Perceived Team Effectiveness: What Makes the Difference?

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Introduction

Group behavior has been studied thoroughly since the end of World War II, precisely because team effectiveness in a military context has been proven to be of central importance. Until the mid eighties, emphasis was put on the internal aspects of the group, such as cohesion or interaction between team members. A topic of special interest since the sixties when studying group behavior has been *autonomy*. The general conclusion can be synthesized by "autonomy is good, more autonomy is better", but in the actual context this lemma has to be proven again.

Since then, the scope has changed to an external point of view, taking into account some situational variables too. Looking at both perspectives simultaneously led to the introduction of the concept of *boundary management*; concept that will be explained below. In summary, this scope rephrases Lewin's fundamental law B = f(P,S) – the behavior (B) of an individual is a function of the person's characteristics (P) and of the situation (S) into E = f(T,S), where E stands for effectiveness, T for team and S for situational aspects.

The kind of teams we are studying here are executive teams[3].

This research issue of team effectiveness is part of a collaborative effort of colleagues of the Catholic University of Leuven and the author. The relevance of this collaboration resides in the fact that it allows to compare teams that are working in different setting, especially with respect to the *environmental turbulence*. This means the way and the degree to which a situation can evolve rather quickly and unexpectedly, at the level of the job, the task at hand, the organization or even the broader context the organization is working in. There is no doubt that military settings, in particular operational contexts such as crisis response operations, may be turbulent.

One could think that there is a clear-cut boundary between the inside of a team and its outside world but this is not true. In fact, this boundary can be conceived as a bi-layer, just as the membrane of a living cell, through which the cell "communicates" with its environment and vice versa. In other words some typical behaviors appear at the boundary. Ancona (1993) studied these behaviors and came up with four roles: 1) the *Ambassador* role through which the team "promotes" itself, 2) the *Scout* role or searching for adequate behavior by looking how other teams proceed in the same situation, 3) the *Co-ordinator* role or adapting the team's behavior to the behavior of neighbor teams fulfilling the same or a similar task, and 4) the *Gard* role intended to protect the team from external interference.

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[3] As opposed to our work within the NATO/RTO/Human Factors and Medicine Panel/TG023 where we study the effectiveness of command teams.

Aim

The central question here is to know to what extent boundary management (BM) contributes to team effectiveness (E), given a certain degree of autonomy (A) for a given degree of turbulence (T).

Method

Therefore, a questionnaire has been set up that contains scales for particular levels or aspects each of the above mentioned variables plus a socio-demographic part[4]. Environmental turbulence is measured at the level of the task at hand, the intra-organizational and the extra-organizational level. The autonomy scale is composed of some 12 facets or domains of autonomy. With respect to BM, we used the scales as developed by Ancona plus two scales dealing more in depth with co-ordination and external contacts.

Instances of items are:

Ambassador: *We try to convince others to support the decisions of our team.*
Scout: *We collect information and ideas from persons outside our team.*
Co-ordinator: *We solve problems together with other teams.*
Gard: *We protect our teams from external interference.*

Effectiveness as an outcome is measured at the level of the product, the procedures and the process at a given moment, plus the viability of the team in the future. But in this paper we will discuss only the impact of BM on overall effectiveness; i.e. an aggregation of the aforementioned levels.

The sample consists of 187 civilians belonging to the car assembling manufactories or to the chemical process industry and 190 soldiers belonging to combat and combat support units, deployed as part of the Task Force Belukos VI in Kosovo.

To measure the impact of BM on Effectiveness we used multiple linear regression and this for the whole sample, different subsamples – i.c. civil versus military respondents and type of team (car assembling, chemical processing, combat troops, support units), once with Turbulence as a continuous variable and once with two categories – i.c. people reporting (perceived) low turbulence (lowest 33%) and once with those reporting high turbulence (highest 33%).

Results

If we consider all variables as continuous, the standardized regression weights (β) are .45 for Autonomy, .19 for Boundary Management and -.17 for Turbulence. The variance explained by these variables (R^2) equals .34. Thus, Autonomy is the strongest predictor for Effectiveness and Boundary Management acts as a buffer for Turbulence.

Unfortunately, looking at the results for the various subgroups, these intuitively straightforward conclusions do not hold anymore. This is the reason why we categorized the variable Turbulence into three parts and compared the results according to a “low” condition and a “high” condition.

[4] For a detailed description, see the first author’s presentation *Perceived Team Effectiveness in Peace Support Operations* (Prague, IAMPS 2001).

When looking at the overall turbulence level, the standardized regression weights for BM are all non-significant in the low condition (Table 1.a) but some of them are significant in the high condition (Table 1.b). More specifically they are significant for the whole sample, the military subsample and the support troops sample but they are not for the civilian subsample, nor for the assembling industry or the chemical process industry and for the combat troops neither, although there is a tendency in the positive direction.
A first partial conclusion is that Autonomy remains a strong predictor, varying from .379 to .630 in the low condition and from .305 to .609 in the high condition. A second but tentative conclusion is that BM does not contribute to effectiveness in rather stable situations. A third partial conclusion is that there seems to exist a differential effect of the type of turbulence; i.e. task related, intra-organizational or extra-organizational turbulence.

Table 1.a.

Total Turbulence Low						
	Sample	**n**	**R**	**R²**	**Auton**	**Bound**
1	All	117	.480	.231	.470	.018 ns
2	Civil	61	.589	.347	.630	-.118 ns
3	Military	55	.525	.276	.524	.004 ns
4	Car Ass	40	.365	.133	.379	-.113 ns
5	Chemic	22	.454	.206	.430	.035 ns
6	Combat	35	.561	.315	.523	.124 ns
7	Support	20	.564	.318	.556	-.368 ns

Table 1.b.

Total Turbulence High						
	Sample	**n**	**R**	**R²**	**Auton**	**Bound**
1	All	110	.640	.410	.483	.222 -
2	Civil	41	.584	.341	.443	.219 ns
3	Military	69	.706	.498	.510	.258 -
4	Car Ass	25	.624	.389	.439	.263 ns
5	Chemic	16	.580	.336	.609	-.046 ns
6	Combat	55	.624	.389	.476	.212 ns
7	Support	14	.839	.704	.305 ns	.578 -

Considering first the level nearest to the team itself - i.c. job-related and task-related turbulence – it is confirmed that Autonomy explains a main part of effectiveness anyway (Table 2.a and Table 2.b). Furthermore, it is confirmed also that BM does not contribute to effectiveness in situations with low turbulence: all regression weights are non-significant (Table 2.a). Except for two cases (chemical process industry and support troops), BM adds significantly to effectiveness with regression weights varying from .196 to .341 (Table 2.b). The non-significant cases may be due to the low number of respondents involved, 19 and 12 respectively.
Thus, BM acts as a buffer for job and task related turbulence.

Table 2.a.

Task Turbulence Low						
	Sample	**n**	**R**	**R²**	**Auton**	**Bound**
1	All	128	.564	.318	.549	.043 ns
2	Civil	81	.637	.406	.636	.005 ns
3	Military	47	.597	.356	.590	.024 ns
4	Car Ass	62	.512	.262	.502	.039 ns
5	Chemic	17	.550	.302	.563	-.019 ns
6	Combat	29	.651	.424	.611	.131 ns
7	Support	17	.573	.328	.595	-.187 ns

Table 2.b.

Task Turbulence High						
	Sample	**N**	**R**	**R²**	**Auton**	**Bound**
1	All	126	.558	.311	.411	.221 -
2	Civil	43	.541	.293	.335	.301 -
3	Military	83	.660	.496	.494	.242 -
4	Car Ass	23	.604	.364	.333	.341 -
5	Chemic	20	.506	.256	.518	-.019 ns
6	Combat	70	.585	.342	.466	.196 -
7	Support	13	.819	.670	.596	.254 ns

At the level of organizational turbulence the results confirm the importance of autonomy with regression weights between .451 and .716 in the low condition (Table 3.a) and between .332 and .680 in the high condition (Table 3.b). Again, in the low condition, BM does not add to effectiveness given that all regression weights are non-significant (Table 3.a). On the contrary, it may be contra-productive as shown by the negative figure in the chemical process industry subsample (β= -.179 ns).

Unlike in the case of job- and task related turbulence in the high condition, BM is significant in only two cases: the military subsample as a whole and the support troops in particular (Table 3.b). This finding suggests that teams perceive factors causing organizational turbulence more or less uncontrollable by BM. That support troops constitute an exception is not so surprising; facing organizational turbulence (broken vehicles, casualties, etc) is indeed to a certain extent their "raison d'être".

Table 3.a.

Intra-Organizational Turbulence Low						
	Sample	**N**	**R**	**R²**	**Auton**	**Bound**
1	All	126	.511	.261	.475	.094 ns
2	Civil	74	.567	.322	.547	-.015 ns
3	Military	52	.548	.300	.509	.152 ns
4	Car Ass	47	.521	.272	.510	.032 ns
5	Chemic	27	.447	.228	.581	-.179 ns
6	Combat	36	.507	.257	.451	.164 ns
7	Support	15	.731	.508	.716	.242 ns

Table 3.b.

Intra-Organizational Turbulence High						
	Sample	**N**	**R**	**R²**	**Auton**	**Bound**
1	All	125	.576	.332	.461	.177 -
2	Civil	45	.417	.174	.389	.053 ns
3	Military	80	.667	.458	.522	.224 -
4	Car Ass	23	.378	.143	.332*	.080 ns
5	Chemic	22	.554	.307	.680	-.209 ns
6	Combat	61	.590	.348	.489	.163 ns
7	Support	19	.808	.653	.543	.345 -

Finally, the results at the level of extra-organizational turbulence confirm (again) the findings of the analyzes at the former level(s) as shown in Table 4.a and Table 4.b. Not withstanding the high absolute values of the regression weights for the chemical process industry subsample and the support troops subsample, these results are non-significant; this may be due to the low number of respondents involved.

Table 4.a.

Extra-organizational Turbulence Low						
	Sample	**N**	**R**	**R²**	**Auton**	**Bound**
1	All	127	.519	.269	.519	.001 ns
2	Civil	51	.534	.286	.578	-.137 ns
3	Military	76	.607	.368	.577	.065 ns
4	Car Ass	21	.302	.091	.322	-.053 ns
5	Chemic	30	.346	.119	.387	-.171 ns
6	Combat	51	.549	.301	.513	.097 ns
7	Support	25	.647	.418	.676	-.060 ns

Table 4.b.

Extra-organizational Turbulence High						
	Sample	**N**	**R**	**R²**	**Auton**	**Bound**
1	All	127	.508	.218	.419	.153 -
2	Civil	65	.517	.267	.521	-.012 ns
3	Military	62	.636	.404	.411	.304 -
4	Car Ass	46	.530	.281	.512	.054 ns
5	Chemic	19	.330	.109	.410*	.211 *
6	Combat	49	.638	.407	.415	.308 -
7	Support	12	.661	.438	.225*	.480 *

Conclusions

The results show that it is important to look at both perspectives of team functioning; i.e. the internal and the external one. In the study we concentrated at a special type of team behavior, i.e. boundary management as defined by Ancona.

Autonomy plays always a crucial role in team effectiveness, irrespective of the degree of turbulence.

Boundary management does not contribute to effectiveness in the low turbulence condition whatever the level of turbulence considered (job- and task related, intra-organizational or

extra-organizational). There are even some indications that it might be contra-productive in rather stable situations.
Boundary management acts as a buffer in high turbulent situations - at least as far as job- and task related factors are considered - and contributes thus to team effectiveness.

Finally, it seems indicated to analyze the data with the four roles defined by Ancona as separate predictors. Aside, in the perspective of validating our questionnaire, we have to verify if our data fit with the scale structure as found by Ancona.