

# Hierarchical Taxonomy of Leadership Behavior: Antecedents, Structure, and Influence in Work Groups Effectiveness

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Organizations in nowadays with a changing environment need leaders who are able to analyze the situation, determine what pattern of leadership behavior is needed to influence processes that are relevant for work groups effectiveness. Literature on the topic of leadership rests on a two-dimensional model (the task-oriented and relation-oriented behaviors), and recently on new paradigms (transformational and charismatic leadership). The three-dimensional model proposed by Yukl (2003) incorporates change among the conventional categories, making it compatible with the received literature, despite significant differences. The aim of this paper is to analyze the antecedents and structure of the hierarchical taxonomy of leadership behavior proposed, and its impact on team effectiveness. Confirmatory factor analysis and hierarchical regression analysis were carried out to test these hypothesis. Our results confirm these relationships in general. The paper discusses theoretical implications of this study, sets out some practical applications, and remarks some trends for future research.

Las organizaciones en la actualidad con un ambiente cambiante necesitan líderes capaces de analizar la situación, determinar que modelo de conductas de liderazgo son necesarias para influir en los procesos relevantes para la efectividad de los grupos de trabajo. La literatura sobre liderazgo se ha apoyado en los modelos bidimensional (líder centrado en las tareas y en la relación), y más recientemente en nuevos paradigmas (liderazgo transformacional y carismático). Compatible con estos últimos, aunque estableciendo importantes diferencias con ellos, el modelo tridimensional propuesto por Yukl (2003) incorpora a las categorías tradicionales la de cambio. El objetivo de esta investigación es analizar los antecedentes y la estructura de la taxonomía jerárquica de liderazgo propuesta, y su impacto sobre la eficacia de los equipos. Se llevaron a cabo análisis factoriales confirmatorios y análisis de regresión para probar estas hipótesis. Los resultados confirman en general estas relaciones. Se discuten las implicaciones teóricas de este estudio y se extraen aplicaciones prácticas, indicando finalmente líneas futuras de investigación.

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Organizations in nowadays with a changing environment need leaders who are able to analyze the situation, determine what pattern of leadership behavior is needed to influence processes that are relevant for work groups effectiveness.

A major problem in research and theory on effective leadership has been the lack of agreement about which behavior categories are relevant and meaningful for leaders (Yukl, Gordon, & Taber, 2002)

By the 1990s, issues of transformational leadership and charisma had become the dominant themes in leadership studies, and there was a proliferation of models and perspectives on charismatic and transformational leadership (Munduate & Medina, 2004). The charismatic leadership theory developed by Conger and Kanungo (1988) relies on its effect on followers and society in general and stemmed from their radical vision of a new world, the exhibition of their own behavior for followers to imitate, and the confidence expressed in the followers' capacity to achieve challenging goals.

In other way, behavioral models of leadership analyze what leaders or managers do with whatever personal traits, skills, or motivational capacities. The primary concern of behavioral models focused on developing methods to determine what leaders do and measure relevant dimensions of their behavior that might be linked to group effectiveness and subordinate satisfaction (Yukl, 2002).

### Two Factors Model: Task and Relations Behavior

The early leadership research emphasized two general, broadly-defined behavior

categories ("metacategories") that are best described as relations-oriented behavior and task-oriented behavior.

For three decades, research on leader behavior was dominated by a focus on these two broadly-defined categories of behavior.

Two main dimensions that reflected how subordinates perceived a manager's behavior were identified. Consideration (or relationship-oriented) behaviors reflect the extent to which a leader shows concern for subordinates' satisfaction and well-being. Initiating structure (or task-oriented) behaviors reflect the degree to which a leader explain and defines the roles of a task, assigns subordinates to various task roles, controls subordinates' performance, and provides feedback to subordinates.

Because these are two independent dimensions, the behavior of a leader may be described as a combination of both. According to this perspective, the ideal leader would be someone with high scores on both dimensions (Avolio, Sosik, Jung, & Berson, 2003; Bass, 1990; Clark & Clark, 1990; Munduate & Medina, 2004; Yukl, 2002).

Many studies were conducted to see how measures of consideration and initiating structure were correlated with criteria of leadership effectiveness, such as subordinate satisfaction and performance.

A meta-analysis of this survey research found that both behaviors have a positive but weak correlation with subordinate performance (Fisher & Edwards, 1988).

Subsequent research on specific types of task and relations behavior found correlations with unit performance that were sometimes stronger but still not consistent across situations (Yukl, 2002).

The literature on leadership is based on the classical bi-factorial models, although more recently has been developed "new paradigms", as charismatic and transformational leadership, among others. The links between different forms of

leadership and team outcomes as proposed in these models are not, however, wholly consistent (Bass et al., 2003), which suggests there is a need for further research.

### Change-Oriented Leadership

Recently researchers have become interested in the way leaders initiate and implement change in organizations. The importance of change management is the modern organization's response to an ineluctable need. Faced with ongoing processes of transformation, firms and institutions of all kinds have been obliged to assign the job of anticipating change and providing guidance to their managers, executives and leaders (Kotter, 1990). The transformational and charismatic leadership theories (Bass, 1985; Conger and Kanungo, 1988; House, 1977) refer to certain kinds of change-oriented behavior, and there is considerable evidence that such patterns are related to effective leadership, as shown in the meta-analysis carried out by Lowe, Kroeck and Sivasubramaniam (1996).

Theories of transformational and charismatic leadership (Bass, 1985; Conger & Kanungo, 1998; House, 1977; Shamir, House, & Arthur, 1993) include some change-oriented behaviors, and there is growing evidence that these behaviors are related to effectiveness of leaders (Lowe, Kroeck, & Sivasubramaniam, 1996). Yukl, Gordon, & Taber (2002)

The tri-dimensional model is compatible with the transformational and charismatic leadership theories, although its aim is in fact to explain leadership processes at a different conceptual level of analysis. This model seeks to describe the influence of leaders on *organizational processes* (rather than on the motivation

and perceptions of subordinates), analyze *contingent* (as opposed to universal) aspects of effective leadership, and highlight the importance of leadership *processes* (instead of focusing on a leader figure). It also represents an effort to identify the behavior patterns that make up each category in such way that each type of behavior is observable, is potentially applicable to leaders of all kinds in organizations, is fundamentally relevant to the category in question, and is based on prior theory and research.

*Change* management is raised in a variety of organizational theories (Tushman & Romanelli, 1985) and is supported by a body of existing research (Ekvall & Arvonen, 1991; Gil, Ares & Barrasa, 2003; Yukl, 1998; Yukl, Gordon & Taber, 2002) which has resulted in its identification as a key category for effective leadership. This category comprises the following behavior sets: monitoring the environment, encouraging innovative thinking, explaining need for change, envisioning change, and taking personal risks.

### Three Factor Model: Task, Relations, and Change Behavior

The first evidence that change-oriented leadership is a distinct type of behavior comes from several studies conducted recently. In the first study, Ekvall and Arvonen (1991) developed a behavior description questionnaire with items from earlier questionnaires such as the LBDQ and some new items on aspects of change-oriented leadership. There was strong support for a three-factor solution in each national sample, and the factors were labeled production centered, employee centered, and change centered. The latter factor included promoting change and growth, providing creative solutions, encouraging creative thinking by others,

experimenting with new ways of doing things, making risky decisions when necessary, and planning for the future. Change-oriented behavior correlated the strongest with subordinate ratings of the manager's competence, whereas employee-centered behavior correlated highest with subordinate satisfaction with the manager.

In a second study, Yukl (1998) administered leader behavior questionnaires included representative items from the Managerial Practices Survey (MPS). An exploratory factor analysis produced a clear factor structure for task-oriented behavior, relationship-oriented behavior, and change-oriented behavior.

The latter factor included identifying external threats and opportunities, envisioning new possibilities, proposing innovative strategies, and encouraging innovative thinking by followers. The scale scores for task, relations, and change behavior were all correlated significantly with subordinate satisfaction with the leader and organizational commitment.

Gil & Barrasa (2002) carried out a research about manager competences from bi-factorial leadership model using an on-line questionnaire with 120 top managers as sample. Authors found that model of two factors was not absolutely right, and bi-factorial structure improved adding a new category related with change-oriented behaviors.

Finally, Gil, Rico, Alcover, & Barrasa (in press) proposed an explanatory model in which the team climate (specifically team climate of innovation) represents the nexus mediating between change-oriented leadership and group outcomes (satisfaction and performance), while group potency reinforces the relationship. Results confirm these relationships in general.

These studies made a good start at identifying a distinct category of change-oriented leadership and showing that it is relevant for leadership effectiveness.

The specific behaviors provide a much better basis than behavior constructs that are very broad and abstract for developing contingency theories of leadership effectiveness (Yukl, 2002).

A hierarchical taxonomy provides a way to reconcile the three-factor solution with the many specific behaviors already found relevant for effective leadership in several types of research.

### The Hierarchical Taxonomy of Leadership Behavior

The *three-dimensional leadership* model, recently developed by Yukl (Yukl, 2003; Yukl, Gordon & Taber, 2002) identifies three major categories, adding *change* to the classical bi-factorial models (*task* and *relation*-oriented leadership). By proposing the incorporation of the category of change, the tri-dimensional model allows the integration of the two major traditions of *management* and *leadership* theory, which have normally stood apart, each having its own literature. Rather than seeking to establish distinctions between managers and leaders, the two can be explained jointly using the same processes and models (Yukl, 2002). The view that people employ a mix of leadership and management behaviors appears much closer to reality, and it is therefore necessary for those that are responsible of teams to learn to combine the necessary skills to direct day-to-day affairs effectively (a task traditionally associated with management) while at the same time anticipating and managing change (leadership) (Gil, 2003).

The theoretical basis for the distinction among the three metacategories is the primary objective of the behavior.

The primary objectives of task behavior include high efficiency in the use of resources on personnel, and high reliability of operations, products, and services. The primary objectives of relations behavior include strong commitment to the unit and its mission, and a high level of mutual trust and cooperation among members. The primary objectives of change behavior include major innovative improvements (in processes, products, or services), and adaptation to external changes (Yukl, Gordon, & Taber, 2002)

Several criteria were used in selecting the specific behavior components to include in the proposed hierarchical taxonomy. First, each behavior must be directly observable. It cannot be defined only in terms of attributions or outcomes. Second, each behavior must be potentially applicable to all types of leaders in organizations. Third, each behavior must have primary relevance for one metacategory, even though it could have secondary relevance for the other metacategories. Fourth, each behavior must be grounded in prior theory and research on effective leadership.

**Table 1.** Definition of the Specific Leadership Behaviors (Yukl, Gordon, & Taber, 2002).

<p><b>Task Behaviors</b></p> <hr/> <p>Clarifying Roles: assigning tasks and explaining job responsibilities, task objectives, and performance expectations.</p> <p>Monitoring Operations: checking on the progress and quality of the work, and evaluating individual and unit performance.</p> <p>Short-Term Planning: determining how to use personnel and resources to accomplish a task efficiently, and determining how to schedule and coordinate unit activities efficiently.</p>
<p><b>Relations Behaviors</b></p> <hr/> <p>Consulting: acting considerate, showing sympathy and support when someone is upset or anxious, and providing encouragement and support when there is a difficult, stressful task.</p> <p>Recognizing: providing praise and recognition for effective performance, significant achievements, special contributions, and performance improvements.</p> <p>Developing: providing coaching and advice, providing opportunities for skill development, and helping people learn how to improve their skills.</p> <p>Empowering: allowing substantial responsibility and discretion in work activities, and trusting people to solve problems and make decisions without getting prior approval.</p>
<p><b>Change Behaviors</b></p> <hr/> <p>Envisioning Change: presenting an appealing description of desirable outcomes that can be achieved by the unit, describing a proposed change with great enthusiasm and conviction.</p> <p>Taking Risks for Change: taking personal risks and making sacrifices to encourage and promote desirable change in the organization.</p> <p>Encouraging Innovative Thinking: challenging people to question their assumptions about the work and consider better ways to do it.</p> <p>External Monitoring: analyzing information about events, trends, and changes in the external environment to identify threats and opportunities for the organizational unit.</p>

*Hypothesis 1.* Hierarchical Taxonomy of Leadership Behavior will show a three-factoral structure into a integrative model of leadership

The taxonomy identifies behavior that are potentially relevant for effective leadership, but it is not assumed that they are equally relevant in all situations, or that every behavior is relevant in every situation. In future research, it will be desirable to relate the leadership behaviors to criteria of leadership effectiveness. Because many of the behaviors emphasize leader influence on collective processes rather than on dyadic processes, it is especially desirable to conduct studies that include objective measures of unit performance. The studies should also measure aspects of the situation that determine the relative importance of the different behaviors. In this way, we can make progress in developing contingency theories of flexible, adaptive leadership.

The metacategories are useful for organizing specific behaviors with a similar objective, but they should not be used as a substitute for the specific behaviors. The utility of the metacategories will depend on the extent to which they are able to improve the prediction of leadership effectiveness or the explanation of why some leaders are more effective than others in a given situation.

*Hypothesis 2.* Metacategories of the hierarchical taxonomy of leadership behavior (task, relations, and change oriented behaviors) reinforces and will explain team effectiveness.

## Method

### *Sample*

The sample comprises 328 participants, who are members of 78 healthcare teams at different public hospitals throughout Spain (Madrid, Barcelona, Málaga, La Coruña, Sevilla and Cadiz). Eleven teams were discarded

because we did not receive an appropriate number of responses from members (teams with a response rate of below 30% of total members) or because they lacked at least two external measures of effectiveness. Work unit was defined as the set of members working in the same structural unit and also working in the same shift, in those units where there were several workshifts. Finally, group size ranged from 3 to 19 employees, and the average of members per work group was 7.74 (S.D.= 4,38).

### *Measures*

*Hierarchical Taxonomy of Leadership Behavior.* Behavior associated with leadership is evaluated using a recent questionnaire designed by Yukl on the basis of earlier inventories (Yukl, Gordon and Taber, 2002). The questionnaire comprises three scales: task, relation and change-oriented leadership. Earlier studies have demonstrated that the psychometric characteristics of the questionnaire are appropriate (Yukl, Gordon & Taber, 2002; Gil, Ares & Barrasa, 2003) See Table 2.

The items had a five-choice response format with anchors for each choice. The anchors emphasized magnitude rather than frequency (1-Not at all or not applicable, 5-To a great extent).

The order of scale items was randomized within the constraint that all behavior must appear in the first part of the questionnaire and no behavior could be concentrated in only one part of the questionnaire.

The internal consistency reliability for each scale was determined with the Cronbach alpha statistic, and the values for all scales exceeded the recommended lower bound for an acceptable estimate of internal consistency ( $\alpha > .70$ ). Most of the values were greater than .70.

*Team performance.* Team performance was assessed via external supervisors and managers with appropriate knowledge,

each team being scored as a unit. The scale from Ancona & Caldwell (1992) was applied. This comprises 5 items (team's efficiency, quality of technical innovations, adherence to schedules, adherence to budgets and ability to resolve conflicts), with  $\alpha = 0.83$ . Each dimension was scored by managers using a 5-point Likert scale (1 = disagree completely, 5 = completely agree). Between two and three evaluations were obtained from various supervisors and managers with a good knowledge of the team (in the absence of at least two such evaluations teams were discarded), resulting in an inter-judge coefficient of 0.74.

Finally, the control measures employed were *team size* (a score was assigned to the number of team members based on data provided by the pertinent department) with an average of 10.6 (SD = 5.33), and *team tenure* (a score was assigned to the time each member had formed part of the team based on individual responses, as a result of which

we obtained an aggregate measure for each team at the group level with  $ICC = 0.59$ ) with an average of 9.6 (SD = 5.49).

### *Procedure*

We contacted the Human Resources departments at each center to apply for their assistance. We also held meetings with the HR managers and the supervisors, officers and managers responsible for the various work units concerned to explain the objectives of the project and the procedure we intended to follow. Team members were invited to participate voluntarily by completing an individual and anonymous questionnaire. External supervisors and managers were also asked to complete a specific questionnaire, again individually and anonymously, to score group effectiveness.

**Table 2.** Means, Standard Desviations, and Intraclass Correlation Coefficients.

Variable	M	S.D	ICC
Task oriented leadership	3,00	0,86	,60
Relations oriented leadership	4,18	0,83	,59
Change oriented leadership	3,34	0,60	,55
Team performance	3,22	0,72	,53

## Results

Correlation coefficients for all of the variables are presented in Table 3. Firstly,

the team size and tenure variables are not correlated with any of the variables forming part of the model tested.

**Table 3.** Correlation coefficients for leadership variables, team performance, and control variables

Variable	1	2	3	4	5	6
1. Task oriented leadership						
2. Relations oriented leadership	0,60**					
3. Change oriented leadership	0,63**	0,86**				
4. Team performance	0,53**	0,43**	0,63**			
5. Team size	0,15	0,03	0,10	0,02	-	
6. Team tenure	0,07	0,09	0,05	0,00	0,16	-

\* p<0.05

\*\* p<0.01

In order to test the hypotheses 1, confirmatory factor analysis was performed to verify the structure of the hierarchical taxonomy of leadership behavior.

The intercorrelations among the 15 behavior scales were analyzed using confirmatory factor analysis with maximum likelihood estimation to test the fit of the theoretical model (See Figure 1). Multiple criteria were used to test the fit of the model to the matrix of intercorrelation (Table 4)..

The Chi-squared statistic was computed to test the overall goodness of fit between the observed correlation matrix and the matrix reproduced from the factor model. A large value of this statistic indicates a poor fit of the model to the data, because it indicates a significant difference between the observed correlation matrix and the correlations estimated by the theoretical model. Unfortunately, this statistic is affected by

sample size as well as model fit. A large sample often yields a significant value even when the model fits the data very well. For that reason, is necessary evaluating Chi-squared relative to its degrees of freedom. A ratio of less than 2.0 indicates a reasonable model fit.

The GFI (Goodness of Fit Index) is not affected by sample size. It is an index of how well the theoretical model reproduces the observed correlations. GFI values range from zero to 1.0, and it has been proposed that an acceptable fit requires a value of at least .90, with .95 representing a very good fit.

The RMSEA is an estimate of the mean difference between each observed and reproduced correlation. It has been proposed that an acceptable fit requires a value of .08 or less, with .05 representing a very good fit.

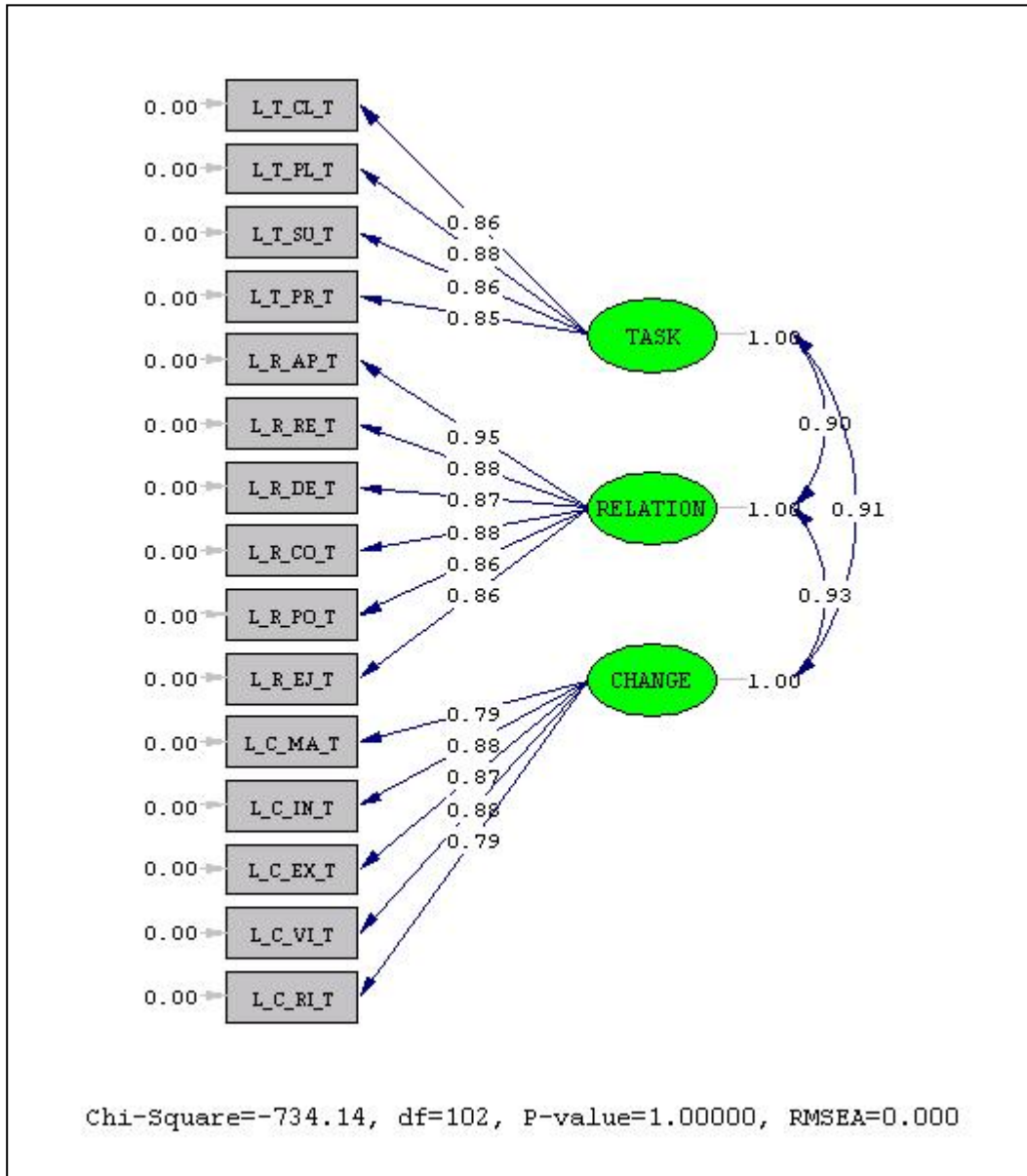


Figure 1. Confirmatory Factorial Analysis of the hierarchical taxonomy of leadership behavior

**Table 4.** Goodness of fit Tests and fit Indices for the Tested Model

	$\chi^2$	df	p	RMSEA	GFI
Model	-734.14	102	1.00	.00	.97

Note:  $\chi^2$  = Chi-square goodness-of-fit index

RMSEA= Root Mean Square Error of Approximation

GFI = Goodness of Fit Index

In order to test the hypotheses 2, hierarchical regression analysis was performed at team level to verify the influence of leadership behaviors on team effectiveness (Table 5).

To aggregate individual-level data to group level, first a theoretical rationale has to support it, but, in addition, it must be assessed empirically, by means of demonstration of agreement within groups and differences between groups. The agreement within group can be calculated by interclass correlation (ICC), interrater agreement (rwg) and average deviation index (AD). The average deviation index (AD) has several advantages compared to others indexes, since it does not need explicitly modeling the random or null response distribution. Average deviation

index is computed taking the average of the items average deviation (AD). Null response range or range of acceptable interrater agreement for six point scales is 1. Therefore, all AD index for items and AD index for scale are less or equal than 1, indicate acceptable interrater agreement.

Average deviation index (AD) was calculated for all groups on each of individual variables (task, relations, and change behaviors).

On the other hand when aggregate variables are used, it is recommended to calculate ANOVAs. This procedure demonstrates that there are differences among groups or between group variance in our variables. And therefore, our variables can be studied at group level.

**Table 5.** Hierarchical Regression Analysis of leadership behaviors on team performance

Step	Independent Variable	$\beta$	$R^2$	$\Delta R^2$
1	Team Size	,02	,08	,08
	Team Tenure	-,00		
2	Task oriented leadership	,25**	,75	,67**
	Relation oriented leadership	,11**		
	Change oriented leadership	,31**		

<sup>a</sup> N = 78 (teams)

\* p<.05

\*\* p<.01

## Discussion

The results obtained from this research provide in a broad sense empirical support for hypotheses 1 regarding factorial structure and for hypothesis 2 regarding effectiveness.

We found the specific behaviors measured by the questionnaire can be grouped into the three proposed metacategories in terms of their primary objective.

This hierarchical taxonomy offers a number of advantages. It provides a parsimonious and meaningful conceptual framework that shows how the behaviors are interrelated. It combines the parsimony of a few, broadly defined metacategories with the greater explanatory power of specific component behaviors that can be related to the requirements for a particular situation. It helps to integrate findings from prior research, and it can be used to derive

more comprehensive theories of effective leadership.

To conclude, the need of the leader's skill to analyze the situation, to anticipate change and providing the team with guidance we can consider as a key variable, relevant to include it into the behavioral leadership models.

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