even aggressive (Denton et al., 2002, Gray-Toft & Anderson, 1981, Schaefer & Moos, 1993). Because clients and caregivers often interact for years in a near-regular daily household situation the emotional burden is perceived as high (Moyle et al., 2003; Stone & Wiener, 2001). In teams with high emotional support, team members listen to and sympathize with a member who is facing difficulties. Providing empathy, care, and trust influences team performance by reducing or preventing stressors (Nijman & Gelissen, 2011, Sarason et al., 1983). Emotional support can therefore be seen as an important team process that influence team performance.

Team learning

Several studies in the public and private sector have shown that team learning – the activities through which a team obtains, processes, and uses information – is a powerful predictor of good team performance (De Dreu, 2007; Edmondson, 1999; Van der Vegt & Bunderson, 2005; Van Offenbeek, 2001; Van Woerkom & Croon, 2009; Van Woerkom & Van Engen, 2009; Zellmer-Bruhn & Gibson, 2006). LTC teams have many opportunities to implement their knowledge in the long-term, and we therefore expect that especially they will benefit from team learning activities. Team learning helps a team adapt to changing circumstances, continually redefine and improve processes and practices, and discover new and better ways of achieving team objectives. Team learning in LTC settings has, however, received little attention.

Error orientation

Teams view and handle errors differently (Van Dyck, 2000). Two dominant approaches are problem solving and blaming (Tjosvold et al., 2004). Teams that adopt a problem solving approach use errors to improve their performance by sharing, discussing, and analyzing them (Tjosvold et al., 2004), which is essential for learning from errors and improving performance (Edmondson 1999; Edmondson et al., 2007). In teams with a blaming approach, members feel afraid and ashamed of making errors, are punished for them, and do not share, discuss, or analyze them (Tjosvold et al., 2004). Learning from errors is difficult and precludes team performance improvements. Because LTC teams, removed from their institutions and managers, make daily decisions on their own, a constructive team approach in confronting errors (i.e. problem solving) is important. Problem solving and blaming are two distinct approaches toward errors, meaning that if a team does not have a blaming approach this does not automatically mean that it will have a problem solving approach toward errors, and vice versa (Edmondson, 2004).

Team reflection

Reflection may be seen as the starting point of the reflexivity process, which refers to the extent to which teams reflect on and accordingly modify their behavior. Team reflection refers to teams' joint and overt exploration of work-related issues. It may, for example, help members recognize that their methods are outdated (Schippers et al., 2007). We focus on team reflection at the meta-level, that is, discussing processes or how teams "think about the way things are done in the team, reflect on communication patterns within the team, and discuss norms and values within the team" (Schippers et al., 2007, p. 206). Such teams ask critical questions about how things are done, reflect on communication patterns within the team, and confront the team's norms and values (Schippers et al., 2007). This leads to constructive decision making and keeps the team focused. Discussing processes enables team members to be more aware of problems and find the 'right' solution (Hoegl & Parboteeach, 2006). Because LTC teams provide care to a steady group of clients over a long period of time, they may fall into routines and habitual behavior that will not change without team reflection. Furthermore, behavior based on habitual routines is difficult for remote team managers to notice and correct. Teams guided by sheer habit do not discuss alternatives to their current work approaches, which can lead to flawed decision making and poor team performance (Schippers et al., 2003).

Team performance

Some authors see team performance as an unitary construct and measure it overall as a performance outcome (Wageman et al., 2005); others see it as a multi-faceted construct comprising several indicators (Campion et al., 1993; Cohen & Bailey, 1997; Hackman, 1990; MacBryde & Mendibil, 2003; Paauwe, 2004; Van der Vegt & Bunderson, 2005; Van Woerkom & Croon, 2009). Following the more detailed view, we distinguish four performance indicators relevant to LTC: team effectiveness, team efficiency, team innovation, and safety. The indicators are considered important in health care settings such as hospitals, but have not yet been studied in LTC.

Team effectiveness

Effective teamwork became a priority in health care after publication of the well-known report, 'To Err is Human: Building a Safer Health System' (Kohn et al., 1999), in which effective teamwork may be seen as one of five principles toward building a safer health care system. Team effectiveness is the most common indicator for team performance and is often seen as synonymous (Harris, 1996; Lemieux-Charles et al., 2006; Mathieu et al., 2008). Following Van Woerkom and Croon (2009), we define team effectiveness for LTC as the absolute level of attainment of goals and expectations, which depends on the degree to which work processes

are free of error and clients are satisfied with the value of services provided. The definition is built upon three commonly used elements of team effectiveness: quality of work (Guzzo & Dickson, 1996; Janz et al., 1997; Wageman et al., 2005; Van der Vegt et al., 2006), meeting goals (Van der Vegt et al., 2006), and client satisfaction (Guzzo & Dickson, 1996; Janz et al., 1997).

Team efficiency

Rising costs and growing personnel shortage in health care settings has brought notions of efficiency to the fore (Hussey et al., 2009; RVZ, 2006). At the same time, its measurement lags behind other performance measures such as effectiveness and quality (Hussey et al., 2009). Most efficiency measurements refer to input-output at the individual (e.g. physicians, nurses) or procedural level (Hussey et al., 2009). Our focus refers to the input-output ratio on the team level, which relates to achieving goals quickly without wasting resources (e.g. time, money) and a good management of resources (Van Woerkom & Croon, 2009).

Team innovation

LTC teams must be innovative to adapt to changing circumstances and flexible in response to new government and/or budgetary initiatives, the changing needs and expectations of clients, and shifting populations (De Dreu, 2002; Poulton & West, 1994). They also need to be creative in allocating their resources (Poulton & West, 1994; West et al., 2004). If a new client has difficulties adjusting to the group, for instance, the team may need to reschedule tasks so that one member is available to give one-on-one attention to the new client. We define innovation as the intentional introduction and application of ideas, processes, products, or procedures that are new to the team and designed to improve the team performance (Anderson & West, 1996; 1998; Van Woerkom & Croon, 2009). Innovation may refer to a new and improved method for the team, but not necessarily for the organization or wider setting. Innovation is often linked to improvement and learning. However, learning and improvement are separate entities, because learning does not always translate to improvement and improvement is not necessarily based on a new idea.

Safety

Worldwide evidence of substantial public health harm has given rise to concerns about patient safety (Dekker-van Doorn et al., 2009; WHO, 2009). The IOM report 'To err is human: Building a Safer Health System' (Kohn et al., 1999) prompted a considerable rethinking of safety in health care. The authors argued that 3 to 4 percent of patients hospitalized in the United States were harmed by care received and 44,000 to 98,000 patients died as a result of medical errors (Kohn et al., 1999). Although little has been written about safety and adverse events in LTC settings, the call for safer care in LTC has been noted (Wagner & Rust, 2008). We define safety as the extent to which a team is able to avoid, prevent, and ameliorate adverse

outcomes or injuries stemming from health care processes (Cooper et al., 2000). The most important adverse events in LTC are accidental injuries involving clients and staff, pressure ulcers, falls, and medication errors (Wagner & Rust, 2008).

Research questions

We formulated five research questions to understand LTC teamwork by identifying the factors that influence team performance, and by studying how to improve team performance. The first three research questions are directly related to the theoretical concepts discussed above:

1. **How do 'real team' characteristics influence team processes and performance in LTC?**
2. **How does team coaching influence team processes and team performance in LTC?**
3. **How do team processes influence team performance in LTC?**

The fourth research question focuses on drivers of team performance from another angle. The first three questions investigate team performance by testing relationships within an IPO framework through survey data. The relevance of drivers is established retrospectively by statistically testing the relation between specific drivers and performance indicators. Here we explore the importance of a wide range of team performance drivers by asking care providers directly what they consider to be important for enhancing team performance and to rank order the relative importance of drivers:

4. **How do care providers perceive the importance of different factors that are expected to improve team performance?**

The answers to the first four questions identify factors relevant to enhancing team performance, but also provide a basis for developing effective interventions. The next step is to identify existing interventions that are empirically evaluated. Because LTC is an underexplored area, interventions that aim to improve team performance in LTC may be limited. Moreover, interventions from other health care settings may act as inspiration or may even be adapted to the LTC setting. The final research question focuses on what is known about interventions that aim to improve team performance for all health care settings:

5. **What are relevant interventions to improve team performance in health care?**

METHODOLOGY

We used surveys, Q methodology, and a literature review to answer our five research questions (Figure 3). The broad scope of our research questions required using several complementary research methods that will result in a broad understanding of team performance.

Figure 3 Research design

		Survey	Q methodology	Systematic literature review
1	How do 'real team' characteristics influence team processes and performance in LTC?	✓		
2	How does team coaching influence team processes and team performance in LTC?	✓		
3	How do team processes influence team performance in LTC?	✓		
4	How do care providers perceive the importance of different factors that are expected to improve team performance?		✓	
5	What are relevant interventions to improve team performance in health care?			✓

Survey method

We employed a longitudinal survey method with data collected at two points in time to answer the first three research questions. Due to time restrains, the research questions were partly explored using cross-sectional survey data. Survey data were gathered in October 2009 (T0) and October 2010 (T1) from two large organizations in the Netherlands that provide LTC for people from all ages with physical and/or intellectual disorders. One is an important care provider for the northern part of the Netherlands (with approximately 1200 clients) and is a subsidiary of the largest care provider (9000 clients) in the country. The other organization is an important care provider (2400 clients) in the southern part of country. The two organizations provide a variety of services: assisted living accommodations, daycare centers, consultations, and visits. Although we will not cover all settings within LTC, we believe that our results will be applicable for settings with the same team concept as our sample, because our research focuses on teams and investigates relationships at team level.

Given the lack of objective team performance indicators, we measure team performance by members' and managers' self-ratings. At T0 and T1, team members received a survey by mail designed to measure 'real team' characteristics, team coaching, team processes, and team performance indicators. Team managers also received a survey at both time points designed to measure team performance indicators.

We gathered data from teams and managers that provide direct care to clients. Teams that provide technical or general services were excluded from our sample. Given this inclusion criterion, the first organization consists of 94 teams (971 team members) and 21 team

managers. The second organization consists of 152 teams (1760 team members) and 41 team managers.

Q methodology

The fourth research question 'How do care providers perceive the importance of different factors that are expected to improve team effectiveness?' was explored by a Q methodology study in a youth care organization. Q methodology is an alternative to surveys, combining aspects of qualitative and quantitative methods, and providing a scientific foundation for the study of subjectivity, such as peoples' viewpoints on important factors for team effectiveness (Brown, 1980; Stephenson, 1935). Q methodology is thus an appropriate method to reveal clusters of viewpoints without imposing any ex-ante categorization, as is often the case with scales used in surveys (Cross, 2005; Baker et al., 2006; Ellingsen et al., 2010). Respondents were given a score sheet and asked to rank-order a set of statements on team effectiveness according to their level of (dis)agreement.

Systematic literature review

We addressed the fifth research question on interventions to improve team effectiveness via a systematic literature review. Because LTC team performance is a relatively under-investigated field, we expanded the focus of the review to health care in general. The systematic literature search included the PubMed, Web of Science, PsycInfo, and Cochrane databases using the search terms tool(s), intervention(s), building, development, training, innovation, program(s), education, -work, improve(ment) and management, all prefaced by the word 'team'. The selection process was three-staged: (1) title and abstract screening, (2) abstract examination, and (3) article summary. Two researchers examined each abstract in stage 2; when both concluded that it matches the criteria, the article was included. In the case of dissent, a third researcher made the final decision. Stage 3 resulted in an overview of interventions that was graded on the evidence level.

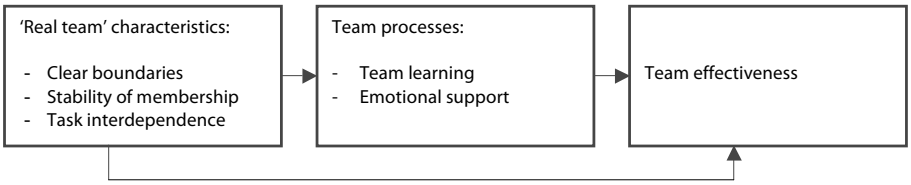
THESIS OUTLINE

This thesis consists of seven chapters.

Chapter 2 focuses on the construct of 'real teams' in LTC settings. According to Wageman, Hackman, and Lehman (2005), the presence of 'real team' characteristics increases the likelihood that a team will perform well. 'Real teams' have *boundaries* that clearly distinguish members from non-members, have at least a moderate degree of *stability* of membership,

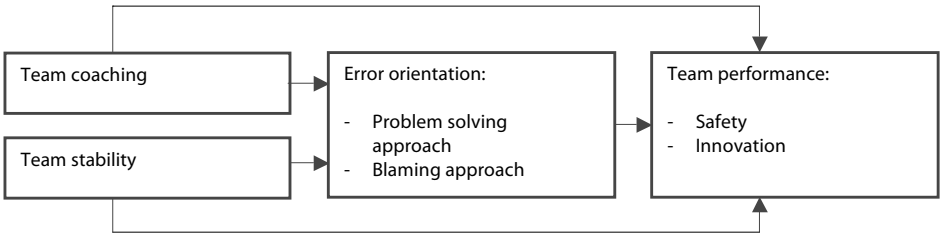
and have members who are *interdependent* when achieving a common purpose. Although it seems likely that 'real teams' will be more effective than teams that are a team in name only, this assumption has never been investigated. We explore the extent to which 'real team' characteristics lead to better team processes and thereby higher team effectiveness in LTC settings. We focus on two team processes that are likely to have a strong impact on team effectiveness given the features of LTC teams: team learning and emotional support. We will test the following theoretical model (Figure 4):

Figure 4 Theoretical framework chapter 2



Chapter 3 focuses on team safety and team innovation. To explain how LTC organizations deal with safety issues and develop innovative solutions to improve care, we focus on the team's error orientation and not just their technical and medical shortcomings. A condition in LTC that may prevent teams from taking on a constructive error orientation, leading to safety issues and low levels of innovation, is team membership instability. High staff turnover may force many LTC teams to work with an unstable composition, which makes it more difficult to develop a climate in which it feels safe for members to openly discuss their errors. Team managers could have an important role in developing a team's error orientation and managing team membership instabilities. We will test the following theoretical model (Figure 5):

Figure 5 Theoretical framework chapter 3



In **Chapter 4** we aim to get more insight into how team reflection influence the relationship between team coaching (as leadership style) and team performance. In line with the Input-Process-Output model, the relationship between team coaching and team performance may be mediated by team reflection as team coaching may encourage teams to reflect on their functioning by promoting discussions, questioning processes, and creating awareness of problems within an environment in which members feel safe to talk about problems, leading

to performance improvement. On the other hand, the relationship between team coaching and team performance may also be moderated by team reflection, meaning that the level of team coaching may need to be adjusted to the level of team reflection. Teams that continually reflect are more likely to manage themselves and require less team coaching. By contrast, poorly reflecting teams are unlikely to manage themselves, and may need more guidance from their managers. We will test the following rival theoretical models (Figure 6 and 7):

Figure 6 Theorectical framework chapter 4

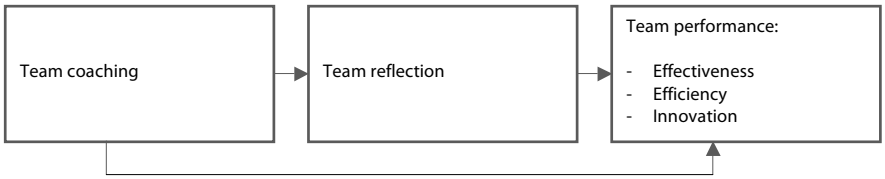
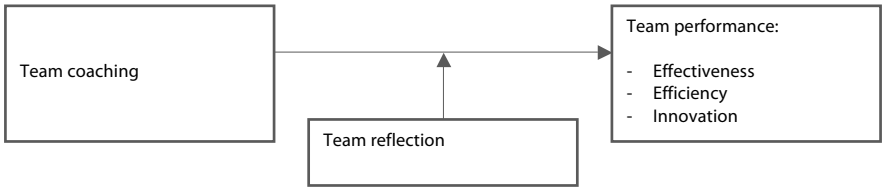


Figure 7 Theoretical framework chapter 4



Chapter 5 describes the use of Q methodology to explore the importance of predictors for team effectiveness. Insights on the relationship between several factors and team effectiveness gathered through analyzing survey data in previous chapters is an indirect way of establishing relationships. Q methodology makes it possible to distinguish different viewpoints of what is important for team effectiveness more directly. Youth care workers were asked to rank-order factors for team effectiveness. We will also try to match the views with the type of care provided.

As opposed to what influences team performance in LTC settings, we focus in **Chapter 6** on the second step of enhancing team performance by investigating the available interventions in the literature that improve team effectiveness. Given research in LTC, we do not expect that the bulk of interventions will be specific to its setting, but interventions from other health care settings could inspire new interventions for LTC or could be adapted to LTC. To assist health care organizations in improving team effectiveness, to synthesize scientific knowledge on relevant interventions, and to identify gaps in the research field, we will focus a literature review on two research questions: (1) What is known in the literature about interventions to improve team effectiveness? (2) To what extent is this knowledge evidence-based?

Chapter 7 presents a conclusion and discussion of our overall findings in relationship to theory and practice. We reflect on our research methodology and conclude with implications and suggestions for future research.

REFERENCES

Allen, N. J., & Hecht, T. D. (2004). The "romance of teams": Toward an understanding of its psychological underpinnings and implications. *Journal of Occupational and Organizational Psychology, 77*(4), 439-461.

Anderson, N., & West, M. A. (1996). The team climate inventory: Development of the TCI and its applications in teambuilding for innovativeness. *European Journal of Work and Organizational Psychology, 5*(1), 53-66.

Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: Development and validation of the team climate inventory. *Journal of Organizational Behavior, 19*(3), 235-258.

Andreatta, P. B. (2010). A typology for health care teams. *Health Care Management Review, 35*(4), 345-354.

Baker, R., Thompson, C., & Mannion, R. (2006). Q methodology in health economics. *Journal of Health Services Research & Policy, 11*(1), 38-45.

Borrill, C. S., Carletta, J., Carter, A. J., Dawson, J. F., Garrod, S., Rees, A., et al. (2000). *The effectiveness of health care teams in the national health service.* Birmingham: Aston Centre for Health Service Organization Research.

Brown, S. R. (1980). *Political subjectivity: Applications of Q methodology in political science.* New Haven, CT: Yale University Press.

Campion, M. A., Medsker, G. J., & Higgs, A. C. (1993). Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology, 46*(4), 823-847.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management, 23*(3), 239-290.

Cooper, J. B., Gaba, D. M., Liang, B., Woods, D., & Blum, L. N. (2000). The national patient safety foundation agenda for research and development in patient safety. *Medscape General Medicine, 2*(3), 1-10.

Cross, R. M. (2005). Exploring attitudes: The case for Q methodology. *Health Education Research, 20*(2), 206-213.

De Dreu, C. K. W. (2002). Team innovation and team effectiveness: The importance of minority dissent and reflexivity. *European Journal of Work and Organizational Psychology, 11*(3), 285-298.

De Dreu, C. K. W. (2007). Cooperative outcome interdependence, task reflexivity, and team effectiveness: A motivated information processing perspective. *Journal of Applied Psychology, 92*(3), 628-638.

Dekker-van Doom, C., Wauben, L., Bonke, B., Kazemier, G., Klein, J., Balvert, B., et al. (2009). Introducing TOPplus in the operating theatre. In R. Flin, & L. Mitchell (Eds.), *Safer surgery: Analysing behaviour in the operating theatre* (pp. 151-171). Surrey: Ashgate Publishing Company.

Denton, M., Zeytinoglu, I. U., Davies, S., & Lian, J. (2002). Job stress and job dissatisfaction of home care workers in the context of health care restructuring. *International Journal of Health Services, 32*(2), 327-357.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44*(2), 350-383.

Edmondson, A. C. (2004). Learning from failure in health care: Frequent opportunities, pervasive barriers. *Quality and Safety in Health Care, 13*(2), ii3-ii9.

Edmondson, A. C., Dillon, J. R., & Roloff, K. S. (2007). Chapter 6: Three perspectives on team learning. *The Academy of Management Annals, 1*(1), 269-314, New York: Lawrence Erlbaum Associates.

Ellingsen, I. T., Størksen, I., & Stephens, P. (2010). Q methodology in social work research. *International Journal of Social Research Methodology, 13*(5), 395-409.

Gray-Toft, P., & Anderson, J. G. (1981). Stress among hospital nursing staff: Its causes and effects. *Social Science & Medicine.Part A: Medical Sociology, 15*(5), 639-647.

Guzzo, R. A., & Dickson, M. W. (1996). Teams in organizations: Recent research on performance and effectiveness. *Annual Review of Psychology, 47*(1), 307-338.

Hackman, J. R. (1990). *Groups that work (and those that don't): Creating conditions for effective teamwork*. San Francisco: Jossey-Bass.

Hackman, J. R., & Wageman, R. (2005). A theory of team coaching. *The Academy of Management Review, 30*(2), 269-287.

Harrington, C., Cassel, C., Estes, C. L., Woolhandler, S., & Himmelstein, D. U. (1991). A national long-term care program for the united states. *The Journal of the American Medical Association, 266*(21), 3023-3029.

Harris, J. (1996). Physical restraint procedures for managing challenging behaviours presented by mentally retarded adults and children. *Research in Developmental Disabilities, 17*(2), 99-134.

Hoegl, M., & Parboteeah, K. P. (2006). Team reflexivity in innovative projects. *R and D Management, 36*(2), 113-126.

Hollenbeck, J. R. (2010). Beyond team types and taxonomies: A dimensional scaling approach to team description. *INGroup Conference Washington 2010*.

Hussey, P. S., De Vries, H., Romley, J., Wang, M. C., Chen, S. S., Shekelle, P. G., et al. (2009). A systematic review of health care efficiency measures. *Health Services Research, 44*(3), 784-805.

Ilgen, D. R., Hollenbeck, J. R., Johnson, M., & Jundt, D. (2005). Teams in organizations: From input-process-output models to IMOI models. *Annual Review of Psychology, 56*, 517-543.

Janz, B. D., Colquitt, J. A., & Noe, R. A. (1997). Knowledge worker team effectiveness: The role of autonomy, interdependence, team development, and contextual support variables. *Personnel Psychology, 50*(4), 877-904.

Katzenbach, J. R., & Smith, D. K. (1993). The discipline of teams. *Harvard Business Review, 71*, 111-120.

King, G. (2002). Crisis management & team effectiveness: A closer examination. *Journal of Business Ethics, 41*(3), 235-249.

Kohn, L. T., Corrigan, J., & Donaldson, M. S. (1999). *To err is human: Building a safer health system*. Washington, DC: National Academy Press.

Kozlowski, S. W. J., & Bell, B. S. (2003). Work groups and teams in organizations. In W. C. Borman, D. R. Ilgen & R. J. Klimoski (Eds.), *Handbook of psychology: Industrial and organizational psychology* (pp. 333-375). London: Wiley Online Library.

Lemieux-Charles, L., & McGuire, W. L. (2006). What do we know about health care team effectiveness? A review of the literature. *Medical Care Research and Review, 63*(3), 263-300.

MacBryde, J., & Mendibil, K. (2003). Designing performance measurement systems for teams: Theory and practice. *Management Decision, 41*(8), 722-733.

Manion, J., Lorimer, W., & Leander, W. J. (1996). *Team-based health care organizations: Blueprint for success.* Maryland: Aspen Publishers.

Marks, M. A., DeChurch, L. A., Mathieu, J. E., Panzer, F. J., & Alonso, A. (2005). Teamwork in multiteam systems. *Journal of Applied Psychology, 90*(5), 964-971.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review, 26*(3), 356-376.

Mathieu, J., Maynard, M. T., Rapp, T., & Gilson, L. (2008). Team effectiveness 1997-2007: A review of recent advancements and a glimpse into the future. *Journal of Management, 34*(3), 410-476.

Mickan, S., & Rodger, S. (2000). Characteristics of effective teams: A literature review. *Australian Health Review, 23*(3), 201-208.

Ministerie van Financiën. (2010). *Langdurige zorg: Rapport brede heroverwegingen*. Den Haag: Ministerie van Financiën.

Moyle, W., Skinner, J., Rowe, G., & Gork, C. (2003). Views of job satisfaction and dissatisfaction in australian long-term care. *Journal of Clinical Nursing, 12*(2), 168-176.

Nijman, D. J., & Gelissen, J. (Eds.). (2011). *Supervisory support in transfer of training. edited by Poell, R.F., & Van Woerkom, M. Supporting workplace learning. Towards evidence-based practice.* Dordrecht: Springer.

Nurmi, R. (1996). Teamwork and team leadership. *Team Performance Management, 2*(1), 9-13.

Øvretveit, J. (1996). Five ways to describe a multidisciplinary team. *Journal of Interprofessional Care, 10*(2), 163-171.

Paauwe, J. (2004). *HRM and performance: Achieving long-term viability*. New York: Oxford University Press.

Poulton, B. C., & West, M. A. (1994). Primary health care team effectiveness: Developing a constituency approach. *Health & Social Care in the Community, 2*(2), 77-84.

Rust, T. B., Wagner, L. M., Hoffman, C., Rowe, M., & Neumann, I. (2008). Broadening the patient safety agenda to include safety in long-term care. *Healthcare Quarterly, 11*(3), 31-34.

RVZ (Raad van Volksgezondheid). (2006). *Labor market and the demand for care (translated from dutch: Arbeidsmarkt en zorgvraag)*. Den Haag: RVZ Publications.

Sarason, I. G., Levine, H. M., Basham, R. B., & Sarason, B. R. (1983). Assessing social support: The social support questionnaire. *Journal of Personality and Social Psychology, 44*(1), 127-139.

Schaefer, J. A., & Moos, R. H. (1993). Relationship, task and system stressors in the health care workplace. *Journal of Community & Applied Social Psychology, 3*(4), 285-298.

Schippers, M. C., Den Hartog, D. N., & Koopman, P. L. (2007). Reflexivity in teams: A measure and correlates. *Applied Psychology, 56*(2), 189-211.

Schippers, M. C., Den Hartog, D. N., Koopman, P. L., & Wienk, J. A. (2003). Diversity and team outcomes: The moderating effects of outcome interdependence and group longevity and the mediating effect of reflexivity. *Journal of Organizational Behavior, 24*(6), 779-802.

Sloane, P. D., & Zimmerman, S. (2005). *Improvement and innovation in long-term care: A research agenda. Report and recommendations from a national consensus conference.* Chapel Hill: The University of North Carolina.

Stephenson, W. (1935). Correlating persons instead of tests. *Journal of Personality, 4*(1), 17-24.

Stewart, G. L. (2006). A meta-analytic review of relationships between team design features and team performance. *Journal of Management, 32*(1), 29-54.

Stewart, G. L., & Barrick, M. R. (2000). Team structure and performance: Assessing the mediating role of intrateam process and the moderating role of task type. *The Academy of Management Journal, 43*(2), 135-148.

Stone, R. I., Wiener J.M. (2001). *Who will care for use? Addressing the long-term care workforce crisis.* The Urban Institute and the American Association of Homes and Services for the Aging.

Tjosvold, D., Yu, Z., & Hui, C. (2004). Team learning from mistakes: The contribution of cooperative goals and Problem-Solving. *Journal of Management Studies, 41*(7), 1223-1245.

Van der Vegt, G. S., & Bunderson, J. S. (2005). Learning and performance in multidisciplinary teams: The importance of collective team identification. *The Academy of Management Journal, 48*(3), 532-547.

Van der Vegt, G. S., Bunderson, J. S., & Oosterhof, A. (2006). Expertness diversity and interpersonal helping in teams: Why those who need the most help end up getting the least. *The Academy of Management Journal ARCHIVE, 49*(5), 877-893.

Van Dyck, C. (2000). *Putting errors to good use: Error management culture in organizations*. Amsterdam: KLI.

Van Offenbeek, M. (2001). Processes and outcomes of team learning. *European Journal of Work and Organizational Psychology, 10*(3), 303-317.

Van Woerkom, M., & Croon, M. (2009). The relationships between team learning activities and team performance. *Personnel Review, 38*(5), 560-577.

Van Woerkom, M., & van Engen, M. L. (2009). Learning from conflicts? the relations between task and relationship conflicts, team learning and team performance. *European Journal of Work and Organizational Psychology, 18*(4), 381-404.

Wageman, R., Hackman, J. R., & Lehman, E. (2005). Team diagnostic survey: Development of an instrument. *The Journal of Applied Behavioral Science, 41*(4), 373-398.

Wagner, L. M., & Rust, T. B. (2008). *Safety in long-term care settings*. Edmonton: Canadian Patient Safety Institute.

West, M. A., Hirst, G., Richter, A., & Shipton, H. (2004). Twelve steps to heaven: Successfully managing change through developing innovative teams. *European Journal of Work and Organizational Psychology, 13*(2), 269-299.

WHO (World Health Organization). (2000). *Home based long-term care. report of a WHO study group*. Geneva: World Health Organization publication.

WHO (World Health Organization). (2002). *Current and future long-term care needs. an analysis based on the 1990 WHO study "the global burden of disease" and the international classification of functioning disability and health.* Geneva: World Health Organization.

WHO (World Health Organization). (2007). *Team building*. Geneva: World Health Organization.

WHO (World Health Organization). (2009). *WHO guidelines for safe surgery 2009. safe surgery saves lives*. Geneva: World Health Organization.

Yoo, B. K., Bhattacharya, J., McDonald, K. M., & Garber, A. M. (2004). Impacts of informal caregiver availability on long-term care expenditures in OECD countries. *Health Services Research, 39*(6), 1971-1992.

Zellmer-Bruhn, M., & Gibson, C. (2006). Multinational organization context: Implications for team learning and performance. *The Academy of Management Journal ARCHIVE, 49*(3), 501-518.

3

Team safety and innovation by learning from errors

Buljac-Samardžić, M., Van Woerkom, M., & Paauwe, J. (2012). Team safety and innovation by learning from errors in long-term care settings. *Health Care Management Review, 37(2), (published online 2011)*.

ABSTRACT

Background: Team safety and team innovation are underexplored in the context of long-term care (LTC). Understanding the issues requires attention to how teams cope with errors. Team managers could have an important role in developing a team's error orientation and managing team membership instabilities.

Purpose: To examine the impact of team member stability, team coaching, and a team's error orientation on team safety and innovation.

Methods: A cross-sectional survey method was employed within two LTC organizations. Team members and team managers received a survey that measured safety and innovation. Team members assessed member stability, team coaching, and team's error orientation (i.e. problem solving and blaming approach). The final sample included 933 respondents from 152 teams.

Results: Stable teams and teams with managers who take on the role of coach are more likely to adopt a problem solving approach and less likely to adopt a blaming approach toward errors. Both error orientations are related to team member ratings of safety and innovation, but only the blaming approach is (negatively) related to manager ratings of innovation. Differences between members' and managers' ratings of safety are greater in teams with relatively high scores for the blaming approach and relatively low scores for the problem solving approach. Team coaching was found to be positively related to innovation, especially in unstable teams.

Practical implications: LTC organizations that wish to enhance team safety and innovation should encourage a problem solving approach and discourage a blaming approach. Team managers can play a crucial role in this by coaching team members to see errors as sources of learning and improvement, and ensuring that individuals will not be blamed for errors.

Keywords: errors; health care teams; innovation; long-term care; safety

INTRODUCTION

Concerns about patient safety are rising due to worldwide evidence of substantial public health harm (WHO, 2009). Several studies show that nearly half the adverse events in hospitals such as complications, infections, and deaths are preventable (Kohn et al., 1999; WHO, 2009). Although little has been written about safety and adverse events in long-term care (LTC) settings, a plea for safer care in such settings has also been noticed (Wagner & Rust, 2008).

The goal of LTC providers is to maintain the best possible quality of life for clients with the greatest possible degree of independence, autonomy, participation, personal fulfillment, and human dignity, be they at home or in care facilities (Harrington et al., 1991; WHO, 2000). LTC organizations provide different forms of care to suit the severity of clients' disabilities. Restricted wards and closed accommodation units, for example, provide intensive treatment. In assisted living accommodations small groups of clients in residential areas are assisted in maintaining a near-regular household situation. LTC centers organize daycare activities for clients and home visits or consultations are provided for clients who live independently.

LTC organizations rely on teams for the provision of care. A team is responsible for the daily care of a limited number of clients and its members make most care-related decisions autonomously. Tasks are divided among team members. The required interaction with other teams is minimal. Teams may be seen as the essential building blocks of LTC organizations since they are the front-line units that provide the bulk of care and that bring clients and providers together (Nelson et al., 2002). The IOM reports 'To err is human: Building a safer health system' (Kohn et al., 1999) and 'Crossing the quality chasm' (IOM, 2001) stress the importance of micro-systems (i.e. teams) for safe and quality care. Understanding how teams cope with safety issues such as falls, medication errors, and pressure ulcers is thus important. Another key safety issue within LTC is aggressive client behavior and its consequences. Controversies about quality of life versus physical restraint and risk prevention have been observed worldwide (Harris, 1996) and many care institutions struggle to find innovative solutions for such difficult situations. Innovations concerning new ways to approach and care for complex clients take place to a large extent at the team level, such as rescheduling and redesigning tasks, redesigning environmental characteristics, and reallocating resources (Port et al., 2005).

To understand safety and the development of innovative solutions for improving LTC, we focus on team characteristics and team processes in LTC organizations that provide a broad range of services to clients with physical and/or intellectual disorders. The situation of geographically scattered LTC organizations with field-working care teams may alter the view that organizational culture and organizational leadership are most important to safety-related and innovative behavior (IOM, 2001; Schein, 2010; WHO, 2000). The LTC sector continues to transition from institutionalized care to assisted living settings. Different types of daycare are provided at different locations and ambulatory care is provided to clients in their geographi-

cally scattered homes. All these lead us to claim that team characteristics and leadership at the team level have a much stronger influence on team safety and innovation than organizational level characteristics. It is in fact likely that multiple subcultures and leadership styles exist in LTC organizations (Schein, 2010).

Understanding safety and the development of innovative solutions for improving care in LTC teams, requires attention to team's error orientation, not just their technical and medical shortcomings (Edmondson, 2004). How teams view and deal with errors varies (Van Dyck, 2000). There are two approaches in dealing with errors: a problem solving approach and a blaming approach (Tjosvold et al., 2004). Teams that adopt a problem solving approach share, discuss, and analyze errors (Tjosvold et al., 2004), which are seen as essential for learning from errors and improving performance (Edmondson, 1999; Edmondson et al., 2007). Members of teams with a blaming approach feel afraid and ashamed of making errors, are punished for them, and do not share, discuss, or analyze them (Tjosvold et al., 2004). Innovation and safety improvements are unlikely in this case (Cannon & Edmondson, 2001). We should note that if a team does not have a blaming approach this does not automatically mean that it will have a problem solving approach toward errors, and vice versa. A problem solving and a blaming approach can be seen as two distinctive approaches toward errors.

A condition in LTC that may prevent teams from taking on a constructive error orientation – possibly leading to safety issues and low levels of innovation – is team member instability. Many LTC teams face high levels of turnover (RVZ, 2006; Waldman et al., 2004). For such teams, developing a climate in which it feels safe for members to openly discuss their errors (Cannon & Edmondson, 2001) – and in turn developing constructive ways to deal with them – is probably more difficult.

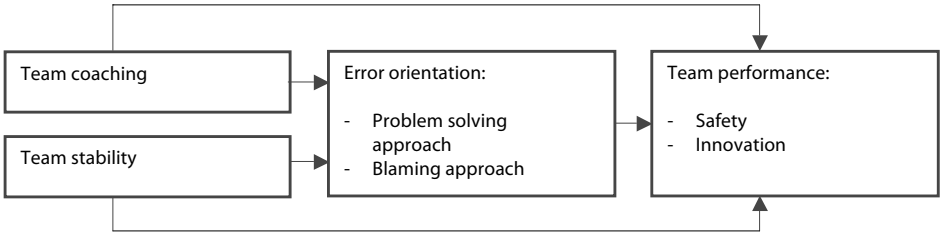
Because team managers in LTC supervise teams that work at different locations, they cannot be physically present all the time and have to manage their teams from a distance, leaving teams to make daily decisions on their own. The team manager's role of coaching a team to manage itself is therefore crucial (Wageman, 2001). Team managers may do so by helping teams improve their interpersonal relationships, develop the best approaches to the work, and encourage dialogues about potentially threatening errors (Cannon & Edmondson, 2001). Team coaching may thus enhance a constructive approach to errors, safety, and innovation.

The issues of team safety and team innovation are high on the research agenda of hospitals but underexplored in the context of LTC. The objective of this study is to examine the impact of team member stability, team coaching, and a team's error orientation on team safety and innovation.

THEORETICAL FRAMEWORK

The different concepts that may play an important role in team safety and innovation are captured in a conceptual model as presented in Figure 1.

Figure 1 Conceptual model



The relationship between team coaching and error orientation

Although coaching is a broad term used in a variety of fields (e.g. sports, management development, therapy) with a variety of aims (e.g. individual skill acquisition, counseling) (Ellinger et al., 2003), we focus on team coaching as a leadership style (Hackman & Wageman, 2005). Hackman and Wageman (2005, p. 269) define team coaching as "a direct interaction with a team intended to help members make coordinated and task-appropriate use of their collective resources in accomplishing the team's work". Team coaching may help teams optimize performance given their circumstances, minimize process losses, and maximize process gains rather than only dictating the 'best' way to perform (Burke et al., 2006; Edmondson, 1999; Hackman & Wageman, 2005; Wageman et al., 2005). The idea is that team managers work with the team to develop the best possible approaches to its tasks and help team members improve their interpersonal relationships (Wageman et al., 2005) by providing feedback, communicating clear expectations, and transferring ownership and accountability to the team members (Ellinger et al., 2011).

Team coaching may be an important factor in shaping a team's error orientation by creating a shared belief that team members can safely take interpersonal risks and by building a shared commitment toward the common goal of learning from errors instead of attributing blame (Cannon & Edmondson, 2001; Edmondson, 1999; 2004; Hackman & Wageman, 2005). Team managers that take on a coaching role support teams in their self-management (Hackman & Wageman, 2005), which may include constructively dealing with errors (Ellinger et al., 2003). By promoting self-management, team members are encouraged to share, discuss, and analyze errors, avoid their recurrence, and discourage punishment for errors (Ellinger et al., 2003; Wageman, 2001). We therefore formulate our first hypothesis as follows:

Hypothesis 1: Team coaching is (a) positively related to a problem solving approach and (b) negatively related to a blaming approach toward errors.

The relationship between team stability and error orientation

Discussing errors implies a willingness to take interpersonal risks and a shared commitment toward learning from errors (Cannon & Edmondson, 2001), both of which are more difficult to develop in the case of unstable team membership. A continually changing team composition lessens the likelihood of being comfortable and speaking out about interpersonally difficult observations and questions (Edmondson, 2003; 2004; Edmondson et al., 2001). Team members need time to develop healthy team processes such as learning, communication, and coordination (Edmondson et al., 2007). The extent to which team members are willing to share knowledge, skills, and actions with the aim of learning from errors is likely to be determined by how long they have worked together as a team (Edmondson et al., 2007). In unstable teams, power differences based on team tenure are more likely to surface, which may intensify the interpersonal risks faced by new team members wishing to speak up (Edmondson et al., 2007; Forsyth, 2009). Although team member stability may also have negative effects, because stable teams may also become slaves to routine (Edmondson et al., 2001) and may develop collective blind spots and groupthink (Snell, 2010), we deem that the positive effects will outweigh the possible negative effects. This has been confirmed by Van Woerkom and Croon (2009). We therefore formulate the following hypothesis:

Hypothesis 2: The stability of a team is (a) positively related to a problem solving approach and (b) negatively related to a blaming approach toward errors.

The relationship between error orientation and team performance

Safety has been defined as the avoidance, prevention, and amelioration of adverse outcomes or injuries stemming from health care processes (Cooper et al., 2000). The most important adverse events in LTC are seen as accidental injuries involving clients and staff, pressure ulcers, falls, and medication errors (Wagner & Rust, 2008). To improve safety and avoid recurrence, a team must learn from errors (Edmondson, 2004). Thus, it is likely that a problem solving approach toward dealing with errors will help to improve safety whereas a blaming approach will have the opposite effect.

Discussing errors may also lead to innovation. Innovation refers to the intentional introduction and application of ideas, processes, products, or procedures that are new to a team and designed to improve team performance (Anderson & West, 1998). Examples of innovation are developing new ways to approach complex clients like redesigning environmental cues to improve mealtime behavior or using nighttime bathing to improve sleeping habits (Port et al., 2005). A problem solving approach toward errors promotes exploration, understanding, and the integration of new ideas, which stimulates innovation; the blaming approach promotes risk avoidance and the use of well-proven and trusted methods, which can be expected to decrease innovation (Tjosvold et al., 2005). Given the fact that LTC organiza-

tions' work is predominantly team-based, and that innovative initiatives are often developed, tested, and implemented at the team level, we formulate the following hypotheses:

Hypothesis 3: A problem solving approach is positively related to (a) safety and (b) innovation.
Hypothesis 4: A blaming approach is negatively related to (a) safety and (b) innovation.

The relationships between team coaching, team stability, and team performance

Team coaching is likely to influence team safety and team innovation through mechanisms such as providing feedback to the team, enhancing group cohesion (Burke et al., 2006), and fostering team commitment (Thornhill & Saunders, 1998). Team stability can be expected to influence team performance because team members who work together over a lengthy period will develop a collective understanding of the conditions for team safety and develop interpersonal relationships, which make discussions about innovative solutions more likely (Akgün & Lynn, 2002; Edmondson, 2003).

Furthermore, we argue that the relationship between team coaching and team performance will be partially mediated by the team's error orientation. A mediating variable transmits the effect of an independent variable on a dependent variable (MacKinnon et al., 2007). By promoting a team climate of openness and psychological safety, team coaching will stimulate a problem solving approach and discourage a blaming approach toward errors, which will eventually lead to enhanced team performance in terms of safety and innovation.

We also argue that the relationship between team stability and team performance will be partially mediated by the team's error orientation. Stable membership provides team members the ability to build solid interpersonal relationships, which is a prerequisite for developing a constructive approach toward errors as a team (and preventing a blaming approach), which in turn can be expected to lead to enhanced team performance in terms of safety and innovation. Given the above arguments, we formulate the following hypotheses:

Hypothesis 5: Team coaching is positively related to (a) safety and (b) innovation.
Hypothesis 6: Team stability is positively related to (a) safety and (b) innovation.
Hypothesis 7: The relationship between team coaching and safety is partially mediated by (a) a problem solving approach and (b) a blaming approach.
Hypothesis 8: The relationship between team coaching and innovation is partially mediated by (a) a problem solving approach and (b) a blaming approach.
Hypothesis 9: The relationship between team stability and safety is partially mediated by (a) a problem solving approach and (b) a blaming approach.
Hypothesis 10: The relationship between team stability and innovation is partially mediated by (a) a problem solving approach and (b) a blaming approach.

METHODS

Study design

We employed a cross-sectional survey method in which data were collected from two large organizations in the Netherlands that provide LTC for people with physical and/or intellectual disorders. Dutch LTC is financed by national insurance, making its services fully accessible. LTC can be intramural (i.e. within a LTC organization) or extramural (i.e. care at home). The participating organizations provide services that vary in intensity to fit the variety and severity of clients' physical and/or intellectual disorders. One organization is an important provider for the northern part of the Netherlands (with approximately 1200 clients) and is a subsidiary of the largest Dutch care provider (with approximately 9000 clients). The other organization is an important care provider in the southern part of the country with approximately 2400 clients. We gathered information only from teams that provide direct care to clients in assisted living accommodations or daycare centers, or provide clients with home visits or consultations. Teams providing technical or general services were excluded. The first organization consists of 94 teams (971 members) and 21 team managers. The second organization consists of 152 teams (1760 members) and 41 team managers. The teams, members, and managers were identified by HR staff members of the participating organizations. Although we knew which respondent belonged to which team we checked this information by asking every respondent for their team name. Every team has one team manager but each team manager supervises multiple teams. Teams have on average one formal and two informal meetings with their manager per week. Team members received a survey by mail designed to measure stability, team coaching, error orientation, safety, and innovation. Safety and innovation were also rated by team managers. The survey was accompanied by a letter from the researchers and a letter from the employing organization. The respondents were asked to return the questionnaire within one month. One week before the deadline, all teams received an email with the current response rate for that team and were encouraged to return the questionnaire. Reminders were also sent to the team managers.

Sample

A total of 246 teams participated in the study, which represents a total of 2731 participants who received a questionnaire. The overall response rate was 45%, with 1219 members of 229 teams responding. Of the teams that responded, the response rates varied between 7% and 100%, and the number of respondents per team ranged from 1 to 23, with a mean of 5.3 respondents. We set a minimum acceptable response rate per team of 30% (Van Mierlo et al., 2009), which resulted in a sample of 183 teams (1096 respondents) and an average of 5.98 respondents per team. After matching the aggregated sample with the team manager

responses, the final sample consisted of 152 teams (933 respondents) and their associated team managers.

Of the final sample, 84% were women, which is representative of the overall LTC setting in the Netherlands (85%) (RVZ, 2006). Team members were on average almost 40 years old, again close to the national setting (RVZ, 2006). On average, respondents had worked 11.89 years in their current organization (SD= 6.31) and 5.04 years on their current team (SD=3.57). About half (51.2%) held a secondary vocational education degree and 29.2% held a bachelor or university degree. The average educational level in our sample was higher than the overall LTC setting where only 6% hold a bachelor or university degree (RVZ, 2006). This can be explained by the fact that the two participating organizations provide care to clients with severe disorders.

Instruments

Participants were asked to rate all items on a five-point Likert-type scale (1= totally disagree, 5= totally agree). Team coaching and stability in team membership were measured using scales developed by Wageman, Hackman, and Lehman (2005). Example scale items were: "The team manager works with the team to develop the best possible approach to work" and "This team is quite stable, with few changes in membership" respectively. We measured error orientation using the scale developed by Tjosfold, Yu, and Hui (2004). Example items were: "After a mistake has been made, we analyze it thoroughly" (problem solving approach) and "In this team people are punished for their errors" (blaming approach). Innovation was measured with a slightly adapted scale of Van Woerkom and Croon (2009), who based it on a sample of 624 respondents working in seven different organizations in the public and private sectors. We made minor changes to the items, like changing 'customers' to 'clients'. An example scale item was: "Our team develops new and improved ways of working". Safety was measured with a self-developed scale that aimed to capture the level of safety for team members and clients in terms of preventing incidents and dangerous situations. An example item was: "Our team prevents incidents with clients through good teamwork". We tested all scales in a focus group that consisted of directors, staff members, team managers, and team members. We asked them if all items were applicable to the LTC setting, were clearly formulated, and if they covered the topic. As shown in Table 1, the Cronbach alpha's for the scales varied between .71 and .92. The results of the factor analysis (principle component analysis, Oblimin rotation) confirmed the one-dimensional construct of the team stability, coaching, safety, and innovation scales, and confirmed the two-dimensional construct of the error orientation scale.

Because all our theoretical concepts were on the team level, we aggregated our sample to the team level by averaging the ratings of the team members. To assess the degree to which this aggregation to the team level was justified, we calculated the ICC1 (the proportion of the total amount of variance between teams), ICC2 (the reliability of the group means), and r_{wg}

Table 1 Descriptive statistics and correlations between variables

		N items	α	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Team coaching	11	.92	3.43	.44													
2	Team stability	3	.85	3.28	.78	.19*												
3	Problem solving approach	6	.85	3.59	.30	.35**	.31**											
4	Blaming approach	5	.80	2.37	.38	-.24**	-.23**	-.42**										
5	Safety (team member rating)	5	.76	3.62	.36	.22**	.51**	.53**	-.45**									
6	Safety (team manager rating)	5	.71	3.83	.53	-.01	.26**	.07	-.03	.34**								
7	Innovation (team member rating)	4	.85	3.46	.36	.40**	.34**	.63**	-.46**	.56**	.23**							
8	Innovation (team manager rating)	4	.87	3.42	.65	.21**	.20*	.12	-.23**	.26**	.34**	.33**						
9	Gender ratio (1= male 2= female)			1.84	.21	.15	-.11	.02	-.14	.03	.15	.12	.18*					
10	Average age			39.98	6.26	-.15	.23**	-.10	.11	.08	.20*	-.10	-.09	-.17*				
11	Average level of education			4.93	.72	-.10	-.14	-.02	.01	-.22**	-.12	-.07	-.10	-.15	-.12			
12	Average years organizational tenure			11.89	6.31	-.09	.40**	.04	-.06	.20*	.21*	.20*	.14	-.09	.65**	-.10		
13	Average years team tenure			5.04	3.57	-.12	.32**	.04	.04	.20*	.19*	.08	.09	-.10	.39**	.06	.42**	
14	Organization (1 = organization 1, 2= organization 2)					.11	-.09	-.04	-.20*	.03	.00	-.14	-.04	.15	.19*	.17*	.04	.05

*Correlation is significant at the .05 level (two-tailed)

** Correlation is significant at the .01 level (two-tailed)

values of within-team agreement for our main variables (Bliese, 2000; James et al., 1984). ICC1 values ranged from .10 to .45 implying that 10% to 45% of the variance in our variables could be attributed to the team level. These values lie within the range of ICC1 values commonly encountered in applied field research (Van Mierlo et al., 2009). The ICC2 values were generally within the range of .51 to .83. Only the ICC2 value for the problem solving approach scale at .41 failed to exceed the minimum value of .50 (Van Mierlo et al., 2009). The r_{wg} values were all above .70, suggesting sufficient within-team agreement to further justify team level aggregation.

Statistical analyses

Descriptive statistics, correlation analysis, and linear models were calculated using procedures in SPSS 17.0. We investigated the extent to which the two participating organizations varied in terms of the mediating and dependent variables. An ANOVA showed that they differed significantly when it came to the 'blaming approach' variable. For this reason, we decided to include 'organization' as a dummy variable in further analyses in which we centered the variables to test for interaction effects.

To look for any mediating effects (Hypotheses 7 to 10), we used the procedure recommended by MacKinnon, Fairchild, and Fritz (2007). In our study, a mediating effect exists when the independent variables (i.e. team coaching and stability) have a significant effect on the mediating variables (i.e. problem solving and blaming approach), and when the mediating variables have a significant effect on the dependent variables (i.e. safety and innovation) in a regression analysis that also include the independent variables. We speak of partial mediation when the independent variable still has a significant but reduced effect on the dependent variable, in addition to the mediating variable. When only the mediating variable has a significant effect on the dependent variable, we speak of pure mediation (MacKinnon et al., 2007).

RESULTS

Correlation analysis

Table 1 provides the descriptive statistics and the correlations between all the variables included in this study. In line with our expectations, team coaching and stability were positively related to the problem solving approach ($r = .35$, $p < .01$; $r = .31$, $p < .01$ respectively), and negatively related to the blaming approach ($r = -.24$, $p < .01$; $r = -.23$, $p < .01$ respectively). The problem solving approach was positively related to safety and to innovation as rated by team members ($r = .53$, $p < .01$; $r = .63$, $p < .01$ respectively), but not by team managers ($r = .07$, n.s.; $r = .12$, n.s. respectively). Although the correlations between the problem solving approach, safety, and innovation were quite strong, a factor analysis including the items of

all three scales showed that the constructs loaded on distinct factors. The blaming approach was negatively related to safety as rated by team members (r = -.45, p < .01), but not by team managers (r = -.03, n.s.). The blaming approach was negatively related to innovation as rated by both team members and team managers (r =-.46, p < .01; r = -.23, p < .01 respectively). Although team coaching was positively related to innovation as rated by team members and team managers (r =.40, p < .01; r =.21, p < .01 respectively), it was only related to safety as rated by team members (r = .22, p < .01). Furthermore, stability was positively related to both safety and innovation, as rated by team members (r = .51, p < .01; r = .34, p < .01 respectively) and team managers (r = .26, p < .01; r = .20, p < .05 respectively).

Teams with more females received higher innovation ratings from team managers (r = .18, p < .05). The average level of education was negatively related to safety as rated by team members (r = -.22, p < .01). Team tenure was positively related to safety as rated by both team members and team managers (r = .20, p < .05; r = .19, p < .05 respectively). The average organizational tenure was also positively related to safety as rated by team members and team managers (r = .20, p < .05; r = .21, p < .05 respectively), and to innovation as rated by team members (r = .20, p < .05). Average age was positively related to safety as rated by team managers (r = .20, p < .05).

The 'organization' dummy variable was positively related to the blaming approach, meaning that the blaming approach was significantly more dominant in one of the two organizations.

Regression analyses

The hypotheses were tested using multiple regression analysis (Tables 2 and 3). Tests for multi-collinearity (variance inflation factors) indicated that there were no multi-collinearity problems in any of the regression analyses.

Team coaching was positively related to the problem solving approach (B = .21, p < .01), and negatively related to the blaming approach (B = -.15, p < .05). On this basis, Hypotheses 1a and 1b concerning the relationship between team coaching and error orientation are supported. Stability was also positively related to the problem solving approach (B = .10, p < .01), and negatively related to the blaming approach (B = -.10, p < .05). Therefore, Hypotheses 2a and 2b concerning the relationship between stability and error orientation can be confirmed. We also saw that team members in the second organization had a more negative score on the blaming approach (B = -.16, p < .01).

The problem solving approach was positively related to safety and innovation as rated by team members (B = .40, p < .01; B = .51, p < .01 respectively), but not by team managers (B = .03, n.s.; B = -.16, n.s. respectively). The blaming approach was negatively related to safety as rated by team members (B = -.21, p < .01), but not by team managers (B = .03, ns). The blaming approach was negatively related to innovation as rated by both team members and team managers (B = -.24, p < .01; B = -.35, p < .05 respectively). Therefore, Hypotheses 3 and

Table 2 Results of regression analyses predicting team's error orientation

	Problem solving approach		Blaming approach	
	Model 1	Model 2	Model 1	Model 2
	B	*B*	*B*	*B*
Organization 1	-.03	-.02	-.15*	-.16**
Team coaching	.21**	.20**	-.15*	-.15*
Team stability	.10**	.09**	-.10*	-.10*
Team coaching * Stability	-	-.08	-	.08
Adjusted R^2	.17	.18	.11	.11
F test	11.56**	9.07**	7.43**	5.76**

* *B* is significant at the .05 level (two-tailed)

** *B* is significant at the .01 level (two-tailed)

4 can only be partly confirmed. It is noteworthy that team members in the first organization think more favorably about team innovation than those in the second ($B = .12$, $p < .05$).

Hypothesis 5a, concerning the relationship between team coaching and safety cannot be confirmed but Hypothesis 5b, concerning the relationship between team coaching and innovation, can be confirmed. Table 3 shows that team coaching was not related to safety as rated by team members ($B = .10$, n.s.) or team managers ($B = -.07$, n.s.). Team coaching is, however, positively related to innovation as rated by both team members ($B = .30$, $p < .01$) and team managers ($B = .27$, $p < .05$). Hypotheses 6a and 6b, concerning the relationships between stability and both safety and innovation, can be confirmed. Stability was positively related to safety as rated by team members ($B = .23$, $p < .01$), safety as rated by team managers ($B = .18$, $p < .01$), innovation as rated by team members ($B = .12$, $p < .01$), and innovation as rated by team managers ($B = .13$, $p < .05$).

Following the procedure of MacKinnon, Fairchild, and Fritz (2007), the results in Table 3 suggest that both error orientations had a partial mediating effect on the relationship between team coaching and innovation as rated by team members. Only the blaming approach had a partial mediating effect in the relationship between team coaching and innovation as rated by team managers. Both error orientations had a pure mediating effect in the relationship between stability and innovation as rated by team members. Only the blaming approach had a pure mediating effect in the relationship between stability and innovation as rated by team managers. Both error orientations had a pure mediating effect in the relationship between coaching and safety as rated by members, but only a partial mediating effect in the relationship between stability and safety as rated by members. Neither had mediating roles in the relationships between stability and team coaching on the one hand and safety as rated by team managers on the other hand. We also tested the mediating effect of team's error orientation by bootstrapping (Preacher & Hayes, 2004), a non-parametric method for assessing indirect effects. Using 10,000 iterations we generated a 95% Confidence Interval (CI).

Table 3 Results of regression analyses predicting safety and innovation

	Safety team member rating			Safety team manager rating		
	Model 1 *B*	Model 2 *B*	Model 3 *B*	Model 1 *B*	Model 2 *B*	Model 3 *B*
Organization 1	.05	.03	.03	.05	.05	.07
Team coaching	.10	-.02	-.01	-.07	-.07	-.09
Team stability	.23**	.17**	.17**	.18**	.18**	.17**
Problem solving	-	.40**	.40**	-	.03	.02
Blaming approach	-	-.21**	-.21**	-	.03	.04
Team coaching * Stability	-	-	.01	-	-	-.19
Adjusted R^2	.27	.44	.44	.05	.04	.04
F test	19.53**	24.70**	20.44**	3.48*	2.07	2.07

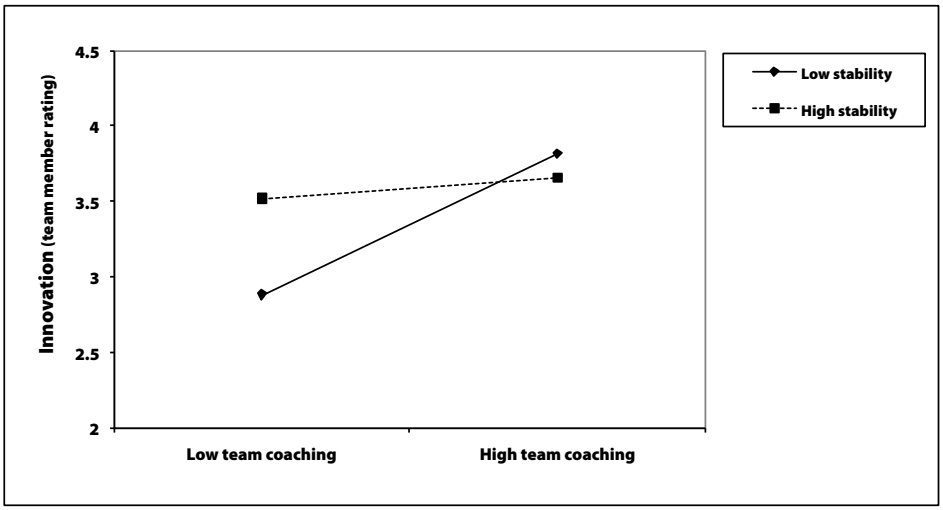
	Innovation team member rating			Innovation team manager rating		
	Model 1 *B*	Model 2 *B*	Model 3 *B*	Model 1 *B*	Model 2 *B*	Model 3 *B*
Organization 1	-.11*	-.13**	.12**	-.05	-.11	-.09
Team coaching	.30**	.15**	.15**	.27*	.25*	.24
Team stability	.12**	.05	.04	.13*	.11	.11
Problem solving	-	.51**	.49**	-	-.16	-.18
Blaming approach	-	-.24**	-.24**	-	-.35*	-.34*
Team coaching * Stability	-	-	-.13*	-	-	-.17
Adjusted R^2	.24	.50	.52	.05	.07	.07
F test	16.97**	31.67**	27.73**	3.78**	3.36**	3.02**

* *B* is significant at the .05 level (two-tailed)

** *B* is significant at the .01 level (two-tailed)

Results showed a significant indirect effect of team coaching on innovation (team member ratings) through the problem solving approach (CI .08 -.22) and the blaming approach (CI .01 -.09). There was also an indirect effect of team coaching on safety (team member ratings) through the problem solving approach (CI .07 -.20) and the blaming approach (CI .01 -.11). Stability had an indirect effect on innovation (team member ratings) through the problem solving approach (CI .04 -.12) and the blaming approach (CI .01 -.05). Stability also had an indirect effect on safety (team member ratings) through the problem solving approach (CI .02 -.08) and blaming approach (CI .00 -.06). Regarding managers' ratings of innovation and safety, only the indirect effect of team coaching and stability on innovation through the blaming approach appeared to be significant (CI .01 -.18; CI .00 - .10 respectively). Therefore, Hypotheses 7 to 10 are only partly supported.

Figure 2 Relationship between the interaction term and innovation



Although not hypothesized, we found that the interaction between team coaching and stability was significantly related to innovation as rated by team members (B = -.13, p < .05). Figure 2 shows a stronger effect of team coaching on innovation (member ratings) for the less stable teams.

Differences between ratings by team members and ratings by their managers

It seems remarkable that we were able to predict team members' ratings on safety, but not managers'. Analyses (paired t-tests) showed that team managers evaluated safety more positively than team members (p < .01). Further analyses (independent t-test) showed that the

Table 4 Results of the t-test with high and low scores on team's error orientation, coaching, and stability

	Group	Mean of differences	SD	*t*-test (equal variance assumed)	*p*-value
Problem solving approach					
Differences safety	Lower than mean	.35	.49	3.00	.00
	Higher than mean	.09	.53		
Blaming approach					
Differences safety	Lower than mean	.12	.48	-2.42	.02
	Higher than mean	.33	.56		
Coaching					
Differences safety	Lower than mean	.31	.56	2.04	.04
	Higher than mean	.13	.48		
Stability of membership					
Differences safety	Lower than mean	.26	.52	1.12	.26
	Higher than mean	.17	.53		

differences between team member and manager ratings on safety were significantly larger in teams with below-average scores on the problem-solving approach and team coaching, and in teams with above-average scores on the blaming approach (Table 4). The stability of team membership had no influence on the differences in safety ratings between team members and team managers.

CONCLUSION AND DISCUSSION

Our results suggest that a problem solving approach relates to stronger perceptions of innovation and safety by team members, whereas a blaming approach relates to weaker ones. Although the blaming approach is negatively related to team managers' ratings of innovation, no significant correlation exists between the problem solving approach and manager ratings of innovation. A possible explanation is that remote managers who operate from a distance may fail to notice that a team has adopted a problem solving approach, viewing their actions as 'normal' team processes. Teams with a blaming approach, however, are more likely to experience conflicts and negative emotions, and managers are more likely to observe such events.

Stable teams more often adopt a problem solving approach, and unstable teams more often adopt a blaming approach, suggesting that team members who interact over a lengthy period are more likely to develop trust and feel safe to discuss errors rather than blame and punish each other when errors occur (Edmondson, 1999).

Both error orientations do not relate to safety as rated by team managers. Indeed, team members have more negative perceptions of safety than their managers. Since team managers will eventually be held responsible for the safety of clients and team members, this may make them think more favorably about the safety in their teams than reality would justify. Another reason might be that safety incidents probably have a larger emotional impact on team members because they are personally involved in incidents and will remember the incidents better and longer. Team managers tend not to be personally involved in safety incidents, and may not always informed about minor incidents, or will only be informed in retrospect when the emotional stress has dissipated.

Team members and team managers agree most closely on the level of safety when the team has a strong problem solving approach toward errors. Members of such teams likely view errors as part of a learning process and will have less negative emotional reactions toward them. The opposite is the case with the blaming approach. Teams reporting high levels of team coaching agree more closely with their managers on the level of safety. Such team members are likely to have a more mature relationship with their manager and engage in discussions about safety, resulting in similar perceptions.

Team members' perception of safety negatively relates to the average level of education. Possibly, more highly-educated team members are more critical of safety issues and strive for higher standards, resulting in a lower self-reporting score for safety.

Team coaching is positively related to a problem solving approach and negatively related to a blaming approach toward errors. Although we cannot draw conclusion about causality, it may be that team managers that take on the role of a coach help team members to learn from each other's errors instead of dictating the best way to do the job. Team coaches may also help team members to improve their interpersonal relationships and facilitate an environment in which it is safe to take interpersonal risks in terms of making and discussing errors by setting clear expectations about openly sharing, discussing, and analyzing errors.

Team coaching was found to be positively related to innovation (team member ratings) especially in unstable teams. Developing new and innovative ideas regarding the provision of care is possibly less urgent for members of unstable teams, and hence underexposed and underdeveloped, since team members first have to invest in getting to know each other and their tasks, roles, and responsibilities, and develop basic team processes such as trust, support, and learning. It is likely that team coaching behaviors, such as building shared commitment, empowering team members, and encouraging and motivating team members to have constructive discussions are especially crucial for unstable teams where team cohesion and self-management are not self-evident. The interaction between team coaching and membership stability has no impact on the team's error orientation or on their views of safety. A possible explanation is that teams see errors and safety issues as more visible and urgent than innovation, and are therefore more inclined to take the initiative in dealing with them. Team members may perceive errors and safety issues as basic aspects of their job that can endanger the quality of care, whereas innovation may be perceived as a 'nice to have' element of superior care provision.

Although our study concentrated on the team level and not on issues in the wider organizational context, our results show that the organizational context is related to the prevalence of the blaming approach toward errors and to team innovation. This suggests that future research on a team's error orientation and team innovation should incorporate the organizational context.

Limitations

Unfortunately we cannot draw conclusions about causality because of our study's cross-sectional design (but we intend to expand the study into a longitudinal design in the near future). Another limitation of our study is that the complexity of the models that we could test was limited because only 152 teams were included in our analyses. Further, we used subjective team performance measures because objective indicators at the team level were not available. Subjective performance ratings have, however, often been found to correlate

with objective performance measures. Also, other measurement approaches are not always superior to self-reporting (Conway & Lance, 2010). Although some may claim that team members could confuse affective outcomes of teamwork with task-related outcomes, we maintain that they can also give a clearer picture of what is going on in the team and a more realistic evaluation of team safety and innovation than managers who are more removed from team activity.

Although we limited the study to LTC organizations providing care for clients with physical and/or intellectual disorders, there was a rather large variation in our sample (teams working in assisted living accommodations, daycare services, ambulant teams) that reflected the variety of the broader LTC population. Therefore, we believe that our findings are generalizable to other LTC settings, like elderly care, especially since such organizations also rely to a large extent on fairly autonomous mono-disciplinary teams with remote team managers.

Although we justified the aggregation of data, our ICC1 values indicated a considerable amount of variance in the perceptions that individual team members within a team have of team functioning. Future research should therefore consider the influence of individual attributes on the perception of team processes and team outcomes.

Practical implications

Innovative ideas will only be developed in a team with a problem solving approach toward dealing with errors. In such a team, members feel safe to take risks to test innovative solutions and do not fear blame if their ideas fail. Encouraging risk-taking behavior might, however, conflict with the instinctive approach of many LTC organizations that try to improve safety by preventing errors, by holding individuals responsible for their errors and developing strict protocols. However, such an approach could unintentionally result in developing a blaming approach, risk aversion and, in the end, suppression of innovative ideas to improve clients' quality of life. As our data show, a blaming approach is likely to lead to lower safety levels and less innovation rather than more.

In practice, many team managers will translate a plea for safer care into strict protocols and prescriptions on how care should be provided, and how errors should be reported and handled. Such an approach contradicts our recommendation that team managers act rather as team coaches to provide safer care. Furthermore, team managers should be aware that they are quite possibly estimating safety levels more positively than their team members. As our data show, taking on the role of team coach and discussing different perceptions within the team might help team managers to better understand their team members' perceptions of safety, leading to similar views. Another approach that would yield improvement would be to keep the team membership as stable as possible. It helps maintain a safe team climate and healthy team processes and prevents the loss of the information and skills held by individual team members. If this is not possible, team coaching can play an important role in

retaining knowledge, skills, and innovative techniques in unstable teams by encouraging a safe team climate and knowledge sharing. A recommendation to LTC organizations might therefore be to recruit team managers based on their coaching skills. Higher management may play an important role in prioritizing and stimulating team coaching rather than putting emphasis on protocols and control, taking into account the possible variations in levels of team coaching and team processes due to the scattered nature of many LTC organizations. They may do so by providing training to improve manager's coaching skills such as listening, questioning, and giving and receiving feedback (Ellinger et al., 2003), and by bringing team managers together more frequently to share experiences and become more aware of their role in enhancing safety and innovation by coaching teams to learn from their errors.

REFERENCES

Akgün, A. E., & Lynn, G. S. (2002). Antecedents and consequences of team stability on new product development performance. *Journal of Engineering and Technology Management, 19*(3-4), 263-286.

Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: Development and validation of the team climate inventory. *Journal of Organizational Behavior, 19*(3), 235-258.

Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein, & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 349-381). San Francisco: Jossey-Bass.

Burke, C. S., Stagl, K. C., Klein, C., Goodwin, G. F., Salas, E., & Halpin, S. M. (2006). What type of leadership behaviors are functional in teams? A meta-analysis. *The Leadership Quarterly, 17*(3), 288-307.

Cannon, M. D., & Edmondson, A. C. (2001). Confronting failure: Antecedents and consequences of shared beliefs about failure in organizational work groups. *Journal of Organizational Behavior, 22*(2), 161-177.

Conway, J. M., & Lance, C. E. (2010). What reviewers should expect from authors regarding common method bias in organizational research. *Journal of Business and Psychology, 25*, 325-334.

Cooper, J. B., Gaba, D. M., Liang, B., Woods, D., & Blum, L. N. (2000). The national patient safety foundation agenda for research and development in patient safety. *Medscape General Medicine, 2*(3), 1-10.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44*(2), 350-383.

Edmondson, A. C. (2003). Speaking up in the operating room: How team leaders promote learning in interdisciplinary action teams. *Journal of Management Studies, 40*(6), 1419-1452.

Edmondson, A. C. (2004). Learning from failure in health care: Frequent opportunities, pervasive barriers. *Quality and Safety in Health Care, 13*(2), ii3-ii9.

Edmondson, A. C., Bohmer, R. M., & Pisano, G. P. (2001). Disrupted routines: Team learning and new technology implementation in hospitals. *Administrative Science Quarterly, 46*(4), 685-716.

Edmondson, A. C., Dillon, J. R., & Roloff, K. S. (2007). Chapter 6: Three perspectives on team learning. *The Academy of Management Annals, 1*(1), 269-314, New York: Lawrence Erlbaum Associates.

Ellinger, A. D., Ellinger, A. E., & Keller, S. B. (2003). Supervisory coaching behavior, employee satisfaction, and warehouse employee performance: A dyadic perspective in the distribution industry. *Human Resource Development Quarterly, 14*(4), 435-458.

Ellinger, A. D., Hamlin, R. G., Beattie, R. S., Wang, Y. L., & McVicar, O. (2011). Managerial coaching as a workplace learning strategy. In R. F. Poel, & M. Van Woerkom (Eds.), *Supporting workplace learning towards evidence-based practice* (pp. 71-87). Dordrecht: Springer.

Forsyth, D. R. (2009). *Group dynamics*. Belmont: Wadsworth.

Harrington, C., Cassel, C., Estes, C. L., Woolhandler, S., & Himmelstein, D. U. (1991). A national long-term care program for the united states. *The Journal of the American Medical Association, 266*(21), 3023-3029.

Harris, J. (1996). Physical restraint procedures for managing challenging behaviours presented by mentally retarded adults and children. *Research in Developmental Disabilities, 17*(2), 99-134.

IOM (Institute of Medicine: Committee on Quality of Health Care in America). (2001). *Crossing the quality chasm: A new health system for the 21st century.* Washington, DC: National Academies Press.

James, L. R., Demaree, R. G., & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology, 69*(1), 85-98.

Kohn, L. T., Corrigan, J., & Donaldson, M. S. (1999). *To err is human: Building a safer health system*. Washington, DC: National Academy Press.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology, 58*, 593.

Nelson, E. C., Batalden, P. B., Mohr, J. J., Godfrey, M. M., Headrick, L. A., & Wasson, J. H. (2002). Microsystems in health care: Part 1. learning from highperforming front-line clinical units. *Joint Commission Journal on Quality and Patient Safety, 28*(9), 472-493.

Port, C., Sloane, P. D., & Zimmerman, S. (2005). *Pragmatic innovations in long-term care: Developing a research agenda. Literature review.* Baltimore: Collaborative studies of long-term care.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, 36*(4), 717-731.

RVZ (Raad van Volksgezondheid). (2006). *Labor market and the demand for care (translated from dutch: Arbeidsmarkt en zorgvraag)*. Den Haag: RVZ Publications.

Schein, E. H. (2010). *Organizational culture and leadership*. San Fransisco: Jossey-Bass.

Snell, M. J. (2010). Solving the problems of groupthink in health care facilities through the application of practical originality. *Global Management Journal, 2*(2), 74-84.

Thornhill, A., & Saunders, M. N. K. (1998). What if line managers don't realize they're responsible for HR? *Personnel Review, 27*(6), 460-476.

Tjosvold, D., Sun, H. F., & Wan, P. (2005). Effects of openness, problem solving, and blaming on learning: An experiment in china. *The Journal of Social Psychology, 145*(6), 629-644.

Tjosvold, D., Yu, Z., & Hui, C. (2004). Team learning from mistakes: The contribution of cooperative goals and Problem-Solving. *Journal of Management Studies, 41*(7), 1223-1245.

Van Dyck, C. (2000). *Putting errors to good use: Error management culture in organizations*. Amsterdam: KLI.

Van Mierlo, H., Vermunt, J. K., & Rutte, C. G. (2009). Composing group-level constructs from individual-level survey data. *Organizational Research Methods, 12*(2), 368.

Van Woerkom, M., & Croon, M. (2009). The relationships between team learning activities and team performance. *Personnel Review, 38*(5), 560-577.

Wageman, R. (2001). How leaders foster self-managing team effectiveness: Design choices versus hands-on coaching. *Organization Science, 12*(5), 559-577.

Wageman, R., Hackman, J. R., & Lehman, E. (2005). Team diagnostic survey. *The Journal of Applied Behavioral Science, 41*(4), 373-398.

Wagner, L. M., & Rust, T. B. (2008). *Safety in long-term care settings*. Edmonton: Canadian Patient Safety Institute.

Waldman, J. D., Kelly, F., Aurora, S., & Smith, H. L. (2004). The shocking cost of turnover in health care. *Health Care Management Review, 29*(1), 2-7.

WHO (World Health Organization). (2000). *Home based long-term care. report of a WHO study group*. Geneva: World Health Organization publication.

WHO (World Health Organization). (2009). *WHO guidelines for safe surgery 2009. safe surgery saves lives.* Geneva: World Health Organization publication.

5

Perceptions of team workers in youth care of what makes teamwork effective

Buljac-Samardžić, M., Van Wijngaarden, J. D. H., Van Wijk, K. P., & Van Exel, N. J. A. (2011). Perceptions of team workers in youth care of what makes teamwork effective. *Health & Social Care in the Community, 19*(3), 307-316.

ABSTRACT

In youth care, little is known about what makes teamwork effective. What is known mostly reflects the view of managers in care organizations, as objective outcome measures are lacking. The objective of this article was to explore the views of youth care workers in different types of teams on the relative importance of characteristics of teamwork for its effectiveness. Q methodology was used. Fifty-one respondents rank-order 34 opinion statements regarding characteristics of teamwork. Individual Q sorts were analyzed using by-person factor analysis. The resulting factors, which represented team workers' views of what is important for effective teamwork, were interpreted and described using composite rankings of the statements for each factor and corresponding team workers' explanations. We found three views of what makes teamwork effective. One view emphasized interaction between team members as most important for team effectiveness. A second view pointed to team characteristics that help sustain communication within teams as being most important. In the third view, the team characteristics that facilitate individuals to perform as a team member were put forward as most important for teamwork to be effective. In conclusion, different views exist on what makes a team effective in youth care. These views correspond with the different types of teams active in youth care as well as in other social care settings.

Keywords: attitude research; Q methodology; team effectiveness; teamwork; youth care

INTRODUCTION

Teamwork is an integral feature in delivering services in both health care and social care. For health care the report 'To Err is Human: Building a Safer Health System' has been one of the landmark publications, putting issues such as teamwork and team effectiveness high on the agenda. The authors suggested that improving teamwork among health care providers would help prevent many medical errors and improve effectiveness (Kohn et al., 1999). Researchers in other countries have found similar results (West et al., 2006 for England; Wagner et al., 2008 for the Netherlands).

In the UK and the Netherlands, youth care has recently experienced several tragedies and consequently, teamwork and team effectiveness have also become key issues in this sector (Vink, 2007). A well-known example in the Netherlands is the 'Maas girl', an 11-year old killed by her parents and dropped in Rotterdam's river Maas. Because the child was well known by youth care organizations, many argued that her death was the result of inadequate case management, and poor communication and cooperation among social workers from the various organizations (Van der Chijs, 2006). The organizations were also chastised for not learning from their mistakes when in the aftermath it became clear that the 'Maas girl' was not an exception. Other tragedies had occurred within a short period in Rotterdam and elsewhere. In their defence, youth care workers argued that their recommendations were seldomly implemented. Thus, organizational learning in general, and effective teamwork in particular, have also been topics of interest in youth care.

Research on teamwork in social care is scarce. Although research on teamwork in especially health care settings may be relevant (e.g. West et al., 2006), most research is conducted in other industries such as aviation and the automotive industry (Campion et al., 1993; Cohen & Bailey, 1997; Helmreich & Davies, 2004). Past research on effective teamwork in health care has especially focused on identifying characteristics of effective teams and developing questionnaires for measuring team effectiveness in hospital care (Heinemann & Zeiss, 2002; Mickan & Rodger, 2000; Lemieux-Charles & McGuire, 2006). Results suggest that important components of team effectiveness are job design, team design, interdependence, context, and team process (Campion et al., 1993; Mickan & Rodger, 2000; Leggat, 2007; Lemieux-Charles & McGuire, 2006). Recently, attention has shifted to the development of tools to improve especially multi-disciplinary teamwork (e.g. Heinemann & Zeiss, 2002; Mickan & Rodger, 2005; Shortell et al., 2004; Wheelan et al., 2003). Crew resource management (CRM), for example, has become a popular teamwork tool in emergency medicine to reduce human errors (Morey et al., 2002). Most research on effective teamwork in health care is, however, conducted in hospitals, with a strong focus on multi-disciplinary emergency teams. The types of care and the team features in youth care are however different from those in hospital settings. Teams in youth care are more likely to be mono-disciplinary, work in shifts, and/or be less task interdependent because most team members work alone in

direct client care. It may therefore be that different characteristics are relevant for effective teamwork in youth care.

In practice, it is generally believed that measuring team performance is difficult in youth care. Objective performance measures on team level are often absent in youth care organizations, as well as in many health care and social care organizations (Konijn & Bruinsma, 2008; Poulton & West, 1994). Therefore, team managers are often asked to judge team performance through a questionnaire (e.g. Campion et al., 1993). However, this is a subjective measure and only represents one perspective on team functioning. An alternative approach is to involve individual team members in the process. Mickan & Rodger (2005) explored perspectives of individual team members by combining repertory grid interviews and clarification questionnaires with a survey in order to distinguish characteristics that are important for effective teamwork. In this study, we use Q methodology to explore views of team members on team functioning, because it is an appropriate method to uncover similarities and differences in views and does not impose any ex-ante categorization on the clustering of views, as is often the case with scales used in questionnaires.

The aim of this study was to explore the perceptions of team workers in youth care, in different types of teams, of what makes teamwork effective. The perceptions of team workers are the foundation for organizations to address issues regarding team functioning.

METHODS

Q methodology is a method that combines aspects of qualitative and quantitative methods, and provides a scientific foundation for the study of subjectivity, such as peoples' viewpoints, attitudes, and preferences (Brown, 1980; Stephenson, 1935). It has been described as a better method to elicit subjectivity in comparison with present alternative methods, because it minimizes researcher bias and allows respondents' voices to be heard in a unique way (Baker et al., 2006; Cross, 2005; Ellingsen et al., 2010). Although Q methodology was introduced about 75 years ago (Stephenson, 1935), it is still relatively novel to many in health services research. The method gained popularity in the last two decades or so (Eccleston et al., 1997; Stainton Rogers, 1991; Stenner & Stainton Rogers, 1998; Stenner et al., 2000), and a considerable number of studies have been published in recent years (Baker, 2006; Boot et al., 2009; Bryant et al., 2006; Cramm et al., 2009; 2010; Jedeloo et al., 2010; Kreuger et al., 2008; Risdon et al., 2003; Ryan & Zerwic, 2004; Stenner et al., 2006; Tielen et al., 2008; Van Exel et al., 2006; 2007; Wallenburg et al., 2010).

In this study, respondents were given a score sheet and asked to rank-order a set of statements derived from covering characteristics that influence team effectiveness according to their agreement with these statements. These rankings were factor analyzed to reveal a (limited) number of patterns (i.e. factors) in the individual rankings of the statements,

based on the supposition that correlations between respondents' rankings indicate similar viewpoints.

For this study, a large youth care organization was selected that is considered representative of youth care in the Netherlands, because it provides the relevant range of types of care to children, youths, and parents, by different types of teams. In the Netherlands, youth care is part of the health care sector, is non-profit, and is financed through taxes. In each of the 15 regions in the country there is a youth care office. A youth care office is the entrance gate to youth care in the Netherlands. It advises caregivers, parents, children, and youth and refers clients on the appropriate care organizations. In each region, there is at least one large youth care organization that provides counseling, guidance, or care. Clients can also be referred to other organizations that are part of youth care, such as organizations for foster parents and for rehabilitation.

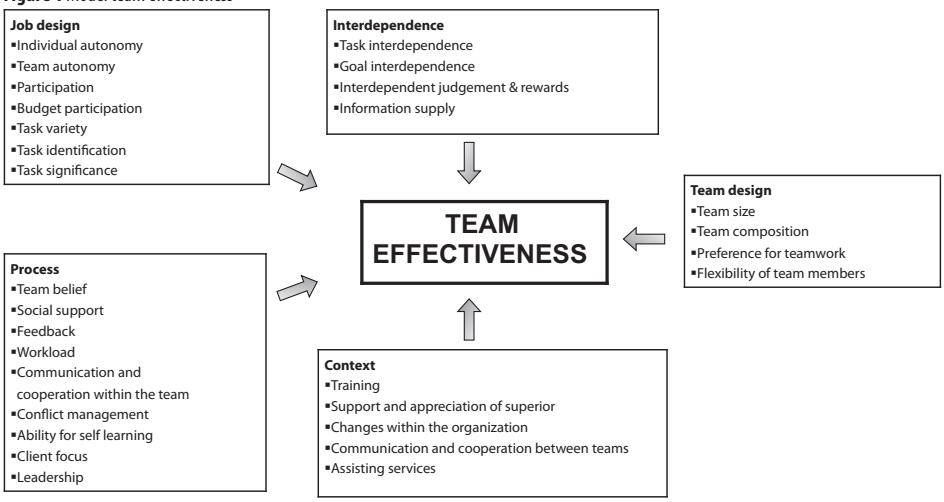
The study was conducted in four stages (described in detail below): selection of the statements (Q set), selection of a sample of respondents (P set), ranking of the statements by respondents (Q sorting process), and analysis of the rankings and interpretation (Q analysis).

Q set: selection of statements

To identify the principal characteristics that could be related to effective teamwork, we examined four sources. We began by reviewing literature for models and theories on team effectiveness. A literature search was conducted in PubMed using three keyword phrases: team effectiveness, effective teamwork, and team performance. This resulted in three important review studies (Campion et al., 1993; Lemieux- Charles & McGuire, 2006; Mickan & Rodger, 2000), which showed that five categories of characteristics are generally associated with team effectiveness: *job design*, *interdependence*, *team design*, *context*, and *process*. *Job design* allegedly contributes to team effectiveness by increasing motivation, a sense of responsibility and ownership of the work. *Interdependence* is the reason teams exist in the first place and is the key to the results of teamwork. It influences individual functioning, interaction, and motivation. The right *team design* enables effective team functioning. The organizational *context* also determines the conditions that promote effective teamwork. Finally, the team *process* enables the transformation of input to output (Campion et al., 1993; Lemieux-Charles & McGuire, 2006; Mickan & Rodger, 2000). Using all the above, we constructed a conceptual model that represents a comprehensive picture of the characteristics that relate to team effectiveness in youth care (Figure 1).

The second source of characteristics that potentially contribute to team effectiveness in youth care was structured interviews with seven employees of the youth care organization, each with a different job description. The third source was official documents from the organization (e.g. policy memorandums, care supply memorandums, annual reports, and the like). Finally, we organized an expert focus group meeting comprising two youth care workers, two managers, and one staff officer. The group met five times to reflect on consecutive versions of the Q set.

Figure 1 Model team effectiveness



Two researchers ordered the information gathered through interviews, document analyses, and the expert focus group meeting according to the elements of the conceptual model (Figure 1), leading to a structured, long list of statements. Four researchers analyzed this long list individually and selected statements exemplifying the elements included in the conceptual model. Two meetings were organized to find consensus on (1) the selection of statements and (2) the wording of the statements. The set agreed upon consisted of 34 opinion statements. This set was pilot-tested with five additional experts in the field of team effectiveness and youth care. In an interview setting they were asked to rank-order the statements and reflect on them by judging the clarity of the statements and the completeness of the set. Based on this pilot, two statements were rephrased.

The final Q set, which is the sample in Q methodology, is shown in Table 1.

P set: selection of sample of respondents

The person sample does not need to be large, as is common in survey methods, as each participant – treated as the variables in Q – performs a large number of tests by relating all statements to each other (Brown, 1980; Cross, 2005). The selected youth care organization had a total of 51 teams divided into three main types: day care teams, 24-hour teams, and support teams. There are two variants each of the 24-hour and support teams (see Figure 2), making up five types of teams in total. Ten teams, two of each type, were randomly selected and invited to participate in this study. In addition, a number of other professionals from the organization were invited. In total, 72 care workers, supervisors, managers, coaches, and experts were invited.

Table 1 Statements and factor scores

Statements	Perception		
	1	2	3
Job design			
Individual team member autonomy (1)	+1	-1*	+2
Team autonomy (9)	+2*	0**	0**
Participation in important decisions about team issues (29)	+1	+1	0**
Participation in important decisions about budget issues (34)	-2**	-2**	-3**
Variation in activities (2)	-1	-1	+1*
Clarity and division of tasks/ responsibilities within the team (11)	+1	+2	0**
Judgment of team members about the importance of their work (25)	-1	-2**	-1
Interdependence			
Interdependence among team members in their activities (18)	0**	-1**	-2*
Associating and adjusting to appointments of team members (21)	+1	+1	-2*
Relationship between judgment and team performance (19)	-1	-2	-1*
Relationship between judgment and individual performance (20)	-1*	-3*	0*
Availability of information for team members to accomplish activities (10)	0*	+2	+1
Quality of information for team members to accomplish activities (15)	0*	+1*	0*
Team design			
Having a sufficient number of team members (7)	-2*	0*	-3*
Having appropriate experts on the team (6)	0*	+1	+1
Preference of team members to work in teams (23)	-2*	0*	-2*
Willingness of team members to be flexible about work times, locations, and tasks (8)	0	+1*	0
Context			
Quality and appropriateness of the training offered by the organization (14)	-1*	0*	+1*
Support and appreciation from supervisors (30)	+1	0*	+1
How organizational changes come about (13)	-3	-1	-2
Communication and cooperation with other teams (17)	-2	-2	-1
Quality of assisting services (31)	-3*	-1	-1
Process			
The degree to which the team has a positive self image (5)	0	0	0
Social support within the team (32)	+2	0*	+2
Giving feedback among team members (28)	+3	+3	+2*
Giving feedback between team members and supervisors/management (24)	+2**	+1**	+3*
Emotional workload (12)	0	-1	-1
Overall workload (16)	-1	-3*	-1
Communication and cooperation within the team (4)	+3	+3	+3
The ability of the team to independently manage conflict (33)	+1	+1	0*
The ability of the team to learn (27)	+2	+2	+1*
Leadership by supervisors (22)	+1	0*	+1
Managerial leadership (26)	0	-1	-1
Team focus on the client (3)	-1*	+2	+2

Note: distinguishing statements (* $p < .01$; ** $p < .05$)

Q sorting process

Respondents were invited by email to come to a lecture hall at Erasmus University on an appointed day (27 May 2008). Participants received 34 cards with the opinion statements printed on them and were asked to rank-order the statements in the score sheet (Figure 3) from least to most important, according to the following instruction: "In your opinion, to what

Figure 2 Short descriptions of the different types of teams

Daycare teams:
Clients, sometimes with their parents, spend (part of) the day at a youth care facility and interact with the youth care worker(s) on duty. These team members may also visit the client at home. They do not work in shifts and are only partly dependent on each other.

24-hour crisis teams:
Clients in urgent need of care are housed and treated at a crisis care facility until a suitable treatment program and housing can be provided. Team members take over for one another in shifts and are therefore dependent on each other.

24-hour care teams:
Clients who permanently or temporarily cannot live at home are provided housing and 24-hour care in a group facility. Youth care workers take over for one another in shifts and are therefore dependent on each other.

Individual support teams:
Throughout a particular case, a client (and his or her parents) is guided and supported by an assigned youth care worker. Team members work independently and come together only for support and feedback.

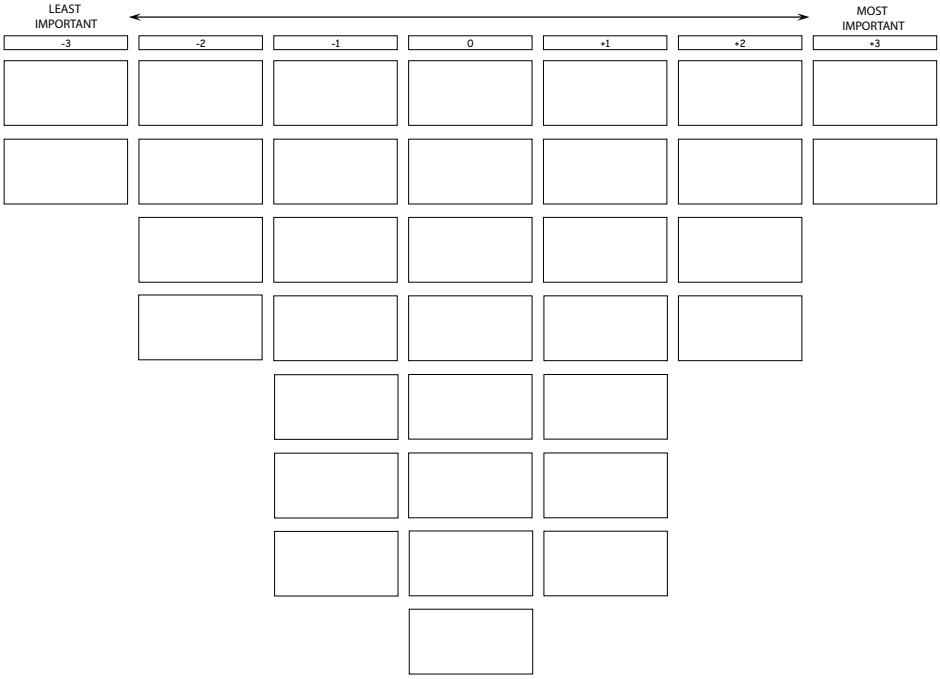
24-hour support teams:
Clients are permanently unable to live at home but are living largely independent in a group residential facility in the proximity of 24-hour assistance from a youth care worker. A youth care worker lives next to the group of clients. Team members do not work in concert but come together for support and feedback.

extent is this statement important for effective teamwork in youth care". They read the statements and divided the cards into three piles, for statements they thought were important for effective teamwork, unimportant, or neutral/ undecided about. Then they took the pile with cards they found important, read the statements again, selected the two they found most important for effective teamwork and placed them on the two spots on the extreme right end of the score sheet. From the remaining cards in the pile, they selected the four statements they then agreed with most and placed these on the score sheet, and so forth, until they were done with the pile with statements they found important. This procedure was repeated for the pile with cards they found unimportant and finally with the remaining cards about which they were neutral or undecided. Next, they were asked to explain the rank-ordering of the two statements they considered most and least important. Finally, respondents were asked to answer a number of questions about personal characteristics: gender, age, job, type of team, education, years employed at the current youth care organization, and years active in the current job description. All participants were told beforehand that the results would be used for an article. To protect the interests of the participants all data were made anonymous.

Q analysis

The first step in the analysis was to compute a correlation matrix between the individual Q sorts (ordering of statements), which indicates the degree of similarity between the Q sorts. The second step was factor analyzing the correlation matrix using by-person factor analysis (centroid factor analysis with a varimax rotation). The interpretation of the results was based on three sources of information. First, the factor array, which represents the way a person loading 100% on the factor would have sorted the cards, is computed by calculating

Figure 3 Q sort response grid



weighted average rank-scores for each of the statements for participants loading significantly on the factor, with their correlation coefficients with the factor as weights. Second, the differences and similarities in the ranking of statements between factors; Table 1 indicates the distinguishing statements per factor, i.e. those which ranked statistically significantly different for that factor compared to the other two factors. Finally, the explanation corresponding team workers gave for the statements they ranked at the extreme ends of the score sheet. Three researchers interpreted the statistical results independently and debates were held to resolve any differences. Consensus on the number and interpretation of factors was reached in two consecutive sessions. Analyses were conducted using the dedicated software package PQMethod 2.11 (Schmolck & Atkinson, 2002). For more details about Q analysis we refer to Brown (1980) and Smith (1999).

RESULTS

Fifty-one of the 72 invitees participated in the study (71% response). Primary reasons for non-participation were work-related issues like scheduling conflicts. The basic characteristics of the sample are presented in Table 2. Analysis showed that, based on eigenvalues, the 51 Q sorts supported a maximum structure of five factors. All possible factor solutions were

Table 2 Sample characteristics (n = 51)

Characteristics		Number
Gender	Female	39 (77%)
Age	20-30 years	18 (35%)
	30-40 years	10 (20%)
	40-50 years	13 (25%)
	>50 years	10 (20%)
Education level	Secondary education	7 (14%)
	Higher vocational education	31 (61%)
	University education	13 (25%)
Type of team	Daycare teams	6 (12%)
	24 hour teams [a]	20 (39%)
	Support teams [b]	14 (27%)
	Multiple teams, no team or unknown	11 (22%)
Job description	Team workers	36 (70%)
	Supervisors	5 (10%)
	Managers	4 (8%)
	Coach	1 (2%)
	Experts	5 (10%)
Years in current organization	< 1 year	3 (6%)
	1 – 3 years	9 (17%)
	3 – 5 years	5 (10%)
	5 – 7 years	10 (20%)
	> 7 years	24 (47%)
Years at current job	< 1 year	4 (8%)
	1 – 3 years	14 (27%)
	3 – 5 years	6 (12%)
	5 – 7 years	8 (16%)
	> 7 years	19 (37%)

Note: [a] 12 (23%) in 24 h crisis teams and 8 (16%) in 24h care teams

[b] 11 (21%) in individual support teams and 3 (6%) in 24h support teams

inspected by three researchers, taking into account the statistical results and the additional interview materials that were collected. The three-factor solution emerged as the most comprehensible and the most congruent with the explanations participants gave to their Q sorts. The three factors (with eigenvalues 21.3, 3.6, and 2.6 respectively) had 42 respondents loading statistically significantly (21, 13, and 8 respectively) and together explained 54% of the variance (23%, 18%, and 13% respectively). Table 1 presents the factor arrays, with a '+3' factor score indicating that the corresponding statement was considered most important for effective teamwork in that factor – and would be positioned at the right end of the score sheet (Figure 3) – and a '-3' score indicating the least importance.

The three factors were interpreted as distinct perceptions of what is important for effective teamwork from the perspective of team workers in youth care. In the following section the three perceptions will be described, using some of the explanations defining participants gave as illustration.

Perception 1: Team interaction

This first perception is dominated by the idea that team effectiveness in youth care depends much more on team interaction than on structural characteristics and procedures. This was reflected in participants' rating: communication, feedback, learning, social support, and team autonomy to stimulate mutual decision making were seen as important. Communication and cooperation (statement 4 gets a +3 score; Table 1) was most important because: "No child can be treated well without good communication" and "It is impossible to be present at every treatment of every child: you need to rely on good communication with your colleagues". Interaction was seen as the cornerstone for teamwork: "You can solve any problem if communication and cooperation are good in a team" and "Good communication and cooperation will lead to pleasant collaboration and avoid loss of effectiveness". Feedback among team members (28) as well as between team members and supervisors/ management (24) was also considered important. Respondents indicated that feedback from different sources is necessary to be able to continually improve performance: "Reflection and new insights provided by feedback from different people helps to improve yourself" and "Feedback is important to keep each other alert at all times". The ability to learn as a team (27) was considered a fundamental aspect of teamwork: "Learning is a condition that makes teamwork possible" and "Learning in a team is crucial for its development". Respondents loading on this perception were very team oriented. Team autonomy (9) was seen as more important for effective teamwork than individual autonomy (1), with the explanation: "Important decisions are better made together than individually, and if you have the autonomy to proceed with that decision you can be more effective as a team". Social support within a team (32) scored +2 because: "If there is support and trust, a team can handle anything" and "Working in youth care can be emotionally difficult to handle without social support".

The organizational context and team composition were perceived as least important for effective teamwork. According to these respondents, assisting services (31), organizational changes (13), interaction with other teams (17), and budget issues (34) do not influence team functioning directly: "It doesn't affect my daily activities" and "Their presence or absence doesn't influence team functioning". Team size (7) was also seen as less important for effective teamwork because: "It's easy to adjust to changes in team size if you have a well functioning team" and "Quality is more important for effectiveness than quantity". Respondents were convinced that there were no team members who did not prefer to work in a team (23): "If someone didn't like teamwork, he probably wouldn't apply for a job on a team".

Perception 2: Preconditions for communication

Respondents loading on perception 2 were focused on the preconditions for communication. As in the first perception communication and cooperation (4) was rated most important.

However, according to these respondents, it was important that communication and cooperation be supported by clarity of tasks/responsibilities (11) and availability of information (10): "Miscommunication will be avoided if there's no confusion about tasks and responsibilities" and "With the proper information we can give suitable care". As with the first perception, processes like feedback among team members (28) and team learning (27) were defined as important for effective teams. In the first perception feedback was seen as important because it stimulates learning and improving, but in this perception: "Feedback is one of the conditions for good communication". Being client oriented (3) was also seen as important for team effectiveness: "We work for clients and therefore have to see and think from their perspective" and "You need to adjust your activities to the needs of clients".

Characteristics that respondents do not expect to be able to change were also those that respondents viewed as least important to team functioning. A clear connection between team performance and rewards/evaluations (19) was seen as least important because it did not fit with the culture of youth care: "This is a consequence of working in a team that provides 24-hour youth care". Workload (16), budget issues (34), and interaction with other teams (17) were least important because: "A heavy workload is common in our daily process and creates a healthy culture of complaining that increases solidarity"; "We don't have a say in budget decisions"; "I'm not dependent on other teams, all my activities are within one team". Furthermore, a clear connection between individual performance and rewards/evaluations (20) was rated least important because: "Judging individual performance doesn't encourage teamwork and promotes competition within the team" and "It isn't possible to measure individual performance if you work in a team". Team members' perception of the importance of their work (25) was also rated as relatively unimportant.

Perception 3: Facilitation of individuals

Respondents loading on this last perception see a team as an instrument to facilitate individual workers. They rated individual autonomy (1) as far more important than team autonomy (9): "Your own contribution and autonomy is very important for a team" and "As a youth care worker you often work alone, which is why individual autonomy is most important". As in the first perception, feedback (28) (24) and social support (32) were seen as important but for a different reason: "Within a support team everyone has a solo job and therefore social support is really important to get you through tough times" and "Feedback is the only way to self reflect". As in the previous two perceptions, communication and cooperation (4) were seen as most important, and for the same reasons. They share with the second perception the importance of the focus on clients (3) because, according to one respondent who is part of a support team: "That's the aim of our existence".

The central role of the individual was seen as most important. Team-oriented statements like quantity (7), task interdependence (18), task cohesion (21), and preference for teamwork

(23) were rated lowest: "My job is autonomous and therefore the number of people on a team is not that important"; "Interdependence is not important because individuals have a high level of autonomy"; "If you work on a team, preference for team work is a given"; "Teamwork preferences are not important for tasks in support teams". Because team workers are not involved in budget issues (34), it was rated least important: "Decisions about budgets are made by the management board" and "Budget issues don't influence our daily tasks". Organizational changes (13) were also seen as less relevant.

CONCLUSION AND DISCUSSION

This study revealed three distinct perceptions of youth care workers on the relative importance of characteristics of teams for effective teamwork: team interaction, preconditions for communication, and facilitation of individuals. There was consensus between the three perceptions on the importance of two characteristics for effective teamwork: 'communication and cooperation within the team' (4) and 'feedback among team members' (28).

Youth care workers loading on the perception 'team interaction' are team-minded and value different processes within a team as important. They have a strong belief in teamwork and work in different types of team. Youth care workers loading on the perception 'preconditions for communication' emphasize characteristics that sustain communication. They were mostly members of a 24-hour care team, taking over for one another in shifts. Communication is therefore crucial for continuity in care. Youth care workers loading on the perception 'facilitation of individuals' are focused on characteristics that assist individual youth care workers at their individual tasks. These respondents work mostly in support teams, meaning that they primarily work solo and come together as a team to support each other's individual tasks by giving feedback.

It is interesting that all four participating managers loaded on the 'team interaction' perception. This could indicate that there is a difference in opinion between management and a part of the team workers about what makes their work effective within this organization. This is particularly interesting because the other two views appear related to specific types of teams, i.e. 24-hour care teams and support teams. Therefore, there may be some effectiveness to gain from closer consultation between management and these teams. However, this could also indicate that team managers had teamwork in general in mind instead of a specific type of team.

Characteristics that influence team effectiveness are well known from the literature and after adjusting them to youth care (Figure 1), we included them in the Q set (Campion et al., 1993; 1996; Lemieux-Charles & McGuire, 2006; Mickan & Rodger, 2000). This Q study showed that aspects of team processes (i.e. feedback, communication, and cooperation) are seen as important for effective teamwork by youth care workers in all three perceptions. This is gen-

erally supported by the literature (e.g. Campion et al., 1993; 1996; Janz et al., 1997; Lemieux-Charles & McGuire, 2006; Mickan & Rodger, 2000). An example is the result of Mickan's and Rodger's research, which elicited six characteristics as important (Mickan & Rodger, 2005). However, the difference between their study and our study is that youth care workers see leadership, purpose and goals as less important (Mickan & Rodger, 2005).

Limitations

Some limitations of this study need to be noted. The Q statements were based on team characteristics identified by two reviews on research in health care (Mickan & Rodger, 2000; Lemieux-Charles & McGuire, 2006) and one review on research in other industries (Campion et al., 1993). To check if these characteristics were applicable to the youth care setting, we did interviews, document analyses, and organized an expert focus group meeting. Finally, we customized the Q statements to the youth care setting. It is unlikely, but still possible, that we have missed relevant team characteristics for youth care. Also, the study was conducted with youth care workers from a single organization. The three viewpoints may be considered representative of workers in this organization but generalization of the results to other settings and subsectors must proceed with caution. Q methodology, by being a small-sample methodology, can be used to describe a population of viewpoints, not a population of people. To determine prevalence of the perceptions, and associations with characteristics of team workers, types of teams and organizations, the perceptions should be incorporated in a regular survey in a larger and representative sample of youth care workers. These findings, however, may be relevant to other youth care institutions in the Netherlands as well as in England, Sweden, Denmark, and Belgium, because the organization of youth care organizations seems very comparable between these countries, although no scientific studies (comparisons) are available to confirm this. These findings may also be relevant for other care settings, such as care for the disabled or elderly in which care workers participate in mono-disciplinary 24- hour care teams or are part of a support team but work individually. Finally, it is worth noting that other interpretive approaches exist to Q methodology, which regards factors as social representations rather than subjective viewpoints, as we did here (Stainton Rogers & Stainton Rogers, 1990).

Implications

In conclusion, Q methodology appears well suited to our research purpose. Youth care workers responded enthusiastically to the topic and method used in this study, which strengthened their involvement and the reliability and validity of our findings. Participants who gave feedback indicated that the statement set helped them see the bigger picture by confronting them with more aspects than they would perhaps otherwise think of, and

that the sorting exercise stimulated them to consider all these aspects relative to each other carefully and helped them to express their viewpoint clearly. In addition, participants said they found it gratifying to see the result of their effort in front of them after finishing the Q sort, and most participants were interested in the overall results of the study and agreed to discuss the emerging viewpoints within their teams. Given the results, we suggest that exploring perceptions of individual team members has an additional value to questionnaires that measure team effectiveness as a whole.

This study has different implications for youth care. Managers need to be aware that different views exist between and within teams about what makes a team effective, as well as between team workers and management. If these views are not incorporated in (changes in) practice, youth care workers may feel they are not represented in the process, and subsequently, be less inclined to participate or contribute to organizational processes. Understanding how youth care workers think about effective teamwork could also be useful in the design of interventions that are meant to improve teamwork and therefore team performance. Odds for successful interventions improve if they are supported by workers (Walburg, 2003). As discussed, it also seems plausible that the different views point to real differences in relevant characteristics for team effectiveness. Different type of teams (mono- versus multidisciplinary teams, 24-hour care teams, daycare teams, support teams) may pose different demands for effective cooperation and team management. For example, 24-hour teams and day care teams may be more effective when tasks and responsibilities are well aligned. That may not be necessary for support teams in which individual work is leading. Policymakers and managers should therefore customize their interventions for different types of teams in youth care. They should also be aware that findings from research in clinical care may not always be relevant for teamwork in youth care, as it is focused on different types of teams. Therefore, both in research and in practice, improving team performance in youth care, such as team effectiveness and safety, asks for consideration of the different views of effective teamwork within an organization.

REFERENCES

Baker, R., Thompson, C., & Mannion, R. (2006). Q methodology in health economics. *Journal of Health Services Research & Policy, 11*(1), 38-45.

Baker, R. M. (2006). Economic rationality and health and lifestyle choices for people with diabetes. *Social Science & Medicine, 63*(9), 2341-2353.

Boot, C. R. L., van Exel, N. J. A., & van der Gulden, J. W. J. (2009). My lung disease Won't go away, it's there to stay": Profiles of adaptation to functional limitations in workers with asthma and COPD. *Journal of Occupational Rehabilitation, 19*(3), 284-292.

Brown, S. R. (1980). *Political subjectivity: Applications of Q methodology in political science.* New Haven, CT: Yale University Press.

Bryant, L. D., Green, J. M., & Hewison, J. (2006). Understandings of down's syndrome: A Q methodological investigation. *Social Science & Medicine, 63*(5), 1188-1200.

Campion, M. A., Medsker, G. J., & Higgs, A. C. (1993). Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology, 46*(4), 823-847.

Campion, M. A., Papper, E. M., & Medsker, G. J. (1996). Relations between work team characteristics and effectiveness: A replication and extension. *Personnel Psychology, 49*(2), 429-452.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management, 23*(3), 239-290.

Cramm, J. M., Kuijsten, R., Finkenflügel, H., & Van Exel, N. J. A. (2009). How employment support and social integration programs are viewed by the intellectually disabled. *Journal of Intellectual Disability Research, 53*(6), 512-520.

Cramm, J. M., van Exel, J., Moller, V., & Finkenflügel, H. (2010). Patient views on determinants of compliance with tuberculosis treatment in the eastern cape, south africa: An application of Q-methodology. *The Patient: Patient-Centered Outcomes Research, 3*(3), 159-172.

Cross, R. M. (2005). Exploring attitudes: The case for Q methodology. *Health Education Research, 20*(2), 206-213.

Eccleston, C., Amanda, C., & Rogers, W. S. (1997). Patients' and professionals' understandings of the causes of chronic pain: Blame, responsibility and identity protection. *Social Science & Medicine, 45*(5), 699-709.

Ellingsen, I. T., Størksen, I., & Stephens, P. (2010). Q methodology in social work research. *International Journal of Social Research Methodology, 13*(5), 395-409.

Heinemann, G. D., & Zeiss, A. M. (2002). *Team performance in health care: Assessment and development*. New York: Kluwer Academic/ Plenum Publishers.

Helmreich, R. L., & Davies, J. M. (2004). Culture, threat, and error: Lessons from aviation. *Canadian Journal of Anesthesia, 51*, 1-4.

Janz, B. D., Colquitt, J. A., & Noe, R. A. (1997). Knowledge worker team effectiveness: The role of autonomy, interdependence, team development, and contextual support variables. *Personnel Psychology, 50*(4), 877-904.

Jedeloo, S., van Staa, A. L., Latour, J. M., & van Exel, N. (2010). Preferences for health care and self-management among dutch adolescents with chronic conditions: A Q-methodological investigation. *International Journal of Nursing Studies, 47*(5), 593-603.

Kohn, L. T., Corrigan, J., & Donaldson, M. S. (1999). *To err is human: Building a safer health system*. Washington, DC: National Academy Press.

Konijn, C., & Bruinsma, W. (2008). *Frequently asked questions about the effectiveness of youth care: Report for spirit amsterdam (translated from dutch: Veelgestelde vragen over effectiviteit in de jeugdzorg: Rapport voor spirit amsterdam)*. Utrecht: Nederlands Jeugd Instituut.

Kreuger, L., Van Exel, J., & Nieboer, A. (2008). Needs of persons with severe intellectual disabilities: A Q-Methodological study of clients with severe behavioural disorders and severe intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities, 21*(5), 466-476.

Leggat, S. G. (2007). Effective healthcare teams require effective team members: Defining teamwork competencies. *BMC Health Services Research, 7*, 17-.

Lemieux-Charles, L., & McGuire, W. L. (2006). What do we know about health care team effectiveness? A review of the literature. *Medical Care Research and Review, 63*(3), 263-300.

Mickan, S., & Rodger, S. (2000). Characteristics of effective teams: A literature review. *Australian Health Review, 23*(3), 201-208.

Mickan, S. M., & Rodger, S. A. (2005). Effective health care teams: A model of six characteristics developed from shared perceptions. *Journal of Interprofessional Care, 19*(4), 358-370.

Morey, J. C., Simon, R., Jay, G. D., Wears, R. L., Salisbury, M., Dukes, K. A., et al. (2002). Error reduction and performance improvement in the emergency department through formal teamwork training: Evaluation results of the MedTeams project. *Health Services Research, 37*(6), 1553-1581.

Poulton, B. C., & West, M. A. (1994). Primary health care team effectiveness: Developing a constituency approach. *Health & Social Care in the Community, 2*(2), 77-84.

Risdon, A., Eccleston, C., Crombez, G., & McCracken, L. (2003). How can we learn to live with pain? A Q-methodological analysis of the diverse understandings of acceptance of chronic pain. *Social Science & Medicine, 56*(2), 375-386.

Ryan, C. J., & Zerwic, J. J. (2004). Knowledge of symptom clusters among adults at risk for acute myocardial infarction. *Nursing Research, 53*(6), 363-369.

Schmolck, P., & Atkinson, J. (2002). *PQMethod software and manual version 2.11*

Shortell, S. M., Marsteller, J. A., Lin, M., Pearson, M. L., Wu, S. Y., Mendel, P., et al. (2004). The role of perceived team effectiveness in improving chronic illness care. *Medical Care, 42*(11), 1040-1048.

Smith, N. W. (1999). *Current systems in psychology: History, theory, research, and applications*. Belmont CA: Wadsworth Pub.

Stainton Rogers, R., & Stainton Rogers, W. (1990). What the brits got out of the Q: And why their work may not line up with the american way of getting into it! *Electronic Journal of Communication, 1*(1), 1-11.

Stainton Rogers, W. (1991). *Explaining health and illness: An exploration of diversity*. London: Harvester Wheatsheaf.

Stenner, P., & Stainton Rogers, R. S. (1998). Jealousy as a manifold of divergent understandings: A Q methodological investigation. *European Journal of Social Psychology, 28*(1), 71-94.

Stenner, P. H. D., Bianchi, G., Popper, M., Supeková, M., Lukšík, I., & Pujol, J. (2006). Constructions of sexual relationship. a study of the views of young people in catalunia, england and slovakia and their health implications. *Journal of Health Psychology, 11*(5), 669-684.

Stenner, P. H. D., Dancey, C. P., & Watts, S. (2000). The understanding of their illness amongst people with irritable bowel syndrome: A Q methodological study. *Social Science & Medicine, 51*(3), 439-452.

Stephenson, W. (1935). Correlating persons instead of tests. *Journal of Personality, 4*(1), 17-24.

Tielen, M., van Staa, A. L., Jedeloo, S., van Exel, N., & Weimar, W. (2008). Q-methodology to identify young adult renal transplant recipients at risk for nonadherence. *Transplantation, 85*(5), 700-706.

Van der Chijs, L. (2006). Research on the errors with youth care considering the maas-girl (translated form dutch: Onderzoek naar falen jeugdzorg bij maasmeisje). Elsevier.

Van Exel, N. J. A., De Graaf, G., & Brouwer, W. B. F. (2006). "Everyone dies, so you might as well have fun!" attitudes of dutch youths about their health lifestyle. *Social Science & Medicine, 63*(10), 2628-2639.

Van Exel, N. J. A., Graaf, G., & Brouwer, W. B. F. (2007). Care for a break? an investigation of informal caregivers' attitudes toward respite care using Q-methodology. *Health Policy, 83*(2-3), 332-342.

Vink, C. (2007). Inspiration from england for the dutch policy in youth care (translated from dutch: Engelse inspiratie voor nederlands jeugdbeleid). *Jeugd En Co Kennis, 4*, 37-46.

Wagner, C., Smits, M., Van Wagtendonk, I., Zwaan, L., Lubberding, S., Merten, H., et al. (2008). *Causes of incidents and unintentional damage in hospitals (translated from dutch: Oorzaken van incidenten en onbedoelde schade in ziekenhuizen)*. Amsterdam/ Utrecht: EMGO Institute and NIVEL.

Walburg, J. A. (2003). *Uitkomstmanagement in de gezondheidszorg*. Maarssen: Elsevier gezondheidszorg.

Wallenburg, I., van Exel, J., Stolk, E., Scheele, F., de Bont, A., & Meurs, P. (2010). Between trust and accountability: Different perspectives on the modernization of postgraduate medical training in the Netherlands. *Academic Medicine, 85*(6), 1082-1090.

West, M. A., Guthrie, J. P., Dawson, J. F., Borrill, C. S., & Carter, M. (2006). Reducing patient mortality in hospitals: The role of human resource management. *Journal of Organizational Behavior, 27*(7), 983-1002.

Wheelan, S. A., Burchill, C. N., & Tilin, F. (2003). The link between teamwork and patients' outcomes in intensive care units. *American Journal of Critical Care, 12*(6), 527-534.

6

Interventions to improve team effectiveness: a systematic review

Buljac-Samardžić, M., Dekker-van Doorn, C. M., Van Wijngaarden, J. D. H., & Van Wijk, K. P. (2010). Interventions to improve team effectiveness: A systematic review. *Health Policy, 94*(3), 183-195.

ABSTRACT

Objective: To review the literature on interventions to improve team effectiveness and identify their 'evidence based'-level.

Methods: Major data bases (PubMed, Web of Science, PsycInfo, and Cochrane Library) were systematically searched for all relevant papers. Inclusion criteria were: peer-reviewed papers, published in English between January 1990 and April 2008, which present empirically based studies focussing on interventions to improve team effectiveness in health care. A data abstraction form was developed to summarize each paper. The Grading of Recommendations, Assessment, Development, and Evaluation Scale was used to assess the level of empirical evidence.

Results: Forty-eight papers were included in this review. Three categories of interventions were identified: training, tools, and organizational interventions. Target groups were mostly multi-disciplinary teams in acute care. The majority of the studies found a positive association between the intervention and non-technical team skills. Most articles presented research with a low level of evidence. Positive results in combination with a moderate or high level of evidence were found for some specific interventions: simulation training, Crew Resource Management training, team-based training and projects on continuous quality improvement.

Conclusion: There are only some studies available with high quality evidence on interventions to improve team effectiveness. These studies show that team training can improve the effectiveness of multi-disciplinary teams in acute (hospital) care.

Keywords: intervention studies; patient care teams; systematic review

INTRODUCTION

The well-known publication of 'To Err is Human: Building a Safer Health System' prompted a considerable rethinking of safety in health care (Kohn et al., 1999). The authors argued that 3 to 4 percent of patients hospitalized in the United States were harmed by care received and 44,000 to 98,000 patients died as a result of medical errors. Their conclusion was that effective teamwork and better communication between caregivers could have prevented half of them. 'To promote effective team functioning' became one of the five principles in the 1999 IOM report to create safe hospital systems (Kohn et al., 1999). The assumption is that effective teamwork leads to higher-quality decision making and medical intervention and, in turn, better patient outcomes (Bunderson, 2003). Since the publication of the report, research on team effectiveness in health care has significantly increased.

Research in health care has focused particularly on identifying characteristics of effective teams and developing instruments for measuring their effectiveness (Lemiex-Charles & McGuire, 2006; Heinemann & Zeiss, 2002; Mickan & Rodger, 2000). Cohen and Bailey define a team as: "A collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems (for example, business unit or corporation), and who manage their relationships across organizational boundaries" (Cohen & Bailey, 1997, p. 241).

Several models have been developed to conceptualize the aspects of teamwork that influence team effectiveness (Campion et al., 1993; Lemieux-Charles & McGuire, 2006; Mickan & Rodger, 2000). These models can be useful in understanding how interventions effect teams. For example, Lemieux-Charles and McGuire (2006) have presented 'The Integrated (Health Care) Team Effectiveness Model' (ITEM). This model shows that the organizational context in which a team operates (e.g. goals, structure, rewards, training, environment) indirectly influences its effectiveness. This particularly has an effect on team processes (e.g. communication, leadership, decision-making), psycho-social traits (e.g. cohesion, norms), and task design (e.g. team composition, autonomy, interdependence). These aspects do have a direct influence on team effectiveness. Finally, team effectiveness can be measured by looking at objective outcomes (e.g. patient satisfaction, quality of care) and subjective outcomes (e.g. effectiveness as perceived by team members).

With respect to measuring team effectiveness, Heinemann and Zeiss (2002) have presented an overview of nine state-of-the-art instruments specific to health care teams that measure aspects such as team climate, collaboration, meeting effectiveness, attitude toward teams, team integration, and development of teams.

However, there are no (general) overviews of studies on different interventions to improve team effectiveness. Therefore, information on the effectiveness of these interventions is scattered. We do not know which interventions are most effective for which target group

and for which outcomes. Nevertheless, health care organizations are spending an increasing amount of money and energy on programs and projects to improve team effectiveness.

To assist health care organizations in their endeavour to improve team effectiveness, synthesize scientific knowledge on relevant interventions, and identify gaps in this research, we performed a systematic review with a focus on two research questions: *(1) Which types of interventions to improve team effectiveness in health care have been researched empirically, for which target groups and for which outcomes? (2) To what extent are these findings evidence based?*

This article presents the findings of this systematic review.

METHODS

Data sources

A systematic literature search was conducted using the PubMed, Web of Science, PsycInfo, and Cochrane databases. We restricted the initial search to English articles with abstracts published in peer-reviewed journals between 1990 and April 2008. According to Lemieux-Charles and McGuire (2006), research interest in team effectiveness in health care started around 1990. Although research on interventions to improve team effectiveness seemed to appear somewhat later, we chose 1990 as a point of departure for the sake of thoroughness. Our search terms were team tool(s), team intervention(s), team building, team development, team training, team innovation, team program, team education, teamwork, team improve(ment), and team management. Rather than combining search terms, every term was used separately in each data base. When the search term consisted of two elements 'AND' was used; e.g. 'team AND tool(s)'. A summary of the search results is presented in Table 1. The search produced 6508 references, including some duplicate articles due to parallel searches.

Table 1 Summary of results

Database	Hits
Pubmed	3082
Web of Science	1819
PsychInfo	1477
Cochrane	130
Total	6508

Inclusion/exclusion criteria

Articles included matched the following criteria: (1) peer-reviewed English-language publication, (2) a focus on health care, (3) a focus on how to improve (and not only measure) team

effectiveness, and (4) empirically researched results. No selection was made based on the design of the study, as long as empirical data was presented. Review articles that focused on interventions to improve team effectiveness were studied only to identify other relevant empirical studies. Because we wanted to include both qualitative and quantitative articles, we did not require clear outcome measurements. Nor did we select studies based on a definition of a team because they were often lacking. Editorial letters, books, and book summaries were excluded.

Selection process

A three-staged process was followed: (1) screening the title and abstract (authors MB, CD, and JW), (2) examining the abstracts (MB, CD, JW, and KW), and (3) summarizing accepted articles (MB, CD, JW, and KW). If the title or abstract did not provide enough information to meet our criteria, the article was referred to the next stage of the process. The first stage resulted in 550 references. In the second stage, each abstract was examined by two researchers, using the same inclusion criteria. When both researchers concluded that an abstract did not match the criteria, it was excluded. When only one of the researcher reached this conclusion, a third researcher was asked to make the final decision. Stage two resulted in 90 articles, which were summarized using a standard format: (1) research question/subject, (2) target group (n), (3) methodology, (4) intervention, (5) results, (6) conclusion, and (7) general remarks. The search included only one review that focused on interventions to improve team effectiveness, namely interprofessional education. This review was analyzed to identify additional studies; but none was found (Reeves et al., 2008). After reading the full length articles, 42 articles did not match the inclusion criteria after all. In the end, 48 studies remained (Table 2).

Organization of results

Based on our findings a categorical description of interventions to improve team effectiveness was constructed. Articles were clustered accordingly. Three categories were identified: (1) training, (2) tools, and (3) organizational interventions. *Training* involves a systematic process through which a team is trained (often by facilitators) to master and improve different aspects of team functioning (Harrison, 1990). We identified four types: (1) simulations, (2) training based on Crew Resource Management (CRM), (3) interprofessional training, and (4) team training. *Simulations* attempt to recreate characteristics of the real world. A simulated scenario can have a specific focus on (a segment of) a complex task or be designed to fully simulate a medical or nursing intervention. *CRM* is a management concept used in the aviation industry to improve teamwork. It has been adapted to high risk, complex medical departments such as emergency departments and operating theatres. CRM encompasses a wide range of knowledge, skills, and attitudes including communication, situational aware-

Table 2 Overall information of results

Interventions	n
Training	32
Simulation training	7
Training based on CRM	8
Interprofessional training	6
Team training	11
Tools	8
Organizational interventions	8
Total	48

ness, problem solving, decision-making, and teamwork (Helmreich, 2000). *Interprofessional training* incorporates different learning methods that aim to improve cooperation between different disciplines (Furber et al., 2004). *Team training* includes different forms of training that focus on specific aspects of team functioning such as goal setting and team building. *Tools* are specific instruments that teams can use independently to improve team effectiveness (e.g. checklists, goal sheets) through better communication. *Organizational interventions* are actions or changes that focus on the organizational context but are expected to have an effect on team functioning, like integrated care or quality interventions, for example. Each intervention will be described using the same structure: target group, outcomes, and level of empirical evidence.

- The *target group* consists of two categories: sector (acute care versus long-term care) and team composition (mono-, multi-, or inter-disciplinary[1]).
- *Outcomes* represent the effect of the intervention. These can be objective outcomes focused on patients (e.g. functional status), teams (e.g. clinical quality of care), and organizations (e.g. cost-effectiveness) or subjective outcomes, namely perceived effectiveness by team members (Lemieux-Charles & McGuire, 2006).
- The *level of empirical evidence* is based on the Grading of Recommendations Assessment, Development, and Evaluation scale (GRADE).

The GRADE system is used because it gives a general rating of not only the level of evidence, but also the quality of the article. The GRADE rating scale has four levels of quality of evidence: (A) high, (B) moderate, (C) low, and (D) very low (GRADE, 2007). A-Quality evidence implies that further research is highly unlikely to change the confidence in the estimated effect of the intervention. The category comprises multicentre random control trials (RCT), one large high-quality multi-centre trial, and high-quality pre- and post-surveys. B-Quality evidence

1. Multi-disciplinary teams are less well developed as inter-disciplinary teams. Members of multi-disciplinary teams focus on their own discipline and work in a parallel to each other. Inter-disciplinary teams have a high integration of disciplines (Heinemann & Zeiss, 2002).

implies that further research is likely to have an important impact on the confidence in the estimated effect and may change it. This category consists of one-centre RCT, RCT with severe limitations, and pre- and post-surveys. C-Quality evidence implies that further research is very likely to have an important impact on the confidence of the estimated effect and is likely to change it. This category consists of high-quality qualitative studies, quasi-experimental designs, and pre- and post-surveys with limitations. D-Quality evidence implies that any estimated effect is very uncertain. This category consists of low-quality qualitative studies and pre- and post-surveys with severe limitations. Levels of evidence of our studies were judged by two researchers. When the two differed in opinion, a third researcher was asked to make the final judgment. Due to the lack of homogeneity across studies, statistical data could not be pooled; the interventions and outcome indicators differed too much.

RESULTS

The results of the 48 articles are summarized in Tables 2 and 3. Most were published after 2000, only six between 1990 and 2000. The majority (32) evaluated a type of training to improve team effectiveness, mostly in multi-disciplinary teams in acute (hospital) care. The outcome indicators were highly diverse and often related to the so-called non-technical skills of teams such as communication, cooperation, coordination, and leadership (Flin & Maran, 2004). The majority of the studies had a low quality of evidence (C). Most studies comprised a pre- and post-survey, experimental design, or used qualitative methods. Little statistical evidence directly related to the effectiveness of the interventions was found.

Training

Of the 32 articles that presented a type of training (simulation-based training, CRM training, interprofessional training, or team training), multi-disciplinary teams in acute (hospital) care were the most common target group, although inter-disciplinary teams in acute care and long-term (elderly) care were also significantly present. Outcomes were diverse, except for studies on CRM training, which mostly focused on safety by improving attitude and team climate (i.e. shared perceptions of the team's work procedures and practices). Nine articles had a high or moderate quality of evidence, three of which presented training based on CRM.

Simulation training

We identified seven studies on simulations using audio-video, computers, manikins, human bodies, or actors. The scenarios were often combined with educational interventions and/or observation (schemes), which are used for debriefing. Teams in acute (hospital) care were

Table 3 Summary of results

Author(s) (year)	Intervention	Target Group (n)	Outcomes	Quality of Evidence
TRAINING				
		Simulation training		
Birch et al. (2007)	Lecture based teaching (LBT), simulation based teaching (SBT), or a combination (LAS)	Multidisciplinary teams in the cure sector (hospitals: obstetric and midwifery) (n= 36 participants/ 6 teams & 18 interviews)	Quantitative results are not significant. Qualitative show improvement in knowledge and confidence for all team members, improvement in transferable skills and less anxiety for SBT group, improvement in communication and teamwork for SBT and LAS group.	C Mixed methods; Pre and post survey & semi structured interviews
Blum et al. (2005)	Simulation based team training to improve communication skills	Mono-disciplinary (anaesthesia) teams in the cure sector (n=22 pilot teams & 10 experimental teams)	No differences in group information sharing (all p values >.20)	C Experimental study; surveys
Crofts et al. (2008)	Emergency training using mannequins or patient- actors	Multidisciplinary teams in the cure sector (n=139 participants/ 23 team pre and 132 participants/ 24 teams post)	Improving patient-actor perception of care (all scores p=.017 to >.001) PPH (safety p= .048, communication p= .035, respect=.077) Eclampsia (safety p=.214, communication p=.071, respect p=.140) Shoulder dystocia (safety p=.532, communication p=.502, respect p=.719)	B RCT
DeVita et al. (2004)	Crisis TEAM Training (computerized human simulator)	Multidisciplinary emergency teams in the cure sector (n> 200 participants)	Improving efficiency and effectiveness of tasks in crisis situations (treatment p=.002, task completion p<.001)	C Observational study
DeVita et al. (2005)	Computerized human patient simulator	Multidisciplinary emergency teams in the cure sector (n=138 participants)	Improving simulated survival and team task completion (overall survival p=.002, overall TCR p<.001) *TCR= percentage of required tasks completed*	C Observational study
Hunt et al. (2007)	Educational intervention during simulated trauma resuscitations (mannequin)	Multidisciplinary trauma teams in the cure sector (n=18 departments)	Improving performance of teams (mean number of tasks, primary survey tasks, secondary survey tasks and procedural tasks all p<.001)	C Pre and post survey
Mackenzie et al. (2007)	Audio- video data review	Multidisciplinary emergency and trauma teams in the cure sector (n= 4 cases in comparison to 49 video records)	Identifies more performance details (p<.05)	D Observational study
		Training based on CRM		
Awad et al. (2005)	Medical team training (MTT) Training session based on CRM	Multidisciplinary OR teams in the cure sector (n= one surgical service)	Improving communication of anaesthesiologist (p<.0008) and surgeons (p<.0004). But not for nurses (p=.70)	C Pre and post survey

Table 3 (continued)

Author(s) (year)	Intervention	Target Group (n)	Outcomes	Quality of Evidence
Grogan et al. (2004)	Aviation- based teamwork training	Multidisciplinary teams in the cure sector (n= 489 participants training/ 463 participants ECC/ 338 pre and post surveys)	Improving attitudes (20 of the 23 items $p<.01$)	B Pre and post survey
Leonard et al. (2004)	Human factors training	Multidisciplinary teams in the cure sector	Better culture, improving attitude toward teamwork and safety climate	D Case study
Makary et al. (2007)	OR briefing program	Multidisciplinary OR teams in cure sector (n=306 participants pre & 116 participants post)	Reducing perceived risk for wrong-site surgery and improving perceived collaboration among OR personnel ($p<.001$)	C Pre and post survey
Morey et al. (2002)	Formal teamwork training (based on CRM)	Multidisciplinary emergency teams in the cure sector (n= 684 participants/ 6 departments as experimental group & 374 participants/ 3 departments as control group)	Improving team behavior ($p=.012$), reducing medical errors ($p=.039$), no differences in subjective workload ($p=.668$), improving staff attitudes toward teamwork ($p=.047$) and staff assessment of institutional support ($p=.040$)	B Quasi-experimental design; pre and post survey (control group)
Nielsen et al. (2007)	Teamwork training curriculum (based on CRM)	Multidisciplinary teams in the cure sector (n= 1.307 participants/ 7 intervention hospitals & 8 control hospitals)	No differences on adverse outcomes ($p>.05$, only one process measure 'time from decision to performance' $p=.03$)	A RCT
Shapiro et al. (2004)	Simulation based teamwork training	Multidisciplinary emergency teams in the cure sector (n= 20 participants/ 2 experimental & 2 control teams)	No differences in team performance (quality of team behavior, experimental group $p=.07$, comparison group $p=.55$)	C High quality observational study
Wallin et al. (2007)	Target-focused medical emergency team training using human patient simulators	Multidisciplinary emergency teams in the cure sector (n= 15 participants)	Improving team skills but no differences in attitude toward safe teamwork ('junior team member should not have control over patient management' $p=.025$, all other items non significant $p>.05$)	C Observational study
		Interprofessional training		
Clark (2002)	Interdisciplinary team training	Interdisciplinary teams in elderly care (n=30 participants)	Program met educational needs of participants and taught lessons for future similar programs (p value not presented)	C Post survey
Clark et al. (2002)	Interdisciplinary clinical team training	Interdisciplinary teams in elderly care (n=66 participants/ 8 teams pre & 15 participants/ 3 teams post)	No significant improvements	C Pre and post survey
Cooley (1994)	Training on interdisciplinary teams on communication and decision- making skills	Interdisciplinary teams in cure sector (n=25 participants)	Effects of training are minimal	C Mixed methods; high quality observations & post survey

Table 3 (continued)

Author(s) (year)	Intervention	Target Group (n)	Outcomes	Quality of Evidence
Coogle et al. (2005)	Geriatric interdisciplinary team training (ITT) program	Interdisciplinary team in elderly care (n=61 participants)	Positive changes in team skills (p<.05) and attitudes (p<.05) (but, critical amount of training necessary)	C Pre and post survey
Lichtenberg et al. (1990)	Interdisciplinary team training in geriatrics (ITTG)	Interdisciplinary teams in elderly care (n=22 participants as experiment group, n=10 participants as control group)	Learning and retaining information (p<.0005) Improving the morale of participants	C Mixed methods; post survey (control group) & interviews
Watts et al. (2007)	Interprofessional learning program	Multidisciplinary teams in the cure sector (n=71 participants/ 9 teams at t1, 64 participants at t2, and 42 participants at t3)	Improving team climate (p<.001) and awareness of professional roles	C Pre and post survey
		Team training		
Berman et al. (2000)	Assessment training	Multidisciplinary teams in the care sector (n= 19 participants)	Increasing team members' participation (p=.003), improving staff members' perception of the efficacy of treatment planning and implementation (p<.001) No differences in team development (p=.254)	C Pre and post survey
Crofts (2006)	Leadership program	Multidisciplinary teams in the cure sector (n= 6 hospitals)	Impact program variable	C Post survey & feedback
DiMeglio et al. (2005)	Team building intervention	Mono-disciplinary nurse teams in the cure sector (n=165 participants pre & 118 participants post)	Improving group cohesion (p<.001), nurse interaction (p<.001), job enjoyment (p<.05) and turnover	C Quasi experimental design; pre and post survey
Frankel et al. (2006)	Fair en just culture principles, teamwork training and communication, and leadership walkrounds	Multi- and mono-disciplinary teams in the cure sector	No reliable results available	D Case study
Gibson (2001)	Goal setting training program	Mono-disciplinary nursing teams in the cure sector (n=120 participants/ 51 teams as intervention group & 67 participants/ 20 teams as control group)	Increasing self efficacy (p<.05), individual effectiveness (p<.001), group efficacy (p<.05) but not team effectiveness	B Quasi experimental design; pre and post survey (control group)
Le Blanc et al. (2007)	Team-based burnout intervention program	Interdisciplinary teams in the cure sector (n=260 participants/ 9 wards as experimental group t1, 231 participants t2, 208 participants t3, and 404 participants/ 20 wards as control group at t1, 145 participants t2, 96 participants t3)	Decreasing emotional exhaustion and depersonalization (p value unknown)	B Quasi experimental study; pre and post survey (control group)

Table 3 (continued)

Author(s) (year)	Intervention	Target Group (n)	Outcomes	Quality of Evidence
Manzo & Rodriquez (1998)	Team building activity	Teams in health care (n=20 participants)	Helps to reinforce the concepts of an effective team at work.	D Observational study
Stoller et al. (2004)	Teambuilding and leadership training	Multidisciplinary teams in the cure sector (n=30 participants)	Improving development teamwork and leadership skills (p<.001)	D Pre and post survey
Strasser et al. (2008)	Staff training program	Interdisciplinary teams in the cure sector (n=227 participants/ 15 teams as intervention group & 237 participants/ 16 teams as control group & 487 patients)	Patient outcomes: improving functional outcome (p=.032) and no differences in length of stay (LOS) or community discharge.	A RCT
Thompson et al. (2008)	Training based on the principles of CAT (cognitive analytic therapy)	Multidisciplinary mental health staff (n=12 participants)	Improving team cohesion and clinical confidence of individual workers	C Interviews
Wilshaw & Bohannon (2003)	Training with time out or debriefing approach	Multidisciplinary mental health care teams (n=35 participants)	Improving competences (p<.001)	D Pre and post survey
TOOLS				
Benett & Danczak (1994)	Significant Event Analysis (SEA)	Multidisciplinary teams in primary care	Changes in practice were made	D Case study
Crofts (2006)	Critical case review	Teams in the cure sector (n= 45 cases)	Improvement in resolving difficulties and managing and communicating patient case issues	D Case reviews
Evans et al. (1999)	Goal Attainment Scaling (GAS)	Interdisciplinary teams in elderly care (n=102 participants)	Improving team processes and increasing accountability for patient care (p value unknown)	D Descriptive study
Lingard et al. (2005)	Preoperative team checklist	Multidisciplinary OR teams in cure sector (n=33 participants & 11 interviews)	Improving information exchange and team cohesion	C Observational study & interviews
Lingard et al. (2008)	Preoperative checklist and team briefing	Multidisciplinary OR teams in cure sector (n=77 participants & 86 pre and 86 post observations)	Reducing number of communication failures (p<.001) and promoting proactive and collaborative team communication	C Mixed methods; pre and post survey & observations
Phipps & Thomas (2007)	Daily goal sheets	Multidisciplinary critical care teams in the cure sector (n=26 participants pre & 22 participants post)	Improving perception of communication from a nursing perspective (p=.05) and improving care (for surgical service) (p=.04)	C Pre and post survey
Simpson et al. (2007)	ICU quality improvement checklist	Multidisciplinary ICU teams in cure sector	Improvement in attention of core issues, team's collegiality and team bonding	D Descriptive study

Table 3 (continued)

Author(s) (year)	Intervention	Target Group (n)	Outcomes	Quality of Evidence
Verhoef et al. (2008)	Rehabilitation Activities Profile	Multidisciplinary teams in cure sector (n=31 participants pre & 29 participants post)	Improving team members' satisfaction (only in day patient setting)	C Pre and post survey
ORGANIZATIONAL INTERVENTION				
Cendan & Good (2006)	Interdisciplinary work flow assessment and redesign	Interdisciplinary OR teams in the cure sector (n= 4 participants, 401 operations and 253 turnover time evaluated)	Decreasing OR turnover time (p<.001)	C High quality observational study
Engels et al. (2006)	Continuous quality improvement	Practices in primary care (n=24 practices as intervention group & 21 practices as control group)	Increasing number and improving quality of improving projects undertaken and self-defined objectives met (p unknown)	A RCT
Friedman & Berger (2004)	Reconstructing patient care teams	Multidisciplinary OR teams in the cure sector	Decreasing length of stay (p<.001), maintaining level of patient satisfaction	C Survey data from the past
Henderson et al. (2006)	EBP (Evidence Based Practice) team-based intervention	Multidisciplinary teams in the cure sector (n=39 participants pre & 38 participants post)	No differences in attitudes toward research and the potential to use research findings	D Pre and post survey
Huby & Rees (2005)	Integrated care pathways	Multidisciplinary teams in health care	It was not optimal effective in improving integration	C Case study
Ledlow et al. (1999)	Animated computer simulation for decision support	Individuals and teams in health care	Developing teamwork and increasing ownership of necessary changes and improvements	C Case study
Macfarlane et al. (2004)	Quality team development program	Multidisciplinary teams in primary care (n=34 participants)	Improving teamwork and patient services	C Interviews
Moroney & Knowles (2006)	Multidisciplinary ward rounds with standard documentation labels	Multidisciplinary teams in cure sector (n=64 participants)	Improving accuracy of predicted discharge dates, decreasing time to carry out clinical interventions Increasing patient involvement, higher development of nurses, higher job satisfaction and improvement in multidisciplinary team relationships Happier working environment, improving staff retention and reducing absence	C Mixed methods; survey; observations; reflections; data collection

the *target group* for all studies. Most simulations were aimed at team functioning in crisis situations. Both subjective and objective *outcomes* were used focusing on information sharing, perception, or team performance in terms of task completion (e.g. number, efficiency, effectiveness). Most studies found a positive association between simulation training and non-technical team skills.

Six of the seven studies had a low or very low quality of *evidence*. One found no association (based on the quantitative data) between the intervention (lecture-based teaching

(LBT), simulation-based teaching (SBT), or a combination of lecture and simulation training (LAS), and team effectiveness. The qualitative data showed a slight indication of a positive effect between the intervention and team effectiveness (Birch et al., 2007). One study with a moderate quality of evidence found a positive association between participation in emergency training and patient-actor perception using manikins or patient-actors. Training that make use of patient-actors seemed to yield the best results (Crofts et al., 2008).

Training based on CRM

Eight studies on training were based on one or more principles of CRM. For all studies the *target group* was teams in the acute (hospital) care and often (multi-disciplinary) emergency/trauma teams. In half of the studies improving attitudes toward teamwork and safety was an (subjective) *outcome* (Grogan et al., 2004; Leonard et al., 2004; Morey et al., 2002; Wallin et al., 2007). All but one found a positive association between CRM training and attitudes. Other (subjective) outcomes consisted of improving communication, collaboration, team behavior, workload, culture, and climate. But also objective outcomes were used: reducing adverse outcomes and medical errors. One article also presented an interesting tool: a briefing checklist for the operating theatre (Makary et al., 2007).

The quality of *evidence* in this subgroup varied from high (A) to very low (D). Five of the eight studies presented a low or very low quality of evidence. Most found improvements in several aspects of team effectiveness such as culture, attitude, communication (with exception of nurses), team skills, perceived risk for wrong-site surgery, and perceived collaboration. Only one study found no difference in team performance (Shapiro et al., 2004). This study had a low quality of evidence. One study had a high quality of evidence (Nielsen et al., 2007) and two had a moderate quality of evidence (Grogan et al., 2004; Morey et al., 2002). These found that training based on CRM principles will likely result in improved team behavior, improved attitudes toward teamwork, improved assessments of institutional support, and reduced medical errors (Morey et al., 2002; Nielsen et al., 2007). No evidence, however, confirmed that CRM-based training reduces adverse outcomes (except for time from decision to performance) or subjective workload (Morey et al., 2002; Nielsen et al., 2007).

Interprofessional training

For five of the six studies on interprofessional training, the *target group* was inter-disciplinary teams in long-term (elderly) care. One study (Watts et al., 2007) had multi-disciplinary teams in acute (hospital) care as the target group. The interventions mostly involved many training sessions. Only subjective *outcomes* were measured focusing on learning and retaining information, attitudes, awareness, and team climate.

All studies had a low or very low quality of *evidence*. Two studies found no positive associations and one did not present clear outcomes concerning team effectiveness (Clark, 2002; Clark et al., 2002; Cooley, 1994). The other three studies found that interprofessional training resulted in improvements in team skills, team climate, awareness of professional roles, attitude, learning and retaining information, and morale.

Team training

Eleven studies used different forms of training but focused on specific aspects of team functioning, namely, team building, leadership, team assessments, staff, goal setting, or burnout. The *target group* and the *outcomes* (mostly subjective) of this subgroup were diverse due to the different subjects, but in most studies positive results were found.

Although in practice team training is often used for team building, only three articles with a (very) low quality of evidence focused on team building (DiMeglio et al., 2005; Manzo & Rodriguez, 1998; Stoller et al., 2004. These studies found improvements in group cohesion, nurse interaction, turnover, competences, and teamwork skills. Two studies did not present clear outcomes (Crofts, 2006; Frankel et al., 2006). Frankel, Leonard, and Denham (2006) described a combination of interventions – training and tools – within a program. They presented a communication and a leadership tool, namely, the situational briefing model SBAR (Situation, Background, Assessment, and Recommendation) and Leadership WalkRounds. SBAR is supposed to help providers organize their thoughts and communication to increase mutual understanding (Frankel et al., 2006). In a Leadership WalkRound, senior leaders of a health care organization ask front-line staff about specific events, contributing factors, near misses, and potential problems, then prioritize events and discuss possible solutions (Frankel et al., 2006). The studies did not present precise information on the evaluation of these tools, which makes it difficult to judge their value.

A study with a moderate quality of *evidence* on a team-based burnout intervention program found that the program is likely to decrease emotional exhaustion and depersonalization (Le Blanc et al., 2007). Another B-grade study demonstrated that goal setting training programs are likely to increase self-efficacy and individual effectiveness. However, there was no evidence that the training increased team effectiveness (Gibson, 2001). A study with a high quality of evidence demonstrated that staff training programs are likely to improve patients' functional outcome (Strasser et al., 2008).

Tools

Eight articles studied the use of specific tools to improve team effectiveness. These tools are often presented as easy and less extensive to implement compared to other team interventions. Tools can roughly be divided into checklists, goal sheets, and case analysis. Teams were

given a training or instruction to use these tools in their daily practice, with the intention of improving communication by making processes, goals, and case discussions more explicit. Three types of checklists were identified: preoperative, rehabilitation activities profile, and quality improvement. These checklists had to be completed by the teams at a given moment. Two ways of analyzing cases to gather themes for improvement are significant event analysis and critical case reviews (Benett & Danczak, 1994; Crofts, 2006b). The *target group* of most studies was multi-disciplinary teams in acute (hospital) care. Various *outcomes* (mostly subjective) were presented: communication failure, team communication, information exchange, team cohesion, satisfaction, team process, accountability, core issues, and patient case issues. All studies had a low or very low quality of *evidence* and showed positive results, especially on communication and team unity.

Organizational intervention

Earlier interventions were aimed at team processes, psycho-social traits and/or task design, which directly influence team outcomes (see Introduction; ITEM model Lemieux-Charles & McGuire, 2006). Organizational interventions are mostly aimed at the organizational context which indirectly effects team outcomes. This category contained eight articles. It involves interventions that focus on decision-making, continuous quality improvement, and redesign of care processes. The *target group* in the studies was often less specific, but mostly multi-disciplinary teams in acute (hospital) care. Some *outcomes* focused on specific aspects of team effectiveness as perceived by team members (such as teamwork, attitude, satisfaction, work ownership) and others presented a more general focus but with objective outcomes (such as quality and quantity of improvement projects, integration, discharge dates, turnover time).

Seven of the eight studies had a low or very low quality of *evidence*. Some of these interventions aimed to improve team effectiveness indirectly, such as with inter-disciplinary work flow assessment and redesign, or reconstructing patient care teams (Cendan & Good, 2006; Freidman & Berger, 2004). These interventions seemed to help teams to provide insight in the strong and weak aspects of patient processes and were likely to result in shorter length of stay (Freidman & Berger, 2004) and operation room turnover time (Cendan & Good, 2006). Other interventions were directly related to improving team effectiveness (Ledlow et al., 1999; Macfarlene et al., 2004; Moroney & Knowles, 2006). These interventions seemed to improve teamwork, patient services, ownership, satisfaction, patient involvement, relationships, and work environment. Only one study on continuous quality improvement intervention presented a high quality of evidence (Engels et al., 2006). This intervention is likely to result in a higher number of quality improvement projects, a higher quality of these projects, and improve achievement of self-defined objectives.

CONCLUSION AND DISCUSSION

We began with the question: *Which types of interventions to improve team effectiveness in health care have been researched empirically, for which target groups and for which outcomes?* We identified 48 relevant articles whose studies focused on training, tools, and organizational interventions as primary intervention types. No study, however, evaluated precisely the same intervention. Most looked at training programs, which can be either simulations, training based on CRM, interprofessional training, or (general) team training. The majority of the interventions aimed at improving the effectiveness of multi-disciplinary teams in acute (hospital) care. Because different outcomes were used, the findings are difficult to compare or to synthesize across studies. Most studies focused on non-technical team skills as outcome, for example, communication, cooperation, coordination and/or leadership, and most used subjective outcome indicators (i.e. perceived effectiveness by team members). The majority of the studies found a positive association between the intervention and non-technical team skills.

Our second research question was: *To what extent are these findings evidence-based?* Most articles (37) presented a low or very low level of evidence (e.g. small sample pre- or post-studies, observational studies, case-studies). Only eight articles presented evidence based on a study with a high or moderate quality of evidence (e.g. RCT, high quality pre- or post-survey). These were mostly training programs: simulation training, CRM-training, and team-based intervention training. Articles with high or moderate quality of evidence found positive associations with team behavior, attitudes (toward teamwork), self-efficacy, individual effectiveness, emotional exhaustion, depersonalization, and perception of care. However, these training programs did not seem to succeed in reducing adverse outcomes, improving subjective workload, reducing length of stay, or reducing community discharge.

A downside of these high quality studies is that they often provide little information about the context in which the intervention was tested, making it difficult to determine if the intervention will also be effective in other settings. As interventions to improve team effectiveness are introduced in complex settings with many variables, research and practice would benefit from mixed-method approaches (Campbell et al., 2000; 2007; Creswell, 2003). Using both qualitative and quantitative research methods will help to (1) explain the findings, (2) contextualize the results, and (3) build new theories (Brown et al., 2008). The authors also suggest assessing the effect of the intervention on different end points by linking the intervention to structure, process, and outcome indicators. New research designs are also emerging, such as Stepped Wedge Trial Design and Evidence-based Co-design, which seem better suited to evaluate interventions to improve team effectiveness than a classic RCT due to the complex and dynamic setting in which such interventions are introduced (Brown et al., 2008b).

There are several gaps in the literature on interventions to improve team effectiveness. Little research has been conducted in long-term care and most studies focus on acute hospital care. Few studies exist on interventions to improve team effectiveness in mono-disciplinary teams in health care. We identified only four such studies in acute care and none in long-term care. More cohesion in outcome measures is needed, as well as replication of same-intervention studies to enable synthesis of findings across different studies. Finally, more high quality evidence needs to be provided using objective outcomes, especially related to tools and organizational interventions to improve team effectiveness.

Limitations

Some limitations of this systematic review have to be taken into account when interpreting the results and recommendations. Our study was restricted to peer-reviewed articles. By not including books or 'grey' literature, we may have missed relevant publications. Our search was also restricted to a number of key words. They were, however, based on a preliminary search and corroborated during the main search by looking at key words in identified articles. Thus, it is possible, but unlikely that we have excluded relevant key words leading to important publications. However, Salas and colleagues have found similar results concerning team training (Salas et al., 2008; 2008b). A meta-analysis of research in other sectors than health care found team training to be useful for "improving cognitive outcomes, affective outcomes, teamwork processes, and performance outcomes… team training accounted for approximately 12–19% of the variance in the examined outcomes" (Salas et al., 2008b, p. 926). Team training also seems to be effective 'across a wide variety of settings, tasks and team types' (Salas et al., 2008b).

Implications

For reasons mentioned above, policy-makers should be aware that there is still little high quality evidence available about the effectiveness of the aforementioned interventions, but most evidence points in the same direction. For teams in acute care, there is growing evidence that communication skills and coordination in high risk, complex medical departments can be improved by simulation training and training based on Crew Resource Management. As these are departments where errors due to miscommunication and poor teamwork can have serious consequences which can lead to a high number of adverse events (Kohn et al., 1999), we advise policy-makers to stimulate the implementation of these training methods. Although the evidence for long-term care also seems to indicate that team training, has positive effects for multi-disciplinary teams in particular, the evidence is still too weak. More research needs to be conducted before any sound advise about the use of such interventions in long-term care can be given. Furthermore, policy-makers should make sure that, when

implementing interventions, they also consult case-studies, before they provide valuable insights in how to implement these interventions.

Finally, before an intervention is used, the specific circumstances of a team should be diagnosed. The right fit between the intervention and the problems, context, and characteristics of a team is more important to improve team effectiveness than the underlying level of evidence.

REFERENCES

Awad, S. S., Fagan, S. P., Bellows, C., Albo, D., Green-Rashad, B., De La Garza, M., et al. (2005). Bridging the communication gap in the operating room with medical team training. *The American Journal of Surgery, 190*(5), 770-774.

Benett, I. J., & Danczak, A. F. (1994). Terminal care: Improving teamwork in primary care using significant event analysis. *European Journal of Cancer Care, 3*(2), 54-57.

Berman, S., Miller, A. C., Rosen, C., & Bicchieri, S. (2000). Assessment training and team functioning for treating children with disabilities. *Archives of Physical Medicine and Rehabilitation, 81*(5), 628-633.

Birch, L., Jones, N., Doyle, P. M., Green, P., McLaughlin, A., Champney, C., et al. (2007). Obstetric skills drills: Evaluation of teaching methods. *Nurse Education Today, 27*(8), 915-922.

Blum, R. H., Raemer, D. B., Carroll, J. S., Dufresne, R. L., & Cooper, J. B. (2005). A method for measuring the effectiveness of simulation-based team training for improving communication skills. *Anesthesia & Analgesia, 100*(5), 1375-1380.

Brown, C., Hofer, T., Johal, A., Thomson, R., Nicholl, J., Franklin, B. D., et al. (2008). An epistemology of patient safety research: A framework for study design and interpretation. Part 2. study design. *Quality and Safety in Health Care, 17*(3), 163-169.

Brown, C., Hofer, T., Johal, A., Thomson, R., Nicholl, J., Franklin, B. D., et al. (2008b). An epistemology of patient safety research: A framework for study design and interpretation. Part 4. one size does not fit all. *Quality and Safety in Health Care, 17*(3), 178-181.

Bunderson, J. T. (2003). Team member educational background and involvement in management teams: Direct effects and the moderating role of power centralization. *Academy of Management Journal, 46*(4), 458-474.

Campbell, M., Fitzpatrick, R., Haines, A., Kinmonth, A. L., Sandercock, P., Spiegelhalter, D., et al. (2000). Framework for design and evaluation of complex interventions to improve health. *British Medical Journal, 321*(7262), 694-696.

Campbell, N. C., Murray, E., Darbyshire, J., Emery, J., Farmer, A., Griffiths, F., et al. (2007). Designing and evaluating complex interventions to improve health care. *British Medical Journal, 334*(7591), 455-459.

Campion, M. A., Medsker, G. J., & Higgs, A. C. (1993). Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology, 46*(4), 823-847.

Cendan, J. C., & Good, M. (2006). Interdisciplinary work flow assessment and redesign decreases operating room turnover time and allows for additional caseload. *Archives of Surgery, 141*(1), 65-70.

Clark, P. G. (2002). Evaluating an interdisciplinary team training institute in geriatrics: Implications for teaching teamwork theory and practice. *Educational Gerontology, 28*(6), 511-528.

Clark, P. G., Leinhaas, M. M., & Filinson, R. (2002). Developing and evaluating an interdisciplinary clinical team training program: Lessons taught and lessons learned. *Educational Gerontology, 28*(6), 491-510.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management, 23*(3), 239-290.

Coogle, C. L., Parham, I. A., Cotter, J. J., Welleford, E. A., & Netting, F. E. (2005). A professional development program in geriatric interdisciplinary teamwork: Implications for managed care and quality of care. *Journal of Applied Gerontology, 24*(2), 142-159.

Cooley, E. (1994). Training an interdisciplinary team in communication and decision-making skills. *Small Group Research, 25*(1), 5-25.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks CA: Sage Publications, Inc.

Crofts, J. F., Bartlett, C., Ellis, D., Winter, C., Donald, F., Hunt, L. P., et al. (2008). Patient-actor perception of care: A comparison of obstetric emergency training using manikins and patient-actors. *Quality and Safety in Health Care, 17*(1), 20-24.

Crofts, L. (2006). A leadership programme for critical care. *Intensive and Critical Care Nursing, 22*(4), 220-227.

Crofts, L. (2006b). Learning from critical case reviews: Emergent themes and their impact on practice. *Intensive and Critical Care Nursing, 22*(6), 362-369.

DeVita, M. A., Schaefer, J., Lutz, J., Dongilli, T., & Wang, H. (2004). Improving medical crisis team performance. *Critical Care Medicine, 32*(2), S61-S65.

DeVita, M. A., Schaefer, J., Lutz, J., Wang, H., & Dongilli, T. (2005). Improving medical emergency team (MET) performance using a novel curriculum and a computerized human patient simulator. *Quality and Safety in Health Care, 14*(5), 326-331.

DiMeglio, K., Padula, C., Piatek, C., Korber, S., Barrett, A., Ducharme, M., et al. (2005). Group cohesion and nurse satisfaction: Examination of a team-building approach. *Journal of Nursing Administration, 35*(3), 110-120.

Engels, Y., Van Den Hombergh, P., Mokkink, H., Van Den Hoogen, H., Van Den Bosch, W., & Grol, R. (2006). The effects of a team-based continuous quality improvement intervention on the management of primary care: A randomised controlled trial. *The British Journal of General Practice, 56*(531), 781-787.

Evans, D. J., Oakey, S., Almdahl, S., & Davoren, B. (1999). Goal attainment scaling in a geriatric day hospital. team and program benefits. *Canadian Family Physician, 45*, 954-960.

Flin, R., & Maran, N. (2004). Identifying and training non-technical skills for teams in acute medicine. *Quality and Safety in Health Care, 13*(1), i80-i84.

Frankel, A. S., Leonard, M. W., & Denham, C. R. (2006). Fair and just culture, team behavior, and leadership engagement: The tools to achieve high reliability. *Health Services Research, 41*(4p2), 1690-1709.

Friedman, D. M., & Berger, D. L. (2004). Improving team structure and communication: A key to hospital efficiency. *Archives of Surgery, 139*(11), 1194-1198.

Furber, C., Hickie, J., Lee, K., McLoughlin, A., Boggis, C., Sutton, A., et al. (2004). Interprofessional education in a midwifery curriculum: The learning through the exploration of the professional task project (LEAPT). *Midwifery, 20*(4), 358-366.

Gibson, C. B. (2001). Me and us: Differential relationships among goal-setting training, efficacy and effectiveness at the individual and team level. *Journal of Organizational Behavior, 22*(7), 789-808.

GRADE Working Group. *Levels of evidence: Grading of recommendations assessment, development and evaluation*., 2007, from http://www.essentialevidenceplus.com/concept/ebmloe.cfm?show=grade

Grogan, E. L., Stiles, R. A., France, D. J., Speroff, T., & Morris, J. A. (2004). The impact of aviation-based teamwork training on the attitudes of health-care professionals. *Journal of the American College of Surgeons, 199*(6), 843-848.

Harrison, R. (1990). *Training and development*. London: Institute of Personnel Management.

Heinemann, G. D., & Zeiss, A. M. (2002). *Team performance in health care: Assessment and development*. New York: Kluwer Academic/ Plenum Publishers.

Helmreich, R. L. (2000). Culture and error in space: Implications from analog environments. *Aviation Space and Environmental Medicine, 71*(9), 133-139.

Henderson, A., Winch, S., Holzhauser, K., & De Vries, S. (2006). The motivation of health professionals to explore research evidence in their practice: An intervention study. *Journal of Clinical Nursing, 15*(12), 1559-1564.

Huby, G., & Rees, G. (2005). The effectiveness of quality improvement tools: Joint working in integrated community teams. *International Journal for Quality in Health Care, 17*(1), 53-58.

Hunt, E. A., Heine, M., Hohenhaus, S. M., Luo, X., & Frush, K. S. (2007). Simulated pediatric trauma team management: Assessment of an educational intervention. *Pediatric Emergency Care, 23*(11), 796-804.

Kohn, L. T., Corrigan, J., & Donaldson, M. S. (1999). *To err is human: Building a safer health system*. Washington, DC: National Academy Press.

Le Blanc, P. M., Hox, J. J., Schaufeli, W. B., Taris, T. W., & Peeters, M. C. W. (2007). Take care! the evaluation of a team-based burnout intervention program for oncology care providers. *Journal of Applied Psychology, 92*(1), 213-227.

Ledlow, G. R., Bradshaw, D. M., & Perry, M.J. (1999). Animated simulation: A valuable decision support tool for practice improvement. *Journal of Healthcare Management / American College of Healthcare Executives, 44*(2), 91-101.

Lemieux-Charles, L., & McGuire, W. L. (2006). What do we know about health care team effectiveness? A review of the literature. *Medical Care Research and Review, 63*(3), 263-300.

Leonard, M., Graham, S., & Bonacum, D. (2004). The human factor: The critical importance of effective teamwork and communication in providing safe care. *Quality and Safety in Health Care, 13*(1), i85-i90.

Lichtenberg, P. A., Strzepek, D. M., & Zeiss, A. M. (1990). Bringing psychiatric aides into the treatment team: An application of the veterans administration's ITTG model. *Gerontology & Geriatrics Education, 10*(4), 63-73.

Lingard, L., Espin, S., Rubin, B., Whyte, S., Colmenares, M., Baker, G. R., et al. (2005). Getting teams to talk: Development and pilot implementation of a checklist to promote interprofessional communication in the OR. *Quality and Safety in Health Care, 14*(5), 340-346.

Lingard, L., Regehr, G., Orser, B., Reznick, R., Baker, G. R., Doran, D., et al. (2008). Evaluation of a preoperative checklist and team briefing among surgeons, nurses, and anesthesiologists to reduce failures in communication. *Archives of Surgery, 143*(1), 12-18.

Macfarlane, F., Greenhalgh, T., Schofield, T., & Desombre, T. (2004). RCGP quality team development programme: An illuminative evaluation. *Quality and Safety in Health Care, 13*(5), 356-362.

Mackenzie, C. F., Xiao, Y., Hu, F. M., Seagull, F. J., & Fitzgerald, M. (2007). Video as a tool for improving tracheal intubation tasks for emergency medical and trauma care. *Annals of Emergency Medicine, 50*(4), 436-442.

Makary, M. A., Mukherjee, A., Sexton, J. B., Syin, D., Goodrich, E., Hartmann, E., et al. (2007). Operating room briefings and wrong-site surgery. *Journal of the American College of Surgeons, 204*(2), 236-243.

Manzo, L., & Rodriguez, M. L. (1998). Creative teams: An experiential activity. *Journal of Continuing Education in Nursing, 29*(5), 234-235.

Mickan, S., & Rodger, S. (2000). Characteristics of effective teams: A literature review. *Australian Health Review, 23*(3), 201-208.

Morey, J. C., Simon, R., Jay, G. D., Wears, R. L., Salisbury, M., Dukes, K. A., et al. (2002). Error reduction and performance improvement in the emergency department through formal teamwork training: Evaluation results of the MedTeams project. *Health Services Research, 37*(6), 1553-1581.

Moroney, N., & Knowles, C. (2006). Innovation and teamwork: Introducing multidisciplinary team ward rounds. *Nursing Management, 13*(1), 28-31.

Nielsen, P. E., Goldman, M. B., Mann, S., Shapiro, D. E., Marcus, R. G., Pratt, S. D., et al. (2007). Effects of teamwork training on adverse outcomes and process of care in labor and delivery: A randomized controlled trial. *Obstetrics & Gynecology, 109*(1), 48-55.

Phipps, L. M., & Thomas, N. J. (2007). The use of a daily goals sheet to improve communication in the paediatric intensive care unit. *Intensive and Critical Care Nursing, 23*(5), 264-271.

Reeves, S., Zwarenstein, M., Goldman, J., Barr, H., Freeth, D., Hammick, M., et al. (2008). *Interprofessional education: Effects on professional practice and health care outcomes*. The Cochrane Collaboration.

Salas, E., DiazGranados, D., Weaver, S. J., & King, H. (2008). Does team training work? principles for health care. *Academic Emergency Medicine, 15*(11), 1002-1009.

Salas, E., DiazGranados, D., Klein, C., Burke, C. S., Stagl, K. C., Goodwin, G. F., et al. (2008b). Does team training improve team performance? A meta-analysis. *Human Factors: The Journal of the Human Factors and Ergonomics Society, 50*(6), 903-933.

Shapiro, M. J., Morey, J. C., Small, S. D., Langford, V., Kaylor, C. J., Jagminas, L., et al. (2004). Simulation based teamwork training for emergency department staff: Does it improve clinical team performance when added to an existing didactic teamwork curriculum? *Quality and Safety in Health Care, 13*(6), 417-421.

Simpson, S. Q., Peterson, D. A., & O'Brien-Ladner, A. R. (2007). Development and implementation of an ICU quality improvement checklist. *Advanced Critical Care, 18*(2), 183-189.

Stoller, J. K., Rose, M., Lee, R., Dolgan, C., & Hoogwerf, B. J. (2004). Teambuilding and leadership training in an internal medicine residency training program. *Journal of General Internal Medicine, 19*(6), 692-697.

Strasser, D. C., Falconer, J. A., Stevens, A. B., Uomoto, J. M., Herrin, J., Bowen, S. E., et al. (2008). Team training and stroke rehabilitation outcomes: A cluster randomized trial. *Archives of Physical Medicine and Rehabilitation, 89*(1), 10-15.

Thompson, A. R., Donnison, J., Warnock-Parkes, E., Turpin, G., Turner, J., & Kerr, I. B. (2008). Multidisciplinary community mental health team staff's experience of a 'skills level'training course in cognitive analytic therapy. *International Journal of Mental Health Nursing, 17*(2), 131-137.

Verhoef, J., Toussaint, P. J., Putter, H., Zwetsloot-Schonk, J. H. M., & Vliet Vlieland, T. P. M. (2008). The impact of introducing an ICF-based rehabilitation tool on staff satisfaction with multidisciplinary team care in rheumatology: An exploratory study. *Clinical Rehabilitation, 22*(1), 23-37.

Wallin, C. J., Meurling, L., Hedman, L., Hedegård, J., & Felländer-Tsai, L. (2007). Target-focused medical emergency team training using a human patient simulator: Effects on behaviour and attitude. *Medical Education, 41*(2), 173-180.

Watts, F., Lindqvist, S., Pearce, S., Drachler, M., & Richardson, B. (2007). Introducing a post-registration interprofessional learning programme for healthcare teams. *Medical Teacher, 29*(5), 443-449.

Wilshaw, G., & Bohannon, N. (2003). Reflective practice and team teaching in mental health care. *Nursing Standard, 17*(50), 33-37.

7

Conclusion and Discussion

AIM OF THESIS

The overall aim of this thesis was to provide insight regarding the factors that influence team performance in long-term care (LTC) and the basis for improvements in team performance. In the following section, we will answer our research questions and discuss five general issues that were extracted from our main findings. Subsequently, we will reflect on the methodology and conclude with a future research agenda.

Research questions

We addressed five research questions in this thesis:

How do 'real team' characteristics influence team processes and performance in LTC?

Our results show that a 'real team', as defined by Wageman, Hackman, and Lehman (2005) is not a unitary construct for teams in LTC. The three characteristics (i.e. team boundaries, stability, and interdependency) that are the primary components of the 'real team' construct do not have the same effects on team processes and performance in this context. Based on the theory of 'real teams', we expected each of the 'real team' characteristics to lead to healthier team processes and to have a positive effect on team learning and emotional support in LTC. Although this assumption proved to be correct for clear team boundaries and stability of membership, task interdependency has a negative effect on team learning and emotional support. In addition to indicating the negative effect of task interdependence, the results show that stability of membership is beneficial for team processes and for team effectiveness, whereas clear team boundaries are beneficial for team processes but only indirectly beneficial for team effectiveness. Therefore, in the context of LTC, it would be wise to avoid the definition of 'real teams' that is proposed by Wageman and colleagues (2005). Rather, we should analyze the three 'real team' characteristics separately and distinguish between stable teams, teams with clear boundaries, and teams with high levels of task interdependence.

The main conclusion is that more intensive teamwork in the LTC sector will not necessarily lead to better outcomes when it involves more task interdependency among team members. An explanation for this unexpected finding may lie in the nature of the care provision in LTC. The bulk of such care is provided by mono-disciplinary teams; other disciplines, such as physicians, occupational therapists, physiotherapists, and speech therapists, may be called upon when necessary but are not involved in the daily practices of LTC teams and are not viewed as members of these teams. Thus, a single caregiver could theoretically deliver all of the daily care for a specific patient and this scenario may even be viewed as the optimum form of care because such a caregiver would then be fully knowledgeable about the client and able to create a high-quality relationship with this person. For practical reasons (e.g. a

single caregiver is not available 24 hours a day, 7 days a week) and for reasons that relate to quality and control (e.g. teamwork offers opportunities for feedback and reflection on the work of various members), teamwork is necessary. However, when multiple caregivers provide care to one client, more handovers are necessary; this scenario increases the likelihood of (tacit) knowledge loss about clients, errors, and inaccuracies and leads to lower-quality relationships between caregivers and clients.

How does team coaching influence team processes and team performance in LTC?

Team coaching has been found to directly lead to more effective and innovative teams and to play an important role in determining a team's error orientation. Team managers who take on the role of a coach bring about a problem solving attitude and prevent team members from blaming one another for errors. They assist team members in learning from one another's errors rather than dictating the best way for performing a job. Team coaching also assists team members in improving their interpersonal relationships and facilitates an environment in which it is safe for members to take interpersonal risks in terms of making and discussing errors by establishing clear expectations with regard to openly sharing, discussing, and analyzing errors. Members of these teams are likely to engage in discussions with respect to safety and to view errors as part of a learning process. As a result, team coaches and team members are more likely to have similar perceptions of safety.

The intensity of coaching should be adjusted according to the needs of a team. Our research shows that unstable and poorly reflective teams require a higher level of team coaching to perform well than stable and highly reflective teams. Team coaching is found to have a stronger positive effect on innovation (team member ratings) in unstable teams than in stable teams. Unstable teams are more likely to depend on team managers to develop new and innovative ideas regarding the provision of care as this may be less urgent for such teams because they must first invest in becoming acquainted with one another and their tasks, roles, responsibilities, and develop basic team processes, such as trust, support, and learning. Moreover, team coaching behaviors, such as building shared commitment, empowering team members, encouraging and motivating team members to engage in constructive discussions, are likely to be particularly crucial for unstable teams in which team cohesion and self-management are not self-evident. Team coaching has a stronger positive effect on effectiveness, efficiency, and innovation in poorly reflective teams than in highly reflective teams. Highly reflective teams are more likely to manage themselves in responding to changing circumstances and performance shortfalls and may require less team coaching to be effective, whereas poorly reflective teams may have difficulties in adapting to changes and may require more coaching from their managers. This finding is consistent with the functional approach of leadership, which focuses on what team leaders 'need to do' rather than what they 'should do' (McGrath, 1962). Therefore, the intensity of leadership intervention should

vary across situations and active intervening has a particularly positive effect in situations in which a team requires such intervention because of their inability to adequately handle problems by themselves (Ahearne et al., 2005; Morgeson, 2005).

How do team processes influence team performance in LTC?

LTC teams in which team learning and emotional support occur are more effective. Team learning assists a team in adapting to changing circumstances, continually refining processes and practices, and discovering new and improved methods for achieving team objectives. Emotional support allows team members to exert more time and energy on task-related activities, as this support prevents or reduces the negative effects of strain and experienced stress by assisting team members in diverting their attention from potential stressors and in reinterpreting and modifying stressful situations. Teams that reflect on their functioning are both more effective and more efficient, as they constantly scan their environment and engage in a process of openly discussing what they are doing, what needs to be done, and how well they are doing. Such teams are more aware of problems and the importance of finding the 'right' solution and are more likely to achieve goals and find better solutions to problems (Hoegl & Parboteeach, 2006). In teams that employ a problem solving approach to respond to errors, team members rate their teams as more innovative and safer than team members in teams that utilize a blaming approach. Discussing errors stimulates participants to learn from errors to avoid recurrence and improve safety. The problem solving approach also promotes exploration, understanding, and the integration of new ideas that stimulates innovation. Although the blaming approach is negatively related to the ratings of team managers with regard to innovation, there is no significant correlation between the problem solving approach and manager ratings of innovation. A possible explanation is that managers who operate from a distance may fail to notice that a team has adopted a problem solving approach and may view the actions of their teams as 'normal' team processes. However, teams that utilize a blaming approach are more likely to experience conflicts and negative emotions and managers are more likely to observe such events.

Furthermore, both error orientations are unrelated to safety as rated by team managers. This result may have occurred because team managers may not always be informed about minor incidents or they may only be informed in retrospect when emotional stress has dissipated. These circumstances will lead to a less accurate view of safety. Another explanation may be that team managers rate safety higher than it actually is. Our results show that the ratings of team members with regard to safety are more negative than the ratings of their manager with regard to safety. Because team managers will eventually be held responsible for the safety of clients and team members, managers may be prone to think more favorably about the safety of their teams than reality would justify. In addition, team managers tend to not be personally involved in safety incidents. Safety incidents probably have a larger emotional effect on team members because members are personally involved in incidents

and will remember the incidents more accurately and for a longer period of time. Therefore, incidents within teams will less negatively affect the judgments of team managers with regard to safety.

How do care providers perceive the importance of different factors that are expected to improve team performance?

By using Q methodology, we were able to distinguish three views of youth care workers with respect to the relative importance of team characteristics for effective teamwork: (1) team interaction, (2) preconditions for communication, and (3) facilitation of individuals. The first view emphasizes interaction between team members as being most important for team effectiveness. Youth care workers with this view are team-minded and value different processes within a team as important, such as social support and team learning. These workers have a strong belief in teamwork and work in different types of teams. The second view emphasizes team characteristics that assist in sustaining communication and cooperation within and between teams as being most important. Youth care workers with this view emphasize characteristics that sustain communication, such as clarity of tasks and responsibilities as well as the availability of information. They are mostly members of a 24-hour care team, taking over for one another in shifts. Therefore, communication is crucial for continuity in care. In the third view, team characteristics that facilitate individuals to perform their tasks are considered to be the most important to ensure the effectiveness of teamwork. Youth care workers with this view are focused on task-related issues, such as individual autonomy. These respondents primarily work in support teams and therefore work primarily alone but assemble as a team to support one another's individual tasks by giving feedback. Although the three views could clearly be distinguished, all of these views emphasize the importance of communication and cooperation within teams and feedback for effective teamwork.

The main conclusion is that different views exist with regard to what makes a team effective in youth care and that these views are context-related. Teamwork and the type of care that is provided influence the views of team members with regard to what is necessary to work effectively.

Managers must be aware that these different views exist when they develop and implement team interventions. Understanding the factors that care providers view as crucial to the effectiveness of a team could be useful in the design of interventions. The likelihood of successful interventions improves if such interventions are supported by care providers. It also seems plausible that the different views may indicate real differences in relevant characteristics for team effectiveness. Different types of teams (e.g. mono- and multi-disciplinary teams, 24-hour care teams, daycare teams, support teams) may pose different demands for effective cooperation and team management. Therefore, managers and policymakers should consider the different types of teams when creating, customizing, and implementing interventions.

What are relevant interventions to improve team performance in health care?

Based on our findings from the systematic literature search, three types of interventions to improve team effectiveness are identified: (1) training, (2) tools, and (3) organizational interventions.

Training involves a systematic process through which a team is provided instruction (often by facilitators) regarding how to master and improve different aspects of team functioning. We identified four types of training: (1) simulations, (2) training based on Crew Resource Management (CRM), (3) interprofessional training, and (4) team training. *Simulations* attempt to recreate characteristics of the real world. A simulated scenario can have a specific focus on (a segment of) a complex task or can be designed to fully simulate a medical or nursing intervention. *CRM* is a management concept that is used in the aviation industry to improve teamwork. CRM has been adapted to high-risk, complex medical departments, such as emergency departments and operating rooms. CRM encompasses a wide range of knowledge, skills, and attitudes, including communication, situational awareness, problem solving, decision making, and teamwork (Helmreich, 2000). *Interprofessional training* incorporates different learning methods that aim to improve cooperation between different disciplines (Furber et al., 2004). *Team training* includes different forms of training that focus on specific aspects of team functioning, such as goal setting and team building.

Tools are specific instruments, such as checklists or goal sheets, that teams can independently use to improve team effectiveness through enhanced communication.

Organizational interventions are actions or changes that focus on the organizational context but are expected to influence team functioning.

The majority of the studies show a positive association between intervention and non-technical team skills, such as communication, cooperation, coordination, and leadership. However, research that is reported in most articles cites a low level of evidence. Studies that have cited a high or moderate level of evidence obtained positive results for simulation training, CRM training, team-based training, and continuous quality improvement. Furthermore, most evidence is available for the effectiveness of training for multi-disciplinary teams in the cure sector. Only a few studies focus on LTC and specifically on elderly care. Moreover, only a small number of studies present interventions that are designed to improve team effectiveness in mono-disciplinary teams in acute care, but none for LTC. The literature contains no evidence of how to improve team effectiveness in mono-disciplinary teams in LTC settings. However, because CRM-based interventions are considered to be the most promising intervention for acute care settings, future research should focus on the effectiveness of CRM in LTC.

DISCUSSION

The main findings resulted in five main issues that require in-depth discussion:

Placing interdependency in perspective

Most LTC organizations are team-based, meaning that professionals work together to achieve results that are beyond the capabilities of single individuals (Marks et al., 2001; West et al., 2004). There is a pervasive assumption in the literature that more teamwork is always better (Erhardt, 2011). Task interdependence is also considered to be one of the most important variables that defines a team (Barrick et al., 2007; Campion et al., 1993; Kozlowski & Bell, 2003; Stewart, 2006). However, our research casts doubt on the general premise that teamwork in which team members with high levels of task interdependency generate outcomes that are superior to those from teams consisting of members who tend to work as individuals (Firth-Cozens, 1998; Katzenbach & Smith, 1993). Our findings suggest that we may want to look differently at the concept of interdependency in LTC.

Interdependency determines the degree to which members must rely on one another to provide care and to fulfill their own needs. Team interdependence may be based on structural (i.e. tasks or technological requirements) and social-psychological concepts (i.e. social demand to work together and emotional support to perform well) (Barrick et al., 2007). In this study, we focused only on task interdependency, which refers to the degree to which the interaction and coordination of team members are required to complete tasks (Guzzo & Shea, 1992). A high level of task interdependency indicates that members must interact with one another to accomplish tasks, whereas a low level of task interdependency indicates that members contribute to team output without the need for interactions (Katz-Navon & Erez, 2005). Our data show that the notion of enhancing team effectiveness by increasing task interdependency is a misconception in the LTC setting.

The bulk of care in LTC is often provided by one discipline or by two disciplines that are not complementary but in which one discipline could replace the other; for example, nurses could replace assistant nursing or household duties if necessary. Complementary disciplines are often called in for assistance but are not considered to be a part of the team. Therefore, one caregiver could theoretically provide most of the care for one client. A high level of task interdependency requires more communication, coordination, commitment, and cohesion within teams to achieve high levels of performance. Teams with a low level of task interdependency are less dependable with regard to strong communication, coordination, commitment, and cohesion to perform well (Barrick et al., 2007) and will spend less time and energy to achieve and maintain a high level of these team processes. Nevertheless, the absence of task interdependency (i.e. when an individual care worker provides all of the necessary care for one client) is also undesirable. This situation results in difficulties to substitute care

providers because these providers were not forced to share knowledge and experiences and to control the quality of care through feedback and reflection from colleagues. Therefore, the provision of care by one individual can result in undesirable outcomes (e.g. efficiency losses or quality declines) (Allen & Hecht, 2004). Hence, the appropriate level of task interdependency is a trade-off between flexibility and quality control versus team effectiveness and efficiency.

Our study shows that increasing interdependency based on structural concepts (i.e. tasks) will not lead to enhancements in team learning, emotional support, and team effectiveness, but we did not examine whether interdependency based on concepts that relate to the social-psychological needs of team members could foster team processes and effectiveness (Barrick et al., 2007). Most research focuses on task interdependency but does not address interdependence in terms of fulfilling social-psychological needs (e.g. support, feedback). Teams in which members have a low level of task interdependency but a high level of social-psychological interdependency may perceive a greater need to interact with members to perform well, although they do not necessarily need to interact to accomplish their tasks. These teams will not be defined as a team according to many team definitions that solely focus on task interdependency. Although multiple sources of interdependency have received some attention in the literature (Barrick et al., 2007; Gully et al., 2002; Wageman, 1995), little is known about social-psychological interdependency in teams. Our results emphasize the importance of emotional support within teams, as emotional support from team members who listen sympathetically when a member is facing difficulties or problems and who provide empathy, care, and trust (Nijman & Gelissen, 2011; Sarason et al., 1983) may reduce or prevent stressors and thus lead to greater team performance (Van Daalen, 2007). Team members in LTC may have a greater need for someone who listens, shows compassion, and gives feedback to perform well than for someone who assists in accomplishing tasks. Therefore, future research should develop a broader understanding of the concept of interdependency.

The ambivalence of managing LTC teams

Many LTC organizations claim that their teams are autonomous and self-managing. Self-managing teams have the authority and accountability to execute, monitor, and manage their work, but within a structure and toward goals set by others (Wageman, 2001).

Although the role of leadership in self-managing teams appears to be a paradox, self-managing teams are not complete substitutes for leadership. Empowering leadership could facilitate self-management, because such leadership assists and supports teams in managing themselves and assists them in interacting with their environment (Stewart et al., 2011). Our findings show that team coaching as a leadership style fosters team performance both directly and indirectly through a team's error orientation. However, coaching a self-managing team requires a delicate balance between intervening and non-intervening. Active interven-

ing might both enhance and harm self-management by creating dependence on a manager rather than self-sufficiency (Morgeson, 2005; Stewart et al., 2011; Van Dalen, 2010; Wageman, 2001). Our findings suggest that active coaching is especially appropriate in unstable and poorly reflective teams, whereas stable and highly reflective teams scarcely benefit from team coaching. Therefore, team managers should assess the stability of membership and the level of team reflection and adjust their level of intervention accordingly.

Therefore, LTC organizations that want to introduce or stimulate self-management should be aware of the leadership style that is utilized by their team managers. A directive and controlling leadership style is unlikely to be effective, because self-managing teams have the authority to manage most of their activities, which requires a more assisting and facilitation style (Morgeson, 2005; Stewart et al., 2011). LTC organizations should therefore structure their organizations to encourage team managers to coach teams and discourage managers from adopting controlling and directive leadership styles. For example, increasing the accountability of teams with respect to their outcomes will reduce pressure on managers. Furthermore, managers should be trained to improve their coaching skills, such as listening, questioning, giving and receiving feedback (Ellinger et al., 2003), and to adapt their coaching interventions to the needs of teams. For example, unstable teams need more coaching to perform well because such teams are occupied with creating team cohesion, redesigning tasks and responsibilities. Teams that do not engage in self-reflection require more coaching because of their difficulties in assessing their environment and adapting to changes. A wide span of control will force managers to prioritize their interference in team processes by intervening in teams only when necessary. Some evidence even suggests that the replacement of hierarchical managers with external coaches who do not possess hierarchical power is helpful for improving self-management and team performance (Wageman, 2001; Van Dalen, 2010). However, this replacement may pose additional demands on the qualifications of team members.

The challenge of measuring team performance

Team performance is a multi-facet construct that refers to the interests of several stakeholders, such as directors, managers, team members, clients, and work councils (Paauwe, 2004). From the perspective of directors, team performance entails financial indicators, such as productivity and efficiency, while work councils place greater emphases on indicators that include employee satisfaction and the achievement of a healthy work-life balance. Team managers may view performance indicators in terms of sick leave and employee turnover. Clients primarily refer to performance as the quality of care and the level of safety.

In LTC, examples of objective performance measures include productivity, efficiency, care provision per client, safety incidents, sick leave, and turnover, but these indicators are often measured per ward or division rather than at the team level. Because this problem also occurs

in many other sectors, perceptions of performance as rated by a supervisor or by team members are often used as substitutes for objective data on team level (Scullen et al., 2000). Many studies have included only supervisor ratings of team performance (e.g. Campion et al., 1993; De Dreu, 2002; Kirkman & Rosen, 1999; Langfred, 2000; Stewart & Barrick, 2000; Tjosvold et al., 2004; Van der Vegt et al., 2006), some studies have utilized only team member ratings of team performance (e.g.. Shortell et al., 2004; Poulton & West, 1994), and a few studies have combined these ratings (e.g. Ancona & Caldwell, 1992; Van Woerkom & Croon, 2009). We have chosen to include the ratings of both team members and team managers to attempt to present a more complete picture of perceived team performance. The underlying assumption is that raters from different sources (i.e. members versus managers) provide unique judgments of performance because they observe different aspects of performance (Hoffman et al., 2010; Mount et al., 1998; Scullen et al., 2000). Due to the complex nature of the team performance construct, a single rater may not be sufficient to present the full picture (Hoffman et al., 2010). However, our results show some discrepancies between the ratings of supervisors and team members.

Our data show that safety is evaluated more positively by managers than by members. It is difficult to determine who has the most realistic view because team members and managers have different interests and different information. Team members tend to base their judgments on their experiences with team processes and the atmosphere in which output is realized, whereas managers tend to base their judgments on the visible and realized output. Although managers are more experienced in evaluating performance, they do not possess a sufficient amount of information regarding team processes as a result of their distance from their teams (Scullen et al., 2000; Stoopendaal, 2008). Our results show that team members and managers are more likely to agree on the level of safety when a team utilizes a strong problem solving approach toward errors. Teams that adopt a problem solving approach are likely to be more open with regard to team processes and to inform managers about errors and incidents. Teams that report high levels of team coaching are also found to be more likely to agree with their team managers on the level of safety. Because members of such teams are likely to have more mature relationships with their managers and to engage in discussions about safety, the perceptions of both groups are likely to be similar.

These findings suggest that this inconsistency between the ratings of members and managers may be explained by the openness and willingness of teams to share information with their managers and by the level of trust between teams and their managers. These conditions should be considered when interpreting the ratings of managers, especially ratings with regard to team outcomes that are difficult to observe and ratings of teams that operate at a distance from their managers. However, some team conditions may affect the reliability of the judgments of team members. Although we did not investigate this issue, the ability of members to reflect on their performance rather than merely on the processes that lead to this performance is likely to be a condition that should be considered when interpreting the

ratings of members. Thus, the interpretation of the ratings of both team members and managers should be situation-based. The judgments of managers with regard to team performance will be reliable only if managers are informed about team functioning or are able to observe team functioning, and the judgments of team members with regard to their performance will be reliable only if teams are able to reflect on their output. Therefore, these issues should be incorporated into future research that measures perceived team performance.

Safety by external control versus internalized forms of control

Although few studies have examined safety and adverse events in LTC settings, pleas for safer care in such settings have been recorded (Wagner & Rust, 2008). In practice, many team managers translate a plea for safer care into a controlling leadership style, strict protocols, and prescriptions of how care should be provided and how errors should be reported and handled. Such an approach focuses on external control, which is time-consuming and perceived as not motivating. Alternatively, internalized forms of control should be created in the form of an organizational culture in which a high level of safety is embedded in norms, values, and assumptions that entail openly discussing safety issues and learning from errors (Schein, 2010). Research has indicated that a high level of safety can be established in a 'blame-free' culture with a high level of trust and a high willingness to learn, which results in a positive attitude toward safety (Helmreich & Davies, 2004; Hudson, 2003). Attitudes toward errors and safety are influenced by visible factors, such as technology (e.g. the effectiveness of a system for reporting errors) and protocols, and by values that are explicitly spread through communication, such as the signals that managers give to teams and members give to one another and to new members. Our results show that teams that learn from errors rather than blame one another provide safer care and that managers who act as coaches can facilitate a problem solving approach. This will eventually lead to teams wherein the importance of safety and the methods of ensuring safety are taken for granted (i.e. the ultimate level of internalized control) (Schein, 2010).

Improving team performance

The first step in enhancing team performance is identifying drivers of performance and interventions that positively influence these drivers. We distinguish multiple drivers of team performance in LTC: team member stability, team coaching, and team processes, such as team learning, emotional support, reflection, and a problem solving approach toward errors. Our systematic literature review entails two interventions that aimed to improve one of these drivers. Team member stability could be fostered by a team building intervention that proved to reduce turnover. The team building intervention entails three one-hour interactive sessions with as main goal to identify elements that create high-performing teams (DiMeglio

et al., 2005). However, this intervention was not tested in LTC settings, and the quality of evidence was low for this research, which makes it difficult to evaluate the likelihood of the success of this intervention for improving team performance in the LTC setting. Team learning could be enhanced by an inter-disciplinary team training intervention that aimed to improve learning and retain information (Lichtenberg et al., 1990). However, the quality of evidence of this research was also low and the intervention was poorly described, which makes it difficult to assess the relevance of this intervention. Hence, these two interventions should be further evaluated in LTC settings. The systematic literature review did not include interventions that were intended to foster team coaching, emotional support, error orientation, and team reflection, which were also shown to be important drivers of team performance in our survey study.

As argued previously, LTC organizations should create an appropriate structure for teams in which they possess the autonomy to put interventions into practice. The role of team managers is essential because these managers can facilitate and encourage newly learned skills, but can also diminish the effects of new ways of working. Our systematic literature review reveals no interventions that aimed to improve the coaching behavior of managers, while our empirical results demonstrate the importance of these interventions for team performance. Therefore, interventions that enable managers to act as coaches should be created for the LTC setting. Such interventions should focus on developing and expanding coaching skills and an increasing awareness of how and when to intervene. In addition, LTC organizations should have a hierarchical structure in which team managers are encouraged to act as coaches by holding teams responsible for team performance rather than placing the responsibility upon the managers themselves. Intervening on the current way of working will require from members to take risks and may cause errors in the process of improving performance. This requires an environment in which teams feel safe and are encouraged to take risks and learn from errors.

METHODOLOGICAL REFLECTION

The main limitations of this study relate to causality, the common method bias, and generalization.

Causality

Although all of our empirically tested relationships were theoretically grounded, some caution in the interpretation of the results is necessary. Some relationships were tested on longitudinal data with two measuring points, which enabled us to test causal relationships to a certain extent. Our empirical data suggested the existence of causal relationships between

team coaching and team performance (i.e. team effectiveness and innovation), between team reflection and team performance (i.e. team effectiveness and efficiency), and between team stability, team learning, and emotional support on the one hand and team effectiveness on the other hand. Other relationships were tested using only cross-sectional data (see Chapter 3). However, we do have strong theoretical reasons for hypothesizing causality in these relationships. Nevertheless, future research should examine the causality of these relationships in longitudinal data sets.

Common method bias

Common method variance refers to "variance that is attributable to the measurement method rather than to the constructs the measures represent" (Podsakoff et al., 2003, p 879), which may exert a systematic effect on observed relationships (i.e. common method bias) (Meade et al., 2007). Although, our study might contain common method variance as some relationships were supported by only self-reported variables, other relationships were supported by the ratings of managers in combination with self-reported measures. Common method bias is unlikely if the ratings of members and managers are predicted by the same drivers. Because team learning and emotional support are predictors of team effectiveness as rated by team members and managers, these relationships are unlikely to be based on common method bias. However, the relationships between team's error orientation (i.e. the adoption of a problem solving approach or a blaming approach) and safety and innovation might be partly based on common method variance because only the relationship between the blaming approach and team innovation is confirmed by the ratings of members and managers. There is an ongoing debate in the literature with regard to the presence of common method bias in self-reported measures and the degree to which this bias inflates the relationships that are found (Conway & Lance, 2010; Doty & Glick, 1998; Podsakoff et al., 2003). Conway and Lance (2010) presented evidence that relationships between self-reported variables are not necessarily and routinely upwardly biased. These authors also argued that some steps can reduce the likelihood of common method bias, such as evidence of construct validity and the lack of overlap in items that are used to measure different constructs. In separate chapters, we provided evidence of construct validity, and we attempted to prevent overlap in items that were used to measure the independent and dependent variables.

Although we view the ratings of managers with regard to team performance as a way to diminish the likelihood of common method bias, some studies have shown that strong rater effects appear to be routinely found in multisource ratings (e.g. Hoffman et al., 2010; Mount et al., 1998; Scullen et al., 2000). However, other studies have shown that multiple sources represent alternative and complementary perspectives on performance (Conway & Lance, 2010). As this debate will not be resolved in the near future, the use of different raters should

continue to be preferred over the use of same raters to broaden the evidence for relationships that are found.

Generalization

Our main results were based on data from two large organizations in the Netherlands that provide care for people of all ages with physical or intellectual disorders. However, as our research focused on teams and relationships were investigated at the team level, we believe that our findings are applicable for health care settings (within and outside LTC) with a similar team concept: highly autonomous teams that are geographically scattered and whose managers operate at a distance rather than as part of the teams.

RESEARCH AGENDA

Our research findings provide the following input for future research:

Defining a team

Our research underlines that what constitutes a 'real team' may vary across settings and should be contextually approached (Paauwe, 2004). A team should not be defined independent of a specific research setting as important characteristics could be lost. The selection of teams for research purposes should be based on a broad definition of a team and basic team features to avoid cherry picking. For example, although ad hoc teams do not fit the 'real team' characteristics that are defined by Wageman and colleagues (2005), this team type is increasingly used. A narrow team definition would alter the object of research and oversimplify reality because it ignores teams that do not fit the 'real team' characteristics but nevertheless exist in practice and may view themselves as team. Future research should not depart from the assumption that 'real team' characteristics are always a guarantee for success. Future research should adopt a contextually-based approach wherein the complexity of the context is fully understood.

Balancing conflicting performance demands in LTC

LTC teams are expected to be effective, efficient, and innovative while simultaneously ensuring the provision of safe care. We investigated the performance outcomes separately, but improvements in one performance outcome could undermine improvements in another. Further research should focus on the trade-off between team performance outcomes. Future studies should examine the extent to which different outcomes are contradicting and the

extent to which fostering these outcomes requires a contradicting approach. For example, innovative teams may waste resources in the process of introducing new concepts, which implies inefficiency because they are unable to attain goals as quickly as possible without wasting resources. Do innovative teams take risks by introducing new concepts causing that safety cannot be guaranteed? Is it easier to be effective in terms of achieving goals without errors when teams are not expected to meet these goals as quickly as possible? Another under-investigated area of research is the ranking order of team performance outcomes. For example, do teams first need to perform effectively to be able to subsequently focus on being innovative and performing efficiently?

Team coaching as a tool to foster team performance

Our results suggest that team coaching is important for improving team processes and team performance and that the effect of team coaching is influenced by the level of team reflection and membership stability. First, future research should expand our knowledge of conditions wherein team coaching is effective. We will investigate the extent to which the relationship between team coaching and team performance is influenced by how well a team performs and the presence of 'real team' characteristics. Second, future research should focus on the development of interventions that facilitate the development of coaching skills, the willingness of managers to act as coaches, and the ability to estimate the extent to which teams meet the conditions in which active coaching is necessary or the conditions in which it might be preferable to refrain from coaching.

CRM interventions in LTC

Interventions that are based on CRM principles have been shown to improve safety in (acute) cure settings. CRM is a management system that aims to make optimal use of resources (i.e. equipment, procedures, and people). CRM training fosters the non-technical skills of people and often involves courses that utilize lectures, practical exercises, case studies, and video clips to improve safety, but could also entail simulations and video-assisted feedback on the work floor. Training topics include situational awareness (e.g. plant status awareness, environmental awareness, shared mental models), decision making (e.g. problem definition, risk and time assessment), communication (e.g. being assertive, asking questions, listening), teamwork (e.g. maintaining team focus, solving conflicts), personal resources (e.g. managing stress, coping with fatigue), and leadership (e.g. planning, coordination, workload management). Another component of CRM involves making optimal use of procedures using checklists and time-out procedures (i.e. briefing and debriefing) (Helmreich & Davies, 2004; Flin et al., 2002). As CRM has been implemented only in high-risk industries, researchers and practitioners should first customize CRM to LTC settings and aim to obtain an optimal fit with

the context characteristics. For example, the required or intended task interdependency of interventions should be customized to the LTC setting to ensure success. As our results show that high levels of task interdependency do not foster team performance in LTC settings, it would be inconsistent when interventions that focus on enhancing team performance in LTC require a high level of task interdependency. Moreover, some training topics (e.g. procedures for handling incidents) will expand the boundaries of a work team that provides the bulk of care and should focus on the multi-team system. A multi-team system is a network of teams with different disciplines (e.g. therapist, social workers, paramedics) that are all involved in providing care to a client and interact directly and interdependently to achieve a shared goal while pursuing different proximal goals (Marks et al., 2001). Further, the demands and views of team members should be incorporated into the intervention design to increase the likelihood that an intervention will be supported and carried out in actual practice. Our future research will investigate how CRM principles can be used to foster team performance in LTC as well how available training could be adapted to the LTC setting.

Concluding remarks

In subsequent years, the LTC sector has to face a number of challenges concerning rising demands and personnel shortages as well as increased pressure to improve safety and decreased costs. In recent years, safety incidents have already been underlined by the media and cost reductions that are mandated by the government have exerted pressure on LTC management to take actions to increase effectiveness and efficiency. The intuitive response of LTC organizations might be to increase control and introduce more directive leadership styles to ensure that no mistakes are made and that no money is wasted. However, our research shows that such attempts would be counterproductive. Rather, safety and costs will benefit in situations in which control is internalized and teams are coached on the ability to solve their own problems and learn from their mistakes. Furthermore, some LTC organizations might respond to these challenges by increasing team-based work via increased task interdependency. However, this research shows that increased task interdependency can decrease the effectiveness of teams. Teams in LTC are not always based on task interdependency; they may also be a team because they depend on each other for social support or feedback to learn. Therefore, to meet the challenges, LTC organizations should consider what teams actually need to improve performance and provide them with the appropriate responsibilities, means, training, and coaching to help them realize their potential.

REFERENCES

Ahearne, M., Mathieu, J., & Rapp, A. (2005). To empower or not to empower your sales force? an empirical examination of the influence of leadership empowerment behavior on customer satisfaction and performance. *Journal of Applied Psychology, 90*(5), 945-955.

Allen, N. J., & Hecht, T. D. (2004). The 'romance of teams': Toward an understanding of its psychological underpinnings and implications. *Journal of Occupational and Organizational Psychology, 77*(4), 439-461.

Ancona, D. G., & Caldwell, D. F. (1992). Demography and design: Predictors of new product team performance. *Organization Science, 3*(3), 321-341.

Barrick, M. R., Bradley, B. H., Kristof-Brown, A. L., & Colbert, A. E. (2007). The moderating role of top management team interdependence: Implications for real teams and working groups. *The Academy of Management Journal ARCHIVE, 50*(3), 544-557.

Campion, M. A., Medsker, G. J., & Higgs, A. C. (1993). Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology, 46*(4), 823-847.

Conway, J. M., & Lance, C. E. (2010). What reviewers should expect from authors regarding common method bias in organizational research. *Journal of Business and Psychology, 25*, 325-334.

De Dreu, C. K. W. (2002). Team innovation and team effectiveness: The importance of minority dissent and reflexivity. *European Journal of Work and Organizational Psychology, 11*(3), 285-298.

DiMeglio, K., Padula, C., Piatek, C., Korber, S., Barrett, A., Ducharme, M., et al. (2005). Group cohesion and nurse satisfaction: Examination of a team-building approach. *Journal of Nursing Administration, 35*(3), 110-120.

Doty, D. H., & Glick, W. H. (1998). Common methods bias: Does common methods variance really bias results? *Organizational Research Methods, 1*(4), 374-406.

Ellinger, A. D., Ellinger, A. E., & Keller, S. B. (2003). Supervisory coaching behavior, employee satisfaction, and warehouse employee performance: A dyadic perspective in the distribution industry. *Human Resource Development Quarterly, 14*(4), 435-458.

Erhardt, N. (2011). Is it all about teamwork? understanding processes in team-based knowledge work. *Management Learning, 42*(1), 87-112.

Firth-Cozens, J. (1998). Celebrating teamwork. *Quality in Health Care, 7*, 3-7.

Flin, R., O'Connor, P., & Mearns, K. (2002). Crew resource management: Improving team work in high reliability industries. *Team Performance Management, 8*(3/4), 68-78.

Furber, C., Hickie, J., Lee, K., McLoughlin, A., Boggis, C., Sutton, A., et al. (2004). Interprofessional education in a midwifery curriculum: The learning through the exploration of the professional task project (LEAPT). *Midwifery, 20*(4), 358-366.

Gully, S. M., Incalcaterra, K. A., Joshi, A., & Beaubien, J. M. (2002). A meta-analysis of team-efficacy, potency, and performance: Interdependence and level of analysis as moderators of observed relationships. *Journal of Applied Psychology, 87*(5), 819-832.

Guzzo, R. A., & Shea, G. P. (1992). Group performance and intergroup relations in organizations. In M. D. Dunnette, & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed., pp. 269-313). Palo Alto, CA: Consulting Psychologists Press.

Helmreich, R. L. (2000). Culture and error in space: Implications from analog environments. *Aviation Space and Environmental Medicine, 71*(9), 133-139.

Helmreich, R. L., & Davies, J. M. (2004). Culture, threat, and error: Lessons from aviation. *Canadian Journal of Anesthesia/Journal Canadien d'Anesthésie, 51*(6), 1-4.

Hoegl, M., & Parboteeah, K. P. (2006). Team reflexivity in innovative projects. *R & D Management, 36*(2), 113-126.

Hoffman, B., Lance, C. E., Bynum, B., & Gentry, W. A. (2010). Rater source effects are alive and well after all. *Personnel Psychology, 63*(1), 119-151.

Hudson, P. (2003). Applying the lessons of high risk industries to health care. *Quality and Safety in Health Care, 12*(1), i7-i12.

Katzenbach, J. R., & Smith, D. K. (1993). The discipline of teams. *Harvard Business Review, 71*, 111-120.

Katz-Navon, T. Y., & Erez, M. (2005). When collective-and self-efficacy affect team performance. *Small Group Research, 36*(4), 437-465.

Kirkman, B. L., & Rosen, B. (1999). Beyond self-management: Antecedents and consequences of team empowerment. *Academy of Management Journal, 42*(1), 58-74.

Kozlowski, S. W. J., & Bell, B. S. (2003). Work groups and teams in organizations. In W. C. Borman, D. R. Ilgen & R. J. Klimoski (Eds.), *Handbook of psychology: Industrial and organizational psychology* (pp. 333-375). London: Wiley Online Library.

Langfred, C. W. (2000). Work-group design and autonomy: A field study of the interaction between task interdependence and group autonomy. *Small Group Research, 31*(1), 54-70.

Lichtenberg, P. A., Strzepek, D. M., & Zeiss, A. M. (1990). Bringing psychiatric aides into the treatment team: An application of the veterans administration's ITTG model. *Gerontology & Geriatrics Education, 10*(4), 63-73.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review, 26*(3), 356-376.

McGrath, J. E. (1962). *Leadership behavior: Some requirements for leadership training*. Washington, DC: US Civil Service Commission, Office of Career Development.

Meade, A. W., Watson, A. M., & Kroustalis, C. M. (2007). *Assessing common methods bias in organizational research*. 22nd Annual Meeting of the Society for Industrial and Organizational Psychology, New York.

Morgeson, F. P. (2005). The external leadership of self-managing teams: Intervening in the context of novel and disruptive events. *Journal of Applied Psychology, 90*(3), 497-508.

Mount, M. K., Judge, T. A., Scullen, S. E., Sytsma, M. R., & Hezlett, S. A. (1998). Trait, rater, and level effects in 360-degree performance ratings. *Personnel Psychology, 51*, 557-576.

Nijman, D. J., & Gelissen, J. (Eds.). (2011). *Supervisory support in transfer of training. edited by Poell, R.F., & Van Woerkom, M. Supporting workplace learning. Towards evidence-based practice.* Dordrecht: Springer.

Paauwe, J. (2004). *HRM and performance: Achieving long-term viability*. New York: Oxford University Press.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903.

Poulton, B. C., & West, M. A. (1994). Primary health care team effectiveness: Developing a constituency approach. *Health & Social Care in the Community, 2*(2), 77-84.

Sarason, I. G., Levine, H. M., Basham, R. B., & Sarason, B. R. (1983). Assessing social support: The social support questionnaire. *Journal of Personality and Social Psychology, 44*(1), 127-139.

Schein, E. H. (2010). *Organizational culture and leadership*. San Fransisco: Jossey-Bass.

Scullen, S. E., Mount, M. K., & Goff, M. (2000). Understanding the latent structure of job performance ratings. *Journal of Applied Psychology, 85*(6), 956-970.

Shortell, S. M., Marsteller, J. A., Lin, M., Pearson, M. L., Wu, S. Y., Mendel, P., et al. (2004). The role of perceived team effectiveness in improving chronic illness care. *Medical Care, 42*(11), 1040-1048.

Stewart, G. L. (2006). A meta-analytic review of relationships between team design features and team performance. *Journal of Management, 32*(1), 29-54.

Stewart, G. L., & Barrick, M. R. (2000). Team structure and performance: Assessing the mediating role of intrateam process and the moderating role of task type. *The Academy of Management Journal, 43*(2), 135-148.

Stewart, G. L., Courtright, S. H., & Manz, C. C. (2011). Self-leadership: A multilevel review. *Journal of Management, 37*(1), 185-222.

Stoopendaal, A. (2008). *Zorg met afstand: Betrokken bestuur in grootschalige zorginstellingen*. Assen: Uitgeverij Van Gorcum.

Tjosvold, D., Tang, M. M. L., & West, M. (2004). Reflexivity for team innovation in china: The contribution of goal interdependence. *Group & Organization Management, 29*(5), 540-559.

Van Daalen, G. (2007). *Social support does it make a difference? Examining the relationship between social support work-family conflict and well-being.* Geertuidenberg: Box Press.

Van Dalen, A. (2010). *Uit de schaduw van het zorgsysteem: Hoe buurtzorg nederland zorg organiseert*. Den Haag: Boom Lemma.

Van der Vegt, G. S., Bunderson, J. S., & Oosterhof, A. (2006). Expertness diversity and interpersonal helping in teams: Why those who need the most help end up getting the least. *The Academy of Management Journal ARCHIVE, 49*(5), 877-893.

Van Woerkom, M., & Croon, M. (2009). The relationships between team learning activities and team performance. *Personnel Review, 38*(5), 560-577.

Wageman, R. (1995). Interdependence and group effectiveness. *Administrative Science Quarterly, 40*(1), 145-180.

Wageman, R. (2001). How leaders foster self-managing team effectiveness: Design choices versus hands-on coaching. *Organization Science, 12*(5), 559-577.

Wageman, R., Hackman, J. R., & Lehman, E. (2005). Team diagnostic survey: Development of an instrument. *The Journal of Applied Behavioral Science, 41*(4), 373-398.

Wagner, L. M., & Rust, T. B. (2008). *Safety in long-term care settings*. Edmonton: Canadian Patient Safety Institute.

West, M. A., Hirst, G., Richter, A., & Shipton, H. (2004). Twelve steps to heaven: Successfully managing change through developing innovative teams. *European Journal of Work and Organizational Psychology, 13*(2), 269-299.

Summary

The overall research aim of this thesis is to provide insights in the factors that influence team performance in long-term care (LTC) and to generate insights how to improve team performance.

In **chapter 2** we examined the impact of three 'real team' characteristics (i.e. team boundaries, stability of membership, and task interdependence) and two team processes – i.e. team learning and emotional support – on team effectiveness in the LTC sector. We employed a longitudinal survey method in which data were collected at two time points (one year interval). Team members completed a survey on 'real team' characteristics (i.e. team boundaries, stability in membership, interdependency), team learning, emotional support, and effectiveness. Team managers separately completed a survey on team effectiveness.

Our results showed that a 'real team' as defined by Wageman, Hackman, and Lehman is not a unitary construct for teams in LTC (Wageman et al., 2005). The three 'real team' characteristics have a different impact on team processes and performance in this context. Based on the theory of 'real teams', we expected each of the 'real team' characteristics to lead to healthier team processes and to consequently have a positive impact on team effectiveness in LTC. Although this assumption proved to be true for the 'real team' characteristics team boundaries and stability of membership, task interdependency showed to have a negative effect on team learning and emotional support. Next to the negative effect of task interdependence, the results show that stability of membership is beneficial for team processes and for team effectiveness, whereas clear team boundaries are beneficial for team processes and only indirectly beneficial for team effectiveness. Therefore, it would be wise not to speak about 'real teams' in the context of LTC, but to analyze the three 'real team' characteristics separately and to distinguish between stable teams, teams with clear boundaries, and teams with high task interdependency. The main conclusion was that more intensive teamwork in the LTC sector will not necessarily lead to better outcomes when this involves more task interdependency among team members.

Chapter 3 focused on the role of team leaders as coach and how this influences team error orientation, team safety and team innovation. We examined the impact of team membership stability, team coaching, and a team's error orientation on team safety and innovation. We employed a cross-sectional survey method. Both team members and team managers received a survey that measured safety and innovation. In addition, team members assessed membership stability, team coaching, and error orientation (i.e. problem solving approach and blaming approach).

Our results showed that team managers that take on the role of coach bring about a problem solving approach and prevent a blaming approach. Team coaching directly influences the safety ratings made by team members and also the innovation level as rated by both team members and team managers. Especially in unstable teams, team coaching

was found to have a positive impact on innovation (team member ratings). Our results also showed that a problem solving approach in responding to errors will lead to stronger perceptions of innovation and safety by team members, whereas a blaming approach will lead to weaker perceptions. Stable teams are more likely to adopt a problem solving approach, whereas unstable teams are more likely to adopt a blaming approach. Team members and team managers agree most closely on the level of safety when the team has a strong problem solving approach toward errors. The opposite is the case when teams have a predominantly blaming approach and are likely to be operating in a less 'blame-free' environment. Teams that report high levels of team coaching were also found to agree more closely with their team manager on the level of safety. The main conclusion was that team safety and innovation should be enhanced by encouraging a problem solving approach and discouraging a blaming approach. Team managers can play a crucial role in this by coaching team members to see errors as sources of learning and improvement and ensuring that individuals will not be blamed for errors.

In **chapter 4** we examined if the relationship between team coaching and team performance is mediated or moderated by team reflection. Team coaching may bring about team reflection by giving performance feedback, listening, analyzing, and asking critical questions (Ellinger et al., 2003; 2011; McLean et al., 2005), which minimizes the chance of mindless execution of routines (Hackman & Wageman, 2005). In line with this reasoning, team reflection may be an important team process for enhancing team performance and act as mediator. In contrast, according to the functional leadership approach (McGrath, 1962) the intensity of leadership interventions should vary across situations, since the main task of the team leader is to do whatever is not being adequately handled by the team itself (Ahearne et al., 2005; Morgeson, 2005; Morgeson et al., 2010; Zaccaro et al., 2001). The relationship between team coaching and team performance might therefore be moderated by team reflection, in such a way that poorly reflective teams benefit more from team coaching than highly reflective teams. We employed a longitudinal survey method in which data were collected at two time points (one year interval). Team members received a survey assessing team coaching and team reflection, and team managers a survey assessing team performance (i.e. team effectiveness, efficiency, and innovation).

Our results showed that teams that receive a coaching style of leadership are more effective and innovative, but not more efficient. Teams that reflect on and criticize aspects of team functioning (e.g. communication forms, norms, values, procedures) work more effectively and efficiently, but not more innovatively. Team reflection does not mediate in the relationship between team coaching and team performance, but act as a moderator in this relationship. Team coaching was found to be more beneficial for all three team performance outcomes in poorly reflecting teams in comparison to highly reflecting teams. Instead of encouraging teams to reflect, team coaches tend to take over the reflection task for teams that are not

able to reflect on their own. So, team managers that act as coach do not encourage teams to explore, question, and analyze work-related issues on their own, but do this for the team. The main conclusion was that team manager should estimate the level of team reflection and adjust their level of intervention accordingly.

Chapter 5 focused on the relative importance of several factors for team performance in general. We used Q methodology to explore views of team members on team functioning. We found three distinct views of youth care workers on the relative importance of characteristics of teams for effective teamwork: (1) team interaction, (2) preconditions for communication, and (3) facilitation of individuals. The first view emphasized interaction between team members as most important for team effectiveness. Youth care workers loading on this view are team-minded, value different processes within a team as important, and have a strong belief in teamwork. Respondents loading on this view work in different types of team. The second view pointed to team characteristics that help sustain communication within and between teams as being most important. Youth care workers loading on this view emphasize characteristics that sustain communication. Respondents loading on this view are mostly members of a 24-hour care team, taking over for one another in shifts. Communication is therefore crucial for continuity in care. In the third view, the team characteristics that facilitate individuals to perform as a team member were put forward as most important for teamwork to be effective. Youth care workers loading on this view are focused on characteristics that assist individual youth care workers at their individual tasks. These respondents work mostly in support teams, meaning that they primarily work solo and come together as a team to support each other's individual tasks by giving feedback. There was consensus between the three accounts on the importance of two characteristics for effective teamwork: 'communication and cooperation within the team' and 'feedback among team members'. The main conclusion was that different views exist on what makes a team effective in youth care, which corresponds with different type of teams.

A systematic literature review was performed in **chapter 6** to examine how team performance can be enhanced in all health care settings. Based on our findings three categories to improve team performance were identified: (1) training, (2) tools, and (3) organizational interventions. Training involves a systematic process through which a team is trained (often by facilitators) to master and improve different aspects of team functioning. We identified four types: (1) simulations, (2) training based on Crew Resource Management (CRM), (3) interprofessional training, and (4) team training. Tools are specific instruments that teams can use independently to improve team effectiveness (e.g. checklists, goal sheets) through better communication. Organizational interventions are actions or changes that focus on the organizational context but are expected to have an effect on team functioning. The majority of the studies found a positive association between the intervention and non-technical team

skills. We also looked at the level of evidence. Most articles presented research with a low level of evidence. Studies with a high or moderate level of evidence found positive results for simulation training, CRM training, team-based training, and continuous quality improvement projects. The main conclusion was that most evidence is available for the effectiveness of training for multidisciplinary teams in the cure sector. There was no evidence how to improve team effectiveness in mono-disciplinary teams in LTC settings.

In the general discussion the five research questions are answered and the discussion revolves around the following five topics: placing interdependency in perspective, the ambivalence of managing LTC teams, the challenge of measuring team performance, safety by external control versus internalized forms of control, and improving team performance. Furthermore, we reflect on the methods used and we present a future research agenda with four topics: defining a team, balancing conflicting performance demands in LTC, team coaching as a tool to foster team performance, and CRM interventions in LTC.

Samenvatting

Het doel van dit proefschrift is het verkrijgen van inzicht in de factoren die het teamfunctioneren in de langdurige zorg beïnvloeden en in het verbeteren van teamfunctioneren.

In **hoofdstuk 2** is gekeken naar de relevantie van het construct 'real teams' voor de langdurige zorg. 'Real teams' worden gekenmerkt door duidelijke teamgrenzen, stabiliteit van teamleden en wederzijdse taakafhankelijkheid. Door middel van longitudinaal vragenlijst onderzoek is geanalyseerd in hoeverre deze kenmerken van invloed zijn op teamleren, emotionele steun binnen het team en op de effectiviteit van teams in de langdurige zorg. De drie kenmerken van een 'real team', teamleren, emotionele steun en teameffectiviteit zijn gemeten aan de hand van een vragenlijst ingevuld door teamleden. Teameffectiviteit is ook gemeten aan de hand van een vragenlijst ingevuld door teammanagers.

Uit dit onderzoek blijkt dat een zogenaamd 'real team', zoals gedefinieerd door Wageman, Hackman en Lehman (2005), niet een eenduidig construct is in de langdurige zorg. De drie kenmerken van een 'real team' hebben elk een ander effect op de teamprocessen en de teameffectiviteit. In lijn met de theorie over 'real teams', leiden duidelijke teamgrenzen en stabiliteit van teamleden tot gezonde teamprocessen. Wederzijdse taakafhankelijkheid heeft echter een negatief effect op teamleren en emotionele steun. Daarnaast geven de resultaten aan dat teameffectiviteit direct baat heeft bij een hoge stabiliteit van teamleden en indirect bij duidelijke teamgrenzen. Het is daarom verstandig om niet te spreken over 'real teams' in de langdurige zorg (zoals gedefinieerd door Wageman, Hackman en Lehman), maar de drie kenmerken van een 'real team' apart te beschouwen en te spreken over teams met duidelijke grenzen, stabiele teams en teams waarin teamleden onderling taak afhankelijk zijn. De belangrijkste conclusie is dat intensiever teamwerk in de langdurige zorg niet zal leiden tot betere resultaten indien dit inhoudt dat teamleden een hogere mate van taakafhankelijkheid hebben.

In **hoofdstuk 3** is gekeken naar de invloed van een coachende stijl van leidinggeven op de omgang met fouten, de veiligheid en de mate van innovatie in teams in de langdurige zorg. Teamleden en teammanagers hebben een vragenlijst ontvangen om de veiligheid en innovatie te meten. Daarnaast hebben teamleden ook de teamstabiliteit en de omgang met fouten beoordeeld aan de hand van een vragenlijst.

De resultaten laten zien dat teammanagers die een coachende stijl aannemen, teams meer stimuleren om van hun fouten te leren en om constructief met fouten om te gaan in plaats van elkaar te beschuldigen. De mate van teamcoaching heeft ook een direct positief effect op de veiligheid (beoordeeld door teamleden) en op de innovatie binnen een team (beoordeeld door teamleden en teammanagers). Dit effect is groter wanneer het een instabiel team betreft. De resultaten laten verder zien dat teamleden die onderdeel zijn van een team dat leert van fouten, de veiligheid en innovatie hoger beoordelen dan teamleden die onderdeel zijn van een team dat elkaar beschuldigend afstraft bij fouten. Stabiele teams hebben daarbij

relatief vaker een benadering gericht op het leren van fouten. De perceptie van teamleden en teammanagers van de veiligheid in het team komt het meest met elkaar overeen wanneer een team gericht is op het leren van fouten. Het tegenovergestelde is het geval wanneer een team gericht is op het beschuldigen van individuen voor fouten. De perceptie die teamleden en teammanagers hebben van de veiligheid in het team komt ook sterker met elkaar overeen wanneer een team een hoge mate van teamcoaching ervaart. De belangrijkste conclusie is dat om verbeteringen in de veiligheid en innovatie te bereiken, dienen teams gestimuleerd te worden om van fouten te leren en dienen zij tevens ontmoedigd te worden om elkaar bij fouten te beschuldigen. Teammanagers kunnen hierin een belangrijke rol spelen door teamleden te coachen om fouten als leer- en verbetermogelijkheid te zien en door ervoor te zorgen dat individuen niet beschuldigd worden voor fouten.

In **hoofdstuk 4** is onderzocht of de relatie tussen coachend leiderschap en teamfunctioneren wordt gemedieerd of gemodereerd door teamreflectie. Team coaches kunnen teamreflectie bevorderen door feedback te geven op het teamfunctioneren, te luisteren, te analyseren en kritische vragen te stellen (Ellinger et al., 2003; 2011; McLean et al., 2005), waardoor de kans op het gedachteloos uitvoeren van routines, zonder deze expliciet af te zetten tegen alternatieven, geminimaliseerd wordt (Hackman & Wageman, 2005). Volgens deze gedachte is teamreflectie een belangrijk teamproces die de relatie tussen teamcoaching en teamfunctioneren medieert. Echter, als leiderschap op een functionele manier wordt benaderd (McGrath, 1962), dan zou teamreflectie de relatie tussen teamcoaching en teamfunctioneren ook kunnen modereren. Een functionele benadering houdt in dat de intensiteit van leiderschapsgedragingen moet variëren, omdat de belangrijkste taak van de leidinggevende is datgene te doen wat het team zelf niet adequaat kan doen (Ahearne et al., 2005; Morgeson, 2005; Morgeson et al., 2010; Zaccaro et al., 2001). De relatie tussen teamcoaching en teamfunctioneren wordt in deze gedachte gemodereerd door teamreflectie, waarbij teams die weinig reflecteren meer profijt hebben van teamcoaching dan teams die veel reflecteren. We hebben een longitudinale vragenlijst onderzoek verricht met twee meetmomenten (met één jaar interval). Teamcoaching en teamreflectie zijn gemeten aan de hand van een vragenlijst ingevuld door teamleden. Het teamfunctioneren (effectiviteit, efficiëntie en innovatie) is gemeten aan de hand van een vragenlijst ingevuld door de teammanagers.

Uit de resultaten blijkt dat teams die op een coachende manier worden aangestuurd, effectiever en innovatiever, maar niet efficiënter zijn. Teams die reflecteren op verschillende aspecten van het teamfunctioneren (zoals hun communicatie kanalen, normen, waarden en procedures) zijn effectiever en efficiënter, maar niet innovatiever. Teamreflectie vervult geen mediërende, maar wel een modererende rol in de relatie tussen teamcoaching en team functioneren. Teamcoaching heeft een groter effect op het team functioneren (effectiviteit, efficiëntie en innovatie) bij weinig reflecterende teams. Een mogelijke verklaring voor het feit dat reflectie geen mediërende rol speelt is dat team coaches geneigd zijn om de reflecte-

rende taken van het team over te nemen in plaats van deze te stimuleren. In plaats van teams te stimuleren om werkgerelateerde kwesties zelf te exploreren, te bevragen en te analyseren doen zij dit mogelijkerwijs voor het team. De belangrijkste conclusie is dat teammanagers de mate van teamreflectie zullen moeten inschatten en hun intensiteit van leiderschap daarop zouden moeten aanpassen.

In **hoofdstuk 5** is onderzocht wat hulpverleners in de jeugdzorg het relatieve belang vinden van factoren die volgens de literatuur teamfunctioneren beïnvloeden. Daarvoor is de zogenaamde Q methode gebruikt waarmee verschillende perspectieven goed in beeld te brengen en te onderscheiden zijn. De respondenten blijken ingedeeld te kunnen worden in drie groepen die een ander perspectief hebben op het relatieve belang van teamfactoren voor de teameffectiviteit, namelijk zij die de nadruk leggen op (1) team interacties, (2) de randvoorwaarden voor communicatie, of op (3) het faciliteren van individuen. Het eerste perspectief benadrukt dat de interacties tussen teamleden het belangrijkste zijn voor teameffectiviteit. Zorgverleners in de jeugdzorg met dit perspectief zijn team georiënteerd, vinden verschillende teamprocessen belangrijk en hebben een sterk vertrouwen in teamwerk. Respondenten met dit perspectief zijn werkzaam in verschillende type teams. Het tweede perspectief is gericht op teamkarakteristieken die communicatie binnen en tussen teams mogelijk maken. Zorgverleners in de jeugdzorg met dit perspectief vinden factoren die communicatie mogelijk maken het belangrijkst. Respondenten met dit perspectief zijn vooral werkzaam in teams die 24-uurs zorg verlenen waardoor er met shifts wordt gewerkt. Communicatie is juist hier belangrijk voor de continuïteit van de zorg. Het derde perspectief benadrukt het belang van factoren die individuele zorgverleners faciliteren om als teamlid te kunnen functioneren. Zorgverleners in de jeugdzorg met dit perspectief zijn gericht op factoren die bijdragen aan hun individuele taken. Respondenten met dit perspectief werken vooral in ambulante teams, waarin solistisch wordt gewerkt en teamleden samen komen om elkaar te ondersteunen bij individueel verrichte taken door bijvoorbeeld feedback te geven. De overeenkomst tussen alle respondenten is dat zij 'communicatie en coöperatie binnen het team' en 'het uitwisselen van feedback tussen teamleden' belangrijk vinden. De belangrijkste conclusie van dit deelonderzoek is dat er verschillende opvattingen bestaan over welke factoren van belang zijn voor effectief teamfunctioneren en dat deze opvattingen gerelateerd zijn aan het type zorg dat een team verleent.

In **hoofdstuk 6** wordt een systematische review van de literatuur gepresenteerd naar de effectiviteit van interventies om teamfunctioneren te verbeteren. Uit de review blijkt dat er drie categorieën van interventies zijn te onderscheiden: (1) trainingen, (2) instrumenten en (3) interventies op organisatie niveau. De eerste categorie bestaat uit trainingen waarin een team leert over de verschillende aspecten van het teamfunctioneren en hoe deze te verbeteren zijn door middel van een systematisch proces. Er zijn vier type trainingen: (1) simulatie

trainingen, (2) trainingen gebaseerd op de principes van Crew Resource Management (CRM), (3) interprofessionele trainingen, en (4) teamtrainingen. De tweede categorie verwijst naar onderzoek naar specifieke instrumenten die een team kan gebruiken om de teameffectiviteit te vergroten door verbeterde communicatie (zoals checklisten en score kaarten). De derde categorie omvat onderzoek naar acties en veranderingen die gericht zijn op de organisatiecontext, maar waarvan wel wordt verwacht dat ze effect hebben op het teamfunctioneren. Het merendeel van de gevonden onderzoeken laat een positief verband zien tussen de interventie en de zogenaamde niet technische teamvaardigheden. De meeste onderzoeken zijn echter niet met een sterk design uitgevoerd wat ten koste gaat van de kwaliteit van het bewijs. Onderzoeken die een relatie aantonen met een hoge of gemiddelde kwaliteit van bewijs, hebben positieve resultaten gevonden voor simulatie trainingen, CRM trainingen, team gebaseerde trainingen en 'continuous quality improvement' projecten (interventie op organisatie niveau). De belangrijkste conclusie van dit deelonderzoek is dat het meeste bewijs beschikbaar is voor de effectiviteit van trainingen die gericht zijn op multi-disciplinaire teams in de 'cure sector'. Er is geen kennis beschikbaar over hoe het teamfunctioneren verbeterd zou moeten worden in mono-disciplinaire teams in de langdurige zorg.

In de conclusie worden de vijf onderzoeksvragen beantwoord. Daarna wordt er een discussie gevoerd rondom de volgende vijf thema's: onderlinge afhankelijkheid in perspectief, de ambivalentie van het managen van teams in de langdurige zorg, de uitdaging van het meten van teamfunctioneren, veiligheid door externe versus interne vormen van controle en het verbeteren van teamfunctioneren. Daarnaast reflecteren we op de methodologie en presenteren we een onderzoeksagenda met de volgende vier thema's: het definiëren van een team, balanceren van tegenstrijdige voorwaarden voor teamfunctioneren in de langdurige zorg, teamcoaching als instrument voor het verbeteren van teamfunctioneren en CRM interventies in de langdurige zorg.

Curriculum Vitae

ABOUT THE AUTHOR

Martina Buljac was born on October 17, 1984 in Rotterdam, the Netherlands. In 2002 she graduated from secondary school (Athenaeum) at the Emmaus College in Rotterdam. At the Erasmus University she studied Health Policy and Management, from 2002 to 2005 Bachelor BMG, from 2005 to 2007 the Masters Health Economics, Policy and Management (HEPL) and Health Care Management (ZoMa). She started doing research by investigating the willingness to pay for helicopter emergency medical services in collaboration with the Erasmus MC for her HEPL thesis, which resulted in a publication.

While finishing her HEPL thesis she entered the Master ZoMa, in 2006, and at the same time she started to work part-time as junior research fellow at the institute of Health Policy and Management at the Erasmus University Rotterdam. As a research fellow she worked on a project on team effectiviness in youth care, which inspired her to pursue a PhD thesis. In 2008 she started her PhD research on team functioning in long-term care. She was involved as a teacher in several courses in the Bachelor and Master program. Martina also fulfilled the role as a reviewer for journals such as Journal of Interprofessional Care, Systematic Reviews, and Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine.

Martina continues her research as assistant professor at the institute of Health Policy and Management at the Erasmus University Rotterdam.

PhD PORTFOLIO

	Year
Research skills training	
- Nihes summer programme Regression Analysis, Erasmus MC, Rotterdam	2007
- Workshop Multi-level Analysis of Group and Longitudinal Data	2011
Presentations at International conferences	
- Posterpresentation 'Measuring and improving team effectiveness' at International Workshop on Team Working (IWOT), Birmingham	2008
- Presentation 'Improving team performance in health care' at International Workshop on Team Working (IWOT), Tilburg	2009
- Presentation 'Interventies om team functioneren te verbeteren' at People Performance Seminar, Rotterdam	2009
- Presentation 'How to improve team effectiveness?' at HRM Network Conference, Amsterdam	2009
- Presentation 'Effective and safe teams in the long-term care setting' Interdisciplinary Network of Group Research (INGRoup), Washington D.C.	2010
- Presentation 'Are real team healthy teams?' at People Performance Seminar, Dublin	2010
- Presentation 'Team reflection: a mediator or a moderator in the relationship between team coaching and team performance?' People Performance Seminar, London	2011
Other presentations	
- Presentation Lindenhof, Rotterdam	2008
- Presentation iBMG/BZO meeting, Rotterdam	2008
- Presentation Lindenhof, Rotterdam	2008
- Presentation TriviumLindenhof, Rotterdam	2009
- Presentation iBMG/HSMO Colloquium, Rotterdam	2010
- Presentation UvT PhD meeting, Tilburg	2010
- Presentation iBMG Seminar, Rotterdam	2011
Seminars and workshops	
- Institute of Healthcare Improvement (IHI) seminar 'Communication and Teamwork', San Diego	2008
- HRM in de zorg, Nijmegen	2008

- Q methodology, Rotterdam	2010

Didactic skills

- Course 'PGO', Erasmus University Rotterdam	2007

Lecturing

- Master ZoMa 'Beheer- en personeelsmanagement'	2007-2008
- Bachelor 1 BMG 'Organisatiewetenschappen'	2007-2008
	2008-2009
	2009-2010
	2010-2011
- Schakeljaar 'Kwaliteitskunde'	2007-2008
- Bachelor 2 BMG 'Integrale Zorg'	2007-2008
	2008-2009
- Schakeljaar 'Organisatiewetenschappen'	2009-2010
	2010-2011
- Schakeljaar 'Organisatie en Strategie'	2009-2010

Supervising theses

- Supersiving and co-supervising ZoMa Master and Bachelor theses	2008-2011

PUBLICATIONS

Dissertation:

Buljac-Samardžić, M., Dekker-van Doorn, C. M., Van Wijngaarden, J. D. H., & Van Wijk, K. P. (2010). Interventions to improve team effectiveness: A systematic review. *Health Policy, 94*(3), 183-195.

Buljac-Samardžić, M., Van Wijngaarden, J. D. H., Van Wijk, K. P., & Van Exel, N. J. A. (2011). Perceptions of team workers in youth care of what makes teamwork effective. *Health & Social Care in the Community, 19*(3), 307-316.

Buljac-Samardžić, M., Van Woerkom, M., & Paauwe, J. (2012). Team safety and innovation by learning from errors in long-term care settings. *Health Care Management Review, 37*(2).

Buljac-Samardžić, M., Van Woerkom, M., Van Wijngaarden, J.D.H. Are real teams healthy teams? Accepted for publication in *Journal of Healthcare Management*.

Under review:

Buljac-Samardžić, M. & Van Woerkom, M. Team reflection: a mediator or a moderator in the relationship between team coaching and team performance? A longitudinal study in long-term care settings. Under review & Presented at Improving People Performance in Health Care, London, 2011.

Other:

Buljac, M., & van Wijngaarden, J. D. H. (2009). De weg naar een effectiever werkend team. *Jeugd En Co Kennis, 3*(1), 23-26.

Ringburg, A. N., Buljac, M., Stolk, E. A., van Lieshout, E. M. M., van Beeck, E. F., Patka, P., et al. (2009). Willingness to pay for lives saved by helicopter emergency medical services. *Prehospital Emergency Care, 13*(1), 37-43.

Van Wijngaarden, J. D. H., Weggelaar, A. M., & Buljac, M. (2009). Commentary quality improvement. *British Journal of Healthcare Managament, 15*(11).

Buljac, M., Van Wijngaarden, J. D. H., & Huijsman, R. (2010). *Eindrapport team effectiviteit in jeugdzorginstelling TriviumLindenhof: De weg naar zelflerende teams*. Rotterdam: iBMG.

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