

# The Role of Value Congruity in Intraorganizational Power

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To understand better the differences in power between subunits, this paper examines the relationship between perceived departmental power and the extent to which departments appear to share important organizational values with top management. Critical contingency perspectives on intraorganizational power are used as a catalyst for exploring similarity of organizational values as an additional determinant of power. Interview and survey data from a quick-service restaurant chain and a robotics company are used to provide support for the role of perceived similarity in values for determining power. Perceived value congruity between department members and top managers, examined from the perspectives of both groups, was found to account for unique variance in departmental power when controlling for the effects of critical contingencies. An objective measure of the similarity of values between department members and top managers, however, was unrelated to departmental power.●

## INTRODUCTION

Over the last ten years the coalitional models of resource dependence (Salancik and Pfeffer, 1974) and strategic contingencies (Hickson et al., 1971) have dominated research on departmental power. It has been suggested that without the resource dependence and strategic contingency research there would be no literature on departmental power (Clegg, 1975). While the coalitional approaches offer some insight into power, there are facets of departmental power that these models do not address. In particular, the models do not explore the impact that shared values have on the ebbs and flows of subunit power.

Several researchers have argued that departmental power depends on a subunit's ability to control critical contingencies. Critical contingencies is an inclusive term used here to express both the resource dependence (Pfeffer and Salancik, 1974; Salancik and Pfeffer, 1974) and strategic contingencies perspectives (Hickson et al., 1971).

The present research serves to supplement the critical contingencies explanations of power by providing a value-based explanation of subunit power. Like the contingencies approaches, a value orientation is used to attempt to explain departmental power outside the purview of hierarchical authority and functional responsibility and is thus most appropriate in situations characterized by dissent, ambiguity, and instability.

According to a value-based explanation of power, influence is shaped by the beliefs of the social players. This orientation is a social-psychological explanation of power in which the sharing of organizational values between those in specific departments and top management is explored as a determinant of subunit power. It is argued that departments whose organizational values are perceived to be congruent with those of top management will possess power. Further, power is ascribed to departments in which employees independently identify the same subsets of critical organizational values as top managers. Finally, it is suggested that value congruence will predict subunit power when controlling for the effects of critical contingencies.

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Pondy (1977) hypothesized that intentionality, appearance, and language are important psychological factors that complement structural explanations of power. More recently, Walsh et al. (1981) have suggested that value systems serve to justify and enhance the power of some groups rather than others. They noted that through values, power structures develop and are legitimized. In this paper, the structural explanations of power are supplemented by a value-based, social-psychological explanation of power in an attempt to synthesize examinations of intraorganizational power.

Following the approach of early theorists, in the present investigation power is examined at the departmental level (Crozier, 1964; Perrow, 1970) and is viewed as a product of the social setting (Emerson, 1962). Political power is defined as the ability of a department to exert control over or affect various issues beyond the level of legitimate authority. The definition is consistent with those used by critical contingency theorists and others concerned with subunit power (Tushman, 1977; Wrong, 1979; Pfeffer, 1981a).

### **Extensions of the Critical Contingency Models**

An examination of the congruence of organizational values permits an elaboration of the theoretical work of the contingency theorists who have assumed or suggested its role but have not explicitly incorporated values into empirical tests. Value congruity contributes to the critical contingencies perspectives by offering an explanation for why different definitions of external contingencies emerge.

Organizations consist of different coalitions of interests (March, 1962) with diverse values that guide and inform their assessments of the external environment. Since departments do not uniformly share the same definitions of critical contingencies, they cannot be expected to agree on which departments have the capacity to control and manage the environment. Thus the question of which subunits define the critical uncertainties for the organization becomes the key to determining which units have influence (Salancik and Pfeffer, 1977). Once a subunit can define what the critical environmental unknowns are, it can shape the power relationships of the firm by enhancing the influence of some units while diminishing the power of others.

It is suggested here that one of the conditions necessary for subunits to define critical contingencies is their expressing organizational values similar to top management's. A department improves its chances of influencing other subunits when it is in a position to define what is critical, and this opportunity is more likely when the subunit expresses consensus on values held by members of the dominant coalition in top management. In this view, the definition of resources and contingencies is influenced by the sharing of values, which facilitates the social construction of reality.

Value congruity places the department in a position to be involved in preliminary and possibly covert decision making that may precede information dissemination and exclude other departments from the decision-making process (Lukes, 1974). That is, by sharing values with top management, a select department has already determined what is or is not a critical

contingency, circumventing interdepartmental bartering for power. Gaining other departments' cooperation or compliance because a department has control of a critical externality is replaced with the possibility that the department shares values with executives and thus constructs a definition of what is critical that may not fit with real environmental circumstances.

Salancik and Pfeffer (1977) noted that the ability to define what is critical is the key to an organization's aligning itself with its environment. It is possible, however, for a value-congruent department to define critical contingencies that do not reflect the important issues facing the firm and thus contribute to the organization's misalignment with the environment. While value congruity may explain departmental power, it may also explain why a firm does not adapt, at least in the short-run, to critical factors in the environment.

Some contingency theorists make a compelling argument that power shifts with changes in the organizational environment (Salancik and Pfeffer, 1977; Pfeffer and Salancik, 1978), while acknowledging that power also has an enduring quality. As the environment changes, so does a subunit's ability to control critical uncertainties; however, the power of the subunit may not be altered when top management shares organizational values in common with the department and thus considers it influential, regardless of its ability to control uncertainties. Similarly, a department may not have power if top management does not value the same organizational means and ends, regardless of whether the subunit is capable of controlling uncertainties.

Contingency theorists contend that situational power can be extended to other contexts and sustained over time. By gaining power, subunits have access to information that allows them to determine what resources will be critical in the future. This argument accentuates the influence of history and draws attention to the role of sharing and transmitting organizational values. Departments acquire knowledge from top managers about the important organizational values; these preferences, as well as control of information, influence how the subunits define critical problems.

## VALUE CONGRUITY

The importance of shared values in organizational functioning is in itself not new. Selznick (1957) argued that the true task of leadership is to create a social structure that embodies select values. In addition, he contended that after establishing values, the organization works to maintain them in the context of a changing environment. The role of shared meanings in the politics of organizations is examined in the literature on organizational paradigms (Lodahl and Gordon, 1972; Brown, 1978; Pfeffer, 1981b). Pfeffer (1981b) argued that consensus on shared meanings is used by top management to control and rationalize decision making, particularly decisions that are in conflict with the ability to control resources.

Much of the recent literature on organizational culture acknowledges the guiding and directing role of values in the functioning of the organization. Values are considered a primary component of an organization's culture (Pettigrew,

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1979; Sathe, 1983; Schein, 1985), and congruence has emerged in two distinct conceptualizations (Enz, 1986). In one view of value congruity, called perceived value congruity, congruence is treated as a purely perceptual construct that captures the espoused, recognized, explicitly stated, and socially defined levels of consensus defined by departments and executives. This view of congruity is illustrated in the treatment of values advocated by Schein (1985), in which values are conscious and explicitly articulated to serve normative or moral functions. Hence, for there to be perceived value congruity, department members must make comparisons between the values held in and by their department and those believed to be held by the top-management team. Top managers must also assess the degree of similarity they perceive to exist between their team and each functional unit.

A second way to characterize value congruity is to determine consensus indirectly by comparing the values of functional groups to those of top management and assess what is here referred to as latent value congruity. Latent value congruity does not require the groups of actors to speculate on similarity, and in fact allows for the possibility that organizational actors may be unaware of similarities in the value orientations of other groups. Assessing latent value congruity captures the underlying, unrecognized, but similar values of departmental members and top managers. In this study, departmental and top-management value sets were compared analytically; the parties were not asked directly to evaluate or articulate similarity. Perceived value congruity and latent value congruity were examined separately.

### **Organizational Values Defined**

Organizational values are defined here as the beliefs held by an individual or group regarding means and ends organizations "ought to" or "should" identify in the running of the enterprise, in choosing what business actions or objectives are preferable to alternate actions, or in establishing organizational objectives. Some organizational theorists have treated values as prescriptive beliefs or preferred states (Ranson, Hinings, and Greenwood, 1980; Beyer, 1981; Sproull, 1981). Kluckhohn (1967: 395), however, regarded values as conceptions of "the desirable which influences the selection from available modes, means, and ends of action," and Rokeach (1968: 10) saw them as a preference "for one mode of behavior over an opposite mode, or a preference for one end-state over an opposite end-state." The present definition of values is consistent with the value conceptualizations of numerous authors who combine an emphasis on means and ends with an ordering of preferences (Rose, 1956; Kluckhohn, 1967; Rokeach, 1968).

### **Importance of Top Management's Values**

The value approach to power relies on top managers as the reference group to which congruity is measured, because the assumptions and values of top management guide and direct perceptions and interpretations of the organization and the environment (Hambrick and Mason, 1984). According to Schein (1985), top managers strive to communicate their organizational values to employees in order to shape behavior and direct the firm. Thus, the values of the executive group

are a key factor in understanding what drives intraorganizational power.

Powerholders tend to seek out those with similar values as successors, specifically to preserve their values and, indirectly, because they are comfortable with persons who are like themselves (Stinchcombe, 1968). When a department shares the important values with top management, it is regarded as "like" the top-management team and therefore worthy of trust. The greater the similarity of organizational values between those within a department and top management, the more likely are the executives to view the department as having control over organizational activities. The influence of the value-congruent department poses no obvious threat to top managers and assures them that their preferences for the operation of the firm will be supported. Other departments influenced by the social setting acknowledge the position of the value-congruent group, and the department itself operates with greater assurance and control.

Value sharing between top management and a department increases the probability that the department has greater access to information, communicates more often with executives, is trusted by and attractive to top management, and is thus in greater control and more secure in its organizational actions. All of these outcomes of the congruence of values suggest heightened power. Whether this power is real or imagined is not important, however, since similarity in how the department and the executives see the organization will most likely lead to similarity in desired behaviors and levels of influence.

Departments that view themselves as similar to top management on organizational values will operate as if they are powerful. Believing themselves to be value-congruent with top management may lead department members to feel they have a right to guide or control those who do not have the "correct" view of what is desirable for the organization. An arrogance of beliefs coupled with security in one's position with top management may drive members of the department to believe their department deserves influence over other departments. Over time, this belief becomes institutionalized and other departments accept it as a given.

### **Hypotheses**

In light of the literature, it is hypothesized that sharing similar values with top management will be associated with increased power of the congruent department relative to other departments. The first hypothesis highlights the dual perceptual processes of departments and top managers ascribing power based on beliefs of value congruence. The second hypothesis also examines the relationship between value congruity and departmental power but relies on a nonperceptual approach to ascertaining similarity.

**Hypothesis 1:** Top managers will ascribe more power to departments they believe share similar organizational values (perceived value congruity). Departmental members who believe their own department to have organizational values that are similar to top management's (perceived value congruity) will ascribe more power to their own department.

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**Hypothesis 2:** Top managers who independently select the same set of important organizational values as a department's members will ascribe more power to that department (latent value congruity). Department members who independently select the same set of important organizational values as top managers (latent value congruity) will ascribe more power to their own department.

The third hypothesis addresses whether value congruity provides any additional explanation of departmental power beyond that provided by a critical contingencies explanation. It is expected that top management's and department members' beliefs about value congruity will account for significant variation in the power they ascribe to the department, controlling for their assessments of the department's ability to control critical contingencies. The incremental explanatory power of value congruity, both latent and perceived, is hypothesized to exist regardless of the way in which value congruity is measured.

**Hypothesis 3:** The value congruity between members of a department and top management will account for significant variation in the department's power beyond that provided by critical contingencies.

## **METHOD**

### **Samples**

Two organizations were selected for study: the corporate headquarters of a quick-service chain of restaurants and a robotics company. These organizations seemed ideally suited to the research question because both operate in competitive growth markets faced with environmental uncertainties, and both have stable top-management teams. In addition, the organizational charts reveal that both of the organizations have flat, functional department designs in which no department is higher in the organizational hierarchy than any other department.

The organizations were also chosen because of their relatively small size and diversity of work-unit activities. The robotics firm employed 100 persons and the restaurant firm had a staff of 625 employees. Selecting small organizations allowed for the examination of each corporate department and insured that employees would be reasonably familiar with the activities of various departments. In addition, every employee had some familiarity or contact with top management. Data were collected through interviews, followed by company-wide questionnaire surveys. Analyses were performed at the departmental level, and all departments ( $N = 15$  robotics firm,  $N = 14$  restaurant firm) in both companies were included in the study.

Each company identified members of its top-management team and provided the researcher with a list. Typically, top managers held the titles of president, vice president, officer, or director. Each member of the top-management team, with the exception of the presidents, had reporting responsibility for the activities of a department.

### **Interviews**

The first stage of data collection involved structured, open-ended interviews with 81 individuals: 48 from the restaurant chain and 33 from the robotics company. All top managers and CEOs were interviewed. In addition, employees were

selected randomly from each department to participate in this stage of the research.

Ten open-ended questions and seventeen structured probes were used to focus on values, critical contingencies, and power. All interviewees were asked to list the most and least important values a company should have in running a business. Respondents were then given a list of value statements and asked to sort them according to desirability. Several questions asked about the degree of similarity between the individuals' values and those of their own department, other departments, and top management.

To investigate critical contingencies, interviewees were asked to list what they felt were the most critical and important problems facing their industry and organization. Probing questions focused on how the companies dealt with the critical problems and which departments were most involved or necessary in solving the problems. In addition, respondents were asked to identify things that were the most unpredictable or uncertain in their industry. Probing questions were used to distinguish whether unknowns occur regularly or have a consistent pattern. Following the model of Hinings et al. (1974), problem areas found to have unpatterned variation were considered the most relevant uncertainties for the organizations. Finally, as a means of capturing critical contingencies, interviewees were asked to identify the resources that departments provide the company. Probes focused on the importance, criticality, and scarcity of the resources.

To examine power, the interviewer asked questions about which departments have the ability to affect the outcomes of other departments, why, and when. Power issues were identified during the interviews by following the guidelines of Hinings et al. (1974), who defined power issues as frequently mentioned facets of the organization in which more than one department is involved. Information on the degree of overall influence of each department was obtained through probing questions.

Use of interviews to gain information was essential, since the variables are based on cultural knowledge or meanings learned, revised, maintained, and defined in the specific organizational context. The pitfall of existing studies of contingencies and values is reliance on contingencies or values that may not be relevant or critical for the subjects under study. The interviews were used to understand the constructs and develop lists of values, contingencies, and power issues for use in the multi-item survey measures, so as to avoid making inappropriate assumptions.

A single researcher coded the interview data, after transcribing each interviewee's responses to each question and determining the frequency of various themes, values, or power issues. All interviews were coded twice as a check on the reliability of the categorizing. Coding disputes were present in less than 2 percent of the cases and were resolved by an independent judge. Reliability and validity of the coding were enhanced by following the suggestions of Crittenden and Hill (1971), who recommended that interviews be conducted by a single investigator to reduce interviewer variability in data collection. In addition, an affect checklist was

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used to record any unusual dynamics in the interview that might bias the interviewee's statements or the interviewer's interpretation.

All of the measures in this study were developed or modified as a result of the interviews, which were used to improve conceptual clarity and understanding of the constructs and to provide contextual information for the development of the questionnaire. None of the interview data were directly used for hypothesis testing. The data analysis was based on information collected on the measures in the survey stage of the research.

### **Questionnaires**

The second stage of the study involved the administration of a structured questionnaire distributed to all employees by intraoffice mail. An additional set of questions was mailed directly to the top managers, soliciting their views on each department. All respondents were guaranteed anonymity, and completed surveys were returned directly to the researcher by mail.

In the restaurant firm, 356 persons (57 percent) responded, representing all 14 departments and 15 top managers. All departments in the company were represented by more than ten departmental members' responses. In the robotics firm, a total of 58 persons (58 percent) responded, representing all 15 departments and 16 top managers. The response rate for top managers was 100 percent. Because all departments in the two organizations ( $N = 29$ ) were included in the study, no group of personnel was excluded.

**Aggregation.** The unit of analysis for this study was the department. To arrive at departmental scores for each of the variables, the responses of departmental members were summed and averaged to arrive at departmental means, in accordance with previous studies (Hinings et al., 1974; Hackman, 1985). Excluded from each department's mean score were the responses of the vice president or director who served as the representative of the department on the top-management team. Using the aggregated responses of all departmental employees avoided the problem of managerial bias attributed to previous research that relied exclusively on the perceptions of department heads (Clegg, 1975). To arrive at a top-management score for each firm, a similar procedure was followed in which each executive evaluated all of the firm's departments. Top managers' scores were summed and averaged for each department.

Following the logic of Perrow (1970), all responses of departmental employees were weighted equally. The use of departmental means controls for departmental size variation within and across the two firms. In addition, aggregating a large number of respondents' perceptions of the department to arrive at departmental scores provides findings that are less distorted by individual biases (Provan, 1980). Finally, aggregating employee and supervisor scores to arrive at departmental means is a responsible approach to reporting data at the subunit level (Van de Ven and Ferry, 1980).

**Multiple respondents.** Glaser and Strauss (1967) advocated the use of multiple comparison groups to cross-validate data

collection. In the present study, measures of all of the variables were obtained for independent respondent groups. One respondent group consisted of departmental employees evaluating their own department's value congruity with top management, control of critical contingencies, and general and issue power. The other group consisted of top managers who evaluated these same variables. Although reliance on individuals' perceptions of their own departments would not represent the traditional problem of self-report bias, because respondents were reporting on their departments rather than themselves, it was felt that including top management's evaluations of each department would represent a theoretically useful source of information as well as a check on validity.

### Measures

*Perceived and latent value congruity.* A list of organizational values developed by the author, supplemented by items from England's (1975) value measure and modified by information from interviewees, were used to measure value congruity. Values are relative phenomena best suited to comparisons of one value to another (Rokeach, 1973). Given that preference statements are comparative, the list of values was shortened, as a result of the interviews, to only those regarded as most desirable. A rank-order approach was used, in which respondents prioritized values a company should have in running a business. Only the value items subjects most frequently ranked as important were used to measure value congruity. By summing only the subset of value statements regarded as most important, separate value-similarity measures were obtained for each company. A total of six value statements were used to measure congruity in the restaurant chain and seven statements in the robotics firm (four of the values were held in common by the two firms), as shown in Table 1.

Perceived value congruity was measured on the questionnaire by asking respondents to indicate the degree of similarity between their department and top management on each of the organizational values. On a separate survey form, top managers were asked to indicate the degree of perceived

Table 1

#### List of Organizational Values

Particular to restaurant chain	Values	
	Particular to robotics company	Common to both organizations
<b>Efficiency:</b> Producing the product with minimal effort, waste, and expense.	<b>Company growth:</b> An increase in various facets of a company, such as assets, sales, and market share.	<b>Ethics:</b> Concern for the honesty and integrity of all employees in conducting company activities.
<b>Employee development:</b> Expanding the skills and abilities of the employees.	<b>Industry leadership:</b> Being considered by everyone in the industry to be the number one company (the best) in the industry.	<b>Superior quality and service:</b> Making a good product and addressing all the needs of the customer in as fast and friendly a way as possible.
	<b>Survival:</b> Staying in business.	<b>High morale:</b> A positive feeling for the company, a feeling of belonging.
		<b>Professionalism:</b> Behaving in a business-like manner.

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similarity between the top-management team and each department on the value items. A 7-point scale was used, with response ranging from "very dissimilar" (1) to "very similar" (7). A "don't know" response was provided and was scored as missing data. The measure of perceived value congruity emphasizes the individual's definition of similarity and requires a conscious assessment of the degree of value congruity. The reliability of the measures of perceived value congruity with top management was obtained using Cronbach's alpha. A Cronbach alpha of .83 was obtained for the restaurant chain and an alpha of .88 was calculated for the robotics firm.

The same list of values developed for the perceived measure was used to measure latent value congruity, the degree of unrecognized congruity between a department's values and those of top management. A frequency distribution of the most important values (i.e., ranked first in the interviews) was obtained for each department and top management. Latent similarity was then calculated by comparing frequency distributions between each department and top management on the various value items, using an index of net difference, developed by Lieberman (1976) to calculate a similarity score between two groups on a ranked value. Net similarity was measured by subtracting Lieberman's index of net difference from one ( $1 - ND_{xy} = \text{Net Similarity}$ ). The Appendix presents a detailed formulation of the index.

*Critical contingencies.* Table 2 summarizes the unique, unpredictable, and critical problems facing the firms studied, as determined during the interviews. To measure each department's ability to control these problems, respondents were asked to indicate the degree to which their department controls each of the problems for the company. A 7-point scale ranging from "does not control" (1) to "controls completely" (7) was used. A "don't know" response was also available and was coded as missing data. Top managers were also asked to indicate, using the same scale, the degree to which each department was able to control the critical problems.

Table 2

#### List of Critical Problems

For restaurant chain	Critical Problems	
		For robotics company
Determining customer needs		Customer ignorance of the product
Turnover		Product quality and reliability
Financial stability		Long-range planning
Attracting sound franchisees		Determining customer wants
Managing and maintaining growth		Company image and reputation
Name recognition and company image		Recruiting and training
Attracting and retaining employees		Staying current on technological changes
Staying a step ahead of the competition (innovative)		Competing with other companies
Maintaining quality, service, cleanliness, and atmosphere		Monitoring and controlling costs
Increasing profitability		

To measure the reliability of this multi-issue measure, Cronbach alphas were calculated separately for each firm. The measure of control of critical contingencies yielded a reliability coefficient of .80 for the restaurant chain and .78 for the robotics firm, thus verifying the degree of internal consistency of the measure regardless of the firm studied.

*Departmental power.* Empirical work on perceived power has historically relied on either a general or an issue-based measure of power (Provan, 1980). One group of researchers has used a general measure of perceived departmental power that is intended to capture overall influence (Perrow, 1970; Salancik and Pfeffer, 1974; Pfeffer and Salancik, 1974). Some have argued, however, that a general measure is inadequate for capturing the diversity and complexity of power relationships (Hinings et al., 1974; Provan, 1980). Hence a number of researchers have adopted a multi-issue approach to capture power in various situations or contexts (Hinings et al., 1974; Provan, Beyer, and Kruytbosch, 1980; Hackman, 1985).

In the present study, both general and issue-based measures were used. A general measure of power similar to that used by Perrow (1970) was obtained by asking, "In general, how much influence do you feel your department has in your company?" A 7-point scale, ranging from "no influence" (1) to "a very great deal of influence" (7) was used. A "don't know" response was available and was coded as missing data. Top managers, using the same scale, were asked to indicate the general influence of each department. Table 3 lists the power issues identified from the interviews, in accordance with Hinings et al.'s (1974) conceptualization of power. Power issues were frequently mentioned facets and outcomes of the organization in which more than one department had the ability to be involved. The issue-based measures capture the multidimensionality of power. In this section of the survey respondents were told that the researcher was "interested in your views concerning your own department's ability to influence the outcomes of various issues." Respondents were

Table 3

<b>List of Power Issues</b>		
	<b>Power Issues</b>	
<b>For restaurant chain</b>	<b>For robotics company</b>	<b>Common to both organizations</b>
Major capital expenditures (acquisitions of stores)	When product will be shipped	Enhancement of a company reputation
Recruiting, training, and employee development	Ability to alter customer satisfaction	Creation of a unique culture
Quality, service, cleanliness, and atmosphere	Development of policy and changes in policy	Long-range planning (future direction)
Increasing profitability	Monitoring and controlling	Increase in sales Communication between departments Introduction of new products

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then asked to indicate the ability of their own department to affect the outcomes of each power issue. Top managers were asked to indicate each department's ability to affect each of the power issues. A 7-point scale was used, with responses ranging from "no ability" to affect the issue (1) to "the greatest ability" to affect the issue (7). Cronbach alphas of .78 for the restaurant chain and .76 for the robotics firm are evidence of the high levels of internal consistency of this measure for each of the organizations.

### **Preliminary Analyses**

Before testing the hypotheses, it was essential to determine whether power differences existed across departments and whether individuals in the same department were similar in their evaluation of their own department's power. Information collected in the interviews indicated that employees expressed greater agreement about their own department's power than did individuals across departments. Nevertheless, analyses of variance were conducted on the questionnaire data to examine this question. If department members varied greatly in their perceptions of power, aggregation of scores to represent a collective departmental perspective would be misleading.

Several one-way analyses of variance were conducted separately for each company to determine the nature of departmental differences. For the restaurant chain, the issue-oriented ( $F = 2.52, p < .001$ ) and general ( $F = 3.45, p < .001$ ) measures of power yielded significant departmental differences. In the robotics company, similar results were found for the issue-oriented ( $F = 2.71, p < .01$ ) and the general ( $F = 2.92, p < .01$ ) measure. These findings indicate that within-department variance is significantly smaller than across-department variance. These analyses suggest agreement among department members evaluating their own department's power. Knowing that power differences exist across departments and that persons in the same department view power similarly allows for the exploration of the relationship between value congruity and power.

Because the measures were all perceptual and drawn from the same instrument, the potential for common-method variance to exist between the value congruity and power measures was examined by conducting a Harman (1967) one-factor test. An additional test for common-method variance was conducted on the critical contingencies and power measures using the Harman one-factor procedure. Results of the Harman one-factor tests produced multiple factors from the variables consistent with the a priori constructs, thus reducing the possibility of common-method problems.

## **RESULTS**

### **Value Congruity and Power**

Table 4 presents the means, standard deviations, and intercorrelations for all the variables. Perceived value congruity was significantly related to issue and general power when both top management and department members evaluated congruity and power. Top managers ascribed more issue-based and general power to departments that they judged to

Table 4

**Means, Standard Deviations, and Intercorrelations among All Variables**

Variable*	Means (S.D.)	1	2	3	4	5	6	7	8
1. Value congruity with top management (depts.)	5.50 (.82)	–							
2. Value congruity with departments (top mgt.)	4.95 (1.35)	.27							
3. Latent value congruity	49.84 (31.48)	.13	.37*						
4. Control of critical contingencies (depts.)	38.45 (9.91)	.28	.27	.40*					
5. Control of critical contingencies (top mgt.)	35.12 (9.61)	.37*	.16	.34*	.85***				
6. Issue power (depts.)	38.76 (6.24)	.39*	.39*	.20	.69***	.48**			
7. Issue power (top mgt.)	37.49 (6.10)	.31*	.36*	.28	.83***	.88***	.64***		
8. General power (depts.)	4.80 (1.02)	.72***	.37*	.18	.46**	.53***	.32	.44**	
9. General power (top mgt.)	4.56 (1.21)	.47**	.56***	.31	.51**	.61***	.35	.60***	.72***

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

\* The variable is based on perceptions of the group(s) noted in parentheses.

be value-similar. Department members also ascribed more issue-based and general power to their department when they perceived it to share organizational values with top management. Hence, the greater the perceived similarity on organizational values between a department and top management, the greater the department's perceived power within the organization.

Latent value congruity was significantly related to general power as evaluated by top management but not significantly associated with power as viewed by department members. Departments that independently selected the same important values as top management did not ascribe to themselves greater power. Only top managers ascribed greater general power to departments that selected the same values as they did.

These findings provide support for the first hypothesis and partial support for the second. Perceived value congruity is related to departmental power when congruity and power are evaluated by either department members or top managers. General power was found to be more strongly associated with value congruity, while critical contingencies was more strongly related to issue-oriented power. Top managers ascribed greater general power to departments in which the members independently identified as important the same subset of organizational values as the executives. In contrast, the relationship between latent value congruity and departmental power as perceived by department members was not significant and thus did not provide support for the second hypothesis.

### Value Congruity and Critical Contingencies

To examine whether value congruity accounts for additional variance in departmental power beyond that provided by con-

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Control of critical contingencies, hierarchical regressions were performed, taking into consideration the effects of critical contingencies. Table 5 summarizes the hierarchical regression analyses, which examined independently the variables from the perspectives of department members and top managers. In each model the critical contingencies variable was entered first, followed by the value congruity measure. Perceived and latent value congruity and issue and general power were examined separately.

Table 5

#### Hierarchical Regression of Value Congruity and Critical Contingencies

	Departmental Perspective Critical* contingencies	Value congruity with top management	Top-Management Perspective Critical† contingencies	Value congruity with each department
Perceived Value Congruity				
Issue-oriented power				
Standardized regression coefficients	.632	.211	.829	.231
Partial <i>F</i> tests		2.122		6.512*
Overall <i>F</i> tests	23.613***	13.377***	86.810***	55.864***
<i>R</i> <sup>2</sup>	.476	.517	.770	.817
Change in <i>R</i> <sup>2</sup>		.041		.047
General power				
Standardized regression coefficients	.282	.640	.566	.454
Partial <i>F</i> tests		22.95***		13.168**
Overall <i>F</i> tests	6.945*	17.880***	15.690***	18.097***
<i>R</i> <sup>2</sup>	.211	.589	.376	.591
Change in <i>R</i> <sup>2</sup>		.378		.215
Latent Value Congruity				
Issue-oriented power				
Standardized regression coefficients	.614	-.217	.873	-.025
Partial <i>F</i> tests		.386		.018
Overall <i>F</i> tests	23.613***	11.720***	86.810***	41.775***
<i>R</i> <sup>2</sup>	.476	.484	.770	.770
Change in <i>R</i> <sup>2</sup>		.008		.0002
General power				
Standardized regression coefficients	.494	.000	.590	.122
Partial <i>F</i> tests		.003		.530
Overall <i>F</i> tests	6.945*	3.341	15.690***	7.970**
<i>R</i> <sup>2</sup>	.211	.211	.376	.389
Change in <i>R</i> <sup>2</sup>		.000		.013

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

\* Derived from department members' perceptions of their own department.

† Derived from top management's perceptions of each department.

**Departmental perspective.** From the perspective of department members, perceived value congruity provided a significant unique explanation of general power. Perceived value congruity with top management accounted for 37.8 percent of the variance in general power after the effects of critical contingencies on power were removed. When examining issue-oriented power, control of critical contingencies explained a large percentage of variance, and perceived value congruity did not account for significant incremental variance. The findings using perceived value congruity support hypothesis 3 for general power but not for issue-oriented

power. Latent value congruity did not account for significant variation in general or issue power when controlling for the effects of critical contingencies.

**Top-management perspective.** The findings indicate significant partial  $F$ 's for the two models of perceived value congruity when congruity is examined from the perspective of the top managers. Top managers ascribed more power to departments that they judged held more similar values to their own than they did to departments judged to hold less similar values: 4.7 percent of the variation in their assessments of issue-based power and 21.5 percent of the variation in their judgments of general power can be accounted for by variations in perceived value congruity. These results indicate that top managers' perceptions of value congruity with a department uniquely explain their evaluations of departmental issue and general power. Latent value congruity was not useful in accounting for additional variation in power beyond that provided by control of critical contingencies. Hypothesis 3 was thus supported when examining perceived value congruity but not latent value congruity.

**Company-specific analyses.** Separate hierarchical regression analyses were performed for each organization to determine whether any company effects were present. Perceived value congruity did account uniquely for significant percentages of variance in departmental power when examined separately for each company. In the robotics firm, significant partial  $F$ -tests for issue power ( $F = 12.38, p < .01$ ) and general power ( $F = 6.65, p < .05$ ) from the perspective of top managers revealed the unique explanatory power of value congruence. In this firm, congruity was also found to account uniquely for 16 percent of the variance in general power from the departmental perspective (partial  $F = 6.38, p < .05$ ). Value congruity uniquely accounted for 12 percent of the variance in issue-oriented power (partial  $F = 10.88, p < .01$ ) from the departmental perspective in the restaurant chain. Latent value congruity did not account for significant percentages of variance in power when analyses were performed separately for the two companies.

Perceived value congruity thus uniquely accounted for variance in power when controlling for the effects of critical contingencies, even though the samples were extremely small and thus lacking in statistical power. These findings are consistent with those reported when the organizations were pooled and thus legitimize the practice in this study of examining both companies together.

### **Cross-Validation with Mixed Models**

The findings of the hierarchical regression analyses reported thus far have helped to clarify the influence of value congruity on departmental power. The measurement of both predictor and criterion variables, however, has relied on the same groups—either department members or top managers. Of interest is whether value congruity from the viewpoint of one group (e.g., top management) will predict power as viewed by the other group (e.g., department members). Hence, as a final examination of incremental variance and a cross-validation of the findings, several mixed-perspective models were employed.

### **Role of Value Congruity**

Hierarchical regression analyses were performed in which the dependent variables—general and issue power—were explored from a different perspective (i.e., top management's or departments') than the independent variables of critical contingencies and value congruity. Top management's assessments of critical contingencies and value congruity were used in regression models predicting power from a departmental perspective. Similarly, departments' assessments of critical contingencies and value congruity were used in two models predicting power from the perspective of top management. The purpose of these analyses was to explore whether unique variance accounted for by value congruity from one reference group's perspective would help explain variance in departmental power as perceived by the other respondent group.

The findings from the mixed-perspective analyses revealed that value congruity uniquely accounted for from .7 to 11.3 percent of the variance in departmental power. The partial  $F$ -tests for issue-based power ( $F = 3.78$ ,  $\alpha = .06$ ) and general power ( $F = 3.315$ ,  $\alpha = .08$ ) approached significance when power was examined from a departmental perspective and value congruity from top management's perspective. Value congruity as evaluated by department members was significant in accounting for 11.3 percent of the variance in top management's perceptions of general power (partial  $F = 4.55$ ,  $p < .05$ ) but insignificant in explaining top management's perceptions of issue power. Overall, the cross-validation using mixed models proved to be a useful check on the incremental explanatory power of value congruity.

### **DISCUSSION AND CONCLUSIONS**

The results of the present study provide preliminary support for the importance of perceived value congruity in explaining departmental power. While the data reported here support the critical contingencies argument, they also highlight the usefulness of examining shared organizational values in determining power.

Value congruity as perceived by top management proved to be a better predictor of departmental power than value congruity as perceived by each department's members, regardless of the group assessing power. It is possible that department members are less aware of their value similarity or are mistaken about the fit more often than top management. It is also conceivable that executives attach greater importance to the sharing of values in assessing power than do department members. Department members may retain an illusion of control by believing that power is more directly the result of their ability to manage unknowns. A final explanation for this finding is that departmental power is shaped by the actions and attitudes of top managers, who in turn are influenced by their perceptions of value congruity, not the department's perceptions of congruence. Thus, executives' perceptions are stronger predictors of departmental power than departmental perceptions.

Differences in the assessment of value congruity as viewed by top managers compared to department members was evident by the lack of association between the perceptions of

similarity ( $r = .27$ ). Judging from the means, department members perceived higher levels of value similarity than did top managers. The lack of a significant association between the perceptual measures of value congruity may be due to more than just differences in viewpoints of top managers and department members.

While this study has concentrated exclusively on assessments of value similarity, it has not explored the espousing of values and the motivation behind expressing similarity. This area of investigation is a possible extension of the work reported here. For example, why do department members or top managers express or profess similarity? It is possible that expressing similar values is more closely linked to power than sharing values. Professing similarity may be a contrivance of department members to bolster top management attraction or trust in their department. By expressing similarity on values, department members may be hoping to manipulate the sympathies of top management or obtain approval and resources, regardless of whether their values are similar to those of top management. In contrast, top managers have fewer incentives for expressing "false" similarity and are more inclined to note dissimilarity. Thus, future research should distinguish between perceived and expressed value similarity. It is possible that the differences in perceived similarity reported in this study may be linked to the different benefits to be gained from similarity. Examination of the communication process is worthy of investigation to further refine the effects of value similarity on intraorganizational power.

A conscious assessment of value similarity was distinguished from nonperceptual similarity of values by measuring both perceived and latent value congruity. The findings suggest that top managers' perceptions of congruity are associated with latent congruity ( $r = .37$ ), while no significant relationship exists between perceived and latent similarity for department members ( $r = .13$ ). Once again these findings point to the possibility that department members perceive similarity with executives but may not actually share similar organizational values.

The stronger association between value congruity and general power may be attributable to the intangible or broad nature of shared values and overall power. In contrast, both issue-oriented power and control of critical contingencies are directed toward specific facets of the work context or isolated incidents. Hence, control of contingencies may determine departmental power in specific situations, while value congruity explains power over a more universal and less detailed set of circumstances.

An issue-based orientation to power presumes that power is overt and can be captured by the identification of specific issues. If issue power fails to capture the "real" influence issues, then it may be weakly related to value congruity. Powerful subunits may consciously conceal relevant issues from consideration by all departments, or department members may insufficiently identify relevant issues. Whichever reason explains the misidentification of power issues, the net effect is a weaker connection between value con-

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gruity and issue-based power. If the power issues are the wrong ones (i.e., non-issues), then the ability to control specific issues (non-issues) may be less important than the more general ability to influence. This view suggests that general power is more aligned with the unspecified indicators of power. Given top management's likely awareness of non-issues, however, it seems reasonable that the findings of this study showed greater association between top management's assessments of general and issue power ( $r = .60$ ) than between departmental evaluations of issue and general power ( $r = .32$ ).

The lack of significant findings for latent value congruity, with the exception of top management's perceptions of general power ( $r = .31$ ,  $p < .05$ ), suggests that believing in an image of value similarity is more powerful in predicting departmental influence than actually sharing values when the parties are unaware of the similarity. Numerous authors have argued that reality is socially constructed and thus is the result of shared understandings or interpretations (Berger and Luckmann, 1967; Blumer, 1969; Daft and Weick, 1984). Perhaps "believing is seeing" (Weick, 1968: 135), that is, believing value congruity exists may shape perceptions of departmental power. This finding suggests that power is a product of a social definition of value congruity, rather than an "objective" calculation of similarity.

Further research should build on these preliminary findings by examining the degree to which department members and top managers communicate values and the levels of success they achieve in transmitting these values. Because top management is likely to be a powerful group, department members may communicate value similarity to increase or perpetuate the department's standing. Top managers advocate a set of values to legitimize their actions (Kamens, 1977), indoctrinate newcomers (Van Maanen and Schein, 1979), or induce compliance and commitment (Pfeffer, 1981b). When executives use values to induce conformity, it is not difficult to understand why they perceive the value-congruent departments to be the most powerful. Top management may wish to impose its values on others in the organization to ensure that the firm is operating in a manner consistent with its beliefs and aspirations. Thus top management may foster the political power of departments that succeed in communicating similar values.

From the perspective of the department, expressed value similarity may be a manipulative strategy to increase power. Departments may believe that top management will be more positively disposed toward them or include them in the critical decision-making activities if they express similarity. Similarly, powerful departments maintain their power by knowing when and how to express similarity with top management. Other motives may guide perceptions of value similarity, including conflict or anxiety reduction. Departments may express similarity to avoid rocking the boat. By reducing conflict they may negotiate for greater power. Thus, research should be undertaken that goes beyond examining the effects of perceived value similarity and considers the process of proactive value communication.

## Limitations of the Study

Three limitations of this study are of particular importance to note. First, all top managers, except the CEOs, also supervised the activities of departments. The extremely flat organizational structures that existed in the firms studied may hinder a clear distinction between top-management views and those of departments. While the numerical representation of departments in the top-management group was balanced in this study (i.e., one executive per department), a firm in which the executive team is composed of more representatives from one department than from others may confuse the distinction between departmental beliefs and top-management beliefs. In addition, the top-management team was value congruent, making the similarity assessments between top management and departments appropriate. If a situation existed in which executives were at variance with each other, then intraorganizational value similarity would be less meaningful. It is possible that organizations with more hierarchical levels, narrower spans of control, unbalanced departmental representation in the top-management set, and executive heterogeneity may rely more on resource control than on value congruity to ascribe power.

A second limitation of the study is the statistically calculated assessment of latent value congruity. While Lieberman's (1976) measure of net difference seems appropriate in this early stage of research on value congruence, future research should consider refinements that take into account that values are below the level of conscious awareness and may appear in unobtrusive ways.

Finally, the theoretical development of the concept of value congruity suggests a causal connection that this cross-sectional study does not examine. It cannot be concluded that value sharing rather than resource control leads to departmental power. It is also impossible to conclude that value sharing precedes resource control in explanations of power. It can be concluded that value sharing as well as resource control is associated with greater departmental power.

The importance of the empirical results presented here on the role of value similarity in determining power is that they serve to direct theoretical attention away from strictly resource-control explanations. In addition, the finding that it is *perceptions* of shared values rather than actual shared values that influence intraorganizational power highlights the importance of created realities and suggests that more theoretical attention be given to the force of group consensus and the social construction process in organizations. Now organization theorists can enrich the analysis of organizational value sharing by focusing on the value communication process and the motives behind it.

## REFERENCES

- Berger, Peter L., and Thomas Luckmann  
1967 *The Social Construction of Reality*. New York: Doubleday.
- Beyer, Janice M.  
1981 "Ideologies, values, and decision making in organizations." In Paul C. Nystrom and William H. Starbuck (eds.), *Handbook of Organizational Design*, 2: 166–202. New York: Oxford University Press.
- Blumer, Herbert  
1969 *Symbolic Interactionism: Perspective and Method*. Englewood Cliffs, NJ: Prentice-Hall.

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- Brown, Richard Harvey**  
1978 "Bureaucracy as praxis: Toward a political phenomenology of formal organizations." *Administrative Science Quarterly*, 23: 365–382.
- Clegg, Stewart R.**  
1975 *Power, Rule and Domination*. Boston: Routledge and Kegan Paul.
- Crittenden, K. S., and R. J. Hill**  
1971 "Coding reliability and validity of interview data." *American Sociological Review*, 36: 1073–1080.
- Crozier, Michel**  
1964 *The Bureaucratic Phenomenon*. Chicago: University of Chicago Press.
- Daft, Richard L., and Karl E. Weick**  
1984 "Toward a model of organizations as interpretation systems." *Academy of Management Review*, 9: 284–295.
- Emerson, Richard M.**  
1962 "Power-dependence relations." *American Sociological Review*, 27: 31–41.
- England, George W.**  
1975 *The Manager and His Values: An International Perspective*. Cambridge, MA: Ballinger.
- Enz, Cathy A.**  
1986 *Power and Shared Values in the Corporate Culture*. Ann Arbor, MI: UMI Research Press.
- Glaser, Barney G., and Anselm L. Strauss**  
1967 *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Aldine.
- Hackman, Judith Dozier**  
1985 "Power and centrality in the allocation of resources in colleges and universities." *Administrative Science Quarterly*, 30: 61–77.
- Hambrick, Donald C., and Phyllis A. Mason**  
1984 "Upper echelons: The organization as a reflection of its top managers." *Academy of Management Review*, 9: 193–206.
- Harman, H. H.**  
1967 *Modern Factor Analysis*. Chicago: University of Chicago Press.
- Hickson, D. J., C. R. Hinings, C. A. Lee, R. E. Schneck, and J. M. Pennings**  
1971 "A strategic contingencies theory of intraorganizational power." *Administrative Science Quarterly*, 16: 216–229.
- Hinings, C. R., D. J. Hickson, J. M. Pennings, and R. E. Schneck**  
1974 "Structural conditions of intraorganizational power." *Administrative Science Quarterly*, 19: 22–44.
- Kamens, D. H.**  
1977 "Legitimizing myths and educational organization: The relationship between organizational ideology and formal structure." *American Sociological Review*, 42: 208–219.
- Kluckhohn, Clyde**  
1967 "Values and value-orientations in the theory of action." In Talcott Parsons and Edward A. Shils (eds.), *Toward a General Theory of Action*: 388–433. Cambridge, MA: Harvard University Press.
- Lieberson, Stanley**  
1976 "Rank-sum comparisons between groups." In David R. Heise (ed.), *Sociological Methodology*: 276–291. San Francisco: Jossey-Bass.
- Lodahl, Janice Beyer, and Gerald Gordon**  
1972 "The structure of scientific fields and the functioning of university graduate departments." *American Sociological Review*, 37: 57–72.
- Lukes, Steven**  
1974 *Power: A Radical View*. London: Macmillan.
- March, James G.**  
1962 "The business firm as a political coalition." *Journal of Politics*, 24: 662–678.
- Perrow, Charles**  
1970 "Departmental power and perspectives in industrial firms." In Mayer N. Zald (ed.), *Power in Organizations*: 59–89. Nashville, TN: Vanderbilt University Press.
- Pettigrew, Andrew M.**  
1979 "On studying organizational cultures." *Administrative Science Quarterly*, 24: 570–581.
- Pfeffer, Jeffrey**  
1981a *Power in Organizations*. Marshfield, MA: Pitman.  
1981b "Management as symbolic action: The creation and maintenance of organizational paradigms." In Larry L. Cummings and Barry M. Staw (eds.), *Research in Organizational Behavior*, 3: 1–52. Greenwich, CT: JAI Press.
- Pfeffer, Jeffrey, and Gerald R. Salancik**  
1974 "Organizational decision-making as a political process: The case of a university budget." *Administrative Science Quarterly*, 19: 453–473.  
1978 *The External Control of Organizations: A Resource Dependence Perspective*. New York: Harper and Row.
- Pondy, Louis R.**  
1977 "The other hand clapping: An information-processing approach to organizational power." In Tove Helland Hammer and Samuel B. Bacharach (eds.), *Reward Systems and Power Distribution in Organizations: Searching for Solutions*: 56–91. Ithaca, NY: NYSSILR Press.
- Provan, Keith G.**  
1980 "Recognizing, measuring, and interpreting the potential/enacted power distinction in organizational research." *Academy of Management Review*, 5: 549–559.
- Provan, Keith G., Janice M. Beyer, and Carlos Kruytbosch**  
1980 "Environmental linkages and power in resource-dependence relations between organizations." *Administrative Science Quarterly*, 25: 200–225.
- Ranson, Stewart, Bob Hinings, and Royston Greenwood**  
1980 "The structuring of organizational structures." *Administrative Science Quarterly*, 25: 1–17.
- Rokeach, Milton**  
1968 *Beliefs, Attitudes, and Values*. San Francisco: Jossey-Bass.  
1973 *The Nature of Human Values*. New York: Free Press.
- Rose, Arnold M.**  
1956 "Sociology and the study of values." *British Journal of Sociology*, 7: 1–17.

- Salancik, Gerald R., and Jeffrey Pfeffer**  
 1974 "The bases and use of power in organizational decision making: The case of a university." *Administrative Science Quarterly*, 19: 453–473.  
 1977 "Who gets power—and how they hold on to it: A strategic contingencies model of power." *Organizational Dynamics*, 5: 3–21.
- Sathe, Vijay**  
 1983 "Implications of corporate culture: A manager's guide to action." *Organizational Dynamics*, 9: 333–354.
- Schein, Edgar H.**  
 1985 *Organizational Culture and Leadership*. San Francisco: Jossey-Bass.
- Selznick, Philip**  
 1957 *Leadership in Administration: A Sociological Interpretation*. Evanston, IL: Row, Peterson.
- Sproull, Lee S.**  
 1981 "Beliefs in organizations." In Paul C. Nystrom and William H. Starbuck (eds.), *Handbook of Organizational Design*, 2: 203–224. New York: Oxford University Press.
- Stinchcombe, Arthur L.**  
 1968 *Constructing Social Theories*. New York: Harcourt, Brace and World.
- Tushman, Michael L.**  
 1977 "A political approach to organizations: A review and rationale." *Academy of Management Review*, 2: 206–216.
- Van de Ven, Andrew H., and Diane L. Ferry**  
 1980 *Measuring and Assessing Organizations*. New York: Wiley.
- Van Maanen, John, and Edgar H. Schein**  
 1979 "Toward a theory of organizational socialization." In Barry M. Staw (ed.), *Research in Organizational Behavior*, 1: 209–264. Greenwich, CT: JAI Press.
- Walsh, Kieron, Bob Hinings, Royston Greenwood, and Stewart Ranson**  
 1981 "Power and advantage in organizations." *Organization Studies*, 2: 131–152.
- Weick, Karl E.**  
 1968 *The Social Psychology of Organizing*. Reading, MA: Addison-Wesley.
- Wrong, Dennis H.**  
 1979 *Power: Its Forms, Bases, and Uses*. New York: Harper Colophon Books.

#### APPENDIX: Net Difference Index

Latent value congruity was measured using Lieberman's (1976) index of net difference, which gives the difference between two probabilities of inequality. To calculate the index of net difference, three comparisons between departments and top management are needed: the probability that  $X$  (any department's frequency) will exceed  $Y$  (top management's frequency) with respect to  $I$  (value statements),  $\text{pr}(X > Y)$ ; The probability that  $Y$  will exceed  $X$ ,  $\text{pr}(Y > X)$ ; and the probability that  $X$  and  $Y$  will be equal,  $\text{pr}(X = Y)$ . The index will be zero if the two probabilities of inequality are equal [ $\text{pr}(X = Y)$ ]; in this case, a net difference does not exist. The index and the derived measure of latent value congruity are obtained using the following formula:

$$ND_{xy} = \text{pr}(X > Y) - \text{pr}(Y > X)$$

$$\text{Measure of net similarity} = 1 - ND_{xy}$$

$$\text{where, } \text{pr}(X > Y) = \sum_{i=2}^n X_i \left( \sum_{j=1}^{n-i-1} Y_j \right)$$

$$\text{pr}(Y > X) = \sum_{i=2}^n Y_i \left( \sum_{j=1}^{n-i-1} X_j \right)$$

The measure of net similarity was calculated by subtracting the index of net difference from one [ $1 - ND_{xy} = \text{Net similarity}$ ]. While the index of net difference deals with ranked values, the difference score is a probabilistic measure that allows for measurement intervals with arithmetic values.