EINDHOVEN UNIVERSITY OF TECHNOLOGY

Fiedler's contingency model of leadership effectiveness : background and recent developments

Citation for published version (APA):
Verkerk, P. J. (1990). *Fiedler's contingency model of leadership effectiveness : background and recent developments.* (OCTO-report; Vol. 9002). Eindhoven University of Technology.

Document status and date:
Published: 01/01/1990

Document Version:
Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:

• A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
• The final author version and the galley proof are versions of the publication after peer review.
• The final published version features the final layout of the paper including the volume, issue and page numbers.

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FIEDLER'S CONTINGENCY MODEL OF LEADERSHIP EFFECTIVENESS: BACKGROUND AND RECENT DEVELOPMENTS.

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OCTO-report 90/02

Preface*

This paper reflects the first research activities which were carried out within the project 'A Sex comparison study of technical problem solving groups'**. The main research questions of the project are: If there is a difference in leadership effectiveness between men and women

- what is the difference ?
- can it be explained by Fiedler's Contingency Model of leadership effectiveness ?

These questions lie at the crossing of two research traditions within the section Social Psychology of the Eindhoven University of Technology. On the one hand, Meuwese's research (f.e. 1964) on leadership effectiveness, and, on the other hand, recent studies into 'Women and Technology (f.e. van Vonderen & Dijkstra, 1987). The section Social Psychology participates in the research centre for 'Communication and Transfer of Technical Knowledge'.

1. Introduction

Over the years, three major underlying questions have dominated research into effective leadership:

- What personality traits differentiate leaders from non-leaders?
- What leadership style is the most effective?
- Which interactions between leadership style and the group situation are effective?

Trait differentiation research has come to be known as the "Great Man Theory". Findings of research on it have been described by Stogdill (1974, p.81): 'The leader is characterized by a strong drive for responsibility and task completion, vigor and persistence in the pursuit of goals, venturesomeness and originality in problem solving, drive to exercise initiative in social situations, self-confidence and sense of personal identity, willingness to accept consequences of decision and action, readiness to absorb interpersonal stress, willingness to tolerate frustration and delay, ability to influence other persons' behavior, and capacity to structure social interaction systems to the purpose at hand.' This research did not produce any conclusive results, because correlations between characteristics and leadership were relatively low (ranging from about .20 to .30). Furthermore, the results were not replicated consistently; in fact, some experiments even showed no or a negative relationship between well-supported characteristics.

After this phase of leadership research, the era of recognizing effective leaders appeared. The question which arose can best be described as: What characteristics differentiate effective leaders from ineffective leaders? Research into leadership effectiveness has produced two major personality characteristic clusters. Subsequent researchers used different dichotomized labels: autocratic vs. democratic leadership (Lewin & Lippit, 1938), initiating structure vs. consideration (Halpin & Winer, 1957), directive vs. participative leadership (Tannenbaum & Schmidt, 1958), Theory X vs. Theory Y (McGregor, 1960), concern for production vs. concern for people (Blake & Mouton, 1964). This type of leadership research was concerned with recognizing which one of the two types of leadership behavior was most effective. However, research on this subject showed inconsistent results. Neither of the two leadership style

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* The author owes special thanks to Prof. Dr. W.A.T. Meuwese and Dr. M.L. van Vonderen for their thoughtful contributions.

** Netherlands organization for scientific research (NWO) is gratefully acknowledged for funding this project. This research was conducted while Drs. P.J. Verkerk was supported by a PSYCHON-grant of this organization (560-270-032), awarded to Dr. M.L. van Vonderen.

clusters appeared to be more effective. Fiedler (1964,1967) broke through the idea of one single effective leadership style. According to him leadership effectiveness is contingent upon the situation. The interaction between leadership style and situation predicts the effectiveness of leadership behavior. In other words, both types of leadership behavior can be effective, but the situation in which the leader operates determines whether one type of behavior will be more effective than the other. Describing leadership behavior Fiedler introduced the dichotomy 'task oriented' vs. 'relationship oriented'.

A new phase in leadership research was born. Describing effective leadership behavior which was contingent upon the situation, researchers introduced dichotomies like: directive and achievement oriented vs. supportive and participative (House & Mitchell, 1974), instrumental vs. directive (Kerr & Jermier, 1978), and performance vs maintainance (Misumi, 1985). Although all these dichotomies, from Lewin & Lippit to Misumi, refer to different areas of leadership effectiveness they share conceptual resemblance. This conceptual resemblance can best be described as an 'orientation towards the job which has to be done' versus 'orientation towards the people the leader works with'.

This paper presents an overview of the contingency model's development. Chapter 2 discusses the model's central measure, LPC. Chapter 3 presents the actual model and reviews validation studies which tested the model. Finally, chapter 4 describes recent ideas for integrating the contingency model and the cognitive resource model.

2. The LPC-score

The central construct, i.e. measure, of the contingency model is the leader's esteem for his Least Preferred Coworker (LPC-score). This chapter will discuss the studies and measures which led to the LPC-scale. Besides the changing composition of the scale, the meaning of the LPC-score has changed over the years, as a result of new research findings. A review of the interpretations will be given. Finally, some attention will be given to the stability issue of the LPC-score.

2.1. History of the ASo scale

In 1951, Fiedler attempted to develop a measure for the diagnostic and therapeutic competence of clinical psychologists. A clinical psychologist was assumed to be able to predict the self-concept of a patient. For this purpose Fiedler used Stephenson's (1953) Q-technique. Every patient was given a list of 76 statements about personality characteristics. Statements like "I feel nervous and anxious in the presence of others" and "I worry a lot about my ability to succeed" were used. Each statement was written on a separate card. The subjects were asked to sort the 76 cards into categories of 1, 5, 12, 20, 20, 12, 5, and 1 statements. Sorting had to be done in a self-descriptive manner. The cards had to be ordered into the categories ranging from the least to the most characteristic of the person. Furthermore, the patient was asked to predict the self-concept of the psychologist. On the other hand, the psychologist attempted to sort the statements, ranging from the least to the most characteristic of the patient, in order to predict a patient's self-concept and to describe his own self-concept. The psychologists were not able to predict the self-concept of patients. However, the measure appeared to be reliably for rating the assumed similarity or dissimilarity between therapists and patients; it was called the 'Assumed Similarity' measure.

The use of the Q-sort-technique was very time-consuming. Moreover, instructions were too complex for persons with relatively low intelligence to understand. Fiedler discarded the Q-sort-technique in favour of Q-blocks. In addition, his research was extended to leaders and the effectiveness of the groups they led. Research on basketball teams (1954) and combat crews (1955) are examples of this type of research. The Q-blocks method was used in both studies. The questionnaire consisted of 100 statements which were grouped into 20 blocks of 5 statements. Statements within each block were assumed to be equally acceptable to the subjects, and descriptive of different personality dimensions. One block is presented below as an example:

		Characteristic for myself:	
		Most	Least
a.	I find it easy to understand what others are trying to tell me	___	___
b.	People think I am a hard worker	___	___
c.	I don't mind losing my temper when provoked	___	___
d.	I like people who don't worry about me	___	___
e.	People often look to me for leadership	___	___

In the basketball study, subjects were asked to describe themselves, the teammate with whom they

cooperated least well and the teammate with whom they cooperated best. In three questionnaires, the subjects were asked to say which statement was the most characteristic and which one was the least characteristic. Three 'Assumed Similarity' scores were computed. A measure of assumed similarity between self-description and description of the positive choice (ASp), between self-description and negative choice (ASn), and between the descriptions of positive and negative choices (ASo). ASn and ASo appeared to be highly correlated.

Although the AS measures quite often had a high predictive value for performance, a measure which was easier to handle and less offensive to the subjects was developed. Unforced scale items were more reliable than Q-blocks. The questionnaire contained 60 items. An example of an unforced item is:

- I would not want to take another person fully into my confidence.

____	: ____	: ____	: ____	: ____	: ____
Definitely true	Quite true	Somewhat true	Somewhat untrue	Quite untrue	Definitely untrue

It was found that the reliability of this scale increased when the subjects described their least or most preferred coworkers with whom they had worked, instead of describing persons with whom they now worked.

Although the unforced scales appeared to be very reliable, it required one hour to administrate the descriptions of self, least preferred co-worker, and most preferred co-worker. Fiedler (1958) finally adopted a test form modeled after Osgood's Semantic Differential (1957). This test contains 20 to 24 scale items. Examples of test items are:

Friendly ___:___:___!___:___:___ Unfriendly

Cooperative ___:___:___!___:___:___ Uncooperative

This item-type is still in use.

2.2. From ASo to LPC

When obtaining ASo, a leader was asked to think of all the persons with whom he had ever worked. On bipolar adjective scales, as described in section 2.1, he had to describe the coworker whom he preferred most (MPC) and his least preferred co-worker (LPC). The ASo score was obtained by computing a measure of profile similarity, D (Cronbach and Glaser, 1953), which is the square root of the summed and squared differences in item scores between MPC and LPC. Low ASo subjects were seen as having a large difference between MPC and LPC, while high ASo subjects were expected to see these opposites as being relatively similar. Esteem for the least preferred and esteem for the most preferred coworker was obtained by summing the item scores of the two scales respectively.
Since ASo and LPC had high correlations, between .70 and .93 (Fiedler, 1964), it was superfluous to ask subjects to describe their most preferred co-workers. From then on, the leader's personality characteristic would only be measured by asking the leader to describe the person with whom he had least liked working, on eight-point bi-polar adjective items. The composition of the LPC scale changed over the years. Initially, the LPC scale consisted of items that referred to the task and interpersonal

relationships within the group. Fiedler (1987) stated that "(...) the LPC asks that you describe your least preferred coworker. This instruction in effect defines the least preferred coworker as ineffective and incompetent on the job. The major portion of the variance will, therefore, reside in personality items which are not logically relevant to being a poor coworker and, for this reason, reflect varying degrees of aversive feelings toward the person with whom one cannot work." The latest version of the scale presented by Fiedler & Chemers (1984) was adopted by Fiedler (1987) and it consists of eighteen items. The eight-point bi-polar items are: 'pleasant - unpleasant', 'friendly - unfriendly', 'rejecting - accepting', 'tense - relaxed', 'distant- close', 'cold - warm', 'supportive - hostile', 'boring - interesting', 'quarrelsome - harmonious', 'gloomy - cheerful', 'open - guarded', 'backbiting - loyal', 'untrustworthy - trustworthy', 'considerate - inconsiderate', 'nasty - nice', 'agreeable - disagreeable', 'insincere - sincere', 'kind - unkind'. The positive pole of the adjective pair scored 8, while the negative pole scored 1. In the latest version, Fiedler (1987) recognized low LPC leaders as those scoring 63 or less; middle LPC leaders scoring between 64 and 72; and high LPC leaders scoring 73 or more. Reviewing several studies, Rice (1978a) reported median split-half reliabilities between .89 and .91 on the LPC scale.

2.3. Five interpretations of the LPC score

The validity of the LPC score has caused a lot of misunderstanding. Over the years, LPC (ASo) has had 5 different meanings. They will be discussed here in chronological order.

a) Social distance.
The first interpretation of LPC, in these days called Assumed Similarity between Opposites, was a generalized index of psychological closeness (Fiedler, 1953, 1954). Subjects showed less assumed similarity between themselves and group members they disliked than between themselves and those they liked. Furthermore, it was found that high LPC persons conformed to social pressures more and they were more closely involved with other group members. When re-analyzing some studies which investigated the reactions of others to high and low LPC persons, Rice (1978b) concluded that the findings were not consistent.

b) Task orientation vs. relations orientation.
Fiedler (1964,1967) interpreted the LPC score as a personal need in the social context. High LPC subjects were considered to have strong needs to attain and maintain good interpersonal relationships, while low LPC subjects had strong needs for successful task performance. It was found that high LPC leaders were generally relationship oriented, also, they gained satisfaction and self-esteem from good interpersonal relations. Low LPC leaders, on the other hand, tended to behave in a more task oriented direction, while, they gained most satisfaction and self-esteem from successful task performance.
c) Cognitive complexity.
The rationale for this interpretation lies on the item-level. The high LPC leader describes his least preferred co-worker as having some good characteristics, only a few leaders give entirely positive ratings, and some bad characteristics. This means, he rates his least preferred co-worker both at the favorable and unfavorable end of each dimension. In those days, the LPC scale consisted of both task and relationship oriented items. It was thought that high LPC leaders were more likely to differentiate between task performance and interpersonal relations than low LPC leaders. It was likely that he would describe his least preferred co-worker, as warm and friendly, for example; while, he felt that this person also was frustrating and inefficient. A low LPC leader, on the other hand, was supposed to be less differentiating between task performance and interpersonal relations, he would describe his least preferred co-worker not only as inefficient but also as cold and unfriendly. No consistent empirical support was found for the cognitive complexity interpretation.

d) Motivational hierarchy.
Fiedler (1972) recognized the inconsistencies in the empirical findings related to the interpretation of task vs. relationship orientation. The main part of the inconsistencies stemmed from the underlying idea that the personal style (need, motivation) and the behavior of leaders were directly related. It was thought that knowing someone's LPC meant knowing their behavior too. Dealing with the empirical inconsistencies, he introduced the 'motivational hierarchy' in order to interpretet the LPC score. Fiedler (1972) disconnected leaders' style and behavior. Leadership style was defined as: "The underlying need structure of the individual which motivates his behavior in various situations .." (Fiedler, 1967; p.36). On the other hand, leadership behavior referred to "... the particular acts in which a leader engages in the course of directing and coordinating the work of his group members." (p.36). The term 'hierarchical' refers to a personal structuring of the leader's behavior. Behavior was seen as a reaction to style. LPC measured leaders' underlying style, c.q. need; while, their behavior depended on the fulfillment of that need. High LPC leaders were considered primarily to have strong needs for attaining and *maintaining* good interpersonal relationships, while low LPC leaders primarily had strong needs for successful task performance. If interpersonal relations were moderately bad a high LPC leader would concentrate on the improvement of these relations. But if interpersonal relations were at a high level, the personal need of the high LPC leader would be fulfilled, then, he would concentrate on his second need, namely, to get admiration and to attain prominence. In leader work groups this can be attained by exhibiting concern for task-relevant aspects of the task. Low LPC leaders primarily are task oriented if the fulfillment of the task is in jeopardy. If task accomplishment is not jeopardized, low LPC leaders will seek friendly, good interpersonal relationships with their coworkers. It was thought that they believed that good interpersonal relations would lead to better task accomplishment.

e) Value attitude.
Rice (1978b) interpreted LPC as a measure of leaders' attitudes toward their co-workers. He relied heavily on Fishbein's (1967) attitude theory and a LPC validation study based on this theory (Fishbein, Landy, and Hatch; 1969). This study demonstrated that high and low LPC leaders described their least preferred co-workers in different terms, or beliefs. High and low LPC leaders had different types of least preferred co-workers. According to Rice, attitudes which were composed of evaluated beliefs, stemmed from values. High and low LPC leaders' values should be interpreted as constructs (Kelly, 1955) by which they anticipated the world. Rice's types corresponded to the two types of leadership styles mentioned by Fiedler. Corresponding values were task vs. relationship. High LPC leaders described their least preferred co-worker as stubborn, inattentive, and dogmatic, while low LPC leaders used terms like incompetent, and unmotivated to perform the task.

Fiedler (1987) partially adopted the value-attitude interpretation . The LPC score was interpreted as "measuring a motivational hierarchy, indicating the degree to which the individual set a higher priority or value on task accomplishment (task-motivated or low LPC), or on maintaining good interpersonal relations (relationship-motivated or high LPC)." (p. 78). A low LPC score of 63 or lower, reflects a more emotional evaluation than a rational evaluation of the co-worker, while a high LPC score, 72 or higher, reflects a less emotional evaluation of the co-worker.

2.4. Stability of LPC scores

One of the basic assumptions underlying the contingency model is the stable nature of the personality attribute, as measured by the LPC. Whether this is true or not has a great impact: "(...) for the contingency model as well as for leadership selection and training: unless LPC is stable over time it can predict future performance" (Fiedler, 1987; p.73). Reviewing 23 studies, Rice (1978a) noticed a wide range in the test-retest reliabilities. Stability coefficients ranged from .01 to .92, with a median of .67 and

a mean of .64. Separating the high and low coefficients, Rice concluded:

> "There is often an impressive level of stability in LPC scores, especially when there are no dramatic changes or incidents in the respondents life during the test-retest interval (...) Experiences such as executive development workshops, leadership experience, management games, and military training sometimes can reduce drastically the stability of LPC. Several studies have shown stability coefficients below .50 among respondents with such intervening experience." (p.114)

Although Rice's conclusion cast doubt on the stability of the LPC score, Fiedler concluded that "(...) the stability of the LPC scale is as high as that of the best personality tests" (1987, p.74).

3. The contingency model of leadership effectiveness

The LPC-score appears to be the central measure for research on leadership effectiveness in the context of the contingency model. At first, researchers thought about a direct relationship between the LPC-score and group performance; but no consistent evidence had been found. Fiedler (1964, 1967), re-analyzing some old studies and conducting some new ones, proposed a contingent approach towards the LPC-score. Both high and low LPC leaders could be effective, but the situation in which the group operated determined whether this would be really the case. The contingency model has appeared to be a popular approach towards leadership effectiveness, through the years.

This chapter will present the development toward the contingency model and its description. In addition, validation studies of the contingency model will be described and evaluated.

3.1. Antecedent studies

In 1964, Fiedler introduced his contingency model of leadership effectiveness. The model resulted from a chain of research which has been described by Fiedler (1964) and Meuwese (1964).

In two investigations of basketball teams and surveying parties, Fiedler (1954) found that team effectiveness correlated negatively (-.69 and -.58, respectively) with the ASo score of the captain of the team. According to the meaning of ASo, the better teams had more active, controlling, and psychologically distant leaders. Fiedler concluded that these relatively high correlations indicated that the ASo score, i.e. the personality attribute which it reflected, was an important variable for predicting group performance. But this research did not clarify whether low ASo leaders made their teams effective, or the more effective teams chose low ASo leaders. To investigate this problem, Fiedler transferred his research to groups with formally, appointed leaders.

In two investigations among B-29 bomber crews and Army tank crews,
Fiedler (1955) found no direct relationship between ASo and group performance. Significant correlations occurred only if the sociometric score was included of the leader endorsing his keyman, who was closely connected to performance. It was found that correlations between ASo and effectiveness were negative when the leader sociometrically endorsed his keyman and positive when the leader rejected his keyman. The relationship between ASo and effectiveness, thus, appeared to be contingent upon the leader's sociometric endorsement of the keyman. Research with anti-artillery crews (Hutchins and Fiedler, 1960) and infantry squads (Havron et al., 1954) supported this interpretation. Sociometric preference appeared to be unimportant in an investigation in open hearth steel shops (Fiedler, 1956). Groups with low ASo leaders appeared to be more effective than groups with high ASo leaders. In a study of 32 farm-supply service companies Godfrey, Fiedler and Hall (1959) found a strong support for the moderating influence of sociometric choice. It was shown that ASo of a company's general manager correlated significantly (-.70) with the company's net income when the informal leader of the board sociometrically endorsed the general manager. Furthermore, it was found that a general manager's ASo predicted (r=-.74) the company's net income when the informal leader of the board endorsed the accepted general manager who endorsed his keyman. Thus a general manager's ASo score predicted the company's net income based upon the degree to which the manager had good interpersonal relations with his group members. Fiedler (1958) stated:

> "The sociometric endorsement and acceptance should be visualized more like a pipeline through which information and attitudes can flow. By itself the pipeline is

neither good nor bad, but unless their is such a pipeline available, the leader's attitudes do not have a channel through which they can reach the members of the group who directly affect performance." (p.41)

Measures for the degree of interpersonal stress were used as indicators of the quality of interpersonal relations in the study of discussion groups by Fiedler, Meuwese and Oonk (1961). Interpersonal stress was manipulated by two elements: homogeneous and heterogeneous socio-cultural background (Catholics and Calvinists), and whether the group had a formal leader or not. The study demonstrated a negative relationship between the LPC of a leader and the group performance, only, if the group was under some interpersonal stress. If the group was relatively stress-free high LPC leaders who maintained small psychological distance, had the most effective groups. Low LPC leaders appeared to be more effective in relatively stressful situations. Fiedler, London and Nemo (1961) cross-validated the relationship between the LPC of a leader and the group creativity under varying conditions of stress. Trained confederates behaved passively in an accepting and encouraging and refrained from initiating new ideas toward the subject leader. Interpersonal stress, c.q. interpersonal relations, was assessed by means of "Group Atmosphere" (GA) scales. The GA scale consisted of a number of evaluative bipolar adjective scales. By means of these scales, subjects described the group atmosphere. Fiedler, Bass & Fiedler (1961) provided a second cross-validation using a study with administrators and lay leaders. It was found that the direction and magnitude of the correlation between LPC and group creativity was consistently related to the leader's GA score. Fiedler (1962) re-analyzed the farm supply companies (Godfrey, et al., 1959), in an attempt to cross validate these findings. The degree of conflictful interpersonal relations were inferred from sociometric questionnaires. As expected, the LPC score of the chairman of the board of directors correlated negatively with company performance when interpersonal relations between board and managers were conflictful, but positively when the sociometric choices indicated harmony. Meuwese (1964) re-analyzed the studies of Fiedler, Meuwese, and Oonk (1961); Fiedler, London and Nemo (1961); Fiedler, Bass and Fiedler (1961); Godfrey et al. (1959); Fiedler (1962); and Fiedler, Hackman and Meuwese (1964). It was demonstrated that these studies had found that high LPC leaders tended to have the most effective groups if there were no interpersonal strains, while, if interpersonal stress was present, or the leader perceived interpersonal strains, low LPC leaders tended to have the most effective groups. When groups experienced external stress no significant correlation between the LPC of the leader and the group performance was obtained. Meuwese (1964) tested these findings, with groups of Army and Navy senior ROTC cadets. A study was conducted on the influence of a leader's ability, measured by an intelligence score and his interpersonal attitude, measured by LPC, on the creative performance under three stress conditions: internal stress, external stress, and no-stress. Positive correlations between LPC and performance were found for the internal (interpersonal) stress condition, indicating that high LPC leaders performed better than low LPC leaders. No significant differences between high and low LPC leaders were found for the external stress condition.

3.2. Situational control

Fiedler (1964, 1967) integrated the complex interrelated research findings. He stated that it was "abundantly clear that different group situations require different leadership styles" (1964, p.158). According to Fiedler, situations could be favorable or unfavorable with regard to the leader's influence on the members of his group. Through the years, Fiedler changed the 'situational favorability' into 'situational control' (1987) of the leader. Situational favorability and situational control were both composed of three components. (1) The antecedent studies clearly demonstrated that the personal relations between leader and members of his group were an important variable. (2) The farm-supply service companies study (Godfrey, et al., 1959) demonstrated that the direction of the correlation between ASo and effectiveness was contingent upon the structuredness of the task. (3) Studies by Gerard (1957) and Anderson and Fiedler (1962) demonstrated that the leader who had a powerful

position behaved differently from one who held low position power. This indicated that the power given by the organization to the position of the leader was an important factor.

The three situational components will be clarified and the way they are assessed will be shown. Although the situational components have been attacked, they have remained prominent over the years. The latest versions of their scales (Fiedler,1987) will be presented.

(1) The affective leader-member relations

Interpersonal relationship between a leader and his keyman appeared to be the most important determinant of the group process. It was measured by the sociometric acceptance of the leader by his group, and by the leader's rating of the group's atmosphere. The group's atmosphere (G.A.) rating consisted of 10 to 20 bipolar semantic differential scales such as:

Cold	--- :	--- :	--- :	--- :	--- :	--- :	--- :	---	Warm
	1	2	3	4	5	6	7	8	

Other scales are: enthusiatic - unenthusiastic; successful - unsuccessful; lots of fun - serious; boring - interesting; helpful - unhelpful; supportive - hostile; distant - close; productive - nonproductive; cooperative - uncooperative. The G.A. score was obtained by summing the scales. Fiedler (1987) cited split-half reliabilities ranging from .92 to .95 reported by Meuwese (1964) and Posthuma (1970).

Over the years, various remarks have been made about using one of the two measures. Mitchell (1970) reported low inter-correlations between the two measures indicating the scores measured different aspects of leader-members relations which were not interchangeable. According to Ashour, (1973a) the group climate measure should be conducted with the members of a group too. Since both play an important role in a group's effectiveness, each perception of group climate might be a predictor of group effectiveness. Group atmosphere ratings were filled out after completing the task, usually. McGrath and Julian (1963) and Myers (1962) found that group effectiveness correlated with group atmosphere ratings. According to Fiedler's contingency model group atmosphere should be assessed independently of the leader. McMahon (1972) stated that the method of assessing group atmosphere brought this into question.

(2). Task structure

The second important component of situational control is the nature of the task. Four dimensions of Shaw's (1963) taxonomy were adopted to assess the clarity or ambiguity of a task. Although these four dimensions seemed apropriate, McMahon (1972) wondered why Fiedler only took these four of Shaw's ten dimensions and what were the reasons for this restriction. The four dimensions are:

a. Goal clarity.
   This is the degree to which the requirements of the assignment are clearly defined.
b. Goal-path multiplicity.
   This refers to the degree to which the assignment can be performed by a variety of procedures.
c. Solution specificity.
   Different tasks have a variety of possible outcomes. Solution specificity refers to the extent that the outcomes are acceptable.
d. Decision verifiability.
   This refers to the degree that checking the solutions or decisions can be made.

Tasks with a high goal clarity, one goal-path, one right solution, and high decision verifiability decrease the anxiety of the leader.

A scale for measuring the task structure was proposed by Fiedler & Chemers (1984) and it is shown in Table 3.1. Fiedler & Mahar (1979) reported split half reliabilities of .77 on this scale.

Table 3.1. Task structure rating scale.

Circle the number in the appropriate column	Usually True	Sometimes True	Seldom True
Is the goal clearly stated or known?			
1. Is there a blueprint, picture, model or detailed description available of the finished product or service?	2	1	0
2. Is there a person available to advice and give a description of the finished product or service, or how the job should be done?	2	1	0
Is there only one way to accomplish the task?			
3. Is there a step-by step procedure, or a standard operating procedure which indicates in detail the process which is to be followed?	2	1	0
4. Is there a specific way to subdivide the task into separate parts or steps?	2	1	0
5. Are there some ways which are clearly recognized as better than others for performing this task?	2	1	0
Is there only one correct answer or solution?			
6. Is it obvious when the task is finished and the correct solution has been found?	2	1	0
7. Is there a book, manual, or job description which indicates the best solution or the best outcome?	2	1	0
Is it easy to check whether the job was done right?			
8. Is there a generally agreed upon understanding about the standards the particular product or service has to meet To be considered acceptable?	2	1	0
9. Is the evaluation of this task generally made on some quantitive basis?	2	1	0
10. Can the leader and the group find out how well the task has been accomplished in enough time to improve future performance?	2	1	0

(3) Position power

Position power has been defined as the inherent power of a leadership position. Every leadership position has a certain amount of position power. It is related to French and Raven's (1958) reward and punishment power and legitimate power. Position power is specified by the rewards and sanctions which are at the leader's disposal, his authority over his subordinates, and the degree to which this authority is supported by the organization. Fiedler & Chemers (1984) developed a position power scale which is shown in Table 3.2.

Table 3.2. Position power rating scale.

Circle the number which best represents your answer.

1. Can the leader directly or by recommendation administer rewards and punishments to subordinates?

2	1	0
Can act directly or can recommend with high effectiveness	Can recommend but with mixed results	No

2. Can the leader directly or by recommendation affect the promotion,demotion, hiring or firing of subordinates?

2	1	0
Can act directly or can recommend with high effectiveness	Can recommend but with mixed results	No

3. Does the leader have the knowledge necessary to assign tasks to subordinates and instruct them in task completion?

2	1	0
Yes	Sometimes or in some aspects	No

4. Is it the leader's job to evaluate the performance of subordinates?

2	1	0
Yes	Sometimes or in some aspects	No

5. Has the leader been given some official title or authority by the organization (e.g. foreman, department, head, platoon leader)?

2	0
Yes	No

The three situational components were integrated into one situational control dimension. The components were divided into two categories, those falling above or below the median of each of the three variables: 'good and moderately poor leader-member relations', 'high and low task structure', and 'high and low position power'. Recognizing the ends of the control dimension was clear, but the intermediate positions gave difficulties. It was postulated that leader-member relations were the most important, task structure the second most important, and position power the least important component. (Nebeker (1975) demonstrated that a 4:2:1 ratio reflected the best importance relationship between the three components, instead of a multiple regression analysis.) The eight (2x2x2) combinations, or octants, were arranged along the situational control dimension. Table 3.3 gives a survey of the eight octants.

Table 3.3. Composition of the 8 octants of situational control.

Octant	Affective leader-member relations	Task structure	Position power
1	good	structured	strong
2	good	structured	weak
3	good	unstructured	strong
4	good	unstructured	weak
5	weak	structured	strong
6	weak	structured	weak
7	weak	unstructured	strong
8	weak	unstructured	weak

3.3. The contingency model

Past studies were re-analyzed and new studies were performed in order to validate the use of the situational control dimension. Correlations between the leaders' LPC (ASo) scores and group performances were plotted for the octants. Fiedler (1964, p.164) concluded: "..., the correlations between leader scores and group performance measures within each octant are quite similar in size and direction. Even granting the post hoc nature of the classification, the consistency of the relations within octants is highly nonrandom in distribution." The median correlations between the LPC (ASo) scores and group performance were plotted against the situational control dimension. The exact correlations are shown in Table 3.4 and the general trend of the correlations is depicted in Figure 3.1. The figure indicates that groups of low LPC leaders performed best when they had very high or very low situational control (octants 1, 2, 3, and 8). Groups of high LPC leaders performed best in moderately well controlled situations (octants 4, 5, and 7).

Table 3.4. Median correlations within the 8 octants of the contingency model, based on original studies.

Octant	Correlations	Number of correlations included
1	-.52	8
2	-.58	3
3	-.33	12
4	.47	10
5	.42	6
6	-	0
7	.05	12
8	-.43	12

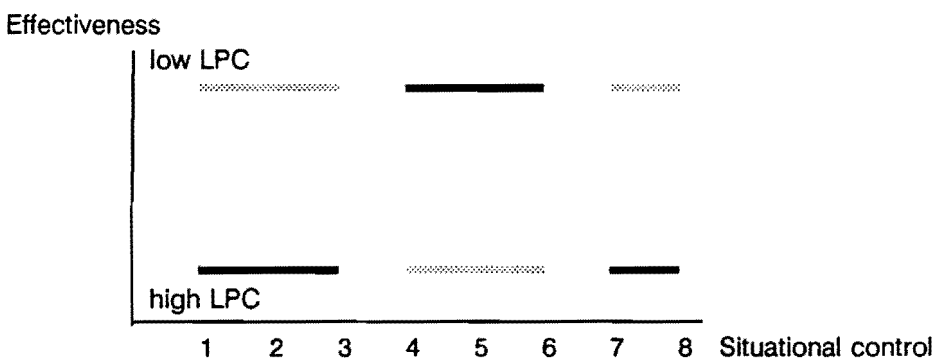

Figure 3.1. General depiction of the median correlations of the 8 octants of the contingency model, based on original studies.

3.4. Validating the contingency model

Three studies were performed in order to test the contingency model in all its eight octants (Fiedler, 1966; Graen, Orris, and Alvares, 1971a; and Chemers and Skrzypek, 1972). The first study (Fiedler, 1966) investigated the effect of leadership experience, and cultural heterogeneity on performance. 96 three-man groups executed two structured, one unstructured, and one co-acting tasks. Petty officers, who were highly experienced, and recruits, who were inexperienced, were made leaders of the groups, while other recruits were the group members. Each of 48 homogeneous groups was composed of three French-speaking men or three Dutch-speaking men. On the other hand, 48 heterogeneous groups had a Dutch-speaking leader and two French speaking members, or a French-speaking leader and two Dutch-speaking members. No performance differences were found between the groups led by petty officers and these led by recruits. In addition, no performance difference were found between homocultural and heterocultural groups. As well as testing these two hypotheses, the contingency model

itself was tested. Over the years, the results of this study were multiply interpretated. In 1966, Fiedler recognized cultural group composition as one, i.e. the main, element of situational control. Situational control was composed of the variable homogeneity versus heterogeneity, Group Atmosphere scores, task structure (one of the two structured tasks, and the unstructure task were used), as well as position power of the leader. Although a curvilinear plot was obtained, compared to the 1964 model, the exact correlation correspondence was unsatisfactory. In 1970, Fiedler (1970) contended that: "Since the Contingency Model was based on culturally homogeneous groups, only these will be used for validation purposes at this time." Although this contention seems temporary, in his 1987 review of validation studies Fiedler still uses it. Dependent on the order of presentation, two pairs of correlations, testing all octants, were computed. Successively these are: -.72, .37, -.16, .08, .16, .07, .26, -.37, and -.77, .50, -.54, .13, .03, .14, -.27, .60. Fiedler (1970) concluded: "As can be seen, the findings do not support the Contingency Model which postulates a curvilinear relationship."

Due to the variance between correlations within octants, Graen et al. (1971a) argued that the point predictions made by the contingency model could not be interpreted easily. The reason for this variance might have been the diversity of group situations in which the model was used. Two identical studies were conducted which adhered as rigorously as possible to the prescriptions of the model. One study found partial support for the predicted curve, while the other one did not find any support at all. Graen et al. (1970) concluded:

> "It was also found that these two studies did not yield similar results, either in terms of the attempted replication of the contingency model or the mean performance scores within octants. This is a rather damaging result considering the similarity of the experimental conditions, tasks, and Ss. Consequently, the studies not only lend evidential disproof to the contingency model, but also indicate that it may not be summarizing meaningful and stable relationships." (p.200)

Fiedler (1971) recognized several inadequacies in the experimental manipulation and procedures. The main points were the weak manipulations of the position power and the small difference between structured and unstructured tasks. Furthermore, the distribution of the leaders' LPC scores in each octant for the two studies was significantly different. In a reaction to Fiedler's comments, Graen, Orris, and Alvares (1971b) argued that "It does not seem reasonable to apply more "stringent methodological requirements" to a study if its results are damaging to a model than if its results support that model." (p.205). Referring to the Meuwese and Fiedler (1967) research, Fiedler's assessment of position power depended on the intuitive judgment of the experimenter.

The third study for testing all eight octants of the contingency model was conducted by Chemers and Skrzypek (1972). It utilized thirty-four groups of four military academy cadets who were required to work on the structured task of drawing a plan for a barracks building and barracks area, as well as, the unstructured task of outlining a plan to stimulate interest in the World politics of overseas-based enlisted men. Leader-member relations were obtained sociometrically before the experiment and cross-examined with the group atmosphere scale after every task. High position power was induced by giving the leader the power to grade the members which would count heavily in their final summer course grade. The results demonstrate a striking correspondence between the plotted curve and Fiedler's (1964, 1967) predictions. The correlations between a leader's LPC score and the task performance for octants 1 to 8 were: -.43, -.32, .10, .35, .28, .13, .08, and -.33. The rank-order correlation between the predicted points and the actual points yielded a rho of .86 ($p<.05$). Chemers and Skrzypek concluded that: "The striking correspondence of the curve obtained in the present experiment to the curve based on Fiedler's extensive research brings into considerable question the findings by Graen et al." (p.175).

Other studies have tested the contingency model partially. Fiedler (1978) evaluated the validation studies. Thirty-eight of the fourty-seven separate correlations were in the same direction as predicted. Evaluating

all the validation studies gave a correlation pattern similar to that of the original studies (Fiedler, 1964). Separating the validation studies into field and laboratory studies yielded a similar picture. Only the median correlation within octant 2 in the laboratory studies was not predicted correctly in the original studies. Fiedler explained this finding by pointing out the difficulty of creating a situation with a structured task and low position power in laboratory setting. Although this analysis strongly supported the contingency model, the way that it was carried out raised much debate. Strube and Garcia (1981) described the critics of Graen et al. (1970), Mitchell et al. (1970), and Ashour (1973) on the use of the binomial test as the measure of the model's validity. Ashour demonstrated that the binomial test would not be sensitive to the magnitude of the correlation; only the sign of the correlation being important. Thus, using the binomial test, nonsignificant relationships could have an effect. Furthermore, the test was not sensitive to a relatively small number of significant disconformations relative to many nonsignificant confirmations. Rice (1978b) used the criterium of 'batting average', which is the percentage of significant results in the predicted direction. Rice found support for the contingency model. The batting average is only a rough estimate of the validity of a model since it does not account for precise significance levels. Strube and Garcia (1981) advocated the use of meta-analysis which could account for "exact significance levels in addition to directionality and number of results" (p.309). The studies analyzed by Fiedler (1978) were meta-analyzed. Analyzing field and laboratory studies together yielded an overwhelming support for the complete model; however, only octants 1 and 4 were significantly supported. Separating the field and laboratory studies gave similar results. Both types of studies were supported overall, however, only a few octants were supported at a significant level (octant 1; octants 1 and 4, respectively). A second meta-analysis was conducted by Peters, Hartke, and Pohlmann (1985). Evaluating the validation studies, the model was supported greatly. However, the expectations of laboratory octant 2 situations were not confirmed ($r=.21$). Peters et al. discarded the argument that it was difficult to create the situational conditions octant 2, because, a) it was not obvious why this condition was more difficult to create than other conditions, b) the difficulty of creating had never been mentioned by other researchers, and c) reviewers of the papers did not see anything contrived about the experimental conditions, concluding that: "(...) the theory is inaccurate with regard to this leadership condition, at least, as it is created within lab settings" (p.282).

4. Cognitive resource theory

In 1973, Ashour noted that: "The model made specific predictions of the correlations to be expected in the eight situations. The correlations, however, gave little insight into the underlying reasons for the predictions proposed." (1973a, p.350). Fiedler & Garcia (1987) still recognized the black-box deficiency of the model: "The most pertinent criticism of the contingency model is its inability to explain the specific process that allows us to predict performance from the interaction of LPC and situational control." (p.86).

Attempting to shed light on the black box view, Fiedler & Garcia (1987) described the cognitive resource model. The underlying concept of the model was described as: "(...), the leader's intellectual abilities are the major source of the plans, decisions, and strategies that guide the group's actions. These plans, decisions and strategies are communicated to the group in the form of directive behavior, and acted upon if the group supports the leader's and the organization's goals, or if the leader is not distracted by stress." (p.105). Two types of intellectual abilities were recognized in leaders; namely, intelligence and job experience. Furthermore, the leader's experience of stress was largely influenced by his relationship with the boss.

The model contained two assumptions and seven hypotheses. Hypothesis 7 integrated the cognitive resource model and the contingency model: 'Directive behavior of the leader is in part determined by the contingency model elements, the leader's task-motivation or relationship-motivation (LPC), and situational control.' (p.8). According to Fiedler & Garcia, the interaction between a leader's personality characteristic (LPC) and the situation predicts, in part, the directiveness of the leader. Leaders with a high LPC score who experienced a high situational control were thought to display directive behavior. While high LPC leaders who experienced a low situational control were thought to be nondirective. Low LPC leaders, on the other hand, who experienced a high control were thought to display nondirective behavior. While low LPC leaders who experienced low control were thought to be directive. It should be noted that directive and nondirective behavior are relative terms. The leader of a creative group cannot be directive during brainstorming, while the captain of an airliner cannot be nondirective during take off.

The following diagram underlies this hypothesis and, in fact, the whole cognitive resource model:

LPC x situational control ---------->	Leader behavior (directiveness) ---------->	Leader cognitive resource use ---------->	Group Performance

(derived from: Fiedler & Garcia, 1987; p.181)

When re-analyzing some old studies, and describing some recent ones, Fiedler found support and rejections for these assumptions and hypotheses. The most significant findings will be discussed now. Two important results were found consistently. Firstly, boss stress moderated the correlation between leader intelligence and performance of the group. In low stress groups leader intelligence and group performance appeared to be correlated significantly with performance, while, in high stress groups these correlations were consistently lower (though not always significantly). Secondly, under low stress, the more intellectually demanding a task the higher were the correlations between leaders' intelligence and group performance.

Although other hypotheses were not overwhelmingly supported, some interesting findings were mentioned. Firstly, correlations between a leader's intelligence score and the group's performance were consistently in the opposite direction to the correlations between a leader's job experience and the

group's performance. Secondly, correlations between a leader's intelligence and the group's performance were very often in the opposite direction to the correlations between the members' intelligence and the group's performance.

4. Future action

Despite the well known methodological problems, Fiedler's Contingency Model seems the best theory to study leadership effectiveness in small groups. The cognitive resource extension of the model is promising in its attempt to shed light on the group process. However, one must be aware that intelligence, competence and experience do not describe the actual group process. Another shortcoming of the theory is that it has almost never been tested among groups which contained females too. Several studies showed that different group processes take place during the interaction of mixed-sex groups compared to homogeneous groups. Findings of these studies will be discussed in a future OCTO-report.

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