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Team types, perceived efficiency and team climate in Swedish cross-professional teamwork

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Abstract
This paper aims to identify the dominant types of team organization in cross-professional Swedish human service organizations and the relationship between team type and perceived efficiency as well as team climate as an aspect of work satisfaction. A questionnaire was responded to by 337 individual professionals from 59 teams, mainly from psychiatric care (50.7%) but also from social, neuropaediatric and vocational (re)habilitation, school health care and the occupational health service. The interprofessional model of team organization was the most frequent (62%), followed by the transprofessional (33%), and the multiprofessional team, (5%). A moderate positive correlation was found between team type and perceived efficiency as well as team climate. The greater the interdependence and the closer the co-operation, the higher the efficiency and the better the climate. No differences were found between professions or organizational domiciles with respect to team type. This paper suggests (1) a more consistent vocabulary with 'cross-professional' as the generic term covering different team types and (2) that a contingency approach to teamwork is tested in future research.

Keywords: *Multi-, inter- and transprofessional teamwork, cross-professional work, human service organizations*

Introduction

Collaboration between professionals from different disciplines has been a widespread form of work organization in human service organizations for a number of decades. However, practitioners, politicians and researchers still advocate further development as well as the expansion of cross-professional work. Their arguments can be categorized into five groups, outlined below.

First, the rationale and most frequent arguments for cross-professional teamwork[1] are based on the fact that solutions to 'complicated problems' demand a variety of knowledge and competence bases (Benierakis, 1995; Heinemann, 2002; Onyett & Ford, 1996; Payne, 2000). Gathering various professional skills and sharing information are also seen as prerequisites for a 'holistic', instead of a fragmented, picture of the client (Proctor-Childs, Freeman & Miller, 1998). Much of the literature starts from an a priori assumption that teamwork is the best way of providing health care and social welfare; claims that are seldom questioned (Searle, 1991). The occasional articles (e.g. Galvin & McCarthy, 1994) that do question this assumption are, however, in their turn criticized (Onyett & Ford, 1996).

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Second, although many authors stress the superiority of cross-professional teams, with respect to 'efficiency', this assumption is based on logical reasoning rather than reliable outcome studies (Colombo, Bendelow, Fulfor & Williams, 2003; Hammick, 1998; Pearson & Spencer, 1995). In their review of more than 2000 articles, Schofield and Amadeo (1999) identified only 11 outcome-based articles fulfilling formal research criteria. Although there have been good results in cross-professional team collaboration, proving that a cross-professional approach is more effective than contributions from single professionals and deciding which model of team organization is the most appropriate seems difficult.

Nevertheless, there are some reports of the benefits of cross-professional collaboration. For example, both Onyett and Ford (1996) and Ovretveit (1997) argue that cross-professional teams provide a cost efficient alternative in health care: duplication, mistakes and delays are minimized when professionals work together. Hooker and Freeborn (1991) found that using non-physicians in primary health care improved access and reduced costs. Carlsson (2002) confirmed this finding and also observed a more sustainable and speedier recovery in long-term patients on sick leave when treated by physicians and psychologists working in collaboration.

Third, 'client satisfaction' has become increasingly important in the delivery of human services, a result of reduced monopoly and modern legislation regulating social welfare, education and health care. Calnan, Cant, Williams and Killoran (1994) consider satisfaction not only to be a measure of output in its own right, but also a factor that may affect compliance with treatment. Comparative studies of cross-professional and uni-professional teams are rare. However, there are reports of a higher level of satisfaction with the quality of health care delivered by cross-professional teams than offered by a single profession (Lowe & O'Hara, 2000; Carlsson, 2002). Another perspective on cross-professional teamwork is found in a study by Simeonsson, Edmondson, Smith, Carnahan and Bucy (1995) who observed that professionals within neuropaediatric habilitation rated a team approach much higher than the parents.

Fourth, a category of arguments pays attention to the fact that 'learning' is facilitated when team members of different disciplines are trained and stimulated to share skills (Gordon, 1981; Littlewood, 1988). Through mutual consultancy, the individual professionals not only broaden their knowledge and understanding of other disciplines (Freeman, Miller & Ross, 2000; Hutchens, 1994; Spratley, 1989) but also broaden their web of professional contacts (Skog & Östman, 1995).

Fifth, 'higher work satisfaction', including 'social support', also has been identified as a benefit. Both Moss (1994) and Payne (2000) stress the opportunities of getting both professional and emotional support from the team. Young (1994) also found positive correlations between a high degree of job satisfaction and well functioning multiprofessional teamwork. Other researchers support this finding. For example, Ranz, Eilenberg and Rosenheck (1997) report a similar relationship between job satisfaction and physicians collaborating with other professions. Kutzscher, Sabiston, Laschinger and Nish (1997) observed not only a higher level of general satisfaction, but also a higher degree of empowerment among those working in cross-professional teams compared to a control group.

There is a complicating factor in the arguments in favour of co-operation between different professions. Cross-professional collaboration is usually organized in teams and the teams may take on a variety of forms. Using empirical research, this paper explores the relationship between team type, perceived efficiency and team climate in cross-professional teamwork.

Three main models of organizing cross-professional teamwork are described fairly consistently in the literature (e.g. Katzenbach & Smith, 1983; Lind & Skärvad, 1997;

Melvin, 1980). The most frequent terms seem to be multiprofessional (syn. additive, multidisciplinary), interprofessional (syn. integrative, interdisciplinary) and transprofessional teams. Lind and Skärvad (1997), not restricted to human service organizations and true professions only, have introduced three, almost identical, team types – role differentiated, role integrated and role complementing teams. Hibbert, Arnaud and Dharampaul (1994) as well as Hall and Weaver (2001) place the three types of teams on a continuum or dimension of interdependence or collaborative intensity among the team members (i.e., a classification according to level of integration). The continuum ranges from the multiprofessional, through the interprofessional to the transprofessional model.

The term 'multiprofessional' refers to a collaborative process where members of different disciplines assess or treat a client/patient independently and only share information with each other (Sorells-Jones, 1997). The team is focused on the task, not the collective working process, and the contributions are made either in parallel or sequentially to each other with a minimum of communication. Each contribution stands alone and can be performed without the input from others. These independent contributions have to be co-ordinated. In health care, the physician has traditionally taken this responsibility.

Interprofessional teamwork is often described in terms of ''the product is more than the simple sum of its parts''. As opposed to multiprofessional work, the outcome can be accomplished only through the interactive effort and contribution of the professionals involved; this implies a high level of communication, mutual planning, collective decisions and shared responsibilities (Day, 1981; Sicotte, D'Amour & Moreault, 2002). To allow for an optimal and holistic management of the client's problems, everyone involved in the process must take everyone else's contribution into consideration.

The transprofessional team operates at the opposite end of the continuum compared to the multiprofessional team. The team uses an integrative work process and disciplinary boundaries are partly dissolved (Zeiss & Steffen, 1996). Reilly (2001), referring to Walker and Avant (1995), defines the characteristic attributes of a transprofessional approach as role extension (increase of discipline-specific knowledge), role enrichment (incorporating knowledge of the other disciplines), role expansion (transmitting one's own expertise to other team members), role release (blurring traditional discipline boundaries) and role support (support of, and feedback to, others on the implementation of skills). Mariano (1999), using the role blurring concept, draws attention to the risk that some team members may not realize the value of the contribution of others and, hence, not use their expertise to the full.

Some reviews on cross-professional team collaboration (McCallin, 2000; Schofield & Amodeo, 1999) have noticed significant weaknesses in terminology; terms such as 'interdisciplinary' and 'multidisciplinary' are rarely defined and often used interchangeably and randomly. 'Multi' as a prefix to professional or disciplinary simply announces that several or many professionals are involved but tells nothing about the work process. 'Inter', on the other hand, denoting between, among, reciprocal or together indicates a type of collaboration. 'Trans', meaning across and beyond, refers in this context to the professional roles. The conceptual confusion may be the result of an unusually large number of articles written by experienced practitioners rather than pure scholars.

The evidence on which team type functions best is unclear (Long, Kneafsey & Ryan, 2003), and Thylefors, Price, Persson and von Wendt (2000) suggest a contingency, or situational, approach with respect to the choice of team organization. The aim behind this study is to take a step in the direction of a contingency model by investigating the relationship between cross-professional team type and efficiency and team climate. The former measurement will be limited to perceived efficiency among the team members. Team

climate is an aspect of work satisfaction (Johnson & Hall, 1988; Lennéer-Axelsson & Thylefors, 1998) and, in that sense, is regarded as an efficiency factor in line with general consensus in the Swedish labour market and the ideas behind the Balanced Score Card (Olve & Sjöstrand, 2002).

Thus, the specific aims of this study are to (a) identify dominating team types in Swedish cross-professional collaboration in human service organizations and (b) explore the relationship between team type, perceived efficiency and team climate.

Methodology

Sample

We used two different samples. The first includes 206 team members in social, neuropaediatric and vocational (re)habilitation, school health care, psychiatric care and the occupational health service, 30 teams in total. The second sample consists of 131 employees, from 29 polyclinical, psychiatric teams. The definition of a team is an organizational work unit made up of at least three different professions. The two samples were merged (Table I). The response rate was 86% in the first, mixed sample, and 58% in the psychiatry sample.

The majority, 58%, belonged to the 40–55 years age group and 74% were women. The average team size was nine members and 77% considered their team to have a formal leader. One-third, 34%, worked part-time (60% or less) in their respective teams. The Swedish health care and social welfare systems are relatively uniform throughout the country, so we may assume that the two samples are fairly representative.

Table I. Descriptive sample data (n = 337)

Variable	Percentage
Organizational domicile	
Psychiatric health care	50.7
Neuropaediatric health care	16.3
School health care	10.4
Occupational health service	9.5
Rehabilitation of drug addicts	4.7
Occupational rehabilitation	8.4
Profession	
Nurse	23.7
Social welfare worker	17.6
Psychologist	11.9
Physiotherapist	7.4
Physician	6.4
Occupational therapist	5.8
Medical secretary	5.1
Special education teacher	4.8
Assistant	2.6
Vocational counsellor	2.2
Headmaster/principal	1.9
Occupational safety engineer	1.6
Speech therapist	1.3
Other*	7.7

Note: *e.g., recreation leader, assistant nurse, pre-school teacher, human resource specialist, assistant.

Instruments and measurements

Data were collected by a questionnaire distributed to all team members either by research assistants or by managers within the organizations. The questionnaires were returned individually to the researchers.

The questionnaire included 37 items. Background data were covered by the first six items.

'Team type' was measured with an instrument made up of six sub-scales. The instrument was constructed by an operationalization of central themes found in the descriptions of the three models of team functioning (i.e. the multi-, inter- and transprofessional model). Six discriminating themes were found; role specialization, task interdependence, co-ordination, task specialization, leadership and role interdependence. These dimensions were treated as continuous variables in the form of 3-point scales. Every step on the scales was described as shown in Table II. (The questionnaire included only the descriptions.)

A 'team type index' was constructed by summing up the responses of the six sub-scales. Thus, the potential index score ranged from 6 to 18. A low index score indicates a multiprofessional, a medium score an interprofessional and a high score a transprofessional team approach. Cronbach's α for the six sub-scales was 0.65. As Cronbach's α is quite sensitive to the number of items, 0.65 is an acceptable value. The operationalization of the theoretically derived construct 'team type' seems to have an internal consistency if Cronbach's α is used as a kind of construct validation.

Table II. Six themes of team functioning

1 Multiprofessional	2 Interprofessional	3 Transprofessional
1. Role specialization: Team roles are specialized and everyone concentrates on her or his own tasks	Roles are specialized but everyone is expected to interact	Although roles are specialized, everyone must also be prepared not only to complement, but to replace each other when necessary
2. Task interdependence: Tasks are usually performed in a determined sequence	Tasks are partly interdependent and must be co-ordinated	Team members as well as their tasks are interdependent
3. Co-ordination: Co-ordination is based on supervision or standardization	Everyone has to co-ordinate their activities	Co-ordination is achieved by direct close interaction, flexibility and improvization
4. Task specialization: Tasks are specialized and only those with a special professional education are allowed to perform the task	Everyone must be prepared to adjust to the task	Everyone must be prepared to adjust to the strengths and weaknesses of the others
5. Leadership: The team leader functions as a traditional manager	The team leader functions as a 'coach'	The team leadership varies with the situation; the team is self-regulated
6. Role interdependence: 'Do your job the best way you know'	'Do your job *and* co-operate'	'Do your job in a interactive way and be ready for continuous adjustments/

A 'perceived efficiency index' was constructed based on the following six items:

- To what extent do you consider that all team members work towards the same goal?
- To what extent do you regard the work of the team as efficient?
- To what extent do you regard your organization/unit as successful?
- Do you consider your organization/unit as distinguished for high quality?
- How well does your team meet the needs of the clients, patients etc?
- In total, how satisfied are you with the work of your team?

The six items all focus, in one way or another, on goal achievement (Cronbach's $\alpha = 0.89$). There were five response alternatives (1 = to a very low degree; 5 = to a very high degree). The index value was calculated by summing up the raw scores and dividing the sums by number of items. Thus, the index score could range from 1 to 5; the higher the score, the better the perceived efficiency.

We constructed a 'team climate index' of 17 items/statements (Cronbach's $\alpha = 0.93$). They dealt with: (a) ability to give feedback, to listen, to express opinions clearly and 'to give and take'; (b) the existence of mutual empathy, interest and attention, an informal and supportive atmosphere, satisfying relationships and acceptance of emotions as well as rational opinions; (c) respect for deviating opinions, constructive criticism and an ambition to achieve consensus as well as a capacity for conflict management; and (d) encouragement of individual performances and activity in team discussions. The climate aspects were inspired by McGregor's (1960) description of prerequisites for successful teamwork.

Respondents had to decide whether the statements were correct descriptions of their respective team or not. There were five response alternatives, from ''disagree totally'' to ''agree totally''. Additionally, the team climate index ranged from 1 – 5, calculated in the same way as the efficiency index (1 = very unsatisfactory climate; 5 = very satisfactory climate).

The remaining two items were ''Does your team have the right combination of professions?'' and ''Our team is task focused''. These two items also had five response alternatives.

Data analysis

Calculations, such as descriptive statistics, reliability analysis (Cronbach's α), analyses of correlations (Pearson's product-moment correlation), and regression analyses (stepwise) were carried out using SPSS 9.0 for Windows. Group differences were analysed by Anova and Bonferroni post hoc test.

Results

The main questions of the study were: What team types dominate in Swedish cross-professional human service organizations? What are the relationships between team type, perceived efficiency and team climate?

Team type

The majority, 62%, perceived their teams as mainly interprofessional and 33% had even higher scores, i.e., signs of a transprofessional model (Figure 1).

Another, more detailed, way of describing the team models is based on the six separate scales in the team type index, shown in Figure 2. The 'keywords' in the Figure correspond to the value 3 on the 3-point scale.
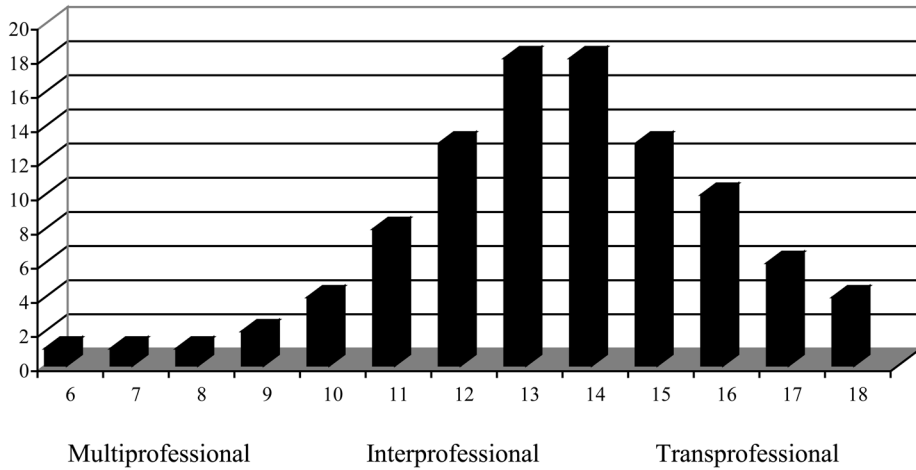
Percent

Figure 1. Team types. Percentage distribution over team types (multiprofessional, score 6 – 9; interprofessional terms, score 10 – 14; transprofessional, 15 – 18).
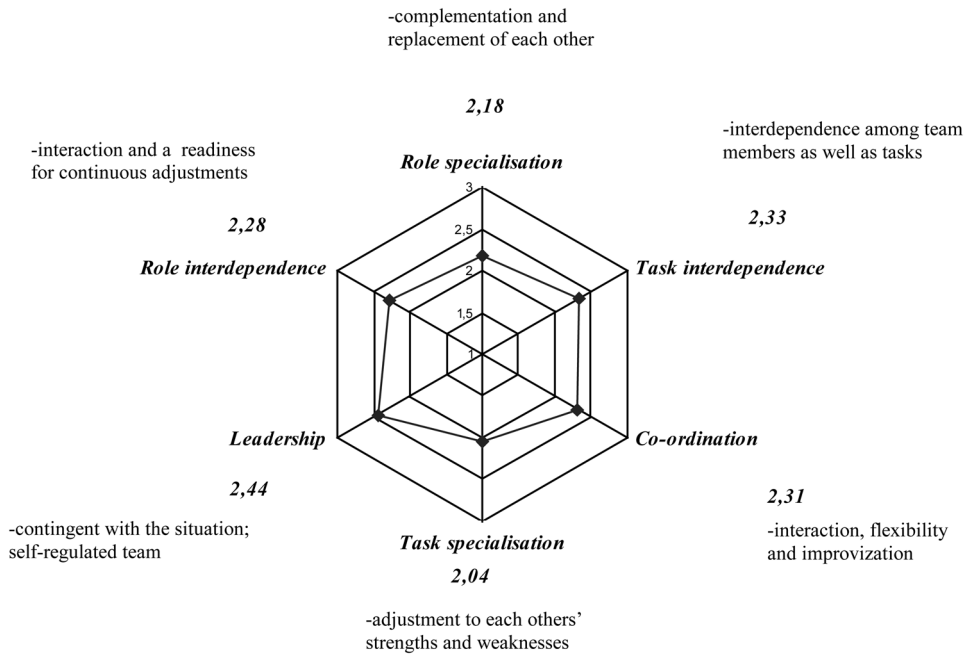

Figure 2. Team type variables. Mean values (scale: 1 = multiprofessional; 2 = interprofessional; 3 = transprofessional).

When the three categories with respect to team type are compared for background data only one clear difference appears. Teams with more than 14 members are given lower scores on the team type index ($p < 0.05$). No differences appeared with respect to profession or organization.

Team type, perceived efficiency and team climate

According to the perceived efficiency index most team members consider their team to be relatively efficient (M = 3.77, SD = 0.64). The team climate index also presents a positive picture (M = 3.92; SD = 0.63).

Team type correlates with perceived efficiency ($r = 0.29$; $p < 0.01$) as well as with team climate ($r = 0.29$; $p < 0.01$). Perceived efficiency and team climate also show a positive and significant relationship ($r = 0.64$; $p < 0.01$).

A comparison between the groups with low, medium and high scores on the team type index confirms that teams considered as inter- and, above all, transprofessional score higher on perceived efficiency ($F (2, 297) = 8.82$; $p < 0.001$) as well as on team climate ($F (2, 297) = 8.08$; $p < 0.001$) (Table III).

The differences between the team types with respect to perceived efficiency are all significant. With respect to team climate the differences are significant between the multiprofessional and the inter- and transprofessional teams, respectively.

Predictors of team climate and perceived efficiency

With perceived efficiency and team climate as dependent variables, a number of predictors were identified using stepwise regression analyses.

A model with three items (Table IV) was highly significant and predicted perceived efficiency ($R^2 = 0.415$; $F_{(3, 153)} = 36.25$; $p < 0.001$).

Thus, perceived high team efficiency is related to a 'supportive' atmosphere, a well distributed activity among members and an encouragement of good individual performances.

Table III. Perceived efficiency and team climate over team types. Mean values and standard deviations

Team type	n	Perceived efficiency		Team climate	
Score		M	SD	M	SD
Multiprofessional 6 – 9	17	3.32	0.68	3.45	0.64
Interprofessional 10 – 14	209	3.74	0.57	3.86	0.58
Transprofessional 15 – 18	111	3.93	0.51	4.07	0.52

Notes: $^\star p < 0.05$ $^{\star\star} p < 0.01$ $^{\star\star\star} p < 0.001$.

Table IV. Summary of stepwise regression analysis of variables predicting perceived efficiency

Variable	B	Std Error	Beta	t
To what extent is the teamwork characterized by helpfulness, support and respect?	0.210	0.063	0.251	3.334***
All team members are active in team discussions	0.209	0.047	0.308	4.394***
To what extent are the team members encouraging good individual performances?	0.166	0.044	0.267	3.771***

Note: $^{\star\star\star} p < 0.001$.

The best model of predictors of team climate (Table V) was a combination of four items ($R^2 = 0.460$; $F_{(4,152)} = 32.38$; $p < 0.001$):

A good team climate is, according to the model, linked to the embracement of a common goal, satisfaction with team achievements and efficiency as well as an adequate team composition.

One or two factors?

Very few individuals, 8.6%, rated their formal team leader as a traditional boss even if the team was regarded as comparatively multiprofessional. This response distribution gave rise to questions on the underlying structure of the team type scale. A factor analysis including the six variables in the team type index identified two distinct factors, Table VI.

Factor 1 relates to specialization and integration and Factor 2, co-ordination and leadership.

Discussion

In 1970 Jaques stated (p. 7) that teamwork "is the best model yet constructed for working with clients as total persons with multiple needs". The question is, what kind of teamwork?

Our result indicates that the most common team type in Swedish health care and social welfare is the interprofessional team, followed by the transprofessional. The more the characteristics resemble those of the transprofessional team, the higher the perceived efficiency. This tendency is also reflected in the literature. So, too, is the relationship between an integrative team organization and a climate, characterized by team spirit, trust and openness, necessary in close co-operation.

The recommendation ought to be: strive for transprofessional teamwork! Cross-professional teams in Swedish human service organizations indeed prefer an integrative team type according to this study. The situation seems to be ideal. There are, however, a

Table V. Summary of stepwise regression analysis of variables predicting team climate

Variable	B	Std Error	Beta	t
To what extent do you consider that all team members are working towards the same goal?	0.219	0.055	0.306	3.99***
In total, how satisfied are you with the work of your team?	0.129	0.060	0.178	2.14*
Does the team have the right combination of professions?	0.127	0.042	0.200	3.04**
To what extent do you regard the work of the team as efficient?	0.143	0.055	0.197	2.59**

Notes: *$p < 0.05$ **$p < 0.01$ ***$p < 0.001$.

Table VI. Rotated component matrix; team type variables

Variable	Component 1	Component 2
Task specialization	0.646	0.377
Task interdependence	0.660	0.458
Role specialization	0.737	0.080
Role interdependence	0.714	0.253
Co-ordination	0.477	0.613
Leadership	0.070	0.874

Notes: Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization.

number of objections. The most important one is that the golden years of Swedish human service organizations have been replaced by a scarcity of resources (Swedish Institute, 2001, 2004). There are few complaints from clients and patients when they eventually receive access to the services but the entrance is narrow (Ferraz Nunes, 2002). Inter- and transprofessional team work demands resources, such as time and co-ordinated calendars.

An integrative teamwork also demands resources of another kind – social competence. Close co-operation tends to exclude professionals who lack ability or motivation for this social intimacy, professionals who might contribute highly in a multidisciplinary team.

Today's clients and patients also are more empowered than those of the past. Some are capable of taking on the role of their own 'case manager' (i.e. taking an active part in co-ordinating single contributions from individual professionals in a multiprofessional team as well as participating in decisions concerning themselves).

Inter- and transprofessional teams are efficient, but time-consuming (Thylefors et al., 2000; Thylefors & Jacobsson, 2001). Therefore, would it be constructive to increase cost efficiency by identifying situations where integrative team collaboration is imperative in contrast to those where multiprofessional teamwork is sufficient? The latter model might be a useful complementary team type as well as a temporary co-operation method within inter- and transprofessional teams.

Hence, there are good reasons for the development of a contingency approach to team working, which is to say identifying situations where either the multi-, the inter- or the transprofessional team organization is the most appropriate choice. Relevant situational variables might be access to resources, complexity of the client's problem, the client's degree of empowerment and team maturity (cf. Fiedler, 1967).

Obstacles to a contingency approach include not only the observed positive correlations between an integrative teamwork and perceived efficiency as well as team climate, but also an idealization of integrative teamwork as the 'real' team (e.g., Katzenbach & Smith, 1993). Having the 'real' or transprofessional team as a permanent guiding-star may be a positive challenge but it may also be a frustrating experience when ambitions cannot be fulfilled. Articles on cross-professional teamwork do show many problems with co-operation (e.g., Skjorshammer, 2001, 2003). A similar obstacle is the confusion between team maturity from a group development perspective and team type. In most respects the team climate index used in this study does describe a mature team (Bennis & Shepard, 1987; Jewell & Reitz, 1981; Lennéer-Axelsson & Thylefors, 1998).

Our results as well as other studies prove a positive relationship between climate/maturity and team type. However, maturity per se does not reveal anything about team type. A mature team would rather have the capacity to choose an appropriate way to collaborate in the given situation. The strong correlation between perceived efficiency and team climate could be understood either as a general satisfaction with the team, both its climate and its achievements, or as a causal relationship between efficiency and climate.

A further question is raised by the results: would efficiency increase in teams of a multiprofessional character if they were co-ordinated by a more directive leadership? If separate contributions are not co-ordinated by means of communication and interaction among team members, then a solution is co-ordination by a boss or a case manager. At the same time, professionals within the explored field generally favour a non-directive leadership, adequate in inter- and transprofessional teams. The factor analysis reveals the presence of two components among the six team type variables. This leads to a suspicion that there is a lack of congruence between the leadership used and other aspects of team organization of the three models. It is still an open question to what extent this incongruence has an impact on efficiency and team climate.

The results on predictors of perceived efficiency underline the importance of the individual team member. On the one hand, the individual must be recognized, encouraged and respected; on the other hand, he or she must contribute to the team. The items with a high predictive value on team climate stress the importance of group goals, satisfaction with efficiency and team composition. Accordingly, in teambuilding and development, aspects such as social relationships, communication and processes are vital as well as structural aspects such as task allocation and goal clarification.

However, future research would benefit from a more consistent use of concepts: 'cross-professional teamwork' as the generic term, indicating individuals from different disciplines working in a team toward a common goal. The term says nothing about the organization of the team. This is done by using the terms multi-, inter- and transprofessional teamwork.

Endnote

1. 'Cross-professional teamwork' as a term is referring to all situations where professionals from different disciplines are collaborating in a team. It does not say anything about *how* the teamwork is organized (cf. cross-functional teams).

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