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Abstract

This paper explores the idea that effective leaders demonstrate more complex, contradictory, and paradoxical behaviors than their less effective counterparts. After highlighting these themes in a brief discussion of the leadership literature, we introduce the concept of *behavioral complexity,* a behavioral analogue to the concept of cognitive complexity (Streufert and Swezey, 1986) as a way to conceptualize this phenomenon. The model of leadership roles developed by Quinn (1984; 1988) is then examined as a theory of leadership based upon the concept of behavioral complexity which allows for an empirical test. The Quinn model represents the leadership domain with a set of eight roles, displayed in a circular pattern, and the empirical test uses a non-traditional multidimensional scaling analysis to test this spatial model. The analysis of data from 892 respondents about 176 executives suggests that effective leaders generally display a more complex and varied set of behaviors, and exhibit a number of aspects of the role structure suggested by the Quinn model and by the concept of behavioral complexity.

This paper makes a contribution to the leadership and organizational literature in three important ways: First, we explicitly examine the often implicit link between leadership and paradox. Second, we introduce a new concept, *behavioral complexity*, which provides a way of integrating several recent trends in the leadership literature. Third, we present an empirical analysis of data about 176 executives which suggests that the concepts of paradox and behavioral complexity may be very useful in understanding effective managerial leadership.

Traditional management theories have often presented organizational phenomena in terms of discrete, opposing categories such as loose or tight, formal or informal, and creative or routine (Bobko, 1985). Many of the most compelling theories of leadership have also divided the domain into contrasting categories. Classic examples from the leadership literature include McGregor's (1960) suggestion that managers view their subordinates either from a Theory X or Theory Y perspective, Zaleznik's (1977) distinction between managers and leaders, and Burns's (1978) contention that leaders are either transactional or transformational. The extensive empirical literature is also replete with such bipolar categories as autocratic or democratic, directive or participative, task-oriented or relations-oriented, and initiating structure vs. consideration (Stogdill, 1974: 365-397). Central to these theories is often the notion that leaders can be classified in either one category or the other, or that certain styles and behaviors can be matched with certain situations to produce effective leadership.

In contrast, more recent theorizing has placed greater emphasis on paradox, contradiction, and complexity, suggesting that many phenomena may in fact fit multiple opposing categories simultaneously. This "paradoxical perspective," has influenced research on topics as diverse as organizational effectiveness (Van de Ven, 1983; Quinn and Cameron, 1988), group dynamics (Smith and Berg, 1987; Murnigham and Conlon, 1991), cognition (Hampden-Turner, 1981; Streufert and Swezey, 1986), psychodynamics (Kets de Vries & Miller, 1985; Zalesnik, 1989), creativity and learning (Rothenberg, 1979; Senge, 1990; DeBono, 1990), and leadership (Mitroff, 1984; Sims and Gioia, 1986; Quinn, 1984; 1988). While not denying the underlying discrete categories, this more complex perspective (Maruyama, 1976) implies that effective leaders are those who have the cognitive and behavioral capacity to recognize and react to paradox, contradiction, and complexity in their environments.

The concept of cognitive complexity has been addressed by many authors (Weick, 1979; Kiesler and Sproull, 1982; Bartunek, Gordon and Weathersby, 1983; Streufert and Swezey, 1986; Jaques, 1986), and there appears to be agreement that cognitive complexity is a

necessary condition for effective leadership. The question raised by this paper, however, is whether cognitive complexity is a sufficient condition. This paper argues that the sufficient condition must instead be a *behavioral complexity* which connotes action as well as cognition; that is, effective leadership must be the ability to both conceive and perform multiple and contradictory roles (Hooijberg and Quinn, 1991; Hooijberg, 1992).

As Sale (1980), has noted, complex behavior is critical to adaptation and survival at the organizational level as well as the individual leadership level explored in this paper.

> Diversity is the rule of human life, not simplicity: the human animal has succeeded precisely because it has been able to diversify, not specialize: to climb *and* swim, hunt *and* nurture, work alone *and* in packs. The same is true of human organizations: they are healthy and they survive when they are diverse and differentiated, capable of many responses; they become brittle and unadaptable and prey to any changing conditions when they are uniform and specialized. It is when an individual is able to take many jobs, learn many skills, live many roles, that growth and fullness of character inhabit the soul: it is when a society complexifies and mixes, when it develops the multiplicity of ways of caring for itself, that it becomes textured and enriched. (p.403)

Early recognition of the paradoxical nature of leadership and the wide range of responses and capabilities required for effective leadership can be found in the work of Bass (1960), Blake and Mouton (1964), Lawrence and Lorsch (1967), and Burns (1978). These theories recognized that managers must simultaneously attend to integration *and* differentiation, and that a manager must *simultaneously* focus on the task and interpersonal aspects of a leadership position.

In addition, there are several examples in the leadership literature which suggest that factors typically treated as conceptual opposites are in fact closely related. One example concerns the classic leadership dichotomy of consideration and the initiation of structure (Hemphill and Coons, 1957). These two ideal types are treated theoretically as though they are orthogonal factors, and are assumed to be uncorrelated. Nonetheless, 11 of 13 empirical studies reviewed by Schriesheim, House, and Kerr (1976) found positive correlations between these two measures, with a median correlation of .45. This suggests that the original bipolar

dichotomy is not born out in actual behavior. As Bass (1981) has noted, effective leaders seem to do more of *all* behaviors, even though researchers may have difficulty analyzing these behaviors within frameworks based on bipolar dimensions.

But beyond noting that effective leaders seem to do "more of everything," leadership theorists and researchers have not developed a concept to represent this idea, nor has there been much empirical research that attempts to extend these ideas. Thus, in this paper we begin by developing the concept of *behavioral complexity* as a notion that addresses many of the issues associated with three recent streams of leadership research: the emphasis on cognitive complexity, the "more of everything" point of view, and the growing interest in paradox and contradiction in the leadership and organizational literature. Next, we examine Quinn's (1984; 1988) model of leadership roles as an attempt to characterize the leadership domain in terms of a set of eight roles drawn from an extensive review of the leadership literature. This model, rooted in the literature on paradox and contradiction, has a concept similar to behavioral complexity at its core and thus offers the prospect of an empirical test of some of the important aspects of behavioral complexity. The model presents eight roles, displayed in a circular pattern, that is explored through a non-traditional multidimensional scaling analysis designed to test this type of spatial model.

Behavioral Complexity

The concept of behavioral complexity is perhaps best understood as an analog to the concept of cognitive complexity. In the same sense that Fitzgerald (1945) noted that "the test of a first-rate intelligence is the ability to hold two opposed ideas in the mind at the same time and still retain the ability to function," the test of a first-rate leader may be the ability to exhibit contrary or opposing behaviors (as appropriate or necessary) while still retaining some measure of integrity, credibility, and direction. Thus, effective leaders are those who have the cognitive and behavioral complexity to respond appropriately to a wide range of situations that may in fact require contrary or opposing behaviors.

Behavioral complexity is also linked to the "more of everything" observation about effective leadership made by Bass (1981) and others, which emphasizes that effective leaders draw from an extensive behavioral repertoire as they perform their job. A larger pool of behavioral responses and initiatives gives a leader a base from which to best perform in reaction to complex and unanticipated demands. Kotter (1982) and Yukl (1989), for example, have both emphasized that leadership positions require extensive interaction, both hierarchically and laterally, within their organization as well as interaction with a complex network outside their organization. The behavioral demands of this network, as well as its potential for complexity also appears to grow as managers develop in their careers. Even within the context of leader-subordinate relations, effective leaders appear to vary their behavior according to factors such as the maturity of their subordinates (Hersey and Blanchard, 1969; 1979). or whether or not their subordinates belong to the manager's in-group (Dansereau, Graen, and Haga, 1975).

In addition, behavioral complexity is directly linked to the concepts of paradox and contradiction noted earlier in this paper. Complexity implies the ability to respond to a host of ambiguous and contradictory forces, including the simultaneous presence of opposites. As the size and differentiation of a leader's network grows, so does the potential for paradox and contradiction. The breadth and depth of a leader's behavioral repertoire thus becomes their distinctive competence. Effective leaders must be loose and tight, creative and routine, and formal and informal. Thus, the concept of behavioral complexity incorporates both the idea of a behavioral repertoire, and the idea of paradox and contradiction.

The concept of behavioral complexity also allows for leadership to be defined in a way that is compatible with the idea of requisite variety (Ashby, 1952). Both behavioral complexity and requisite variety lead to a simple definition of effective leadership as *the ability to perform the multiple roles and behaviors that circumscribe the requisite variety implied by an organizational or environmental context.* If paradox exists in the environment, then it must be reflected in behavior. Thus, a leader with a diverse role and skill repertoire and a broad

behavioral portfolio will be best suited to react to a complex, yet often ambiguous and indeterminate organizational and environmental context.

Defining leadership in terms of behavioral complexity and requisite variety also has interesting implications for the classic leadership problem of situationalism. A definition of leadership rooted in requisite variety presents a formidable, and perhaps infinite set of contingencies that are continually in a state of flux. Such fundamental situationalism presents contingency researchers with a nearly intractable task. As organizational environments become more complex, the problem becomes even more difficult. Thus, a more fruitful approach may be to attempt to define the portfolio of roles and behaviors that allow a leader to respond to complex demands, rather than the calculus by which a particular behavior is applied to a particular situation. Perhaps a realization of the intractable nature of the contingency problem lies behind Yukl's observation that "the pendulum [in leadership research] appears to be swinging back from extreme situationalism to a more balanced theoretical perspective" (Yukl, 1989, p. 279).

Thus, the concept of behavioral complexity is linked to the recent literature in the related areas of cognitive complexity, behavioral repertoires, and paradox and contradiction, and identifies an integrative dynamic that deserves further conceptual development (Hooijberg, 1992). In addition, because much of the literature cited in these three areas is exclusively conceptual, further development of the concept can also come from empirical research, particularly by examining leadership theories that have included elements of behavioral complexity in their frameworks.

The Quinn Model of Leadership Roles

Several authors have attempted to define leadership in terms of a complex of behaviors or a portfolio of roles (Mintzberg, 1973; 1975; Yukl, 1981; Bass, 1981; Pauchant, Nilles, El Sawy, and Mohrman, 1989). Mintzberg, for example, described ten leadership functions in his in-depth study of managerial behavior, and Yukl (1981) presented nineteen categories of leader

behavior based on both his own research, and a review of the leadership literature. Each of these authors also included leadership functions and behaviors that seem to be in contradiction with one another. None these, however, have developed a framework or central concept to address these issues.

One author who has formulated a framework of leadership that addresses issues of contradiction and paradox is Quinn (1984; 1988). Quinn (1984) reviewed the literature on leadership roles noted above and summarized the leadership domain in terms of eight leadership roles, incorporating the nineteen categories presented by Yukl (1981). Quinn then presented these eight roles in terms of the competing values model of organizational effectiveness developed by Quinn and Rohrbaugh (1983). The eight roles were represented in a circular pattern based on the two underlying dimensions of stability vs. flexibility and internal vs. external focus identified by the effectiveness model. This model is presented in Figure 1.

<insert Figure 1 about here>

Although Quinn (1984; 1988) does not develop the concept of behavioral complexity, his leadership model does stress the same basic theme: The need for leaders to reframe underlying polar opposites such as stability and flexibility in order to see a more complex concept of leadership that encompasses both ends of the continuum. The model assumes that a traditional view of the two ends of the continuum as incompatible and contradictory is characteristic of a lower level of development as a leader and assumes that the ability of leaders to reconcile these extremes is characteristic of a higher level of development. In keeping with the emphasis of this model on behavioral complexity and leadership as a portfolio of capabilities, the eight roles in the model are defined in terms of a set of skills necessary to perform each role.

The leadership model groups two of the leadership roles within each of four quadrants. The upper-right quadrant, which the effectiveness framework links to open-systems theory and

the process of adaptation to the organization's external environment, defines two leadership roles:

Innovator Role	The innovator is creative and envisions, encourages, and facilitates change.
Broker Role	The broker is politically astute, acquires resources and maintains the unit's external legitimacy through the development, scanning, and maintenance of a network of external contacts.

Moving clockwise to the lower right quadrant, labeled the rational goal model in the effectiveness framework, two more leadership roles are specified. These roles emphasize the rational pursuit of goals external to the group, and the leader's role in defining and motivating the attainment of those goals.

Producer Role	The producer is the task-oriented, work-focused role. The producer seeks closure, and motivates those behaviors that will result in the completion of the group's task.
Director Role	The director engages in goal setting and role clarification, sets objectives, and establishes clear expectations.

The lower left quadrant is referred to in the effectiveness framework as the internal process model and places primary emphasis on internal control and stability. Two additional leadership roles are specified in that quadrant.

Coordinator Role	The coordinator maintains structure, does the scheduling, coordinating, and problem solving, and sees that rules and standards are met.
Monitor Role	The monitor collects and distributes information, checks on performance, and provides a sense of continuity and stability.

The upper left quadrant is referred to in the framework as the human relations quadrant, placing primary emphasis on human interaction and process. Two final leadership roles are defined within that quadrant.

Facilitator Role	The facilitator encourages the expression of opinions, seeks consensus, and negotiates compromise.
Mentor Role	The mentor is aware of individual needs, listens actively, is fair, supports legitimate requests, and attempts to facilitate the development of individuals.

As such, the Quinn model represents several aspects of the concept of behavioral complexity discussed earlier in this paper. Within the definition of the leadership domain provided by the model, the implication is that leaders with a broad behavioral repertoire, and the ability, as a part of that repertoire, to perform roles that include a degree of contradiction or paradox, will be the most effective. The logic of this model of leadership is to define a set of roles comprising the leadership task in a way that captures some of the inherent conflicts and contradictions of the simultaneous needs for both internal integration and external adaptation combined with the need for both stability and flexibility. These roles perhaps do not represent paradox at any profound level, but they do clearly represent some of the conflicting demands of managerial leadership: the need to monitor and control, for example, often conflicts with the need to innovate and adapt; the need to be personally productive often conflicts with the need to mentor and develop the human organization. Thus, the definition of effective leadership implied by the model is not the capacity to be either a monitor *or* a director *or* an innovator, but rather to perform all of these roles simultaneously.

The introduction of the concepts of paradox, contradiction, and complexity into this model, however, raises some interesting questions about how to empirically test the model in a way that will shed some light on the issues associated with behavioral complexity. The presentation of the roles in terms of a circular pattern, in particular, led us to examine several multidimensional scaling techniques designed to test spatial models. These non-traditional analytic techniques are employed for the empirical part of this research.

Analysis Strategy: How Do You Test a Spatial Model?

Because Quinn's leadership model is a "spatial" model that expresses the underlying theory and hypotheses in terms of a geometric shape, this suggests the use of a non-traditional

analysis technique. The testing of geometric and spatial models has in fact been addressed at length in the literature on multidimensional scaling, and thus this methodology forms the basis for our analytic strategy. Readers wishing to (re)familiarize themselves with the logic of multidimensional scaling may want to refer to a basic MDS source such as Kruskal and Wish (1978).

Figure 1 suggests a spatial model with eight separate roles presented in terms of two underlying dimensions, with a specific set of relationships among these roles. The roles should take the form of a "circle" within these two dimensions, such that some pairs of roles (such as the monitor and the coordinator) should be very closely related, while other pairs of roles (such as the mentor and the producer) should be far less closely related. Opposite roles are presumably more "contradictory" and adjacent roles are more similar. One might expect, for example, that a leader who was highly proficient as a mentor would also have facilitator skills in their behavioral portfolio, but might be somewhat less likely to be highly proficient as a director or producer.

A conventional approach to testing this unusual structure would be to factor analyze measures of the eight roles as a test to see if there were indeed eight separate factors. But this simple exploratory factor analysis could not provide the necessary test of the *relationship* among the eight factors. Next, one might propose a confirmatory factor analysis that would test for eight separate factors with a carefully specified set of interrelationships among the eight roles designed as a test of the underlying circular structure. Nonetheless, this analysis would still not relate the roles to the two underlying dimensions of stability-flexibility and internal-external focus. Because factor analysis directly equates a statistical dimension with a theoretical construct, such an analysis (either exploratory or confirmatory) must, by definition, have either *two* factors representing the underlying dimensions or *eight* factors representing the eight roles. In short, the appropriate analytic strategy must test for the presence of eight roles, in a circular pattern, within two dimensions.

While this type of non-linear analysis is relatively unfamiliar within the organizational literature, there are many precedents for solving such problems in other literatures. In this paper, we rely upon a confirmatory multidimensional scaling (MDS) technique that allows us to explore the convergence between Quinn's model of leadership roles and the data on executives collected in this study.

Because we rely upon a logic and an analytic approach that may be unfamiliar to many organizational researchers, we have provided a brief background for our analytic strategy. The approach we take in this paper began with the efforts of Coombs (1941), Guttman (1954), Shepard (1974), and others to develop a non-metric alternative to factor analysis. One of the goals was to break the assumed link between constructs and statistical dimensions that lies at the heart of metric factor analysis and to introduce an approach that would present related constructs within a parsimonious number of statistical dimensions. One of the first classic examples of this logic was Coombs' (1941) study of intelligence testing in which he presented 17 tests, expressed as five factors, scaled within two dimensions, all computed on a hand calculator!

Next, Guttman (1968) and others developed an approach designed to scale multiple constructs within the smallest possible number of dimensions. (We use a derivative of Guttman's "smallest space analysis" in this paper to determine if the eight roles specified by the model can in fact be represented in only two dimensions.) Following this innovation, researchers then began to focus on the interpretation of *spatial patterns or structures*. As an example, Levy's (1976) analysis of quality of life data showed that the quality of life data could be scaled in the form of a "radix" which could identify both specific facets of quality of life and the centrality of a given item to overall quality of life. The results of Levy's analysis are presented in Figure 2.

<insert Figure 2 about here>

As Figure 2 shows, the most direct measure of quality of life, "Life in General" has the highest "centrality" -- it appears directly in the center of the diagram, and the measures that represent specific aspects of quality of life, such as family, work, or the economy, radiate from that central point. This analysis, like most MDS applications, is based on the intercorrelations among survey items, such that the items that are highly correlated appear close together in the diagram, while those that are less highly correlated appear farthest apart. Thus, from Figure 2, one can infer that "Life in General" has a relatively high correlation with all of the other measures and thus appears in the center of the diagram, while aspects of life quality such as family & economy, or work & spare time appear as "opposites" -- they are on opposite sides of the model, indicating that intercorrelations among these measures were the lowest in the model.

In addition, there are even more direct analogs to the structure of the Quinn leadership model that can be taken from the MDS literature. These examples take the form of a "circumplex" -- a two-dimensional geometric structure in the form of a circle. The classic example of a circumplex structure comes from studies of color vision: scaling the perceived similarity of light waves of different frequency produces the color circle -- red is next to yellow, yellow is next to green, green is next to blue, blue is next to purple, and, eventually, purple is next to red. Analysis of color vision data (Ekman, 1954; Helm and Tucker, 1962) resulted in the circumplex presented in Figure 3 (Borg and Lingoes, 1980).

<insert Figure 3 about here>

Interestingly enough, because an individual with normal color vision will produce similarity judgments that form a nearly perfect circle, departures from this circumplex structure can be used to identify individuals with abnormal color vision. Defects in color vision could thus be defined as departures from this circumplex structure. This observation leads to an interesting set of questions with respect to leadership and the Quinn model: Do subordinates' ratings of their managers on the eight leadership roles fit the circumplex structure implied by

the theory? Do highly effective managers exhibit this circumplex pattern more clearly than do less effective managers?

Hypotheses

The logic outlined above suggests a number of conditions that should be met in a test of Quinn's model of leadership roles and the related logic of behavioral complexity. Our specific hypotheses stem from the general assumption that if more behavioral complexity is indeed an important characteristic of leadership, then highly effective managers should exhibit the broad portfolio of roles more clearly than less effective managers. The model suggests at least three conditions that should be met: The leadership role data should scale in two dimensions, the measures of each of the roles should be valid, and the circumplex pattern among the roles should be apparent. Each of the three hypotheses is stated as both a general hypothesis about the conditions that must be met for the model to be considered valid, and a more specific hypothesis that the ideal form of the model should be more apparent when high effectiveness managers are contrasted with low effectiveness managers.

The first hypothesis is the *dimensionality* hypothesis, which specifies that a set of survey items measuring the eight roles can be represented in two dimensions as specified by the model.

H1: The items measuring the eight leadership roles should scale in two dimensions. In addition, the fit of the items in two dimensions will be better for high effectiveness managers than low effectiveness managers.

The second hypothesis is the *measurement* hypothesis requiring that the measures of each of the roles meet a stringent criteria of convergent-discriminant validity:

H2: The items measuring a given leadership role should cluster distinctly, that is, each item should be more closely related to other items measuring that same role than to items measuring another leadership role. In addition, this convergent-discriminant validity will be better for high effectiveness managers than for low effectiveness managers.

The third hypothesis is the *circumplex* hypothesis, concerning the interrelationship among the leadership roles, and requiring that the roles take the form of a circle, or circumplex, as prescribed by the theoretical model.

H3: The interrelationships among the role clusters should take the form of a circumplex, as specified by the theoretical model. In addition, this circumplex pattern will be more apparent for high effectiveness managers than for low effectiveness managers.

Taken together, these hypotheses specify a confirmatory test of Quinn's model of leadership roles, and an exploratory test of the underlying logic of behavioral complexity. There are, of course, several clear limits to the "hypothesis testing" logic suggested here. First, because it is our intention to examine the concept of behavioral complexity, the specific tests we propose for the competing values model are also a means to explore the broader issues raised by the concept. As such, a set of "hypotheses," designed to test the validity of the Quinn leadership model, only constitute an exploratory test of the broader issues we have raised. Second, the multidimensional scaling techniques used in this paper are generally not intended to provide a significance test for the results of a specific sample with respect to an entire population. They are, instead, a means to examine the structure of a given sample and a given set of measures. These qualifications suggest that the analyses presented in this paper, in contrast to a traditional "hypothesis testing" approach, have both confirmatory and exploratory properties.

Methodology

The subjects of this study were a sample of 176 mid-level executives drawn from 84 different companies in the public utilities industry during 1988 and 1989. Each of these subjects selected a set of 3-7 direct subordinates who knew them well and asked them to respond to a questionnaire that included a set of items measuring the eight roles specified by the competing values model. A total of 670 subordinates responded about the 176 participating

executives. Responses from all of the subordinates of a particular manager were aggregated to produce a single score on each of the items for each manager. The mean of these subordinate responses was taken as the measure of each of the eight roles in the model for each manager.[1] Subordinate responses were chosen as measures of the leadership roles based on the assumption of frequent contact, salience of the measures, and overall knowledge of the participating executive.

In addition, 222 supervisors of the 176 managers completed a questionnaire that included assessments of the effectiveness of each of the managers in the following areas: their success compared to their peers, the degree to which they have met performance standards, their performance as a role model for others, and their overall performance as a manager. Supervisors' responses were chosen as measures of effectiveness because they often are an important criterion by which a manager's effectiveness is judged, they are reasonably comparable across managers and supervisors, and they were accessible in this study. In those cases with multiple supervisors responding about a given manager, the mean score was used. Next, an index of the five effectiveness items was computed for each manager and the sample of managers was split at the median into high and low effectiveness samples. A complete listing of the items used to make up the role measures and effectiveness measure is presented in the appendix, along with means, standard deviations, and alpha coefficients for each index.

Combining subordinate responses as measures of managers' role behavior and supervisory responses to assess the managers' effectiveness serves several objectives: First, this combination has greatest face validity. Subordinates, in general, have more frequent contact with the manager than do supervisors and the content of the leadership roles, as defined by the Quinn model, is well-suited to the manager-subordinate relationship. Supervisors, in turn, are most often responsible for assessing a manager's effectiveness in the organization and the survey measures used in this study serve as a close proxy for that assessment. Second, the

[1]While this study has focused on the mean scores on each of the eight roles, Hooijberg (1992) has also examined variance in the ratings as a predictor of effectiveness.

combination of subordinate and supervisory responses avoids the bias of having data about both leadership role behavior and effectiveness come from the same source.

Of the 176 participating managers reported on in this study, 69% were in middle or upper management positions, and 60% had been promoted once or twice over the past five years. 87.3% of the participating managers were male, 96% were white, 70% were between 30 and 56 years of age, all participants had completed high school, more than 35% had a BA, and 25% had a Masters degree. The demographics of those who responded about the participating manager were unavailable because of concerns about anonymity, but we estimate that they were only slightly more diverse with respect to race and gender than the target sample of participating managers.

To analyze these data, correlation matrices for high effectiveness and low effectiveness managers were computed. These matrices were then analyzed using a multidimensional scaling analysis to see if the roles data fit into two dimensions. After that, a series of constraints representing the theoretical model were imposed on the data using an approach developed by Borg & Lingoes (1980) and Denison & Fornell (1990) to determine the fit between the model and the data. These procedures are described in further detail below along with the presentation of the results.

Results

To test the first hypothesis that the items measuring the eight leadership roles could be represented in two dimensions, the multidimensional scaling program MINISSA (Lingoes, 1973) was used to analyze the correlation matrix of 16 items that measured the eight leadership roles for high and low effectiveness managers. The correlation matrices for high and low effectiveness managers are presented in Table 1, and the MDS results for the high and low effectiveness managers are presented in Figures 4 and 5.[2]

[2]In this analysis , two items were used as a parsimonious representation of each of the roles. Other versions of the role measures (eg. Quinn, 1988) use a larger number of items and give a fuller description of the skills associated with each role. The two-item indexes, in all cases, correlate .90 or greater with the longer versions.

<insert Table 1 about here>

<insert Figure 4 about here>

<insert Figure 5 about here>

These MDS analyses translate the correlations between variables into distances in a geometric space. Figures 4 & 5 present these distances in a two-dimensional plot. Highly correlated variables appear close together and less highly correlated variables appear further apart. A "stress" coefficient (K) indicates the "friction" associated with representing the data in two dimensions. In this case, data for both groups scaled well in two dimensions, as indicated by a coefficient (K) of .13 for the high effectiveness managers and .09 for the low effectiveness managers. A good fit is indicated when $K \leq .15$ (Lingoes, 1973). If the stress coefficient was greater than .15, then three dimensions would be required to accurately represent the data. In general, a greater number of dimensions will be required to represent a more complex set of intercorrelations among a larger set of variables.

These results confirm hypothesis #1 in the sense that the data for both high effectiveness and low effectiveness managers scale well in two dimensions. The results do not confirm hypothesis #1 in that the data for high effectiveness managers do not scale better than the data for low effectiveness managers, and in fact scale slightly worse.

Figures 4 & 5 also help to pose the next set of research questions: How much of the underlying structure of the model is actually present? Can the role measures be distinguished from one another? Is the circumplex form apparent in the data? Are these underlying structures more apparent in the data for high effectiveness managers than they are for low effectiveness managers? These research questions each require that a set of constraints be placed on the data presented in Figure 4 & 5 to determine how well the model fits the actual data.

Thus, the second hypothesis is a test of convergent-discriminant validity. This test begins with the two dimensional MINISSA plot generated by our test of hypothesis #1. To test hypothesis #2, the measurement constraints representing the criterion of convergent-discriminant validity are imposed on the plot. The requisite test of convergent-discriminant validity can be stated as follows: each item that measures a given leadership role should be more closely related to the other item measuring that leadership role than it is to any of the items measuring the other leadership roles.

As an example, suppose that two items intended to measure the broker role were not highly correlated -- say, .20 -- and one of the two broker items was in fact more highly correlated -- say .50 -- with an item measuring the monitor role. In this situation, it would be difficult to claim that either the broker role or the monitor role had been accurately measured. This principle, extended to all items and roles, implies a very specific order of correlations for the matrices presented in Table 1: Each item that measures a given role should be more highly correlated with the other item measuring that same role, than with any items measuring other roles. If this condition is met, then this set of role measures can be assumed to have a high degree of convergent-discriminant validity. These constraints were developed and applied using the guidelines developed by Borg and Lingoes (1980) and Denison and Fornell (1990).

To assess the level of fit between the constraints and the underlying data, Lingoes and Borg (1983) developed an "efficacy coefficient" -- a non-inferential measure of fit between theory and data. According to their guidelines, when the coefficient is greater than 3, there is a high degree of convergence between the model and the data. When the coefficient is below 1, there is a clear lack of fit between the model and the data. When the coefficient lies between 1 and 3, the fit is judged to be marginally acceptable and other factors such as sample size, number of variables and number of dimensions may need to be taken into consideration. Given that this analysis has a large sample size, a large number of variables, and a small number of dimensions, we generally interpret coefficients in the 1-3 range as indicating acceptable fit.

By this criterion, the measurement model achieves an acceptable degree of fit for the low effectiveness managers (3.43) and a very high degree of fit for the high effectiveness managers (33.0). These results provide clear support for the second hypothesis and demonstrate that the measures of each of the eight roles are separate and distinct and have been measured with some accuracy. The results also indicate that the roles, as perceived by subordinates, are much more clearly differentiated for the high effectiveness managers than they are for the low effectiveness managers.

The third hypothesis requires a test to determine if the data take the form of a circumplex as suggested by the theory. Once again, this hypothesis is operationalized in terms of a set of constraints that are placed on the data. These constraints require that items measuring the same role be closest together, items measuring adjacent roles be next closest together, items measuring more distant roles be further apart, and that items measuring the most distant roles -- those on the opposite side of the circle as specified by the model -- should be the farthest apart. These constraints require that the data directly fit the circumplex form suggested by the model. A matrix with the actual constraints used in this analysis is presented in Table 2.

<insert Table 2 about here>

When the circumplex constraints are applied to the data, however, the fit is very low; .12 for high effectiveness managers and .09 for low effectiveness managers, indicating that there is little fit between the circumplex model and the data. Hypothesis #3, at least in its initial form, must be rejected.

Because these results were based upon a highly stringent set of constraints -- each of the role measures was required to fit an exact point on the circumplex -- we also tested to see if the data would fit a simpler version of the model, the "quadrant" model. The quadrant model simply required that the roles fit within the proper quadrant of the framework and did not constrain the order of the roles within the quadrant. This change improved the fit of the model

considerably for high effectiveness managers (2.14) and slightly improved the fit of the model for low effectiveness managers (.66). These results suggest that the quadrant model is an acceptable fit for high effectiveness managers, but is still an unacceptable fit for low effectiveness managers. The plots of these results for high and low effectiveness managers are presented in Figures 6 & 7.

<insert Figure 6 about here>

<insert Figure 7 about here>

Examining Figures 6 & 7 also helps to explain why the circumplex model proposed in hypothesis #3 was rejected. For the high effectiveness managers, two conclusions can be drawn: first, a comparison between the data presented in Figure 6 and the theoretical model presented in Figure 1 shows that the order of the roles on the left side of the model in Figure 6 is different from the order prescribed by the theory. The theory (see Figure 1 for reference) specifies that moving from "6 to 12 o'clock" the order should be coordinator, monitor, facilitator, mentor. Instead, the order in the actual data is monitor, coordinator, mentor, facilitator; and reverses the order of the roles within each of the two quadrants. While this finding may not necessarily contradict the general logic of the model, this difference does violate a strict interpretation of the circumplex model.

The second reason that the data for the high effectiveness managers does not fit the circumplex model is that the two items for the director role, and one of the items for the facilitator role, tend to fall toward the center of the plot, rather than on the periphery as prescribed by the theory.

The results for the low effectiveness managers presented in Figure 7 suggest a different set of reasons why the data from this group did not fit either the circumplex model or the quadrant model. First, three of the roles, the director, producer, and coordinator, appear almost directly in the center of the diagram, suggesting that these three roles are highly central to the

concept of leadership enacted by this group of low effectiveness managers. These roles also overlap, indicating that subordinates cannot differentiate the complexity implied by the model. In addition, the monitor role appears in the lower right quadrant instead of the lower left quadrant as predicted by the theoretical model. These violations of the structure predicted by either the circumplex or the quadrant model result in a poor fit for the low effectiveness managers, even though the four roles in the top half of the model generally fit as expected.

An overall summary of the results for these analyses is presented below in Table 3.

<insert Table 3 about here>

Discussion

This paper has explored the idea that effective leaders demonstrate more complex, contradictory, and paradoxical behaviors than ineffective leaders. The concept of behavioral complexity is introduced as a way of linking this research to three related ideas in the literature: cognitive complexity (Streufert and Swezey, 1986), behavioral repertoires (Mintzberg, 1973; 1975; Bass, 1981; Yukl, 1989), and paradox and contradiction (Mitroff, 1984; Quinn, 1984; 1988). After discussing these ideas at a conceptual level, the paper then examined Quinn's (1984; 1988) model of leadership roles as a framework based on the concept of behavioral complexity that allows for an empirical test of several of the key implications of this concept.

The non-traditional multidimensional scaling analyses presented in this paper test the fit between data on 176 executives and the circumplex structure suggested by the Quinn model. The analyses also test whether the data for high effectiveness managers fit the model better than the data for low effectiveness managers. The results show that high effectiveness managers are perceived to have a greater degree of behavioral complexity, as defined by the leadership model, than low effectiveness managers. These results illustrate that it is quite possible to show how effective managerial leaders exhibit a behavioral structure with greater differentiation and complexity than their less effective counterparts. High effectiveness

managers exhibit the eight roles more clearly, and display a limited form of the circumplex model that we labeled the quadrant model. Low effectiveness managers showed much less of this hypothesized ideal structure, although their subordinates were able to perceive the eight roles distinctly.

Taken together, these findings have several implications. First, with respect to the model itself, the fact that the results show good support for the quadrant model, but little support for the circumplex model raises an important question: What was the original rationale for the order of roles within each quadrant? Careful examination of sources such as Quinn (1984; 1988) shows that this issue has received little attention. Pairs of roles are discussed as a representation of a given quadrant, but little attention is given to the order of roles within each quadrant. Reordering the roles on the left side of the model, and then re-testing the model reveals that an acceptable fit (K=1.78) to the circumplex model for high effectiveness managers can be obtained by reordering the roles. If these findings persist in future research, it suggests that the model should be altered to reflect this reordering and that the rationale for the ordering of the roles within each quadrant should be re-examined.

Second, the findings of this study regarding the more limited complexity of the low effectiveness managers has implications for both the model itself, and for the more general concept of behavioral complexity. A brief examination of Figure 5 reveals that the less effective managers exhibit one central cluster of three poorly differentiated roles -- coordinating, producing, and directing. As in Levy's (1976) example (presented in Figure 2) showing "life in general" at the center of a collection quality of life indicators, these roles form the core of leadership behavior as it is perceived by the subordinates of the less effective managers. It suggests that the less effective managers, in this context, may behave according to a more traditional definition of managerial leadership, placing a greater emphasis on control, stability and productivity than do their more effective counterparts.

Figure 7 shows that the data for the low effectiveness managers present a large number of departures from the circumplex pattern. None of the roles in the lower half of the model fit

the prescribed pattern, and three of the roles fall into the center of the diagram. The fact that these roles fall in the center of the diagram indicates that the behavior of these low effectiveness managers displays less complexity than the model would suggest is desirable. Rather than performing eight separate (and sometimes contradictory) roles, these managers show less differentiation and thus less complexity. These findings, plus the more basic finding that the subordinates of high effectiveness managers are simply better able to perceive the eight discrete roles more clearly, give additional support to the general hypothesis that behavioral complexity is more commonly found among high effectiveness managers.

The observation that less effective managers tend to exhibit behavior characteristic of a more traditional and transactional definition of leadership may also be influenced by the choice of public utility executives as a sample for this study. Several independent findings seem to support the idea that utility managers may fit a highly traditional definition of leadership behavior. Utility managers have been found to be less mobile, less politically active, and more technically oriented than managers in other industries. They have also been found to be less active physically, less stressed, and more satisfied with life overall. In addition, as a group, they hold more traditional values of marriage and sex roles, and are more active in community and church work (Hildebrandt and Miller, 1982; Hildebrandt and Edington, 1985). However, it is worth recalling that the more effective utility managers in this study *did not* appear to exhibit this traditional leadership pattern in the same way that the less effective managers did. Nonetheless, future research on different samples of leaders will be needed to determine the generality of the findings presented in this paper. For example, one might expect that a similar study of entrepreneurs or managers in highly dynamic industries would uncover different types of deficiencies than those shown by the utility managers studied here. One might hypothesize, for instance, that high performing entrepreneurs would exhibit the well-rounded circumplex or quadrant pattern show here, but that low performing entrepreneurs would present innovator and broker roles as "central" to leadership in that setting in the same way that utility managers saw direction and control as being central to leadership in their stable industry.

Several limitations of this research should also be noted. Within the specific design of this empirical study, a number of issues deserve further consideration. First among these is the empirical definition of effectiveness as a set of supervisory ratings. While this approach has abundant precedent in the managerial literature, and fits well with a study of subordinate ratings of leadership role behavior, it is clearly only one of many possible definitions of effectiveness. A topic as rich and expansive as behavioral complexity clearly warrants broader and more varied definitions of effectiveness, that are more directly linked to the requisite variety of the environment. Is greater behavioral complexity also associated with the ability to reconcile the competing demands of the natural environment, corporate social responsibility and international competition? (Hart and Quinn, 1993) Many important research questions will require a broader definition of effectiveness than that used in this study.

A similar point can also be made with respect to the measures of role behavior used in our empirical study. Even though the eight roles in the model are rooted in earlier elaborations of leadership and managerial behavior, and provide a useful way of comparing the behavior of different leaders, the definition of leadership in terms of a fixed set of roles runs the risk of neglecting one of the central questions of behavioral complexity. Presumably, the greater complexity of the behavior of effective leaders also means that effective leaders would competently perform *more* roles, and would devise new roles, not yet specified by any model, in response to the requirements of the environment. Future examination of behavioral complexity would benefit by not relying on a generic definition of managerial roles.

In a related set of analyses done for this paper, data on the roles and effectiveness variables were collected from peers and from the participants themselves, as well as supervisors and subordinates. We then analyzed all the possible combinations -- peer role data combined with self-rating of effectiveness, supervisory roles data combined with subordinate ratings of effectiveness, and so on. These analyses show the same general pattern as the results presented here, but the results are clearest and most significant for the combination of

subordinate ratings of role behavior and supervisory ratings of effectiveness presented in detail in this paper.

Perhaps the most basic limitation of this study, however, is that it explores only one of many possible approaches to studying paradox, contradiction, and complexity in managerial leadership. The strategy in this paper illustrates that a broad concept such as behavioral complexity can be defined in a way that allows for empirical examination, but is by no means intended to suggest that this is the only fruitful approach to studying paradox. Obviously, there are many other promising approaches.

Even when behavioral complexity is defined in terms of bipolar dimensions such as those used to define the Quinn leadership roles model, there are many other promising alternatives. Hampden-Turner (1981), for example, presents a discussion of 16 bipolar dimensions that might be used as a base for defining behavioral complexity. More recently, Prahalad and Doz (1987) have introduced another intriguing alternative in their analysis of the increasing "global localization" of successful multinational firms. Yet another promising example comes from Dandridge, Mitroff, and Joyce (1980) who present an interesting discussion of symbolic vs. literal dimensions of leadership and organization. Examples such as these illustrate that even when the research question is posed in terms of bipolar dimensions, there are many alternatives to explore besides those addressed in this paper.

Another fruitful approach to developing the concept of behavioral complexity might be to define paradoxical conditions in an organizational environment and then carefully examine the behavioral complexity these conditions engender among effective leaders. For example, competition among suppliers in the computer industry is often combined with joint ventures among suppliers to create a condition called "co-opetition" by managers in the industry.[3] The emergence of this paradox in the industry environment implies that leaders who can only work in cooperative *or* competitive modes are at a disadvantage compared to those leaders with the requisite cognitive and behavioral skills to work in both modes simultaneously. Nonetheless,

[3]We wish to thank Will O'Brien of the Digital Equipment Company for calling our attention to this new term.

effective leadership behavior in these circumstances is problematic; and the nature of those requisite skills and the complexity they entail remains to be defined by both researchers and practitioners.

The same might be said for effective leadership when work crosses boundaries. Boundaries between functions, occupations, companies, industries, and public and private organizations all require a rich behavioral repertoire to bridge, integrate, and manage. Crossing national, linguistic, and cultural boundaries also creates a need to requisite variety within the behavioral of a leader. These situations stretch far beyond the empirical definition of behavioral complexity examined in this paper, but are fully in keeping with the underlying notion of behavioral complexity.

Other forms of complexity may also be critical to more complete understanding of effective leadership. Emotional complexity in particular seems to deserve greater attention. As several authors have suggested, the complexity of the emotional relationship between leaders and their followers is often underestimated by traditional leadership theorists, and is critically important to understanding leadership issues such as charisma and commitment (Conger and Kanungo, 1988; Kets de Vries, 1989; Pauchant, 1991). Clinical researchers of leadership and organization such as Kernberg (1979) or Zaleznik (1989) and their discussion of emotional complexity have made an important contribution to the understanding of both behavioral and cognitive complexity and to effective leadership itself. Behavioral complexity, if taken alone, casts the human relationships upon which organization depends in rather "wooden" terms, and grossly underestimates their true complexity. From downsizing to international joint ventures to AIDS policies for employees, leadership requires the ability to connect at the level of human emotion. A better understanding of this form of complexity would represent a major contribution in leadership research.

Finally, the methods introduced in this paper also suggest several interesting directions for future research. Confirmatory scaling techniques can applied to any form of similarity data, including individual cognition and behavior, as well as the group level correlational data

analyzed in this paper. This suggests a host of interesting research designs based upon individual differences scaling techniques. As but one example, the hypothesis of behavioral complexity implies that the behavioral portfolios of effective leaders should display a higher dimensionality than those of less effective leaders. Similarity hypotheses could be generated with respect to cognitive and emotional complexity. Applying these techniques to the study of leadership, paradox, and complexity may be a useful strategy for advancing the empirical literature in these areas.

The concept of behavioral complexity introduced in this paper has acknowledge that managers develop diverse behavioral repertoires and that it is through these response sets that they perform the act of leadership. More mature, effective, and experienced managers develop more balanced repertoires that are sophisticated and complex, and that reflect the environment from which they emerged. Because of the complexity and paradox of their environment, such behavioral repertoires must incorporate a host of conflicts, contradictions, inconsistencies, and paradoxes. Extremes and opposites such as action and reflection or power and compassion become incorporated into the complex of behaviors that a leader develops. The concept of paradox reinforces the idea that the structure of this behavioral complexity is not neat, linear, or bipolar, but must take a more complicated form. This new emphasis also implies that new theories, research techniques, and methodologies, such as those presented in this paper, will be required to better understand the relationship between leadership and performance.

"A foolish consistency is the hobgoblin of little minds,
Adored by little statesmen and philosophers and divines.
With consistency, a great soul has simply nothing to do..."
(Emerson, 1852)

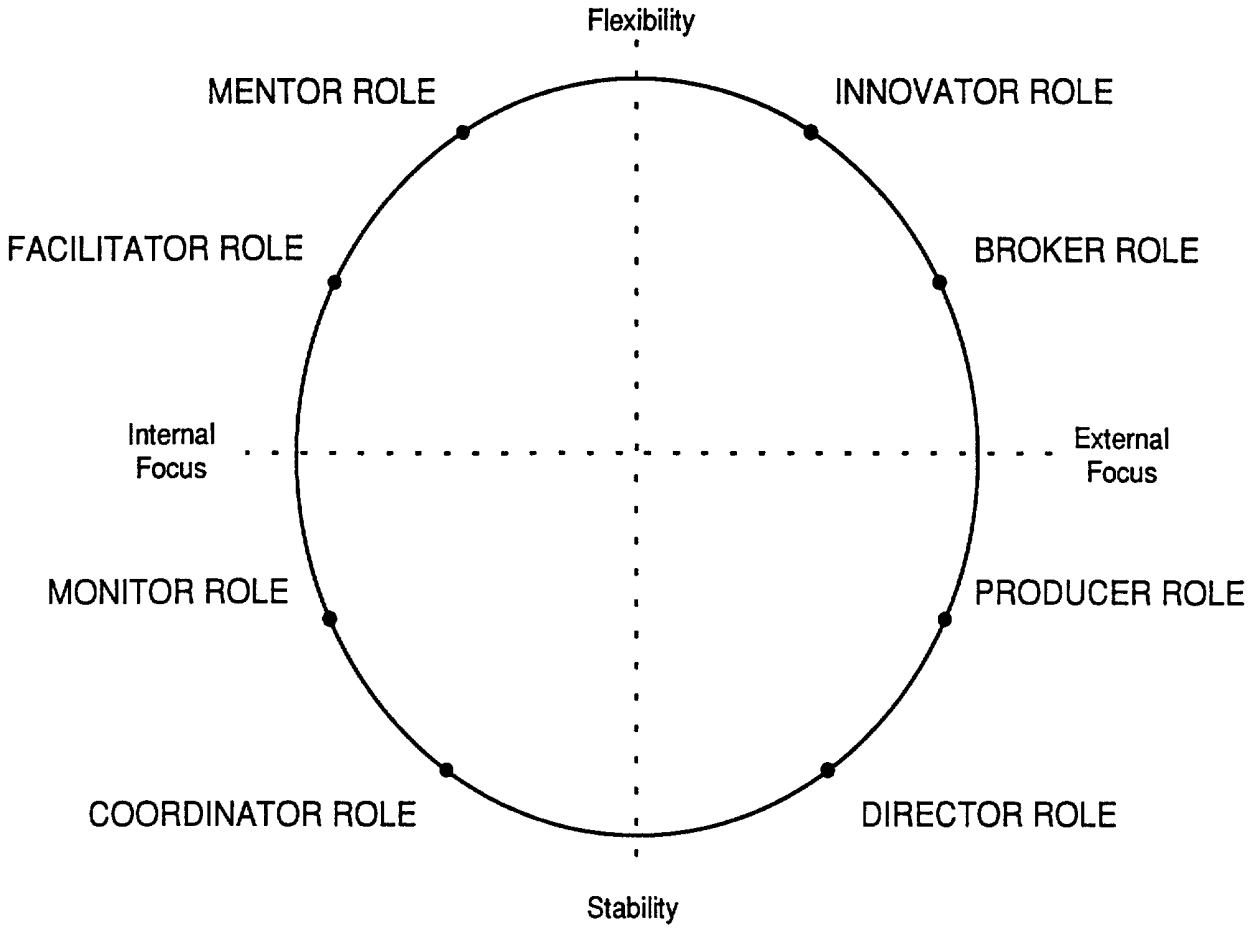

Figure 1. Quinn's model of leadership roles.

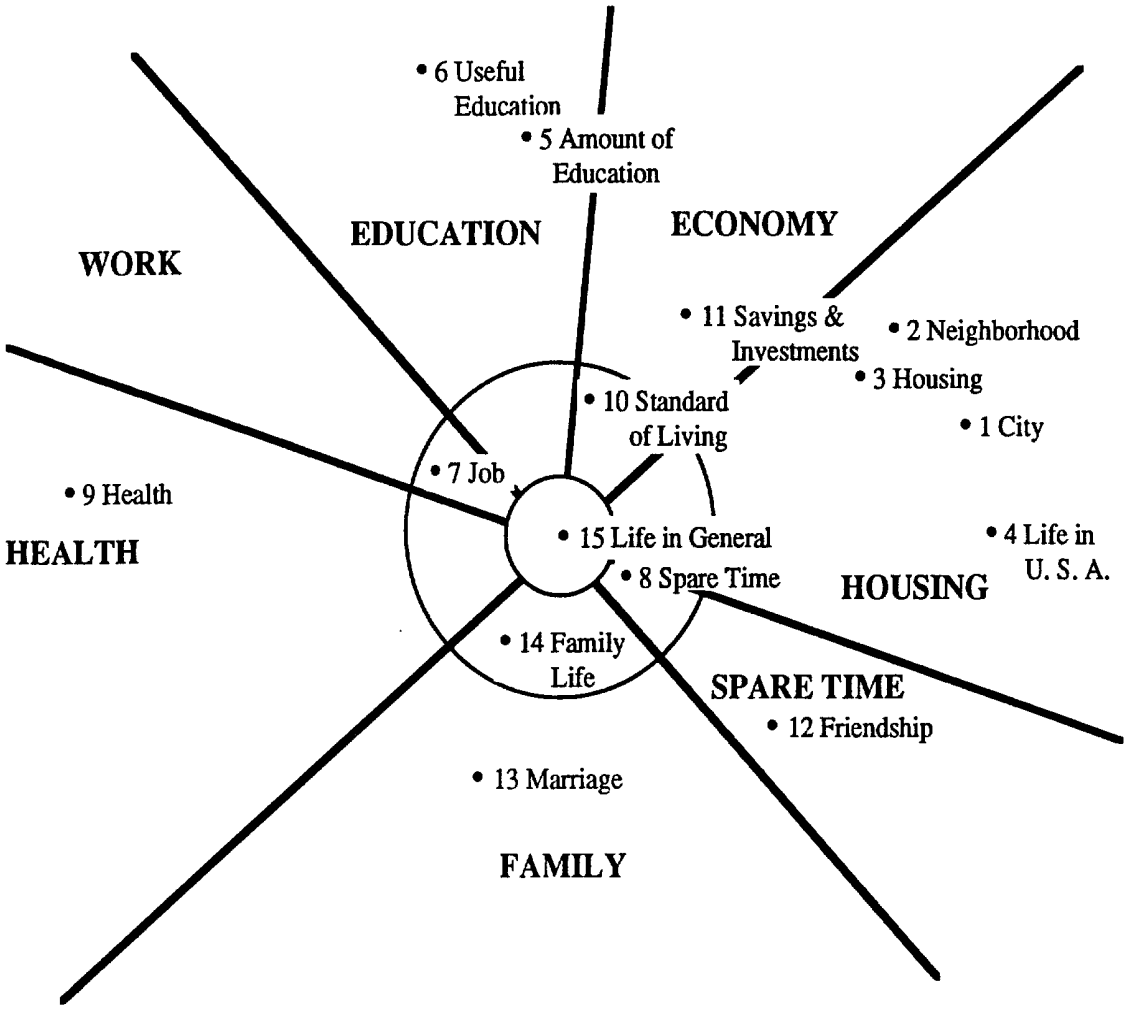

Figure 2. Radex configuration of quality of life data. (Levy, 1976)

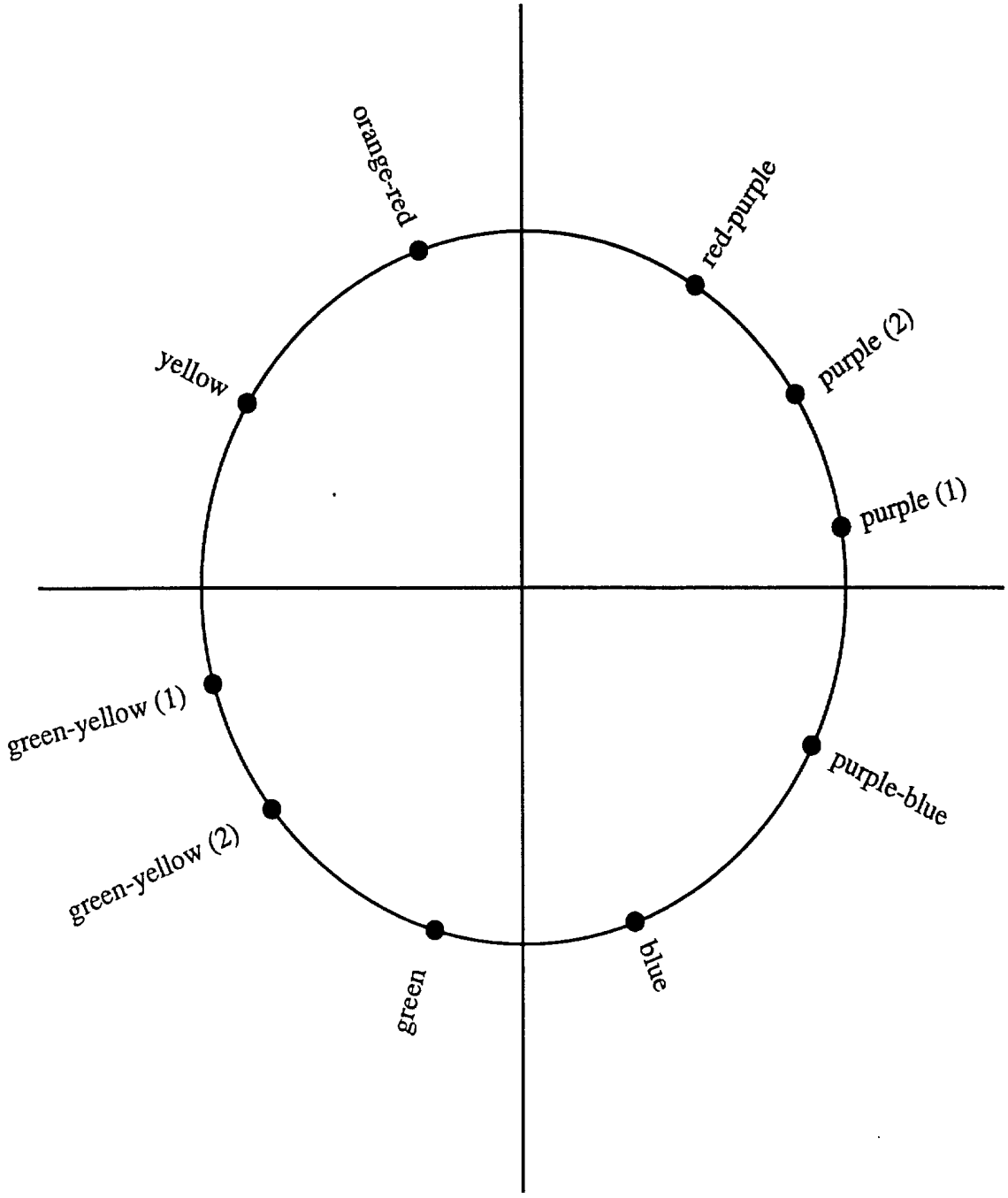

Figure 3. Circumplex configuration of color vision data. (from Helm, 1959)

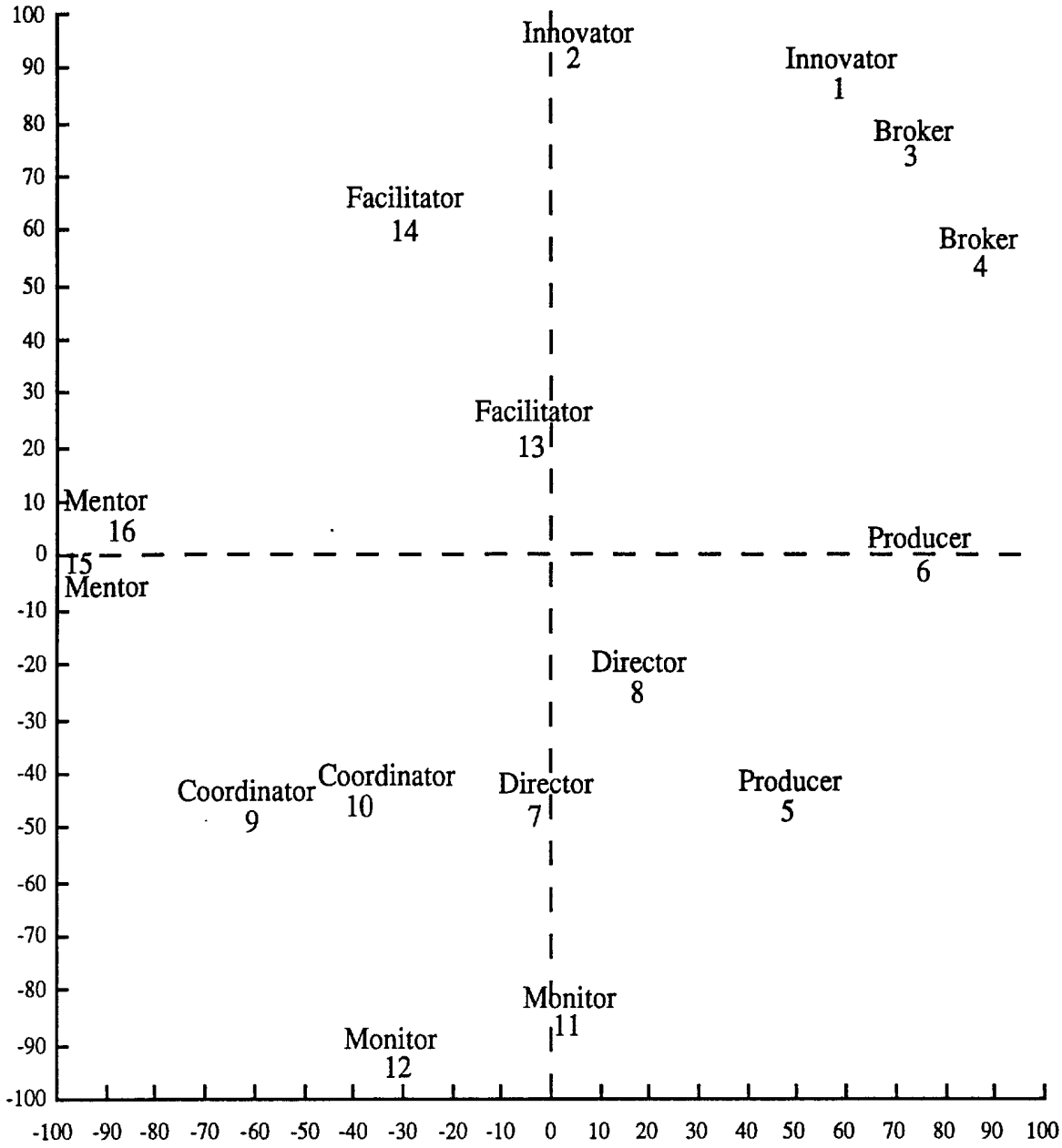

Figure 4. Unconstrained MDS for high effectiveness managers.

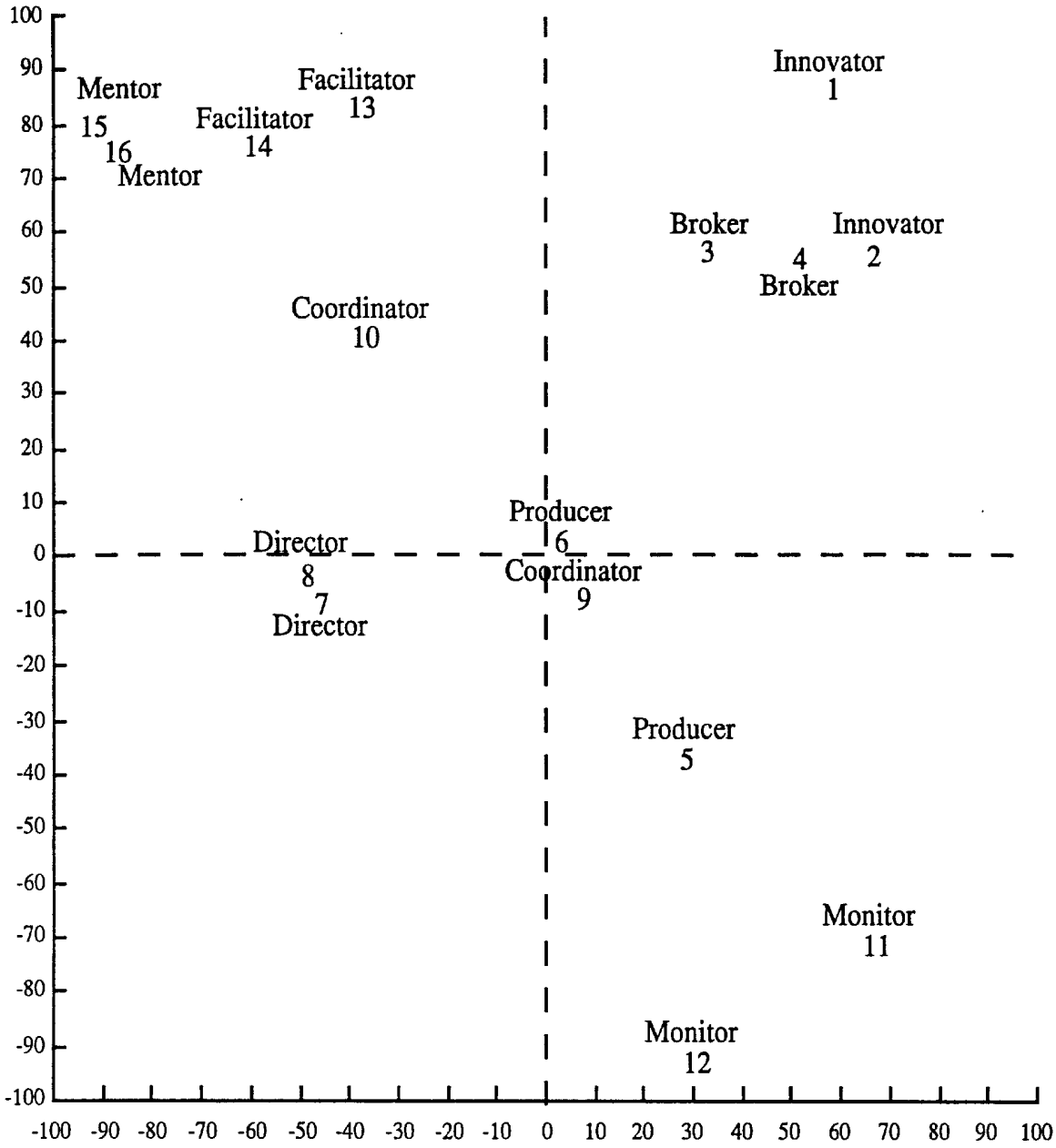

Figure 5. Unconstrained MDS for low effectiveness managers.

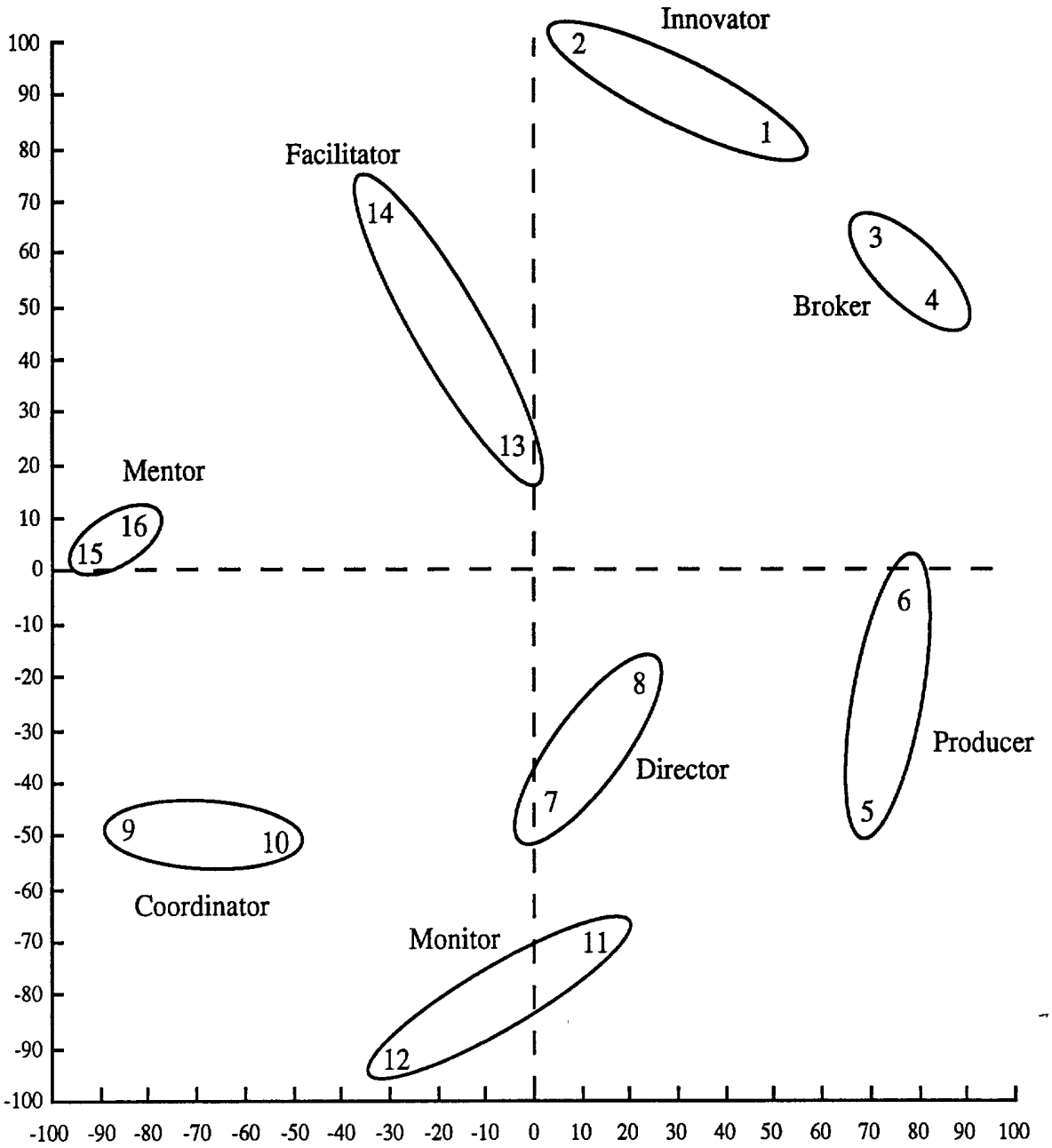

Figure 6. Constrained model for high effectiveness managers.

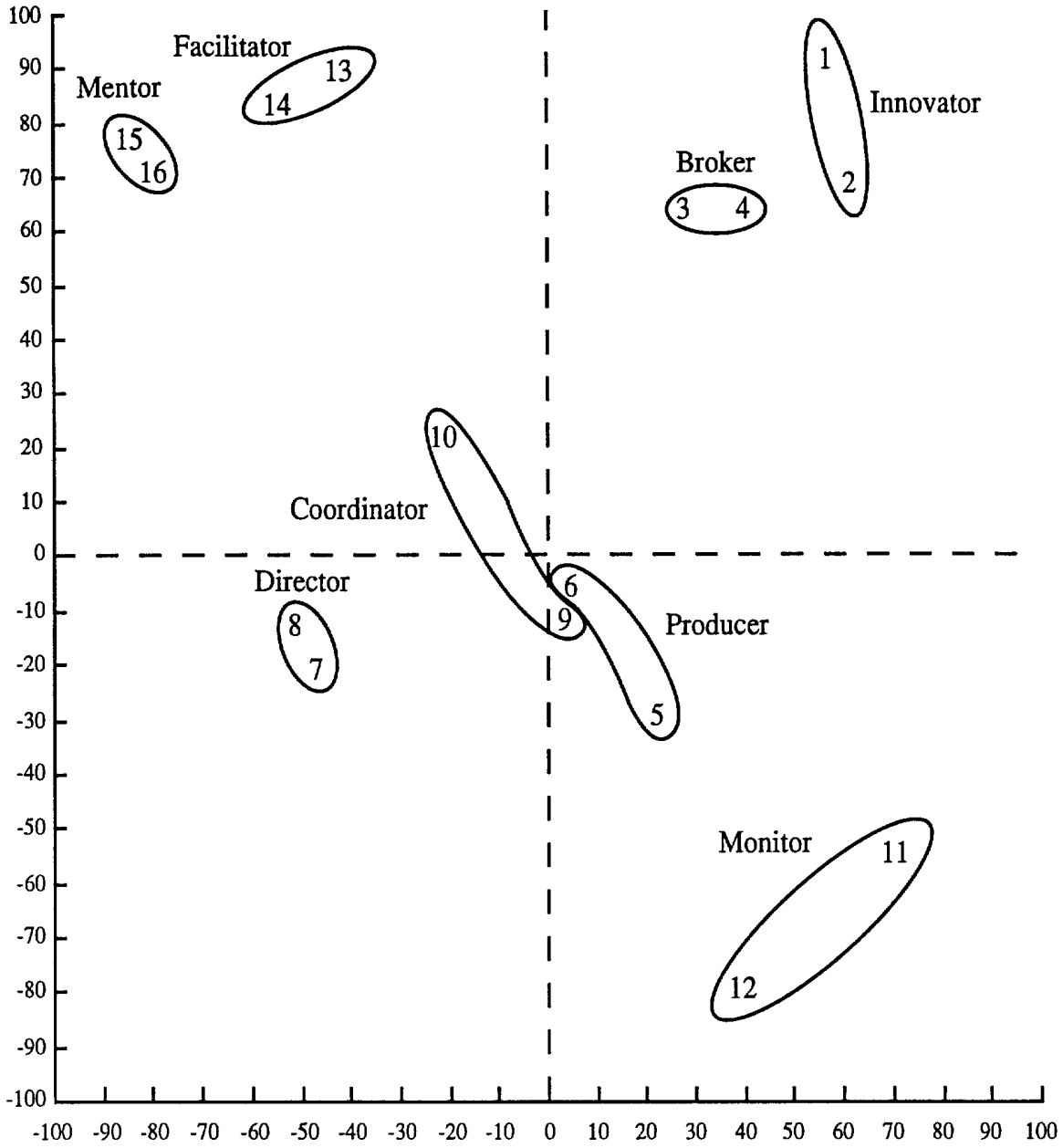

Figure 7. Constrained model for low effectiveness managers.

Table 1

Correlation matrices for high effectiveness and low effectiveness managers

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
innovator	1		.55	.39	.33	.28	.32	.19	.33	.19	.07	.10	-.14	.27	.28	.02	.04
	2	.57		.18	.09	.28	.22	.20	.27	.22	-.02	.04	-.10	.31	.40	.17	.06
broker	3	.58	.54		.69	.06	.26	.12	.23	.19	.24	.12	-.12	.38	.25	.11	.15
	4	.51	.62	.66		.08	.33	.11	.29	.24	.28	.02	-.21	.32	.30	.03	.07
producer	5	.33	.33	.36	.41		.61	.56	.40	.31	.22	.34	.45	.23	.12	.21	.23
	6	.39	.43	.41	.45	.72		.44	.40	.22	.25	.30	.21	.16	.08	.15	.18
director	7	.32	.25	.36	.31	.53	.48		.69	.37	.50	.48	.41	.39	.27	.22	.27
	8	.41	.22	.31	.27	.54	.59	.75		.49	.50	.42	.31	.50	.39	.20	.25
coordinator	9	.39	.37	.50	.44	.56	.59	.55	.54		.56	.22	.28	.39	.52	.32	.30
	10	.32	.32	.45	.40	.43	.63	.58	.56	.61		.39	.38	.39	.40	.41	.49
monitor	11	.15	.11	.28	.16	.41	.32	.22	.23	.41	.10		.56	.31	.14	.25	.24
	12	-.06	.15	.09	.11	.43	.36	.31	.28	.37	.13	.54		.18	.07	.28	.26
facilitator	13	.37	.26	.39	.40	.28	.36	.53	.47	.43	.59	.09	.21		.60	.36	.35
	14	.23	.44	.31	.38	.24	.50	.38	.43	.42	.53	-.06	-.02	.42		.46	.49
mentor	15	.27	.15	.44	.26	.22	.39	.34	.40	.31	.47	-.08	.02	.49	.48		.85
	16	.17	.23	.32	.26	.19	.39	.34	.39	.31	.53	.11	.02	.46	.59	.85	

The correlations under the diagonal represent the relationships among the leadership items for managers who scored under the median on the effectiveness measure (N=72). The correlations above the diagonal represent the relationships among the leadership items for managers who scored above the median on the effectiveness measure (N=72).

Table 2

Matrix of Constraints for the Circumplex Model*

innovator	5							
broker	4	5						
producer	3	4	5					
director	2	3	4	5				
coordinator	1	2	3	4	5			
monitor	2	1	2	3	4	5		
facilitator	3	2	1	2	3	4	5	
mentor	4	3	2	1	2	3	4	5

*Five levels of constraints are defined by this matrix: "5" designates measures of the same role; "4" designates measures of adjacent roles; "3" and "2" designates measures of more distant roles, and "1" designates measures of the most distant role.

Table 3

Summary of Results

	Hypothesis #1 Dimensionality	Hypothesis #2 Measurement	Hypothesis #3 Circumflex	Quadrant Model
Low Effectiveness Managers	.09	3.43	.09	.66
High Effectiveness Managers	.13	33.0	.12	2.14

Note: Hypothesis #1 is tested by comparing the coefficient (K) (a test of how well the data fit in a given number of dimensions) for effective and ineffective managers. When K $\leq$ .15 this indicates a good fit. Other hypotheses and models presented in this table are tested by comparing the efficacy coefficient (R) for effective and ineffective managers. When R is $\geq$ 1.0 this indicates a good fit.

REFERENCES

Ashby, W.R. (1952) **Design for a brain**. New York: Wiley.

Bartunek, J.M., Gordon, J.R., and Weathersby, R.D. (1983) Developing "complicated" understanding in administrators. **Administrative Science Quarterly, 29**, 355-372.

Bass, B.M. (1981) **Stogdill's handbook of leadership: A survey of theory in research**. New York: Free Press.

Bass, B.M. (1960) **Leadership, psychology, and organizational behavior**. New York: Harper.

Blake, R.R., and Mouton, J.S. (1964) **The managerial grid: Key orientations for achieving productivity through people**. Gulf Publishing Company, Houston, Texas.

Bobko, P. (1985) Removing assumptions of bipolarity: Towards variation and circularity. **Academy of Management Review**, 19, 99-108.

Borg, I., and Lingoes, J.C. (1980) A model and algorithm for multidimensional scaling with external constraints on the distances, **Psychometrika**, 45 (1), 25-38.

Burns, J.M. (1978) **Leadership**. New York: Harper.

Conger, J.A., and Kanungo, R.N. (1988) **Charismatic leadership: The elusive factor in organizational effectiveness**. San Francisco, CA: Jossey-Bass.

Coombs, C.H. (1941) A factorial study of number ability. **Psychometrika**, 6, 161-189.

Dandridge, T. C., Mitroff, I. I., and Joyce, W.F. (1980) Organizational symbolism: A topic to expand organizational analysis. **Academy of Management Review**, 5, 77-82.

Dansereau, F., Graen, G., and Haga, W.J. (1975) A vertical dyad linkage approach to leadership within formal organizations: A longitudinal investigation of the function-making process. **Organizational Behavior and Human Performance**, 13(1), 46-78.

DeBono, E. (199) **I am right, you are wrong.** New York: Viking.

Denison, D.R., and Fornell, C. (1990) Modeling distance structures in consumer research: Scale versus order in validity assessment. **Journal of Consumer Research, 16** (1).

Ekman, G. (1954) Dimensions of color vision. **Journal of Psychology, 38**, 467-474.

Emerson, R.W. (1852) Self-reliance in **Essays: First Series**. Boston: Phillips, Sampson & Co.

Fitzgerald, F.S. (1945) The crack-up. In E. Wilson (Ed.), **The crack-up**. New York: J. McLaughlin.

Guttman, L. (1968) A general nonmetric technique for finding the smallest coordinate space for a configuration of points, **Psychometrika, 33,** 469-506.

Guttman, L. (1954) The principal components of scalable attitudes. In P.F. Lazarsfeld (Ed.), **Mathematical thinking in the social sciences.** Glencoe: The Free Press.

Hampden-Turner, C. (1981) **Maps of the mind.** New York: MacMillan.

Hart, S.L. and Quinn, R.E. (1993) Executive leadership and firm performance: An integrative model and preliminary evidence. **Human Relations,** in press.

Helm, C.E. (1959) A multidimensional ratio scaling analysis of color relations. Unpublished doctoral dissertation, Princeton.

Helm, C.E., and Tucker, L.R. (1962) Individual differences in the structure of color-perception. **American Journal of Psychology, 75,** 437-444.

Hemphill and Coons, A.L. (1957) Development of the leadership behavior development questionnaire. In R.M. Stogdill and A.L. Coons (Eds.), **Leaders behavior: Its descriptions and measurement.** Columbus, OH: Ohio State University, Bureau of Business Research.

Hersey, P., and Blanchard, K.H. (1969) Life cycle theory of leadership. **Training and Development Journal,** 23 (2), 26-34.

Hersey, P., and Blanchard, K.H. (1979) **Management of Organizational Behavior (3rd ed.).** Englewood Cliffs, NJ: Prentice Hall.

Hildebrandt, H.W., and Edington, D.W. (1985) The lifestyles and career patterns of utility executives. **Public Utilities Fortnightly, 115** (2).

Hildebrandt, H.W., and Miller, E.L. (1982) The newly promoted utility executive. **Public Utilities Fortnightly,** December 23.

Hooijberg, R. (1992) Behavioral complexity and managerial effectiveness: A new perspective on managerial leadership. Unpublished doctoral dissertation. University of Michigan, Ann Arbor, Michigan.

Jacques, E. (1986) The development of intellectual capability: A discussion of stratified systems theory. **Journal of Applied Behavioral Science, 22** (4), 361-383.

Kernberg, O.F. (1979) Regression in organizational leadership. **Psychiatry,** 42:24-39.

Kets de Vries, M.F.K. (1989) Leaders who self-destruct: The causes and cures. **Organization Dynamics,** (Spring), 5-17.

Kets de Vries, M.F.K. and Millier, D. (1985) Narcissism and leadership: An object relations perspective. **Human Relations,** 38: 583-601.

Kiesler, S., and Sproull, L. (1982) Managerial response to changing environments: Perspectives on problem sensing from social cognition. **Administrative Science Quarterly, 27,** 548-570.

Kotter, J.P. (1982) **The general managers.** New York: Free Press.

Kruskal, J.B., and Wish, M. (1978) **Multidimensional scaling.** Beverly Hills, CA: Sage

Lawrence, P.R., and Lorsch, J.W. (1967) **Organization and environment.** Boston: Harvard Business School, Division of Research.

Levy, S. (1976) Use of the mapping sentence for coordinating theory and research: A cross-cultural example. **Quality and Quantity, 10,** 117-125.

Lingoes, J.C. (1973) **The Guttman-Lingoes nonmetric program series.** Ann Arbor: Mathesis Press.

Lingoes, J.C., and Borg, I. (1983a) A quasi-statistical model for choosing between alternative configurations derived from ordinally constrained data. **British Journal of Mathematical and Statistical Psychology, 36** (1), 36-53.

Maruyama, M. (1976) Toward Cultural Symbiosis. In E. Jantsch and C.H. Waddington (Eds.), **Evolution and consciousness: Human systems in transition.** Reading, MA: Addison-Wesley.

McGregor, D. (1960) **Human side of enterprise.** McGraw-Hill Book Company, Inc. New York.

Mintzberg, H. (1973) **The nature of managerial work.** New York: Harper and Row.

Mintzberg, H. (1975) The manager's job: Folklore and fact. **Harvard Business Review, 53,** 49-61.

Mitroff, I. (1984) **Stakeholders of the organization mind.** San Francisco, CA: Jossey-Bass.

Murnighan, J.K. and Conlon, D. (1991) The dynamics of intense workgroups: A study of British string quartets. **Administrative Science Quarterly, 36**(2), 165-186.

Pauchant, T.C. (1991) Transferential leadership: Toward a more complex understanding of charisma in organizations. **Organization Studies, 12** (4), 507-527.

Pauchant, T.C., Nilles, J., El Sawy, O., and Mohrman, A. (1989) **Toward a paradoxical theory of organizational effectiveness: An empirical study of the "competing values model."** Unpublished working paper. Laval University, Montreal, Quebec.

Prahalad, C.K., and Doz, Y.L. (1987) **The multinational mission: Balancing local demands of global vision.** New York: Free Press.

Quinn, R.E. (1984) Applying the competing values approach to leadership: Toward an integrative model. In J.G. Hunt, R. Stewart, C. Schriesheim, and D. Hosking (Eds.), **Managers and leaders: An international perspective.** New York: Pergamon.

Quinn, R.E. (1988) **Beyond rational management: Mastering the paradoxes and competing demands of high performance.** Jossey-Bass Inc., Publishers, San Francisco.

Quinn, R.E., and Cameron, K.S. (1988) **Paradox and transformation: Toward a theory of change in organization and management.** Cambridge, MA: Ballinger.

Quinn, R.E., and Rohrbaugh, J. (1983) A spatial model of effectiveness criteria: Towards a competing values approach to organizational analysis. **Management Science, 29** (3), March.

Rothenberg, A. (1979) **The emerging goddess.** Chicago: University of Chicago Press.

Sale, K. (1980) **Human scale.** New York: Coward, McCann and Geoghegen.

Schriesheim, C., House, R., and Kerr S. (1976) Leader initiating structure: A reconciliation of discrepant research results and some empirical tests. **Organization Behavior and Human Performance, 15** (2), 297-321.

Senge, P.M. (1990) **The fifth discipline.** New York: Doubleday/Currency.

Shepard, R.N. (1974) Representation of structure in similarity data: Problems and prospects, **Psychometrika, 39**, 373-421.

Sims, H.P., and Gioia, D.A. (1986) **The thinking organization.** San Francisco: Jossey-Bass.

Smith, K. and Berg, D. (1987) **Paradoxes of group life.** Understanding conflict, paralysis, and movement in group dynamics. San Francisco: Jossey-Bass.

Stogdill, R.M. (1974) **Handbook of leadership: Theory and research.** NY: Free Press.

Streufert, S., and Swezey, R.W. (1986) **Complexity, managers and organizations.** Orlando, Fla.: Academic Press.

Van de Ven, A. (1983) Review of "In search of excellence," **Administrative Science Quarterly,**

Weick, K. (1979) **The social psychology of organizing.** New York: Random House.

Yukl, G. (1981) **Leadership in organizations.** Englewood Cliffs, NJ: Prentice-Hall.

Yukl, G. (1989) Managerial leadership: A review of theory and research. **Journal of Management, 15** (2), 251-289.

Zaleznik, A. (1977) Managers and leaders: Are they different? **Harvard Business Review, 55**, 67-80.

Zaleznik, A. (1989) **The managerial mystique: Restoring leadership in business.** New York: Harper and Row.

APPENDIX

Questionnaire Items By Role*

1 almost never	2 very seldom	3 seldom	4 occasionally	5 frequently	6 very frequently	7 almost always

	Mean	Variance
The Innovator Role (.66)		
1. Comes up with inventive ideas.	4.84	.51
2. Experiments with new concepts and ideas.	4.59	.65
The Broker Role (.72)		
3. Exerts upward influence in the organization.	4.82	.69
4. Influences decisions made at higher levels.	4.66	.56
The Producer Role (.79)		
5. Sees that the unit delivers on stated goals.	5.51	.54
6. Gets the unit to meet expected goals.	5.32	.46
The Director Role (.80)		
7. Makes the unit's role very clear.	4.86	.76
8. Clarifies the unit's priorities and directions.	4.76	.54
The Coordinator Role (.70)		
9. Anticipates workflow problems, avoids crisis.	4.51	.74
10. Brings a sense of order into the unit.	4.92	.76
The Monitor Role (.61)		
11. Maintains tight logistical control.	4.56	.85
12. Compares records, reports, and so on to detect discrepancies.	4.79	.95
The Facilitator Role (.62)		
13. Surfaces key differences among group members, then works participatively to resolve them.	3.99	.84
14. Encourages participative decision making in the group.	4.72	.73
The Mentor Role (.87)		
15. Shows empathy and concern in dealing with subordinates.	4.98	.84
16. Treats each individual in a sensitive, caring way.	4.96	1.02

*Alpha coefficients for the total sample are included in parentheses for each index.