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A Three-Dimensional Analysis of Manager-Subordinate Value Congruence:

Implications for Job Satisfaction, Organizational Commitment, and Extra-Role Behavior

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A dissertation submitted to the Graduate School, University of Missouri - St Louis, in partial fulfillment of the requirements for the Doctor of Philosophy degree in Industrial/Organizational Psychology

May, 1996

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ABSTRACT

Recent research on "fit" in organizations has employed the notion of value congruence as a key component of the match between individuals and their work environments. Results have suggested that congruence in values is related to important organizational outcomes. Existing findings were hypothesized to oversimplify the mechanisms and potential outcomes of value congruence, and were questioned under a new approach. This new approach stems from findings by Edwards (1991; 1993; 1994) who has identified methodological flaws in a number of congruence research areas. Consistent with Edwards' methodology, a 3-dimensional analysis of the relationship between value congruence and the outcomes of job satisfaction, organizational commitment, and extra-role behavior was conducted. Results indicated that value congruence-outcome relationships can be more fully detailed under this approach. Specifically, similarity between managers and subordinates in value for social factors was shown to elicit more pronounced effects than similarity in value for either reward or work outcome factors. Effects were also more pronounced when job satisfaction was the criterion as opposed to organizational commitment or extra-role behavior. Among the most important findings was the observation that along the line or continuum at which congruence occurs (i.e., congruence at high vs. low absolute levels), significant slopes were frequently observed. Thus, contrary to past assertions, evidence was gathered here suggesting that congruence, per se, may not always result in positive outcomes.

ACKNOWLEDGEMENTS

The completion of this dissertation, and all other phases of my graduate studies would not have been possible without the support of a number of individuals. I would first like to thank the members of my dissertation committee whose insightful comments and suggestions added immense technical and conceptual value to this research. Special thanks go to Dr. Michael Harris whose support and guidance throughout my graduate studies helped to focus my efforts and enhance my knowledge and skills.

My family has been, and will always be, instrumental to my life's efforts, and no less so with this dissertation. My parents, William and Jean Paese, have always provided the support, encouragement, wisdom, and love that helped me to perservere. In addition, my brothers and sisters have served as outstanding models of individual achievement and personal excellence. Their own successes, in combination with their support, caring, and love have greatly influenced the standards toward which I have always worked, both as a scholar and human being.

Finally, my wife, Rebecca Ann Mullen, served as the foundation and strength of this project. Without her understanding, patience, encouragement, and love, this would not have been possible.

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Introduction

Psychologists have long been occupied with the pursuit of understanding the relative impact of both individual and environmental attributes on behavior, and research has spawned much debate (Epstein & O'Brien, 1985). As research has moved toward the now widely espoused interactionist perspective (Kenrick & Funder, 1988), many have investigated the notion of person-environment interaction in the context of "fit" or "congruence" in the workplace (e.g., Holland, 1985; Pervin, 1968; for a review see Edwards, 1991). Within I/O psychology and organizational behavior, congruence research has taken place in areas including job stress (French, Caplan & Harrison, 1982), vocational choice (Holland, 1985; Super, 1957), motivation (Hackman & Oldham, 1980), and most heavily in the area of job satisfaction (Dawis & Lofquist; 1984; Locke, 1969; 1976). Across all of these topic areas is the shared presumption that when individual characteristics match environmental characteristics, positive outcomes result. Indeed, the literature has been consistently supportive of the relationship between fit and positive affect (e.g., job and/or career satisfaction, reduced stress, work adjustment, etc.; Mount & Muchinsky, 1978; Spokane, 1985).

Recently, research has begun to explore the congruence between manager and subordinate *work values* as a predictor of such outcomes as job satisfaction, organizational commitment, and turnover. Traditional congruence studies have been criticized for neglecting contextual variables such as work values in assessing person-environment

congruence (Chatman, 1989; Meglino et al., 1989). As will be discussed below, work values are theorized to play a critical role in organizations and interpersonal relationships therein (Chatman, 1989; Kluckhohn, 1967; Locke, 1976; Rokeach, 1973; Schein, 1985). Indeed, a number of recent studies have presented evidence that manager-subordinate *value congruence* may be related to organizational outcomes including job satisfaction, organizational commitment, turnover (Chatman, 1991; Meglino et al., 1989; 1991; 1992; O'Reilly, Chatman & Caldwell, 1991); organizational attractiveness (Judge & Bretz, 1992); and departmental power (Enz, 1988).

Not unrelated to this research is an existing body of research on manager-subordinate similarity (Turban & Jones, 1988; Wexley, Alexander; Greenawalt, & Couch, 1980; Wexley & Pulakos, 1983; White, Crino & Hatfield, 1985). Like research on value congruence, similarity researchers have postulated that managers and subordinates who share similarities will enjoy positive outcomes such as greater job satisfaction and higher performance ratings. Despite the likenesses between value congruence and similarity research, however, the two have been conducted independently, and have not shared certain concepts relevant to both. One contribution of the present project is to integrate these two areas of research and to apply key aspects of each to arrive at a more unified approach. This unified approach represents a departure from traditional approaches to congruence, and conceptualizes the congruence-outcome relationship to be more complex than has previously been the case.

Another contribution of the present research relates to the methods employed in

traditional value congruence and similarity studies. In spite of the apparent progress made in both of these areas (and other congruence research areas), the propensity of existing congruence studies have been found to contain serious methodological flaws. Recently, Edwards and his colleagues (Edwards & Cooper; 1990; Edwards, 1994; 1993; 1991; Edwards & Parry, 1994) reviewed the broader congruence literature (i.e., that including areas in addition to work value congruence) and have identified a number of problems. The foundation of the critique lies primarily in the notion that combining person and environment measures into one profile similarity index (Cronbach & Gleser, 1953) used to predict one or more outcomes is both statistically and conceptually problematic. To state the matter simply, combining person and environment measures into one congruence index, and subsequently using that index as a predictor of some outcome, results in at least three important consequences: (a) the independent effects of the person and environment are confounded, (b) it is impossible to examine the effects of individual dimensions of the person or environment on the outcome under study, and (c) unnecessary statistical constraints are placed on the analytic model. These three basic results of using congruence indices render many existing findings inconclusive, nondescript, and potentially misleading. These criticisms have important implications for value congruence and similarity research since both have relied almost exclusively on profile similarity indices. Since both research streams have drawn conclusions from these methods, the necessity for re-examination is highlighted.

Towards this end, there are means by which the aforementioned methodological

pitfalls can be avoided. By employing 3-dimensional (i.e., polynomial) regression analysis of the relationship between subordinate values, manager values, and subsequent outcomes such as job satisfaction and organizational commitment, more precise estimation can be achieved. The method recommended by Edwards (1994) borrows from response surface methodology (Box & Draper, 1987; Myers, 1971; Neter, Wasserman & Kutner, 1989) and outlines details for analyzing and interpreting 3-dimensional relationships. In several instances, Edwards has shown this method to illuminate theoretical inconsistencies and, in some cases, to refute the basic conclusions made in past empirical studies (Edwards & Harrison, 1993). It was expected that application of these methods to value congruence research would also refute existing assumptions surrounding the effects of congruence, and would help to uncover more promising research avenues in the value congruence arena.

The present investigation applied Edwards' methods to manager-subordinate value congruence and its relationship to the outcomes of job satisfaction, organizational commitment, and extra-role behavior. The existing research in this area does not adequately capture these relationships, and the 3-dimensional analyses employed herein shed new light on how manager and subordinate values interact to influence employee attitudes and behavior. Existing theories regarding how value congruence relates to organizational outcomes were used to generate hypotheses which go beyond the existing research and make more specific predictions about the underlying mechanisms and consequences of value congruence. In addition, concepts from both value congruence and similarity research were combined and integrated to arrive at a more unified approach. To

place this research into proper empirical and theoretical context, the areas of value congruence and similarity are first reviewed and integrated. Next, problems and recommended solutions relating to this research are presented. Hypotheses are then drawn in a manner consistent with theoretical postulates and methodological directives.

Overview of Similarity and Work Value Congruence Research

Similarity research

Numerous theorists have postulated that similarity between individuals will result in positive outcomes such as greater job satisfaction and organizational commitment. Kluckhohn (1951) theorized that the mechanism through which these outcomes result is prediction. That is, the accurate prediction of another's behavior provides verification of role expectations. Clarified role expectations then lead to less role ambiguity, which in turn leads to positive outcomes. This is consistent with Kahn's Role Episode Model (Katz & Kahn, 1978) which states that interpersonal satisfaction results when behavioral expectations held by one person are verified by the exhibited behavior of another person (Wexley et al., 1980). Through normal communication, information about work-related attitudes and characteristics is sent via verbal and nonverbal cues. Accurate interpretation of these cues results in greater role clarity and social satisfaction. Early studies of similarity showed that individuals perceived to be more similar to raters were also perceived as more attractive, thus biasing subsequent evaluations and decisions regarding the target individuals (Byrne, 1961; Byrne, Young & Griffitt, 1966). This research led to numerous investigations of manager-subordinate similarity as it relates to job satisfaction,

organizational commitment, and job performance ratings.

One important aspect of this research has been the distinction between different types of similarity. The most traditional measure, *perceived similarity*, is measured by one or more items asking respondents how similar to their manager/subordinate they perceive themselves to be (Baskett, 1973; Golightly, Huffman & Byrne, 1972). Wexley, Alexander, Greenawalt and Couch (1980) identified two additional types of congruence. Specifically, they distinguished between *perceptual congruence* and *actual congruence.* Perceptual congruence is defined as the correspondence between one's perception of another's characteristics and the other's self-rating of those same characteristics. Manager perceptual congruence, for example, is the relation between manager perceptions of subordinate attributes and subordinate self-ratings of those same attributes. Similarly, subordinate perceptual congruence is the relation between subordinate perceptions of manager attributes and manager self-ratings. Actual congruence is simply the correspondence between two individuals' self-rated attributes. Generally, studies have supported all three types of similarity as predictors of job satisfaction and performance ratings, although subordinate perceptual congruence has generally been the best predictor of subordinate satisfaction; and manager perceptual congruence has generally been the best predictor of subordinate performance (Hatfield & Huseman, 1982; Pulakos & Wexley, 1983; Turban & Jones, 1988; Wexley et al.; 1980; Wexley & Pulakos, 1983). Furthermore, actual congruence has been suggested to be the weakest predictor of these outcomes (Hatfield & Huseman, 1982; Turban & Jones, 1988). Finally, it has been

suggested that perceived similarity may comprise the single best predictor of subordinate attitudes, over and above the congruence measures (White et al., 1985).

Value Congruence Research

Value congruence research also incorporates a number of propositions regarding the effects of congruence in the workplace. In addition to the theories mentioned above, some have presented theories specific to value congruence (as opposed to similarity in general). According to Schein's (1985) theory of organizational culture, individuals who share similar work values are likely to engage in similar methods of cognitive processing, which results in similar interpretations of environmental stimuli, and similar approaches to interpersonal communication (see also Rokeach, 1973). These similarities serve to reduce the frequency of negative aspects of interactions at work such as uncertainty and lack of understanding, resulting in easier coordination of efforts, and heightened job satisfaction and organizational commitment (Kluckhohn, 1951; Meglino, Ravlin & Adkins, 1989).

A number of studies have investigated the outcomes of value congruence. In one of the earliest studies found, Senger (1971) asked a small sample of managers to rank their subordinates in order of competence. Generally, highest-rated subordinates had values similar to their managers while low-rated subordinates had values dissimilar from their managers. No significance tests of this difference were conducted. Weiss (1978) measured the values of subordinates and managers from a number of organizations with the Rosenberg Occupational Value Survey (Rosenberg, 1957), on which respondents rated the importance of 10 organizational characteristics. Results indicated that value congruence

was related to ratings of managers' consideration, success, and competence.

In Chatman's (1989) theory of person-organization fit, she stated that "although many aspects of organizations and people are important in determining behavior (e.g., abilities, job requirements, personality characteristics, and vocations), a fundamental and enduring aspect of both organizations and people is their values" (p. 339). Values, she argued, serve as aides to environmental adaptation, and have implications for how individuals behave. Shared values, then, result in similar modes of behavior and agreement on the appropriateness of behaviors across situations. Based on this notion, she characterized value congruence as the central component in person-organization fit, and hypothesized fit to be positively related to job satisfaction, organizational commitment, and extra-role behavior, where the latter is defined as prosocial behavior which is outside the realm of the job description, and serves to benefit the organization (Chatman, 1989; 1991). She hypothesized congruence to be negatively related to intentions to leave the organization, and actual departures (Chatman, 1991).

Two studies followed Chatman's (1989) theory, which advocates the use of the Q statistic in calculating congruence. Q is derived by correlating individual Q-sorts to obtain an index of the similarity between two profiles (Cronbach & Gleser, 1953). Chatman (1991) employed this profile comparison process to assess the validity of person-organization fit (as operationalized by value congruence) in predicting the performance of newly hired accountants. Results showed widely varying value structures across individuals and organizations, and significant validity in the prediction of work adjustment,

job satisfaction, and intent to leave the organization. O'Reilly et al. (1991) also employed the profile comparison process to assess person-organization value congruence. Their results showed significant predictive validity against the criteria of organizational commitment, job satisfaction, and intent to leave.

Meglino, Ravlin & Adkins (1989; 1991) employed variations of their Comparative Emphasis Scale (CES) to assess value congruence among organizational members. The instrument creates a rank ordering of values for each individual. Profile similarity indices for each manager-subordinate dyad are then created by calculating rank-order correlations between the two individuals' rankings of values. Results found by Meglino et al. (1989) showed worker-supervisor value congruence to be significantly predictive of job satisfaction, organizational commitment, and lateness. Oddly, congruence was related to lower job performance ratings. In another study, Meglino, Ravlin & Adkins (1991) administered the CES to a group of students who later viewed video tapes representing one of two radically different leadership styles (Patton or Ghandi). Results indicated that when individual values were similar to the values espoused by the leader, greater anticipated satisfaction with the leader was reported. In addition, this effect was related to the amount of prior experience the students had with the type of leadership behavior represented.

Using the same methodology and measurement instrument (i.e., CES), only in a selection scenario, Adkins et al. (1993a) examined work values as an antecedent to recruiters' judgments of applicant fit with the organization. They found applicant-recruiter value congruence to be related to ratings of general and firm-specific employability, but did

not find the same relationship for applicant-organization value congruence. They concluded that interviewers seem to evaluate applicants more in line with their own values as opposed to the organization's values.

The relationship between applicant-organization value congruence and applicants' job choice decisions and perceptions of organizations have also been investigated in two studies. Judge & Bretz (1993) employed a policy capturing design and found that organizational work values significantly influenced job choice decisions. Individuals were more likely to choose jobs that represented values similar to their own values. Another study (Adkins, Russell & Werbel, 1993b) found that after controlling for GPA, sex, work experience, and extra-curricular involvement, value congruence was not significantly related to applicant judgments of their own fit with the organization

Relationships have also been shown to exist between *perceived* value congruence and various outcomes. Posner, Kouzes & Schmidt (1985) analyzed survey data from nearly 1500 managers, and found significant relationships between perceived value congruence and variables including feelings of personal success, reported ethical behavior, job stress, and organizational commitment. Similarly, Enz (1988) showed that perceptions of value congruence between organizational departments and company executives was related to greater perceived power in departments reporting greater value congruence with company executives.

Across these studies of value congruence, important organizational outcomes have been found to be related to the correspondence between individuals' values and the values

of their supervisors. All of the aforementioned investigations, however, employed congruence indices used as predictors of these outcomes. Brief mention of the weaknesses of these analytic methods has been made above. The next section outlines the exact nature of the problems with past value congruence and similarity research, and suggests ways of correcting analytic flaws and providing for greater interpretational depth.

Problems with Value Congruence and Similarity Research

Difficulty defining work values

The *work value* construct has lacked empirical and conceptual clarification over the years. In effect, values have never been clearly distinguished from preferences, needs, interests, and other closely related constructs. Some have argued values to be higher orders of needs (Lofquist & Dawis, 1978) while others have argued precisely the opposite (Super, 1973). Some classify values with interests and motives (Allport, Vernon & Lindzey, 1970) while others see values as clearly distinct from these concepts (Pryor, 1982). A host of other competing definitions could be put forth as well (see Lofquist & Dawis, 1978). Furthermore, empirical efforts to distinguish between interests, preferences, needs, values and the like have not yielded conclusive results (McNabb & Fitzsimmons, 1987; Pryor, 1982; Lofquist & Dawis, 1978).

Despite the lack of consensus on a definition of work values, existing definitions serve to provide sufficient direction to guide this research. To begin, it is acknowledged that values, needs, preferences, etc. are oblique variables which share a common element, and are therefore difficult to separate conceptually and empirically. The position taken here

is that the common element is *that which is most desired, sought, or wanted from one's work environment.* Work values serve as standards against which aspects of the work environment are evaluated, and lead individuals to behave and choose in ways that increase the likelihood of value fulfillment. As such, all values are assumed to be at least somewhat desirable to most people. Ravlin & Meglino (1987a) pointed out that the social desirability of values is at the core of their very essence. This conceptualization is consistent with several other authors' definitions of values. Locke (1976, p. 1303), for example, defined work values as "what a person consciously or subconsciously desires, wants, or seeks to attain" to maximize well-being at work. Rokeach (1979, p. 2) called work values "core conceptions of the desirable within every individual". Kluckhohn (1967, p. 395) also referred to values as "notions of the desirable". By settling on this definition, it must be acknowledged that values may not be completely distinct from others' definitions of needs, preferences, interests, or other variables. Rather, this definition incorporates the notion of desire which seems to pervade all of these constructs. The task of construct validation will be left to future researchers.

Lack of conceptual equivalence in subordinate, manager, and criterion measures

Numerous congruence researchers have stressed the importance of maintaining commensurate person and environment measures (Caplan, 1987a; 1987b; Chatman, 1989; Edwards, 1993). Often times in past research, however, individuals have been described and measured with one set of variables, while environmental factors were measured with another. Additionally, in many cases in which both person and environment have been

measured in a commensurate manner, the criterion has not. Commensurate measurement ensures that the two individuals being compared are compared in a meaningful fashion. In value congruence and similarity research, this has not been the pattern, especially in cases where congruence has been used to predict job satisfaction. Typically, these studies have relied on global measures of congruence and satisfaction without regard to the individual facets of either. To be conceptually consistent, however, congruence on a given dimension should be compared to satisfaction on that same dimension (Edwards, 1993). For example, subordinate and manager value for achievement should be compared to satisfaction with achievement, rather than to global satisfaction, or worse, to satisfaction on some other dimension (e.g., pay). By combining distinct facets into one index and thereby sacrificing commensurate measurement, the exact nature of the congruence relationship becomes obscured. The present research ensures commensurate subordinate, manager, and outcome measurement, thereby providing more interpretable results.

Failure to incorporate both person and job-type dimensions as values

Studies of similarity have typically employed a different set of values than studies of value congruence. Generally, value congruence investigations have included such values as Protestant Work Ethic (Blood, 1969; Kidron, 1978), pride in work (Hazer & Alvarez, 1981), honesty, fairness, concern for others, and opportunity for achievement (Ravlin & Meglino, 1987a). By contrast, the similarity research has been more closely tied to the job satisfaction literature, containing such facets as work itself, pay, promotions, benefits, etc. (Hatfield & Huseman, 1982; Wexley et al., 1980; White et al., 1985). While

the two areas have not contained mutually exclusive lists of constituents, there is a clear difference in that the work values literature has focused on aspects of the person, while the similarity and job satisfaction literatures have focused on aspects of the job. Both person and job factors are of equal importance if they are relevant to the work desires of the individual. The present study includes both person and job variables .

Lack of attention to different types of value congruence

A critical component of past similarity research has been the distinction between perceived similarity, perceptual congruence, and actual congruence (Turban & Jones, 1988). The value congruence literature has not addressed this distinction in the past, yet the similarity research has shown it to be important (e.g., Wexley et al., 1980). As mentioned, some evidence points to perceived similarity over perceptual congruence and actual congruence as the more reliable predictor of satisfaction and commitment (White et al., 1985). Clearly, an important consideration is the relative predictive power of perceptions of congruence versus actual congruence in values. The present study incorporates all three types of congruence and the relationship of each type to each criterion. Different congruence-outcome relationships are hypothesized, depending upon the type of congruence at issue. Past value congruence research has not been able to speak to these differences.

Inability to Inspect Outcomes at Different Levels of Congruence

Another problem emerges from the use of profile similarity indices to predict outcomes. By combining person and environment (or here subordinate and manager)

measures into one index, congruence is assumed to have equal effects on the dependent variable, regardless of the absolute level of the component values. The often-overlooked detail is that high congruence can occur along a continuum which extends from low value to high value for a given dimension. That is, in a 3-dimensional surface plot where X and Y represent person and environment measures and Z represents a criterion, there is a diagonal line on the surface, along which X=Y (e.g., manager values equal subordinate values). All points along the X=Y line represent high congruence, but the *amount of shared value* differs at different points on the line since the two may share high or low value for a given facet. Clearly, the level of Z may be wholly different when two individuals share high value for a given dimension as opposed to when both share low value for that dimension. Both cases represent high congruence, but the resulting attitudes and behaviors may well be quite different. If such differences were identified, they would be represented by a non-zero slope along the X=Y line. Previous researchers have not explored outcome levels at different levels of congruence. Most have hypothesized value congruence to be positively related to job satisfaction and other outcomes (Chatman, 1989; 1991; Meglino et al., 1989; 1992; O'Reilly et al., 1991), but such hypotheses implicitly assume that the same level of the outcome will result, regardless of whether the two individuals share high value or low value for the dimension being considered. The present investigation went beyond these hypotheses to consider outcomes at different levels of congruence.

Inability to inspect effects of congruence on individual dimensions

By combining component profiles into one index, information about individual dimensions of congruence is lost. O'Reilly et al. (1991), for example, obtained congruence indices by correlating Q-sorts of 54 values, and subsequently using the correlation coefficient as a predictor of various outcomes. Values such as flexibility, working with others, being organized, job security, and numerous others were combined into one value profile. Using this technique, the contributions of individual dimensions of each person's Q-sort are lost in the similarity index. It is feasible, in such cases, that congruence may be high or low due to the effect of only a small subset of the rated/sorted elements. Cronbach & Gleser (1953) stressed that similarity can only be assessed by dimension. Past studies, however, assume the effects of all dimensions to be equal, and measure congruence globally. This may seem logical since all dimensions seem to be equally weighted in deriving the correlation (i.e., unity). However, the individual contributions of the dimensions are actually determined by the associated variances and covariances of the measures (Edwards, 1993), which are rarely reported. A more instructive analysis (the one employed here) would analyze each dimension separately, avoiding the conceptual confusion introduced by combining measures into one index. As will be discussed below, congruence effects are hypothesized to differ across dimensions.

Assumption of a 2-dimensional function to explain relationships

Combining manager and subordinate measures into an index of congruence assumes a 2-dimensional function to explain the congruence relationship when, in fact, a 3-

dimensional function is required to accurately depict it (Edwards, 1991). The 3-dimensional function is necessary since the component measures come from different conceptual sources (i.e., manager and subordinate). By combining the two, the independent effects of each on the criterion cannot be discerned. Since the relative contributions of the component measures are determined by their respective variances and covariances, they cannot be assumed to contribute equally. Combining them allows one component or the other to be the primary determinant of the resulting regression line. In a 3-dimensional analysis, the obtained function is a response surface as opposed to a regression line. This is obtained through the use of polynomial regression analysis using the individual components as separate predictors in the same equation. Such analyses account for the independent effects of individual components and allow for the investigation of slope along the line of congruence. Inspection of the 3-dimensional response surface also greatly facilitates interpretation of the data by accounting for slope, curvature, and tilt of the diagram. In polynomial regression terms, this requires testing higher-order models (i.e., quadratic, cubic, quartic, etc.) since these models can depict more precise changes in the response surface. Past research has not tested higher order models; rather, those using profile similarity indices have imposed constrained models on the data and have assumed an optimal fit. These constrained models mandate overly simplistic response surfaces which, in most cases, do not fully describe the observed relationship (see next section).

Incorporation of untested constraints in regression models

As Edwards (1993; 1994) has outlined, using profile similarity indices as predictors places untested statistical constraints on the regression model. In similarity research, this index has most often been D^1, D, or D^2 (Hatfield & Husemen, 1982; Wexley et al, 1980; Wexley & Pulakos, 1983; White et al., 1985). All three equations can be seen in their basic form in Table 1. As can be seen, D^1 is an index based on the sum of the differences between profile elements. D is based on the square root of the sum of the squared differences between manager and subordinate measures (Cronbach & Gleser, 1953). Some studies have also employed D^2 (e.g., Turban & Jones, 1988), which is a function of the sum of the squared differences between manager and subordinate. Edwards (1993; 1994) has comprehensively summarized the problems associated with the use of profile similarity indices including D^1, D and D^2, and that discussion will not be repeated here. To briefly illustrate the issue, however, the basic problems introduced by summing differences between profile elements (i.e., D^1) will be presented since these are representative of the problems associated with D and D^2 as well. The statistical constraints introduced by employing difference scores can be best illustrated by presenting a regression equation using the sum of the differences between X and Y as a predictor:

$$Z = b_0 + b_1 \sum (X_i - Y_i) + e \qquad (1)$$

In this equation, Z is the dependent variable, X and Y are the individual components of comparison (e.g., manager and subordinate values), *i* represents the dimension on which X and Y are being compared, and *e* is a random error term. Expanding this equation results

in:

$$Z = b_0 + b_1X_1 - b_1Y_1 + b_1X_2 - b_1Y_2 + \ldots + b_1X_k - b_1Y_k + e \quad (2)$$

In Equation (2), the use of difference scores as the unit of analysis constrains the coefficient on Y to be equal in magnitude and opposite in sign to the coefficient on X. Equation (2) also limits the coefficients on X and Y to be equal across k elements. If however, X and Y are used as separate predictors instead of using the difference between them as a single predictor, the equation is written:

$$Z = b_0 + b_1X_1 + b_2Y_1 + b_3X_2 + b_4Y_2 + \ldots + b_{2k-1}X_k + b_{2k}Y_k + e \quad (3)$$

As can be seen, Equation (3) relaxes the constraints present in Equation (2) by allowing the beta weights to vary with respect to each individual predictor. Many researchers in the past have argued that the use of profile similarity indices results in greater predictive power; but as indicated above, Equation (2) cannot explain more variance in Z than Equation (3) since it is constrained, and would likely explain less variance (Edwards, 1994).

Since D^1, D and D^2 have been the predominant measures in similarity research, the constraints in equation (2) have been a factor in those studies. In no cases, however, have the constraints been tested. It is possible that a model with the above constraints could optimally explain the obtained data; but these models should be tested rather than applied without theoretical justification (Edwards, 1993). All 3-dimensional models imply a specific response surface, and failure to test the appropriateness of that surface results in imposing a model onto a set of data without allowing other competing models to be considered.

While D^1, D and D^2 have been the primary measures used in similarity research, profile correlations (Q) have been the norm in value congruence research, and have taken two forms. First, some researchers have correlated Q-sorts of sets of values to obtain congruence indices (e.g., Chatman, 1991; O'Reilly, Chatman & Caldwell, 1991). In the second case, some have correlated rank orders of values to determine congruence (Adkins et al.; 1993a; 1993b; Meglino et al., 1989; 1992). Unfortunately, the mathematical illustration presented above cannot be repeated for Q, since Q cannot be represented by an unconstrained regression equation in terms its component measures. Nonetheless, Q shares the shortcomings associated with the employment of profile similarity indices outlined above. One additional limitation is that Q relies only on the correspondence between profile shapes, ignoring information about distance between component measures. The response surface implied by Q can be represented by analyses consistent with the polynomial regression approach employed here, which represents both shape and distance. However, since Q-sorts and rankings are ordinal and ipsative measures, they do not lend themselves to regression analysis since they violate required assumptions (Cohen & Cohen, 1983). Hence, direct confirmatory tests of Q cannot be conducted. As mentioned, however, the response surface implied by Q can be adequately represented by polynomial regression procedures. Nonetheless, the use of normative measures of values has been recommended over Q-sorts or rankings.

Summary

The literature on work value congruence and similarity between managers and

subordinates has been shown to contain a number of serious flaws which threaten the validity of the conclusions drawn, and limit the scope of interpretation that has been common to these studies. These flaws stem from both conceptual and methodological issues. First, coherent definitions of work values have been rare, and have contributed to the difficulty in arriving at commensurate manager, subordinate, and criterion measures. Value congruence research has also failed to examine the effects of different types of congruence which have been shown to elicit different results in similarity research. Several problems have also emerged from the use of profile similarity indices as predictors of various outcomes. Collapsing measures into one index results in conceptual confusion about the relative contribution of each component, and the dimensions therein, on the criterion. In addition, an inherently 3-dimensional function is reduced to 2 dimensions when profile similarity indices are used, limiting the scope of interpretation and assuming that the effect of congruence remains constant regardless of the absolute level at which the two components are congruent. Finally, profile similarity indices introduce statistical constraints on the regression model which have, in the past, gone untested under the erroneous assumption that profile similarity indices predict better than two independent predictors. The following section (a) reconceptualizes the manner in which the congruence mechanism operates, (b) outlines how the above problems can be avoided, and (c) draws hypotheses in light of the 3-dimensional approach.

Integration, Hypotheses, and the 3-Dimensional Approach

Given the preceding discussion, a unifying perspective is needed to fuse the merits

of the value congruence and similarity research streams, and to avoid the numerous problems associated with this research by incorporating a 3-dimensional approach to the study of congruence. This unification begins with a new perspective on how the congruence mechanism exerts its influence, and how outcome patterns are expected to occur. Next, theoretical hypotheses consistent with the new perspective are submitted and the 3-dimensional approach is outlined.

Toward a unified theory of value congruence

Past researchers have postulated that similarity in values results in positive outcomes due to the increased ability to predict one another's behavior (Kluckhohn, 1951), or to the similarity in cognitive approaches to work situations which results in better communication and cooperation (Schein, 1985). These theoretical postulates harbor the implicit expectation that when value congruence is high, positive outcomes result, and when congruence is low, negative outcomes result. The position taken here is that this expectation is overly simplistic, and will not receive support when 3-dimensional analyses are conducted. The congruence mechanism, as conceptualized here, is thought to be a more complex process which requires explication of (a) the type of congruence being considered, and (b) whether high congruence occurs at a high or low absolute level (i.e., high value vs. low value).

Actual congruence. Recall that actual value congruence was defined above as the congruence between manager and subordinate self reports of values. We will assume for the moment that value congruence refers to the sharing of high value for a given work

attribute or condition. Recall that work values are defined as notions of what is desirable in one's work environment, and serve to guide individuals toward behaviors which increase the likelihood of value fulfillment. The positive effect of value congruence (at a high absolute level) between manager and subordinate, can occur in two ways. The first is through the mutual acceptance and reinforcement of value-seeking behavior. Given emphasis on similar workplace values, managers and subordinates will seek to behave toward similar ends, and will accept and reinforce one another's behavior when that behavior supports the shared value(s). Such behavioral reinforcement then leads to positive attitudinal and behavioral outcomes. Second, individuals who work together and share values supply one another with important value-fulfilling resources. In a manager-subordinate relationship, the two may share high value for, say, honesty in dealing with others. This assumes that each desires honesty both in his/her own behavior, and in how others behave toward him/her. For each person, the value will be at least partially fulfilled within the working relationship since both are likely to be treated honestly by one another. As such, each "supplies" the other with value-fulfilling behavior. This effect should be especially pronounced with social variables such as honesty, fairness, and concern for others, where both manager and subordinate can influence the supply of such behaviors. For other variables such as pay and benefits, promotions, recognition, workload, etc., only the manager controls the supply of these variables, and the subordinate has little influence over their supply. Thus, the effect of shared high value is expected to exert its most positive effect when social values are shared.

To this point, the predictions that past theorists have made regarding actual congruence would remain largely unaltered, namely, that high value congruence will result in positive outcomes. However, past theorists have restricted their predictions to only half of the value congruence issue by considering only those cases in which individuals share values at a high absolute level. Contrary to existing theory, it is argued here that high congruence will not always result in positive outcomes, and may in some cases, result in negative outcomes. Consider the opposite scenario in which high congruence is observed between manager and subordinate, but at a low absolute level (i.e., shared low value). Once again using the example of honesty, both manager and subordinate would place low emphasis on honest behavior in the workplace. In such a situation, a mutual neglect of honesty could result, which in turn could have negative consequences for both individuals (e.g., lack of important information, misinformation, distrust, etc.). A similar scenario could be drawn for other social values such as helping and concern for others, or fairness. Since both manager and subordinate can act to influence the contextual supply of these social factors, the overall potential for value-fulfillment in the work context will be lacking, possibly resulting in a deterioration of the context to a point that is detrimental to both parties. Past theories of congruence have not addressed this side of the congruence issue. Thus, two hypotheses are submitted which consider high congruence at both high and low absolute levels.

Hypothesis 1: The highest levels of satisfaction, commitment, and extra-role behavior will be observed when

managers and subordinates share high value for a given attribute/dimension. This effect will be most pronounced with respect to social values, and less pronounced with respect to values for which the manager has sole control over the supply of value-fulfillment (i.e., rewards, work aspects), resulting in more extreme positive outcome levels on social dimensions.

Hypothesis 2: Lower outcome levels will be observed when managers and subordinates share low value for a given attribute/dimension. This effect will also be most pronounced with respect to social values where shared low value is expected to result in low levels of satisfaction, commitment, and extra-role behavior.

Support for Hypotheses 1 and 2 will be shown if the slope along the X=Y line in the 3-dimensional plot is positive and significant. Furthermore, support for a stronger effect for social values will be shown if plots for that value factor contain steeper positive slopes along the X=Y line than other factors. Figure 1 (Appendix B) shows the hypothesized slope along the X=Y line, indicating the differences in outcomes between congruence at high and low absolute levels.

Another point which distinguishes the present conceptualization from past congruence theories is that incongruence is not necessarily assumed to result in negative

consequences. As with high congruence, incongruence between manager and subordinate can occur in one of two forms: (a) the subordinate has high value for an attribute while the manager has low value, or (b) the opposite occurs. It is expected that the former of the two will result in the lowest levels of subordinate satisfaction, commitment, and extra-role behavior since the manager will not prove to be a source of value-fulfilling resources (which are highly desired by the subordinate). In the second form of incongruence, however, subordinate value is low while manager value is high. It is here that negative consequences for the subordinate are not necessarily expected to result. Recall that values, by their very nature, are socially desirable constructs (Ravlin & Meglino, 1987a). That is, all values are assumed to be at least slightly desirable to most people. Therefore, the fulfillment of a value on which one places low emphasis is not expected to be a negative experience, or result in negative consequences. To the contrary, it is expected to be a positive experience in most cases, if only moderately positive. Consider, for example, the value of recognition (e.g., for good performance, hard work, etc.). The subordinate who places low value on recognition would not be negatively influenced by receiving recognition from the manager who places high value on that factor. To be sure, the subordinate's experience would not be as positive as it would if he/she placed high value on recognition; but it would most likely be at least moderately positive. Thus, it is hypothesized that incongruence will not always result in negative outcomes.

Hypothesis 3: The lowest levels of subordinate satisfaction, commitment, and extra-role behavior will be observed when

subordinate values are high and manager values are low. This effect will be most pronounced with respect to social values resulting in more extreme negative outcome levels on these dimensions.

Hypothesis 4: Moderate to high levels of satisfaction, commitment, and extra-role behavior will be observed when manager values are high and subordinate values are low.

Support for Hypotheses 3 and 4 will be shown in the same fashion as for Hypotheses 1 and 2, only the line of interest will be the X= -Y line (i.e., incongruence) as opposed to the X=Y line. Figure 1 (Appendix B) illustrates the hypothesized slope along the X=-Y line, as well as the overall hypothesized surface for actual congruence (i.e., Hypotheses 1-4). Note that the shape of the surface supports Hypotheses 1-4 by showing significant slopes along both the X=Y and X=-Y lines.

Perceptual congruence. As stated above, another factor influencing the manner in which the congruence mechanism operates is the type of congruence being measured. The preceding discussion dealt only with actual congruence. The effect of perceptual congruence is anticipated to operate in a different manner. As discussed above, subordinate perceptual congruence (SPC) is the relation between subordinate ratings of manager values and manager self-ratings of values. Similarly, manager perceptual congruence (MPC) refers to the correspondence between manager perceptions of subordinate values and subordinate self-ratings of values. As such, these congruence

measures represent the extent to which each person has an accurate understanding of the other's work values. Whereas the effect of actual congruence is theorized to exert its influence through the mutual supply and reinforcement of value-fulfilling behaviors among managers and subordinates, the operative perceptual congruence mechanism has been theorized to be behavioral prediction (Kluckhohn, 1951), which can be expected to influence outcomes in a slightly different manner. By understanding one another's values, both manager and subordinate are better able to predict one another's behavior and understand one another's actions. The accurate perception of another's values then becomes a positive experience in and of itself, and can be expected to be related to satisfaction, commitment and extra-role behavior (Katz & Kahn, 1978; Wexley et al., 1980).

Given this logic, the predicted patterns of results for SPC and MPC differ slightly from those hypothesized for actual congruence. Recall that outcome levels related to actual congruence at high absolute levels are predicted to differ from those related to actual congruence at low absolute levels. This difference is not expected to occur with perceptual congruence. Rather, for both SPC and MPC, both high and low absolute levels are predicted to be related to high outcome levels.

Some differences between SPC and MPC, however, are expected. First, consider SPC, where high congruence (at either high or low absolute levels) indicates that the subordinate has an accurate understanding of the manager's values. By and large, the relationships expected here are the same as those expected for MPC, with several subtle

differences. The first difference is that SPC measures are expected to account for more variance in subordinate satisfaction than MPC measures since subordinate perceptions will undoubtedly have greater influence on their satisfaction than manager perceptions. For the same reason, the outcome relationships expected for job satisfaction are expected to hold for organizational commitment as well. Finally, unlike the prediction for MPC, incongruence in SPC is expected to result in negative outcomes, regardless of the form that incongruence takes. The resulting pattern of results is consistent with traditional conceptualizations of the congruence relationship which hypothesize that congruence will result in positive consequences and incongruence will result in negative consequences. That hypothesis is revised slightly to state that when subordinates perceive congruence, positive outcomes will result, and when they perceive incongruence, negative outcomes will result.

> *Hypothesis 5.* When SPC is the measurement mode, the highest levels of subordinate satisfaction, commitment, and extra-role behavior will be observed under conditions of high congruence, regardless of the absolute level at which congruence occurs.
>
> *Hypothesis 6.* When SPC is the measurement mode, low levels of subordinate satisfaction, commitment, and extra-role behavior will be observed when incongruence exists, regardless of the form that incongruence takes.

Hypotheses 5 and 6 imply a ridge along the X=Y line (i.e., nonsignificant slope) and downward slopes in either direction from that line toward the two points where X and Y become increasingly incongruent (i.e., a significant curvilinear slope along the X=-Y line). Figure 2 (Appendix B) illustrates the hypothesized surface for SPC (i.e., Hypotheses 5 and 6), which shows no slope along the X=Y line and downward slopes in either direction from that line toward the regions of incongruence.

Next, consider MPC, where high congruence (at either high or low absolute levels) suggests that the manager has an accurate understanding of the subordinate's values. Under such conditions, the manager is likely to be effective in predicting the subordinate's actions and responses, and will be better equipped to behave in ways that help fulfill the subordinate's values. In the case of incongruence, however, the manager wrongly perceives the subordinate to have either high or low desire for a given value. Where the manager wrongly believes the subordinate to have low desire for a value, low levels of subordinate satisfaction and commitment are expected, since the manager will assume value-fulfilling behavior is not necessary. However, the same negative outcomes are not expected when the manager wrongly believes the subordinate to have high desire for a value, the logic here being the same as that presented above with actual congruence. Subordinates who are provided with value-fulfilling resources can be expected to be at least moderately satisfied, even if the given value is not a primary value for the subordinate. This effect is once again expected to be most evident with respect to social values (i.e., honesty, concern for others, fairness), since both manager and subordinate have control

over the presence of resources which fulfill these values.

> *Hypothesis 7*: For MPC, high congruence at both high and low absolute levels will be associated with high subordinate satisfaction. The highest outcome levels are expected when social values are being compared.
>
> *Hypothesis 8*. When MPC is the measurement mode, the lowest levels of subordinate satisfaction will be observed when manager perceptions of subordinate values are low, and subordinate self-ratings of values are high.
>
> *Hypothesis 9*. In the MPC measurement mode, moderate to high levels of subordinate satisfaction will be observed when manager perceptions of subordinate values are high and subordinate self-ratings of values are low.

For Hypothesis 7, the hypothesized relationship is a ridge along the X=Y line, representing high outcomes at all points along that line. Additionally, that line is expected to have a nonsignificant slope. Hypotheses 8 and 9 imply a nonzero, curvilinear slope along the X= -Y line in plots representing MPC relationships. Figure 3 illustrates the surface implied by Hypotheses 7-9 by showing no slope along the X=Y line and the hypothesized differences between the two regions of incongruence.

Perceived similarity. Traditional research on similarity has posited that employee perceptions of similarity (i.e., as measured with several direct items asking how similar

subordinates feel they are to their managers) may predict outcomes better than perceptual congruence or actual congruence (White et al., 1985). Tests of this proposition, however, have been conducted using constrained regression equations as outlined above. Since these models represent a limited explanation of the congruence relationship, previous studies may have underestimated the amount of variance in outcomes accounted for by actual congruence measures, thereby concluding perceived similarity to be the better predictor. As discussed above, however, actual congruence is expected to result in similar behavior patterns across situations, and in the reinforcement and supply of value-fulfilling behaviors, suggesting that it too should predict outcomes effectively.

> *Hypothesis 10*: Across outcomes, regression models employing actual congruence measures will account for as much or more variance in outcomes as a perceived similarity measure.

Constrained regression models. Past research employing constrained regression models (i.e., D^1, D, D^2) have assumed the implied surfaces to be adequate to explain congruence relationships. These 2-dimensional analyses, however, have been shown to be overly simplistic. Furthermore, when the 3-dimensional plots of these indices are drawn, they too fail to reflect sufficient detail in the slope and curvature of the plot to accurately represent the data. Because congruence relationships are expected to be more complex than the models implied by D^1, D, and D^2, unconstrained models were expected to explain significantly more variance in outcomes.

Hypothesis 11: Constrained models corresponding to D^1, D, and D^2 will explain significantly less variance in outcomes than will unconstrained models which depict local curvature in congruence relationships. Thus, the former set of (constrained) models will be rejected in favor of unconstrained models.

Moderators and mediators. In addition to the 3-dimensional analyses required to test the above hypotheses, analyses were conducted to test for the presence of significant moderator and/or mediator effects. The above discussion alluded to the importance of managerial control over the supply of value-fulfilling resources. Hypotheses 1-4 imply that the effect of value congruence on outcomes will be moderated by the level of control that managers have over the supply of value-fulfilling resources. That is, across dimensions of values, it is expected that the congruence-outcome relationship will vary depending upon the level of control the supervisor has on each variable. Stronger congruence effects are expected when managerial control is high, and weaker effects are expected when control is low. An implicit assumption in this prediction is that managers will take action to maximize the supply of value-fulfilling resources (e.g., pay, workload, social support) when their desire for an attribute is high, and will not do so when their desire for an attribute is low. Resultingly, value congruence in a high managerial control scenario would allow the two individuals to "get what they value" because the manager can influence the environment accordingly. Conversely, in a low managerial control scenario, shared value for an

attribute has less meaning since the mere value of an attribute may not be sufficient to influence its supply, thereby attenuating the relationship between congruence and outcomes such as satisfaction and commitment. A second moderator may be the extent to which managers and subordinates interact with one another at work. In some cases, it may be that manager and subordinate see very little of each other, and have only vague notions of one another's work values. In such cases, the effects of congruence may be lessened. Additional regression analyses were conducted to obtain more concrete empirical evidence for (or against) these moderator relationships.

In addition to these potential moderators, the theories by Kluckhohn (1951) and Kahn (Katz & Kahn, 1978) suggest two possible mediators of the relationship between value congruence and outcomes. Increased levels of communication (Katz & Kahn, 1978), and lower levels of role ambiguity (Katz & Kahn, 1978; Kluckhohn, 1951) have been posited to result from manager-subordinate similarity, and to subsequently result in positive attitudinal and behavioral outcomes. This implies that the effect of value congruence "goes through" (i.e., is mediated by) communication and role ambiguity in exerting influence on outcomes. Additional analyses were conducted to test this proposition.

The 3-dimensional approach

Given the previous explication of the substantive hypotheses regarding congruence relationships under the different types of congruence, we can now proceed to the manner in which these hypotheses were tested. The 3-dimensional approach can progress in either confirmatory or exploratory fashion. In the present case, both approaches were employed.

The first phase of the analyses involved confirmatory tests of past models employed in value congruence and similarity research, while the second phase consisted of exploratory examinations to further detail the relationship between value congruence and outcomes. On the confirmatory side, where past research has employed specific regression models (i.e., D^1, D and D^2), those models were tested against alternative models to confirm or disconfirm their validity. The logic here again is that since these models employ specific analytic constraints, those constraints should be tested against unconstrained models to see which accounts for more variance in outcomes. Since the models which represent D^1, D, and D^2 incorporate statistical constraints and reflect only limited variation in the surface of the relationship (i.e., linear surfaces), it was expected that unconstrained models which can represent more precise local inflection in the surface would explain more variance than constrained models corresponding to D^1, D, or D^2. Table 1 shows the constrained and unconstrained regression equations associated with D^1, D, and D^2.

The confirmatory process proceeded as follows: Analyses of the data began by performing the traditional 2-dimensional operations for D^1, D, and D^2, calculating the correlations between outcomes and the similarity indices. Note that to be most consistent with past research in the value congruence literature, these traditional analyses were conducted at the scale level, using scale means as the level of analysis as opposed to the item level, which a small number of studies have employed. Issues of item-level versus scale-level analyses are revisited below in the Discussion section. The polynomial

Table 1
Similarity Indices and Corresponding Regression Equations

Similarity Index*	Original Equation	Expanded/Constrained Equation	Unconstrained Equation
D	$Z = [\sum (M_i - S_i)^2]^{1/2}$	*****	*****
D^1	$Z = \sum (M_i - S_i)$ $= b_o + b_1 \sum (M_i - S_i) + e$	$Z = b_o + b_1M_1 - b_1S_1$ $+ b_1M_2 - b_1S_2 + ...$ $+ b_1M_k - b_1S_k + e$	$Z = b_o + b_1M_1 + b_2S_1$ $+ b_3M_2 + b_4S_2 + ...$ $+ b_{2k-1}M_k + b_{2k}S_k + e$
D^2	$Z = \sum (M_i - S_i)^2$ $= b_o + b_i \sum (M_i - S_i)^2 + e$	$Z = b_o + b_1M^2 - 2b_1M_1S_1 + b_1S^2$ $+ b_1M^2 - 2b_1M_2S_2 + b_1S^2 + ...$ $+ b_1M^2 - 2b_1M_kS_k + b_1S^2 + e$	$Z = b_o + b_1M_1 + b_2S_1$ $+ b_3M^2 + b_4M_1S_1 + b_5S^2$ $+ b_6M_2 + b_7S_2 + b_8M^2$ $+ b_9M_2S_2 + b_{10}S^2 + ...$ $+ b_{5k-4}M_k + b_{5k-3}S_k + b_{5k-2}M^2$ $+ b_{5k-1}M_kS_k + b_{5k}S^2 + e$

* Some models in the current study employ only one dimension, in which case the summation operations are not included in the equation, and the profile similarity index becomes a bivariate congruence index.
Note: M and S represent manager and subordinate values, respectively.

regression approach was then applied to test both constrained and unconstrained models. Constrained equations were tested by entering them into the regression procedure in their constrained forms. Unconstrained equations included separate measures of each individual entity (X & Y) for the linear equation, the square of each term (X^2 & Y^2), and the product of the two terms were added for the quadratic equations (XY; Edwards, 1993). Next, models with terms one order higher than the unconstrained model were tested to determine if the unconstrained model was sufficiently complex to fit the data. Support for a model is demonstrated if (a) the amount of variance explained by the model is significant, (b) the appropriate coefficients are significant and in the right direction, (c) the constraints implied by the model are upheld, and (d) no higher order terms are significant (Edwards, 1994).

The second phase of the analyses was conducted in an exploratory fashion by introducing a progression of models, each of one order higher than the previous (i.e., linear, quadratic, cubic, etc.), until a model failed to reach significance. In this manner, the substantive hypotheses associated with the unified approach to value congruence were tested by comparing the obtained model fits and associated 3-dimensional plots with the predictions made in the previous section. As implied here, a key component in testing hypotheses is the examination of the 3-dimensional plots associated with each relationship.

Method

Sample

Study participants were 605 employed students who completed stimulus materials in class, and then delivered versions of the stimulus materials to their respective managers.

Of these managers, 232 then returned surveys to the author via business reply mail. Manager and subordinate surveys were pre-coded by the subordinates to allow the two to be matched in the analyses, while also preserving the anonymity of respondents. Two manager surveys could not be used since they were miscoded and could not be linked to the corresponding student survey. Thus, a total sample of 230 manager-subordinate pairs was analyzed.

The subordinate sample consisted of 89 (40%) male and 140 (60%) female participants (1 missing response). Also among the subordinates, 118 (51%) were full time employees and 111 (49%) were working part time (1 missing response). Average subordinate age was 26.73 years (SD = 6.60), and average job tenure was 24.88 months (SD = 22.64). For the managers, 125 (54%) were men and 105 (46%) were women. The average age of the managers was 38.87 (SD = 9.49) years. The majority of study participants worked in the service industry (48%), while smaller proportions worked in manufacturing (12%), health care or medical (10%), education (7%), government agencies (5%), and miscellaneous others (7%). Eleven percent did not report their industry category. Most subordinates (54%) worked in lower level service, clerical, or sales type positions (e.g., waiter/waitress, clerk, bank teller, customer service rep., administrative assistant, etc.). The remainder were in high-level sales (11%), management or supervisory (8%), technical (7%) or medical professions (3%). Seventeen percent (17%) of the respondents did not report their job titles.

To investigate potential differences in response patterns between those subordinates

whose managers responded and those whose managers did not respond, several comparisons were made. First, it was conceivable that the group of subordinates whose managers responded would report greater liking for their managers, and that the opposite would be true for those whose managers did not respond. Therefore, the two groups were compared on subordinates' liking for their managers. Liking was measured with a two-item scale (alpha = .95) asking the extent to which subordinates like and get along with their managers. The T-test of this difference was significant ($p < .004$, $df = 602$), however the actual mean difference was quite small (Means = 5.48, 5.13), suggesting a statistically significant but not practically significant finding. Furthermore, the adjunct test for the difference in the variances of the two measures was not significant ($p < .66$). Similar T-tests were conducted with similar results for perceived similarity ($p < .04$; $df = 603$; Means = 4.49, 4.24), effectiveness of communication ($p < .02$; $df = 603$; Means = 5.06, 4.79), and frequency of interaction ($p < .001$; $df = 602$; Means = 5.61, 5.11). (Note that all higher means correspond to the responding group.) In these cases as well, differences were not practically significant. Taken together, these tests revealed no substantial differences between the responding and non-responding groups.

Measures

Work Values and Job Satisfaction. The definition of work values detailed above helps to direct measurement of manager and subordinate work values, and the various facets of job satisfaction. Recall that work values were defined as notions of what is desirable in a job, and serve as standards by which the work environment is evaluated.

Given this definition, one can draw a direct parallel between work values and job satisfaction facets, since what is desirable in a job is the antecedent to what is satisfactory in a job. A job facet is simply an aspect of one's work environment, with which one may be satisfied or dissatisfied. Similarly, a work value is simply a job facet on which one places some level importance or interest in gaining a high amount of the facet. Facet satisfaction then becomes precisely the same thing as value fulfillment. The result is that the dimensions of values and the facets of job satisfaction are necessarily identical (i.e., they mirror one another). For work values, items were worded to ask the extent to which each dimension was a desired attribute of the respondent's work environment. Similarly, job satisfaction measures were worded to ask the extent to which individuals were satisfied with the current level of the attribute in their jobs. Since work values are socially desirable constructs by nature (Ravlin & Meglino, 1987a), 7-point scales were employed to help avoid the problem of insufficient variance due to range restriction. Instructions were also worded to encourage the use of the entire scale as opposed to rating all values very highly. Inspection of the survey instruments in Appendix A helps to illustrate these points.

The work values and corresponding job satisfaction facets were selected from among the many that have been investigated in past research. Based on literature reviews, it was determined that three groups of values/facets would provide adequate representation of past research, while representing both person- and job-type values (see Appendix for actual measures). The first factor, Social Values, represents the person side and consists of three dimensions: (a) Helping and Concern for Others, (b) Honesty - both in one's own

behavior and in others' behavior , and (c) Fairness - in the treatment of employees (e.g., work assignments, rewards, etc.). The second factor, Reward Values, represents an aspect of the job and consists of (a) Pay & Benefits, (b) Promotions, and (c) Recognition. The third factor, Work Aspect Values, represents another aspect of the job and includes (a) Workload, (b) Work Itself, and (c) Working Conditions. Each of the three value factors was represented by nine attributes. For each attribute, respondents indicated (a) their own desire for that attribute in their jobs, (b) their perceptions of their manager's or subordinate's desire for the attribute (i.e., managers indicated their perceptions of their subordinates' values, and vice versa), and (c) their perceptions of the manager's control over each attribute in the workplace. The same attributes were used to measure Social Satisfaction, Reward Satisfaction, and Work Aspect Satisfaction. Tables 2 and 3 show the means, standard deviations, and alpha reliability coefficients for all scales, including predictor and criterion measures.

As an additional note, the reduction of the individual sub-dimensions to the three final factors was an important step for several reasons. First, regression analyses with many different dimensions can be difficult to interpret. Second, problems which arise from multicollinearity can be reduced by grouping related dimensions into a smaller set of more orthogonal factors. Third, since the polynomial regression approach requires that when testing a given model, all dimensions be analyzed within one equation, sample sizes required to achieve adequate statistical power can rapidly become prohibitively large. Analyzing unconstrained regression equations in the present study sometimes required

entering five predictors and their corresponding polynomial terms into the regression equation for each dimension (i.e., For a quadratic equation, 15 variables are included in the equation.) Power analysis (Cohen & Cohen, 1983) showed that to ensure an 80% chance to detect the significance of an R^2 of .10 or greater (15 predictors, alpha = .05), a minimum sample size of 169 respondents is required. It should be noted that in this study, the power associated with specific model tests varied with respect to the criterion being investigated (i.e., variable to subject ratio). Specifically, because job satisfaction comparisons were made on only one facet, fewer variables were required in the equations, resulting in more statistical power. The aforementioned power analysis represents the maximum number of predictors that were included in any one equation, and therefore represents the equations in which it was most difficult to demonstrate statistical significance. The sample of 230 respondents obtained in this study was therefore determined to be sufficient to perform the required tests.

Actual Congruence (AC). Actual congruence (AC) was operationalized as the relationship between manager and subordinate self-reports of values.

Perceptual Congruence. Two types of perceptual congruence were assessed by asking managers and subordinates to respond to the work value items as they thought the other would respond. Subordinate perceptual congruence (SPC) was operationalized as the subordinates' perceptions of manager values paired with the managers' self-reports of their own values. Manager perceptual congruence (MPC) was managers' perceptions of subordinate values paired with subordinates' self-reports of their own values. For each of

these types of congruence, the two components were used as independent predictors of the outcome as opposed to combining them into a congruence index. The latter was done only to test past methods against the 3-dimensional approach.

Perceived Similarity (PS). Two items were adapted from Turban & Jones's (1988) study to assess the extent to which subordinates (a) perceive their managers to see things in the same way they do, and (b) feel that they and their managers are alike in a number of ways.

Organizational Commitment. Four items are included on subordinate surveys to measure subordinates' organizational commitment (OC). These items were adapted from the Organizational Commitment Questionnaire (OCQ; Porter, Steers, Mowday & Boulian, 1974), a commonly used and accepted measure of organizational commitment. The instrument measures the extent to which the subordinate is willing to exert effort on the organization's behalf, intends to remain a member of the organization, and feels that the goals of the organization are worthy of support.

Extra-Role Behavior (ERB). Chatman (1991) defined extra-role behavior (ERB) as voluntary individual work behavior which is outside the realm of the job description, and which contributes positively to the organization and its goals. ERB is thought to be a major component of organizational citizenship behavior which includes cooperation with coworkers, willingly taking on special assignments, and generally working to help the organization (Werner, 1994). Four items on the manager survey assessed the extent to which managers observe ERB in subordinates.

Communication effectiveness. Three items were included to assess the extent to which managers and subordinates communicate well together, keep each other informed of important information, and feel comfortable conversing with one another.

Role ambiguity. Breaugh and Colihan (1994) defined job ambiguity as perceptions of uncertainty regarding job aspects, and provided construct validity evidence for a three-facet model of job ambiguity. The facets included (a) work method ambiguity (i.e., uncertainty about the methods and procedures used to accomplish work tasks), (b) scheduling ambiguity (i.e., uncertainty about the scheduling or sequencing of work activities), and (c) performance criteria ambiguity (i.e., uncertainty about the standards that are used for determining the effectiveness of one's performance). Each scale included three items for which reported alpha coefficients were high (i.e., .81 to .97). For the present purposes, the three facet scales (9 items) used by Breaugh and Colihan (1994) were combined to form one global measure of role ambiguity included on the subordinate survey form.

Frequency of interaction. Two items were generated to assess the frequency with which managers and subordinates interact with one another.

Analysis

Confirmatory analyses. Following Edwards' (1993; 1994) recommendations, congruence relationships were analyzed using polynomial regression procedures available in SYSTAT (Wilkinson, 1992), a statistical program providing functions necessary to perform the polynomial regression analyses, efficiently test model constraints, and to

produce adjunct graphical displays of 3-dimensional surfaces. Table 1 helps to illustrate the confirmatory tests that were conducted. Note that in the table, M refers to manager values while S refers to subordinate values. For each profile similarity index, the original unexpanded and expanded equations are presented in columns two and three, while the fourth column represents the unconstrained equation. Note also that because D cannot be subjected to the same algebraic expansions as D^1 and D^2, there is no corresponding unconstrained equation to be tested for D. However, since D is a transformation of D^2, the surface of D can be adequately represented by performing the unconstrained polynomial operations for D^2. Hence, the unconstrained equation for D^2 served as the test for both D and D^2.

The statistical constraints associated with D^1 and D^2 can be identified by examining the constrained equations in Table 1. As mentioned earlier, D^1 constrains the coefficients on X and Y to be opposite in sign and equal in magnitude. Additionally, D^1 maintains this constraint for all k dimensions. Examination of the constrained and unconstrained equations for D^2 shows that it imposes a different set of constraints. First, the coefficients on M and S are assumed to be zero since they are not included in the constrained equation. Second, the coefficients on M^2 and S^2 are held to be equal. Third, the coefficient on MS is twice the magnitude of the coefficient on either M^2 or S^2, and opposite in sign. Finally, these constraints are imposed on all k dimensions.

To relax the constraints on D^1 and D^2, the unconstrained equations employing manager and subordinate values as separate predictors were tested for each criterion. Note

that the equations employed for each criterion included all three dimensions of values (Edwards & Parry, 1994). Thus, in the case of a quadratic equation, for example, each criterion was regressed on fifteen predictor variables, five corresponding to each of the three dimensions of values (i.e., M, S, S^2, M^2, and MS). Additionally, these same analyses were conducted in three phases, each phase representing a different type of congruence. For actual congruence, M and S were the self-reported values of managers and subordinates, respectively. For subordinate perceptual congruence, M and S were manager self-reports of work values and subordinate ratings of manager values, respectively. Finally, for manager perceptual congruence, M and S were manager ratings of subordinate values and subordinate self-ratings of values, respectively.

Having identified the appropriate regression equations and corresponding constraints, both constrained and unconstrained models for each of the five criteria and three types of congruence were estimated. More specifically, each type of congruence comprised a phase in the confirmatory analyses. Within each phase, equations corresponding to D^1, D^2, and their unconstrained counterparts were tested for each criterion. Each model was estimated and tested for significance, followed by tests of the individual coefficients to see if they were significant and in the predicted direction. Constraints implied by each equation were then tested to determine if the predicted pattern emerged. In the final step, equations including terms one order higher than the original equation were tested to assess whether the original model was complex enough to describe the underlying surface. As mentioned, a model corresponding to a given profile similarity

index was considered to have been supported if (a) the overall unconstrained model for that index was significant, (b) the appropriate coefficients were significant and in the predicted direction, (c) the constraints were not rejected, and (d) no higher order terms beyond those in the original equation were significant (Edwards, 1994; Edwards & Harrison, 1993).

Exploratory analyses. To further investigate the relationship between M, S, and the various outcomes, exploratory analyses were conducted. These analyses helped to illuminate any unique congruence relationships that could exist across different dimensions. Like the confirmatory analyses, the exploratory investigation took place in three phases, one for each type of congruence. Unlike the confirmatory analyses, equations considered only one dimension at a time. For each type of congruence, 9 equations were estimated. It should be noted that if dimensions and criteria were completely crossed to allow each criterion to be regressed on each value factor, 15 equations for each type of congruence would have been necessary (i.e., 3 value factors, 5 criteria). However, for each of the three satisfaction factors, only the corresponding value factor was used to derive the predictor set. For example, Social Satisfaction was regressed only on Social Values of subordinates and managers (and the corresponding polynomial terms), but not on Reward Values or Work Values. This makes sense conceptually since there is no theoretical or practical reason to investigate noncommensurate value and satisfaction factors. It is important, however, to examine each individual factor's relationship to the more unique outcomes of organizational commitment (OC) and extra-role behavior (ERB). Clearly, different value factors could have meaningfully different relationships with these outcomes.

Consequently, the outcomes of Social Satisfaction, Reward Satisfaction, and Work Aspect Satisfaction were regressed only on their corresponding value factors (3 equations), while OC and ERB were each regressed on each value factor (6 equations), resulting in 9 equations to be estimated within each type of congruence (27 equations in all). Note that Type I error rates were controlled using the Bonferroni procedure used by Edwards & Harrison (1993; see Holm, 1979 for a description). Finally, all analyses were supplemented by 3-dimensional plots of the response surfaces. These plots greatly enhance the interpretation of congruence results and shed light on the hypothesis tests.

Results

Tables 2 and 3 show the scale means, standard deviations, intercorrelations, and scale reliabilities for the measures employed. As expected, value measures received fairly high ratings on the 7-point scale (i.e., means in the 4 to 5 range), lending support to the notion that each of the work values represented was perceived to be at least somewhat desirable to most individuals. Standard deviations generally indicated that there was substantial variation around the means (i.e., most were near 1.0 or above). Internal consistency of the various measures was also uniformly high (alpha coefficients ranged from .74 to .95). Scale intercorrelations among the work value measures yielded moderate intercorrelations, which is also consistent with the finding that all values were generally perceived favorably. Given that finding, some level of intercorrelation was expected; however, the observed effect sizes remain small enough to imply that the three value measures were perceived as unique variables.

Table 2
Means, Standard Deviations, Alphas
Subordinate Scales

	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Subordinate Values												
1. Social	5.31	.84	**.80**									
2. Rewards	5.36	.86	.42	**.85**								
3. Work Aspects	4.41	.92	.51	.52	**.82**							
Subordinate Perceptions of Manager Values												
4. Social	4.59	1.15	.46	.16	.38	**.86**						
5. Rewards	4.70	1.23	.30	.34	.27	.48	**.90**					
6. Work Aspects	4.11	1.06	.39	.36	.61	.53	.52	**.81**				
Subordinate Satisfaction												
7. Social	4.12	1.25	.17	.03	.15	.65	.31	.32	.89			
8. Rewards	3.44	1.25	.14	.16	.10	.49	.51	.30	.63	.87		
9. Work Aspects	4.27	.90	.17	.07	.08	.34	.14	.26	.54	.43	.74	
Other Subordinate Variables												
10. Org. Commitment	5.00	1.37	.09	.14	.04	.44	.40	.27	.47	.57	.36	.86
11. Perceived Similarity	4.50	1.56	.06	.05	.09	.43	.26	.04	.54	.49	.33	.39
12. Communication Effectiveness	5.06	1.44	.04	.01	.00	.57	.37	.19	.55	.48	.28	.39
13. Job Ambiguity	5.88	.80	.10	.04	.07	.29	.26	.24	.24	.21	.23	.09
14. Frequency of Interaction	5.63	1.43	.12	.07	.10	.32	.08	.05	.12	.18	.16	.23
15. Liking	5.49	1.46	.00	.09	.07	.56	.28	.14	.51	.43	.28	.38

Table 2
(continued...)

	11.	12.	13.	14.	15.
Subordinate Values					
1. Social					
2. Rewards					
3. Work Aspects					
Subordinate Perceptions of Manager Values					
4. Social					
5. Rewards					
6. Work Aspects					
Subordinate Satisfaction					
7. Social					
8. Rewards					
9. Work Aspects					
Other Subordinate Variables					
10. Org. Commitment					
11. Perceived Similarity	.87				
12. Communication Effectiveness	.78	.87			
13. Job Ambiguity	.25	.32	.88		
14. Frequency of Interaction	.32	.44	.16	.86	
15. Liking	.74	.78	.24	.39	.95

Note. Ns ranged from 229-230. Alpha coefficients are in bold along the matrix diagonal. Coefficients greater than or equal to .12 are statistically significant ($p<.05$).

Table 3
Means, Standard Deviations, Alphas
Manager Scales

	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Manager Values												
1. Social	5.68	.96	**.90**									
2. Rewards	5.24	.95	.60	**.89**								
3. Work Aspects	4.61	.84	.45	.31	**.80**							
Manager Perceptions of Subordinate Values												
4. Social	5.65	.89	.74	.51	.42	**.87**						
5. Rewards	5.28	.94	.52	.61	.17	.51	**.87**					
6. Work Aspects	4.70	.83	.39	.30	.63	.50	.21	**.80**				
Managerial Control												
7. Social	4.97	.97	.45	.28	.27	.40	.27	.25	.79			
8. Rewards	4.06	1.10	.21	.29	.19	.22	.31	.22	.44	.87		
9. Work Aspects	3.98	1.17	.28	.20	.37	.23	.12	.38	.45	.58	.85	
Other Manager Variables												
10. Extra Role Behavior	5.53	1.22	.44	.32	.18	.40	.32	.18	.34	.20	.25	.92

Note. Ns ranged from 228-230. Alpha coefficients are in bold along the matrix diagonal. Coefficients greater than or equal to .12 are statistically significant ($p<.05$).

Traditional Analyses

Analyses began by examining fit relationships in the traditional manner; that is, by combining manager and subordinate measures into one profile similarity index and using the index to predict outcomes. Two points of clarification should be made regarding these traditional analyses. First, because the congruence comparisons for job satisfaction represented only one dimension at a time, those congruence measures are different from the congruence measures for organizational commitment and extra-role behavior. Specifically, the congruence indices for job satisfaction are bivariate congruence measures while those for organizational commitment and extra-role behavior are profile similarity indices, the former making comparisons along only one dimension and the latter making comparisons across all dimensions. Second, it is again noted that these analyses were conducted at the scale level as opposed to the item level. Much congruence research in the past has employed item-level comparisons, however, to be consistent with value congruence research, scale analyses were conducted.

Table 4 shows the results of these traditional analyses. As can be seen, results associated with both D and D^2 are consistent with past research. Specifically, these results generally suggest that as congruence increases, outcomes tend to increase as well. (Note that the signs of these correlations were expected to be negative since high congruence is represented by small D values.) Additionally, the findings for D and D^2 hold across all three congruence types and across all outcomes. With regard to D^1, however, there is little evidence for congruence, and in several cases where significant correlations were

Table 4
Traditional Profile Similarity Index Results

Congruence Type	Criterion	Profile Similarity Index D	D^1	D^2
Actual Congruence	Social Satisfaction	-.29***	-.04	-.31***
	Reward Satisfaction	-.19***	.05	-.22***
	Work Aspect Satisfaction	-.05	-.03	-.11*
	Org. Commitment	-.15**	.07	-.18***
	Extra-Role Behavior	-.17**	-.32***	-.19***
Subordinate Perceptual Congruence	Social Satisfaction	-.54***	.40***	-.52***
	Reward Satisfaction	-.41***	.38***	-.42***
	Work Aspect Satisfaction	-.06	.11	-.07
	Org. Commitment	-.35***	.37***	-.39***
	Extra-Role Behavior	-.01	-.11*	-.02
Manager Perceptual Congruence	Social Satisfaction	-.31***	-.01	-.32***
	Reward Satisfaction	-.21***	.03	-.24***
	Work Aspect Satisfaction	-.13*	-.03	-.12*
	Org. Commitment	-.15**	.06	-.16***
	Extra-Role Behavior	-.20***	-.32***	-.21***

Note. N = 228-229. Indices for job satisfaction facets are bivariate congruence indices which compare on only one dimension while those for organizational commitment and extra-role behavior are profile similarity indices which compare across all dimensions. Negative coefficients indicate a positive relationship between congruence and outcomes since high congruence is associated with small D, D^1, and D^2 values.
* $p < .05$; ** $p < 01$; *** $p < .001$

observed, they were in the opposite direction of those observed for D and D^2.

Several initial conclusions can be drawn from these results. First, type of congruence (i.e., actual vs. perceptual congruence) appears not to exert a major influence when employing traditional measurement methods. Results were highly consistent across all three types of congruence. Second, little can be said about the specific nature of these congruence relationships since little is known about the source of congruence (i.e., dimensions). Third, very different interpretations of the data result when employing different similarity indices. As mentioned, the results associated with both D and D^2 support traditional congruence findings which argue that as congruence increases, positive outcomes increase as well. For the algebraic difference index D^1, however, there is no support for this assertion, and in several cases, the opposite is supported. For example, with respect to SPC, D^1 correlations suggest that as congruence increases, facet satisfaction (Social and Reward satisfaction) and organizational commitment decrease. Clearly then, the use of difference scores in constructing similarity indices to predict outcomes was a source of discrepant, and puzzling information.

Confirmatory Analyses

The first step of the confirmatory phase involved the analysis of each constrained regression equation to determine if the implied constraints were supported. Recall that a model is deemed to provide an acceptable fit to the data if (a) the overall model is significant, (b) the appropriate coefficients are significant and in the predicted directions, (c) the constraints implied by the model are not rejected, and (d) no higher order terms

beyond those specified in the original equation are found to be significant. Tables 5, 6, and 7 show the results of the confirmatory tests of the two testable models of congruence (D^1 and D^2), under the three congruence types (Actual Congruence - Table 5, Subordinate Perceptual Congruence - Table 6, and Manager Perceptual Congruence - Table 7). Across congruence types, results were highly consistent. That is, the implied constraints were almost universally rejected. For the linear models corresponding to the D^1 index, there were no cases in which all four conditions held. Recall that D^1 constrains the coefficients on M and S to be equal in magnitude and opposite in sign. While nearly all of the models were significant, none had M and S coefficients that conformed to the prescribed pattern, and the implied constraints were rejected in every model but one. In addition, higher order terms were significant in all cases but two. Moreover, for all three types of congruence, linear models (i.e., D^1) were not sufficiently complex to accurately represent the congruence relationship.

With regard to the quadratic tests employing D^2, all models had significant R^2 values; but none met the remaining three criteria for an acceptable model fit. Recall that the D^2 index places the following constraints on the analytic model: (a) the coefficients on M and S are zero; (b) the coefficients on M^2 and S^2 are equal; (c) the coefficient on MS is twice the magnitude of either M^2 or S^2, and is opposite in sign; and (d) these constraints are imposed on all k dimensions. As can be seen in Tables 5-7, one or more of these constraints was rejected in every case. Several models also revealed significant higher order terms, suggesting that for those models, the quadratic surface was not adequately

Table 5
Confirmatory Tests of Actual Congruence Models

Index	Predictor	Facet Satisfaction: Social Values	Facet Satisfaction: Reward Values	Facet Satisfaction: Work Aspect Values	Organizational Commitment: Social Values	Organizational Commitment: Reward Values	Organizational Commitment: Work Aspect Values	Extra Role Behavior: Social Values	Extra Role Behavior: Reward Values	Extra Role Behavior: Work Aspect Values
D^1	S	.234**	.237**	.095	.071	.270*	-.068	.031	.026	-.123
	M	.248**	.105	.139*	.044	.035	-.065	.511**	.105	-.019
	R	.262**	.178*	.174*			.174			.455***
	Constraints	15.814***	6.839**	6.203**			1.637			8.062***
	Higher-Order Terms	11.715***	3.172**	2.875**			3.950**			1.470
D^2	S	-1.285	-.211	1.139*	-2.060*	-.013	1.762*	1.027	-1.180	-.479
	M	.487	.603	.200	.295	.460	-.046	.560	-.845	-.855
	S^2	-.049	-.054	.053	.113	-.130*	-.016	-.145	.003	.090
	SM	.381**	.181	.168*	.199*	.268*	-.359**	.085	.227*	-.081
	M^2	-.218**	-.155**	-.043	-.127	-.194**	.174*	-.057	-.023	.135*
	R	.446**	.270*	.256**			.401***			.502***
	Constraints	8.232***	3.033**	2.071*			3.225***			3.313***
	Higher-Order Terms	4.372**	.784	1.172			1.873			1.573

Note: N=227-230. S represents subordinate self-reported values and M represents manager self-reported values. Table entries for predictor variables are unstandardized regression coefficients. R is the multiple R for the model. Entries for constraints and higher-order terms are F ratios.
* $p < .05$; ** $p < .01$; *** $p < .001$

Table 6
Confirmatory Tests of Subordinate Perceptual Congruence Models

		Facet Satisfaction			Organizational Commitment			Extra Role Behavior		
Index	Predictor	Social Values	Reward Values	Work Aspect Values	Social Values	Reward Values	Work Aspect Values	Social Values	Reward Values	Work Aspect Values
D^1	S	.698***	.516***	.228***	.424***	.293***	-.046	.243**	.130	-.230**
	M	.102	.028	.134*	-.145	.041	.045	.443***	.090	.023
	R	**.664****	**.509*****	**.307*****			**.510*****			**.509*****
	Constraints	106.214***	35.719***	19.078**			9.459***			22.145***
	Higher-Order Terms	10.161***	4.602**	5.002**			2.483**			1.298
D^2	S	.724*	.806*	-1.142*	.632	1.028*	.506	1.441**	.306	-.763
	M	.377	.810	-.542	-.910	1.251	-.458	.756	-.443	-1.059
	S^2	-.028	-.088**	.074*	-.078	-.116**	-.022	-.025	-.026	.027
	SM	.294***	.088	.170**	.072	.048	-.144	-.172*	.013	.073
	M^2	-.144**	-.124*	.001	.054	-.155*	.119	.037	.046	.092
	R	**.713****	**.550*****	**.389*****			**.573*****			**.545*****
	Constraints	17.850***	11.968***	3.072*			5.477***			2.324**
	Higher-Order Terms	.974	1.031	3.145**			1.316			1.483

Note: N=227-230. S represents subordinate perceptions of manager values and M represents manager self-reported values. Table entries for predictor variables are unstandardized regression coefficients. R is the multiple R for the model. Entries for constraints and higher-order terms are F ratios.
* $p < .05$; ** $p < .01$; *** $p < .001$

Table 7
Confirmatory Tests of Manager Perceptual Congruence Models

		Facet Satisfaction			Organizational Commitment			Extra Role Behavior		
Index	Predictor	Social Values	Reward Values	Work Aspect Values	Social Values	Reward Values	Work Aspect Values	Social Values	Reward Values	Work Aspect Values
D^1	S	.233**	.228**	.093	.057	.275*	-.080	.027	-.056	-.088
	M	.206*	.122	.172**	.164	-.058	-.061	.454***	.201*	-.007
	R	.232**	.183*	.196**			.186			.439***
	Constraints	12.856***	7.541***	8.773***			1.834			6.950***
	Higher-Order Terms	8.386**	3.936**	3.547**			2.771**			1.992*
D^2	S	-1.274	-.131	-1.237**	-1.960	.647	1.700*	1.997*	-.828	-.627
	M	-1.446	.665	.646	.944	-1.083	-.762	.247	-.656	-.114
	S^2	-.121	-.084	.062	.027	-.114	-.060	-.300***	.018	.075
	SM	.504**	.229*	.166**	.342**	.135	-.261*	.187	.128	-.013
	M^2	-.101	-.157**	-.130*	-.250**	.038	.203*	-.073	.016	.011
	R	.387***	.286***	.293***			.365***			.503***
	Constraints	8.232***	3.410**	2.985*			2.358**			3.762***
	Higher-Order Terms	4.372**	1.723	.777			1.912*			3.257***

Note: N=227-230. S represents subordinate self-reported values and M represents manager perceptions os subordinate values. Table entries for predictor variables are unstandardized regression coefficients. R is the multiple R for the model. Entries for constraints and higher-order terms are F ratios.
* $p < .05$; ** $p < .01$; *** $p < .001$

complex to fit the data. In those instances, cubic or quartic models provided the best fit to the data (see Exploratory Analyses below). Moreover, like the results obtained for D^1, the constrained model for D^2 was also insufficient in explaining the obtained congruence relationships. At this point, then, it is reasonable to conclude that across all three congruence types, profile similarity indices placed inappropriate limitations on the analytic models of congruence. When tested, the implied constraints failed to receive support, and therefore seem unjustified for use in congruence research of this nature.

Exploratory Analyses

Having conducted confirmatory tests of the various congruence models, each model was further tested to see if higher order models would better describe the data. In these analyses, models of one order higher than the previous model were tested until the addition of higher order terms no longer added significantly to the prediction of the criterion. As such, a portion of this step was completed in the confirmatory analysis phase when higher-order terms were tested for significance. Those tests involved the addition of cubic terms to quadratic (i.e., D^2) models. In cases where the cubic terms added significantly to the model, quartic terms were then added to test for a significant increment to R^2, and so on. Variables were included in the final model if they were significant in the last model run, if they were required to comprise a higher order term, or if they were significant in an earlier (i.e., lower-order) model, but did not reach significance when higher-order terms were added (Edwards, 1993, 1994).

Tables 8, 9, and 10 present the results of these exploratory analyses. As can be

Table 8
Exploratory Analyses of Actual Congruence Models

	Facet Satisfaction			Organizational Commitment			Extra Role Behavior		
Independent Variable	Social Values	Reward Values	Work Aspect Values	Social Values	Reward Values	Work Aspect Values	Social Values	Reward Values	Work Aspect Values
S	15.457**	-.211	1.139*	2.060*	-.013	1.762*		-1.180	
M	-4.497	.603	.200	.295	.460	-.046	.560	-.845	-.855
S^2	-2.740*				-.130*				
SM			.168**	.199*	.268*	-.359**		.227*	
M^2	1.394*	-.155**			-.194**	.174*			.135*
S^3									
S^2M	.155*								
SM^2									
M^3	-.102*								
S^4									
S^3M									
S^2M^2									
SM^3									
M^4									
R	.503***	.270*	.256**			.401***			.502***
Slope (X = Y line)									
linear	.798**	.392**	1.339**	2.355*	.447	1.808	1.587*	-2.025	-1.334
curvilinear	.114	-.028	.178*	.184	-.056	-.201	-.117	.201*	.144
Slope (X = -Y line)									
linear	-1.772	.814	.939	-1.765	-.473	1.716	.467	-.326	.376
curvilinear	-.648**	-.390**	-.158	-.212	-.592***	.517	-.287*	-.253**	.306

Note: N=227-230. S represents subordinate self-reported values and M represents manager self-reported values. Table entries for predictor variables are unstandardized regression coefficients. R is the multiple R for the model. Entries for slope analyses are sums of corresponding linear and curvilinear regression coefficients.
* $p < .05$; ** $p < .01$; *** $p < .001$

Table 9
Exploratory Analyses of Subordinate Perceptual Congruence Models

	Facet Satisfaction			Organizational Commitment			Extra Role Behavior		
Independent Variable	Social Values	Reward Values	Work Aspect Values	Social Values	Reward Values	Work Aspect Values	Social Values	Reward Values	Work Aspect Values
S	.724*	.806*	-3.908	.632	1.028*		1.441**		-.763
M	.377	.810	2.374		1.251		.756		
S^2		-.088**	.807**		-.116**				
SM	.294***						-.172*		
M^2	.144**	-.124*			-.155*				
S^3									
S^2M									
SM^2									
M^3									
S^4									
S^3M									
S^2M^2									
SM^3									
M^4									
R	.713***	.550***	.444***			.573***			.545***
Slope (X = Y line)									
linear	1.101**	1.616*	-1.684**	.278	2.279***	.048	2.197**	-.137	-1.822
curvilinear	.122*	-.924	.245**	.048	-.223**	-.003	-.160*	.033	.192
Slope (X = -Y line)									
linear	.347	-.004	-.600**	1.542*	-.223	.964	.685	.749	.296
curvilinear	-.725**	-1.100**	-.095	-.096	-.319**	.285	.184	.007	.046

Note: N=227-230. S represents subordinate perceptions of manager values and M represents manager self-reported values. Table entries for predictor variables are unstandardized regression coefficients. R is the multiple R for the model. Entries for slope analyses are sums of corresponding linear and curvilinear regression coefficients.
* $p < .05$; ** $p < .01$; *** $p < .001$

Table 10
Exploratory Analyses of Manager Perceptual Congruence Models

	Facet Satisfaction			Organizational Commitment			Extra Role Behavior		
Independent Variable	Social Values	Reward Values	Work Aspect Values	Social Values	Reward Values	Work Aspect Values	Social Values	Reward Values	Work Aspect Values
S	20.331***	-.131	-1.237*	25.853**	1.528	7.110	27.965	72.450**	-23.402
M	18.791**	.665	.646	27.973***		-2.310	-42.318	114.129***	44.834**
S^2	-1.910*			-3.247**			.121		4.492
SM	-4.000***	.229*	.166**	-3.840**		-2.402*	-11.568	-37.216***	.
M^2		-.157**	-.130*	-3.543**		1.624	18.481*	-18.222**	-18.855**
S^3									-.225
S^2M	.423***			.407**			2.012	3.032**	
SM^2						.217*	.005*	4.853***	
M^3				.211**		-.166*	-2.328*	.976	2.900**
S^4									
S^3M									
S^2M^2								-.248**	.274**
SM^3									-.166*
M^4									
R	.471***	.286***	.293**			.389***			.698***
Slope (X = Y line)									
linear	-2.720*	.528	-.591	-1.016*	-.436	.938	2.244*	-1.484	-.741
curvilinear	.282*	-.034	.098	.119*	.059	-.118	-.186*	.162	.073
Slope (X = -Y line)									
linear	.172	-.802	-1.883**	-2.904	1.730	2.462	1.750	-.172	-.513*
curvilinear	-.726***	-.492***	-.234*	-.565*	-.211*	.404	-.560*	-.094	.099*

Note: N=227-230. S represents subordinate self-reported values and M represents manager perceptions of subordinate values. Table entries for predictor variables are unstandardized regression coefficients. R is the multiple R for the model. Entries for slope analyses are sums of corresponding linear and curvilinear regression coefficients.
* $p < .05$; ** $p < .01$; *** $p < .001$

seen, quadratic models typically provided adequate descriptions of the data. This was especially true with regard to actual congruence and subordinate perceptual congruence, where the response surfaces revealed more uniform, interpretable patterns. For manager perceptual congruence, however, the response surfaces for the raw data often show highly irregular, and less readily interpretable patterns which require higher-order regression terms to accurately reflect the surface. These latter findings indicate that while MPC results provide some support for congruence effects under that measurement mode, the nature of the congruence effect is much more difficult to discern than that for either AC or SPC. The specific features of these effects are discussed in greater detail below.

Hypothesis Tests

Actual Congruence. Hypothesis 1 predicted that the highest levels of satisfaction, commitment, and extra-role behavior would be observed when managers and subordinates shared high value for a given attribute of the work environment. Similarly, Hypothesis 2 predicted that lower outcome levels would be associated with shared low value on a given attribute. Additionally, it was predicted that these effects would be most pronounced with respect to social values. Figures 4-12 present the surface plots associated with the three dimensions of values predicting the three different outcomes (i.e., Facet Satisfaction - Figures 4-6; Organizational Commitment - Figures 7-9; Extra-Role Behavior - Figures 10-12). Note also that Tables 8-10 present the slope coefficients and associated significance levels for the lines of congruence and incongruence on the obtained surfaces. For facet satisfaction, all three value comparisons yielded the predicted pattern of outcome levels.

Specifically, the highest satisfaction levels were observed when managers and subordinates shared high value for the attributes considered. Additionally, lower outcome levels were observed for shared low values. Indeed, Table 8 shows that each of the slopes along the X=Y lines in Figures 4-6 was statistically significant, supporting the predicted differences between congruence at high and low levels. However, despite the fact that the X=Y slope in Figure 1 (i.e., social value congruence) appears to be considerably steeper than those in Figures 5 and 6, the slope along that line was not significantly steeper than the slopes for reward and work aspect values.

For organizational commitment, only the relationship for social values (Figure 7) showed the hypothesized slope along the X=Y line. The slopes along the X=Y lines for reward and work aspect values (Figures 8 and 9) were not significant. Additionally, the model for work aspect values (Figure 9) depicts a highly irregular response pattern for which the quadratic equation provides a statistically significant, but visually inconsistent representation of the raw data. So while the overall models provided adequate fits to the data, suggesting a significant congruence effect, the overall effect for organizational commitment was not as strong as that observed for job satisfaction. With regard to Hypotheses 1 and 2, the results for organizational commitment can be said to provide only partial support. The data do, however, again support the prediction of a steeper slope along the X=Y line for social values.

The results for actual congruence predicting extra-role behavior were somewhat mixed. For social values (Figure 10), the linear solution provided the best fit to the raw

data, indicating that managers' values were the predominant predictor of subordinates' extra-role behavior. However, closer analysis of the X=Y slope on that surface did provide evidence for a congruence effect since the slope was significant. Figure 12 (work aspect values predicting extra-role behavior) also shows a moderate congruence effect along the X=Y line, although the slope of that line was not significant. The surfaces for reward value congruence (Figure 11) depict a much more irregular pattern of responses, making the data difficult to interpret. The quadratic plot (Figure 11c), which provided the best fit to the raw data, shows that congruence at extreme high and low absolute levels resulted in the most frequent extra-role behavior. Indeed, there was a significant curvilinear slope along the X=Y line. With regard to predictions, the results for extra-role behavior in the actual congruence mode provide support for Hypothesis 1 since the highest outcome levels were at the points of shared high value. However, the extra-role behavior results lend only moderate support for Hypothesis 2 since shared low values were associated with significantly lower outcome levels in only one of the three models - social values. This finding of a significant X=Y slope for social value congruence again supports the prediction of steeper slopes for those models.

To summarize the results for Hypotheses 1 and 2, Hypothesis 1 received strong support across the three outcomes. Hypothesis 2 received strong support in the facet satisfaction analyses, and moderate support in the organizational commitment and extra-role behavior analyses. Additionally, the prediction that the X=Y lines would be steeper for the social value plots received strong support in the organizational commitment analyses, and

moderate support in the facet satisfaction and extra-role behavior analyses.

The second portion of the actual congruence predictions dealt with incongruence. Hypotheses 3 and 4 predicted a downward slope, toward the left of the surface, along the X=-Y line (i.e., the line of incongruence). More specifically, the lowest outcome levels were predicted when subordinate values were high and manager values were low (i.e., the left corner of the surface). In the reverse situation (i.e., the right corner of the surface), it was predicted that outcome levels would rise to more moderate levels. The results for facet satisfaction support Hypothesis 3, but do not support Hypothesis 4 (Figures 4-6). While the lowest outcome levels do include the cases when subordinate values are high and manager values are low, they also include the opposite scenario in which subordinate values are low and manager values are high. For facet satisfaction, both types of incongruence resulted in equally low levels of satisfaction. The results for organizational commitment (Figures 7-9) follow the same pattern as those for facet satisfaction, and therefore also support Hypothesis 3, but not Hypothesis 4. Figures 10-12, which detail the extra-role behavior findings, strongly support Hypothesis 3, and lend moderate support to Hypothesis 4. Figures 10c and 11c depict the predicted curvilinear pattern of outcomes along the X=-Y line, and Table 8 shows that the curvilinear beta weights for these two lines were significant and in the predicted direction. The relationship depicted in Figure 12, while significant, was not strong enough to elicit a significant function along the line of incongruence. However, the plot of the raw data (Figure 12a) generally reveals a slight trend toward the predicted result. Hypotheses 3 and 4, then, were generally supported in

the extra-role behavior models within the actual congruence mode.

To summarize the results for incongruence in the actual congruence mode, the relationships for facet satisfaction and organizational commitment did not reveal the predicted slopes along the X=-Y line. Rather, these models showed both types of incongruence to result in equally low outcomes, thus supporting Hypothesis 3, but not supporting Hypothesis 4. The results for extra-role behavior, however, generally did support both hypotheses, revealing moderate to high outcome levels for instances where manager values were high and subordinate values were low.

Subordinate Perceptual Congruence (SPC). Hypotheses 5 and 6 addressed subordinate perceptual congruence (SPC), or the correspondence between subordinates' perceptions of their managers' values, and their managers' self-reports of values. Hypothesis 5 predicted that the highest outcome levels would be associated with high congruence, regardless of the specific nature of congruence (i.e., high outcome levels at all points on the X=Y line). Hypothesis 6 predicted that incongruence, regardless of its form, would result in extreme low levels of outcomes. Combining Hypotheses 5 and 6, the predicted surface suggests a level ridge along the X=Y line which curves downward toward the right and left corners of the plane which represent incongruence.

For facet satisfaction (Figures 13-15), the results mirror those obtained in the actual congruence mode. Namely, each of the three facet satisfaction models revealed a significant slope along the X=Y line representing different outcome levels at different levels of congruence. The general association between incongruence and low outcomes was,

however, consistent with expectations. Thus, the results for facet satisfaction do not support Hypothesis 5, but do support Hypothesis 6.

For organizational commitment, only the value comparisons for social and reward values yielded significant fits to the data (Figures 16 and 17). The work aspect value measures (Figure 18) did not contribute significantly to the model, suggesting that in the SPC measurement mode, social and reward values were more closely related to organizational commitment than work aspect values. For social values predicting organizational commitment (Figure 16), the linear solution provided the best fit to the data, and revealed a significant slope along the line of incongruence. The surface generally reflects that subordinate social values were more predictive of organizational commitment than the combination of subordinate and manager social values (i.e., no support for a congruence effect). That is, the perception that one's boss has high concern for fairness, honesty, and helping others was associated with high organizational commitment (even when those perceptions were inaccurate). For reward values predicting organizational commitment (Figure 17), the response pattern is again similar to that observed in the actual congruence mode, with a positive slope along the X=Y line and a curvilinear slope along the X=-Y line. These data again support Hypothesis 6, but fail to support Hypothesis 5.

For extra-role behavior in the SPC mode (Figures 19-21), social values and work aspect values contributed significantly to the model. Reward values did not contribute significantly to the model. Additionally, the model for work aspect values was highly irregular, and the relatively flat, linear model which provided the best fit suggests no real

congruence effect for work aspect values. These results indicate that within the SPC mode, social value congruence was the primary predictor of extra-role behavior. Indeed, for social values, a congruence effect was observed, indicated by a steep, curvilinear slope along the X=Y line.; but this effect was not particularly strong as indicated by the relatively high outcome levels associated with incongruence. Taken together, the results for extra-role behavior in the SPC mode lend little support to Hypotheses 5 and 6, and further, suggest that reward and work aspect value congruence, as measured in the SPC mode, had a small relationship to extra-role behavior. Once again, social values were found to have the strongest congruence effect, relative to reward and work aspect congruence.

Taken together, the SPC results provided no support for Hypothesis 5. Hypothesis 6 was strongly supported by the facet satisfaction results, and received moderate support in the organizational commitment results. Finally, the extra-role behavior results lend no support to either Hypothesis 5 or 6. Generally, the SPC results seem not to conform to the predicted pattern, therefore lending little support to the behavioral prediction theory (Katz & Kahn, 1978; Kluckholn, 1951) which posited that the effect of accurate behavioral prediction would result in positive attitudes and behavior. The effect did receive some support, but only in the cases of congruence at high levels. These data revealed clearly that accurate perceptions of low work values resulted in low outcome levels. Moreover, the SPC results do not support the behavioral prediction explanation for the effect of SPC. To the contrary, the results lend greater support to the behavioral supply and reinforcement argument used to explain the effect of actual congruence (see above).

Manager Perceptual Congruence (MPC). Manager perceptual congruence (MPC) addressed the similarity between managers' perceptions of their subordinates' values, and the subordinates' self-reports of values. Hypothesis 7 posited that in the MPC measurement mode, congruence at both high and low absolute levels would be associated with high outcome levels (i.e., a level ridge along the X=Y line). Hypothesis 8 predicted that the lowest outcome levels would occur when manager perceptions of subordinate values were low, and subordinate self-reports of values were high. Conversely, Hypothesis 9 predicted moderate outcomes when managers' perceptions of subordinate's values were high, and subordinates' self-ratings were low. As discussed above, where the manager wrongly believes the subordinate to have low value for a given attribute (and therefore denies the individual value-fulfilling resources), lower outcome levels were expected than in the case where the manager wrongly perceives the individual to have high desire for a given attribute. The manager in the latter case could be expected to provide the individual with value fulfilling resources which, although not a high priority for the subordinate, would be expected to have a moderately positive impact on outcomes.

The integration of Hypotheses 7-9 results in a very specific predicted surface. Namely, MPC surfaces (Figures 22-30) were expected to reflect a level ridge along the X=Y line (i.e., nonsignificant, level slope), and downward slopes toward both regions of incongruence, with a steeper downward slope in the direction of the region where manager perceptions of subordinates are low and subordinate self-perceptions are high (i.e., the left portion of the surface). For facet satisfaction, none of the three models (Figures 22-24)

demonstrated the hypothesized surface. For social values predicting satisfaction (Figure 22), there was a steep and significant slope along the X=Y line, and the areas of incongruence showed equally low levels of satisfaction. The features of the surface are again consistent with the findings for actual congruence and subordinate perceptual congruence. The surfaces for reward values and work aspect values predicting satisfaction (Figures 23 and 24) each had nonsignificant slopes along the X=Y line, supporting Hypothesis 7. However, visual inspection of the quadratic surfaces for these two models shows considerable slope along the lines of congruence, despite the fact that the slope coefficients did not reach statistical significance. The author interprets these results to provide more evidence against Hypothesis 7 than for it. Because the test of the slope of the X=Y line does not represent a comparison of means at various points on the line of congruence, the lack of significance does not necessarily indicate that there is no difference between outcomes at high and low levels. The position taken here is that slope analyses should be combined with visual inspection of the surface to arrive at final conclusions. Thus, the results for facet satisfaction in the MPC mode seem to lend little support to Hypothesis 7 which predicted no slope along the X=Y line. Hypotheses 8 and 9 received support in only Figure 24 which depicts work aspect value congruence predicting satisfaction. The curvilinear slope along the X= -Y line shows the lowest outcome level to be where subordinates have high value and managers perceive low value, and the higher outcome level at the point where managers perceive subordinates to have high value and subordinates have low value.

For organizational commitment in the MPC mode, the surfaces predicted by Hypotheses 7, 8 and 9 were not observed (see Figures 25-27). Figure 25, social value congruence predicting organizational commitment, had a significant slope along the X=Y line, and equal outcome levels in the regions of incongruence. The obtained surface for reward value congruence predicting organizational commitment (Figure 26) was linear, and while it had a nonsignificant slope along the X=Y line, the slope along the line of incongruence tilted opposite of the predicted direction. For work aspect value congruence predicting organizational commitment (Figure 27), the resulting surface was quite flat, indicating a weak overall effect from which no real conclusions could be drawn.

Finally, the results for extra-role behavior in the MPC measurement mode (Figures 28-30) provided considerable support for Hypotheses 7, 8, and 9. Figure 28 depicts the relationship between social value congruence and extra-role behavior, and supports Hypotheses 8 and 9, but does not support Hypothesis 7. The surface reflects the predicted differences in the regions of incongruence, suggesting that misperceptions of high values have less negative impact than misperceptions of low values. The steep slope along the X=Y line, however, was not predicted. Similar findings were obtained for reward value congruence and work aspect value congruence predicting extra-role behavior (Figures 29 and 30). Once again these plots showed fairly steep slopes along the line of congruence which, although not statistically significant, appear to reflect substantial outcome differences between congruence at high and low points. Again, however, Figures 29 and 30 show the predicted differences between the two regions of incongruence. This finding

is more tenuous for reward value congruence (Figure 29) where the slope of the X=-Y line was not significant. It is however, a clear finding for work aspect value congruence (Figure 30) where the X=-Y slope had significant linear and curvilinear coefficients.

To summarize the results for the MPC measurement mode, inspection of the surfaces resulting from these analyses shows that the expected X=Y ridge was generally not observed, resulting in little support for Hypothesis 7. In all 9 MPC models, an upward slope along the X=Y line was clearly visible, although only three of these slopes were statistically significant (i.e., those corresponding to social values), again showing stronger congruence effects for social values. The differences predicted by Hypotheses 8 and 9 were supported in 4 of the 9 model tests. The models involving extra-role behavior (Figures 28-30) were particularly supportive of these hypotheses, suggesting that managers' misperceptions of high values were positively related to extra-role behavior, but not to satisfaction or commitment. The remaining models showed no marked differences in outcome levels between the two different forms of incongruence; rather, each showed equal (low) levels of outcomes. Moreover, the MPC results showed no support for Hypothesis 7, and mixed support for Hypotheses 8 and 9.

Perceived Similarity. Because traditional measures of congruence employed constrained measures, thereby limiting the amount of variance in outcomes that could be accounted for, Hypothesis 10 postulated that the actual congruence measure would perform as well or better than the perceived similarity measure in predicting the three criteria. (Note

Table 11
Comparison of Multiple R Values Between
Different Congruence Measurement Modes

Congruence Measurement Mode	Social Satisfaction	Reward Satisfaction	Work Aspect Satisfaction	Org. Commitm't	Extra-Role Behavior
Perceived Similarity	.541***	.494***	.337***	.392***	.331***
Actual Congruence	.503***	.268*	.253**	.404***	.501***
Subordinate Perceptual Congruence	.713***	.550***	.444***	.573***	.545***
Manager Perceptual Congruence	.471***	.286**	.293**	.389***	.698***

Note: N = 230; Entries for Perceived Similarity are Pearson's coefficients (two-tailed) and entries for congruence measures are multiple correlation coefficients.
* $p < .05$;
** $p < .01$;
*** $p < .001$

that significance tests of the difference between correlations obtained by congruence measures and the perceived similarity measure are impossible since the covariance between the two measures cannot be calculated.) Table 11 shows the results of these comparisons. It is important to note that these tests were conducted under different levels of statistical power due to the varying number of predictors in the equations. Therefore, conclusions drawn from these comparisons are qualitative and not statistical in nature.

Two initial conclusions drawn from Table 11 are that (a) the SPC measurement mode provided the best prediction of facet satisfaction and organizational commitment, and (b) the MPC measurement mode provided the best prediction of extra-role behavior. The perceived similarity measure performed well in the prediction of facet satisfaction and organizational commitment, outperforming the others in the prediction of satisfaction, and performing roughly equally in the prediction of organizational commitment. The congruence measures all outperformed the perceived similarity measure in the prediction of extra-role behavior.

To summarize, it appears that the actual congruence measurement approach performed as well or better than the perceived similarity measure in predicting organizational commitment and extra-role behavior; but did not perform as well in predicting facet satisfaction. Thus, Hypothesis 10 received partial support. Furthermore, the findings indicate that the accurate perception of another's work values was more predictive of satisfaction, commitment, and extra-role behavior than the actual congruence

Table 12
Changes in R^2 from Constrained to Unconstrained Models

Criterion	Model	Actual Congruence		Subord. Perc. Congruence		Manager Perc. Congruence	
		Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
Social Satisfaction	D^1	.001	.068***	.160***	.441***a	.000	.054***a
	D^2	.096***	.198**a	.270***	.508***a	.102***	.150***a
Reward Satisfaction	D^1	.002	.032*a	.144***	.259***a	.001	.033*a
	D^2	.048***	.072**	.176***	.302***a	.057***	.082***
Work Aspect Satisfaction	D^1	.001	.030*a	.012	.094***a	.001	.038**a
	D^2	.012*	.065**	.004	.151***a	.014***	.086***a
Organizational Commitment	D^1	.004	.030	.136***	.260***a	.003	.034
	D^2	.032***	.160***a	.152***	.328***a	.025**	.133**a
Extra-Role Behavior	D^1	.108***	.206***a	.012*	.259***a	.102***	.192***a
	D^2	.036***	.251***a	.000	.297***a	.044***	.254***a

N= 229 ; Entries are squared correlation coefficients for the constrained models, and squared multiple correlations for the unconstrained models.

[a] The R^2 for this equation was significantly greater than the R^2 for the constrained equation.

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

in work values. Nonetheless, while the perceptual measures (primarily subordinate perceptual congruence) were more predictive than actual congruence, it remains noteworthy that the latter was a consistent and significant predictor in and of itself.

Constrained vs. Unconstrained Models. Hypothesis 11 predicted that constrained regression models corresponding to D^1, D and D^2 would explain significantly less variance in outcomes than their unconstrained counterparts. Table 12 shows the results of these analyses. Across all three measurement modes and criterion measures, the unconstrained models significantly outperformed the constrained models. In 24 out of 27 cases, the unconstrained model explained significantly more criterion variance than the constrained model. These results strongly support Hypothesis 11, and like the confirmatory regression results reported above, reject the inherent constraints imposed by using profile similarity indices (i.e., D^1, D, D^2) to estimate the effect of congruence.

Analysis of Moderators

Moderator analyses were conducted using Edwards' (1993) recommendations for testing the significance of moderator variables using polynomial regression procedures. To test an individual moderating effect, moderator terms were added to the regression model, and tested hierarchically to determine if a significant increment to the explained variance had been achieved. If so, it was concluded that a significant moderating effect had been found. To further examine moderating relationships, separate surface plots which represent different levels of the moderator variable are presented to more closely examine the nature

Table 13
Results of Moderator Analysis[a]
Moderator = Managerial Control

Dependent Variable	Independent Variable	Actual Congruence F Ratio	Actual Congruence p <	Subordinate Perceptual Cong. F Ratio	Subordinate Perceptual Cong. p <	Manager Perceptual Cong. F Ratio	Manager Perceptual Cong. p <
Social Satisfaction	Social Values	3.332	.05	n.s.		n.s.	
Reward Satisfaction	Reward Values	n.s.		5.221	.01	2.417	.05
Work Aspect Satisfaction	Work Aspect Values	n.s.		4.431	.01	3.606	.01
Organizaional Commitment	Social Values	n.s.		n.s.		n.s.	
	Reward Values	n.s.		n.s.		n.s.	
	Work Aspect Values	n.s.		n.s.		2.707	.05
Extra-Role Behavior	Social Values	5.572	.01	2.741	.05	2.461	.05
	Reward Values	n.s.		n.s.		3.090	.01
	Work Aspect Values	5.097	.01	n.s.		3.299	.01

Note: N = 227-229. F tests were conducted after adding moderator terms to the final equation for each of the above models. If the set of moderator terms added significantly to the original equation, a moderator effect was inferred.

[a] Significance levels represent probabilities calculated prior to the Bonferonni procedure for controlling Type 1 error rates. None of the entries on this table were significant following that procedure.

Table 14
Results of Moderator Analysis[a]
Moderator = Frequency of Interaction

Dependent Variable	Independent Variable	Actual Congruence F Ratio	Actual Congruence p <	Subordinate Perceptual Cong. F Ratio	Subordinate Perceptual Cong. p <	Manager Perceptual Cong. F Ratio	Manager Perceptual Cong. p <
Social Satisfaction	Social Values	n.s.		4.831	.01	n.s.	
Reward Satisfaction	Reward Values	2.751	.05	n.s.		n.s.	
Work Aspect Satisfaction	Work Aspect Values	2.752	.05	3.334	.05	n.s.	
Organizaional Commitment	Social Values	5.496	.01	11.122	.01	3.391	.01
	Reward Values	4.731	.01	6.436	.005	13.874	.01
	Work Aspect Values	5.073	.01	n.s.		4.902	.01
Extra-Role Behavior	Social Values	4.896	.05	n.s.		n.s.	
	Reward Values	10.847	.005	n.s.		4.048	.01
	Work Aspect Values	4.661	.05	n.s.		4.725	.01

Note: N = 227-229. F tests were conducted after adding moderator terms to the final equation for each of the above models. If the set of moderator terms added significantly to the original equation, a moderator effect was inferred.

[a] Significance levels represent probabilities calculated prior to the Bonferonni procedure for controlling Type 1 error rates. None of the entries on this table were significant following that procedure.

of the moderating effect. Tables 13 and 14 show the results of the computational analyses of the moderator variables of managerial control and frequency of interaction, respectively.

Managerial Control. Looking first at Table 13, it can be seen that managerial control was found to have a significant moderating effect in a number of cases. However, following the Bonferonni procedure for controlling Type 1 error rates (Holm, 1979), none of the findings listed maintained significance. Thus, while managerial control initially appeared to exert a moderating effect in several cases, the significance of these tests was not great enough to withstand the Bonferonni correction. Given this dilemma, it seems appropriate to inspect the surface plots associated with significant moderating effects to determine whether effects can be observed visually. For those models in which significant moderating effects were observed prior to the Bonferonni procedure, median splits were computed to separate plots into two groups representing low and high managerial control. Across these plots, several patterns are worth mention. First, the moderating effects in the actual congruence mode suggested a stronger congruence effect when managerial control was high. Figures 31-33 depict the three models in which managerial control was found to moderate the actual congruence, outcome relationship. Figures 31 and 32 depict social values predicting satisfaction and extra-role behavior, respectively. In both cases, the slopes along the line of congruence are clearly steeper in the high control plots. Additionally, Figures 32 and 33 show greater curvature along the line of incongruence, suggesting that the effect of incongruence is also stronger when managers report high control over social values. These patterns would suggest that when managers have little or

no control over the attribute upon which congruence is being assessed, the positive effects of congruence and the negative effects of incongruence may be lessened. Note, however, that this effect was observed in only 3 of the 9 models, lending only partial support to the notion that managerial control moderates actual congruence relationships.

Three significant moderating effects were also observed in the subordinate perceptual congruence analyses. Inspection of the surface plots (Figures 34-36), however, shows little difference in between the high and low managerial control plots, indicating no moderating effect for managerial control in the SPC mode.

Inconsistent findings were observed in the MPC mode. In several cases, stronger effects were observed where managers reported high control over the attribute in question. Several other cases, however, showed somewhat stronger effects where managers reported low control. One consistent aspect of these findings, however, is that the high control plots more closely reflected the original surface plots (i.e., Figures 4-30). This would suggest that the predicted MPC effects can be expected to occur, assuming managers have some minimum level of control over the attributes in question. In the absence of managerial control, the effects of congruence seem to become more unpredictable.

Frequency of Interaction. Also discussed above was the possibility that congruence effects would be moderated by the frequency with which managers and subordinates interact. Table 14 shows the results of these moderator analyses. While no specific hypotheses were put forth, an intuitive expectation was that more frequent interaction between managers and subordinates would accentuate the effects of congruence, especially

those related to social values. It seems to stand to reason that more frequent interaction, which allows for more social information to be shared, would result in the most pronounced congruence relationships. The findings, however, present several results which suggest precisely the opposite.

Beginning with actual congruence, 8 of the 9 model tests revealed significant increments to the variance explained when the moderator terms were added. Additionally, inspection of the associated surface plots (Figures 43-59) revealed distinct differences in the response surfaces for the two levels of frequency of interaction. In nearly all of the plots contrasting high versus low frequency of interaction, stronger congruence effects emerged in the low frequency of interaction group. This was evidenced by steeper slopes along the lines of congruence and greater curvature along the lines of incongruence (i.e., downward toward the two regions of incongruence).

For subordinate perceptual congruence, several significant effects were found. Examination of the associated surface plots, however, suggests that the response differences were small, and resulted in only slight differences between the surfaces of the high and low frequency of interaction plots. Overall, while several equations were found to explain additional variance, it appears that frequency of interaction did not meaningfully moderate the SPC relationships.

The results for manager perceptual congruence again support the notion of a stronger congruence effect when frequency of interaction is low. In 5 of 9 cases, significant moderating effects were found, and for each of the 5 significant effects, the

surface plots showed substantially different patterns for the low frequency of interaction groups. Again, X=Y lines were steeper, and X=-Y lines had greater curvature. Combining these findings with the actual congruence findings, a pattern emerges which suggests that when managers and subordinates see each other less often, the effects of congruence (or lack thereof) are more pronounced. The most distinct aspect of those enhanced effects is the X=-Y line. In the low frequency of interaction plots, incongruence is associated with much lower outcome levels (i.e., satisfaction, commitment, extra-role behavior). As mentioned, this initially seems counterintuitive, but may be attributable to an adaptability mechanism which managers and subordinates who work together frequently must operate. That is, perhaps managers and subordinates who work together frequently adapt to one another's differences, thereby maintaining more positive attitudes and behavior despite value incongruence. Conversely, those who interact less frequently may feel more burdened by working with someone with different values, having had little time to adapt to the differences. This issue is explored further in the discussion section below.

Analysis of Mediators

Two variables were introduced as potential mediators of the congruence-outcome relationship. The effectiveness of the communication between managers and subordinates, and the level of job ambiguity felt by subordinates have each been posited to be direct outcomes of value congruence (Katz & Kahn, 1978; Kluckholn, 1951). The proposition here is that this causal step is the precursor to satisfaction, commitment, and extra-role behavior. That is, the causal path under scrutiny begins with value congruence which

influences communication effectiveness and/or job ambiguity, which in turn influence satisfaction, commitment, and extra-role behavior. Thus, communication effectiveness and job ambiguity are seen as variables through which the effect of value congruence must pass in order to exert its effect on satisfaction, commitment, and extra-role behavior. It should be noted that the analyses conducted here only provided preliminary evidence for mediating effects. More rigorous causal modeling (e.g., path analyses, structural equation modeling) would be required to more clearly define the nature of the relationships between these variables. These analyses do, however, represent an important first step in examining the causal path.

To test for the presence of mediating effects, a three step regression procedure was employed to examine three critical paths in the mediational relationship (Baron & Kenny, 1986; Judd & Kenny, 1981). First, the independent variable must be shown to predict the mediator. Second, the independent variable must be shown to predict the dependent variable. Third, the mediator must be shown be significantly related to the dependent variable when included in an equation with the independent variable. If all three of these conditions hold, a final condition must be observed: The relationship between the independent variable and the dependent variable must be smaller in the third equation than in the second. If all of these conditions are met, preliminary evidence for a mediating effect has been obtained. Note that in this study, the test of mediation is an unusual case since the predictor variable is, in effect, two variables: manager values and subordinate values. Additionally, the quadratic terms for these variables are also typically included, increasing

the difficulty to estimate the effect of one variable only on the criterion variable. More specifically, to investigate the fourth condition mentioned above, mediational effects were only considered present if the variance accounted for by both manager and subordinate values was less when the mediator was included in the equation. Complete mediation was considered present if the independent variable set no longer reached significance when the mediator was included in the equation. Partial mediation was considered present if the variance accounted for by the independent variable decreased when the mediator was included. Given the unique nature of the tests conducted herein (i.e., the combination of two variables which comprise the independent variable), the results obtained here can only be considered preliminary estimations of a mediating effect, and would require more rigorous testing under more statistically controlled circumstances to make more firm conclusions.

Consistent with Baron & Kenny's (1986) recommendations, three regression equations were estimated for each model: First, the mediator was regressed on the independent variable. Second, the dependent variable was regressed on the independent variable. Third, the dependent variable was regressed on both the independent variable and the mediator. For these models, the independent variable was the set of terms included in the final (i.e., best fitting) models obtained for each congruence relationship. If the first two equations were significant, the third equation was examined. The first step was to see if the mediator was significantly related to the dependent variable. If so, next was the test for complete mediation, which was conducted by examining whether the combination of

the independent variables failed to reach significance after the inclusion of the mediator. Throughout all the analyses, no models supported a complete mediation hypothesis. Therefore, further analyses were conducted to investigate the possibility of partial mediation. As mentioned above, partial mediation could be inferred if the independent variable set accounted for less criterion variance when the mediator was included in the equation. Since no significance test of this reduction in variance was available, the actual percentage of variance accounted for by the independent variable in both equations was compared, and judgments of the practical significance of that reduction were made (see below).

Communication Effectiveness. Table 15 shows the results of the regression analyses conducted to test the mediating effect of communication effectiveness. Across measurement modes and outcomes, evidence for mediation was found in a number of models. That is, the relationship between the independent variable set and the criterion frequently decreased when the mediator was added to the equation. As mentioned above, no models suggested complete mediation, however, some suggested partial mediation. Additionally, nearly all of the partial mediating effects were observed in those relationships involving social values. Seven of the nine social value congruence relationships received support for the partial mediating effect of communication effectiveness. In each case, the variance accounted for by the independent variable set decreased with the inclusion of the mediator. On average, this decrease was .042 or 4.2% of the variance, with all variance

Table 15
Tests of Mediation
Mediator = Communication Effectiveness

Criterion	Predictor	Actual Congruence	Subord. Perc. Congr.	Mgr. Perc. Congr.
Facet Satisfaction	Social Values	1. F = 4.188***	1. F = 29.863***	1. F = 7.624***
		2. F = 9.889***	2. F = 44.332***	2. F = 11.412***
		3. B = .411***	3. B = .239***	3. B = .434***
	Reward Values	1. n.s.	1. F = 10.364***	1. n.s.
		2. --	2. F = 23.713***	2. --
		3. --	3. B = .283***	3. --
	Work Aspect Values	1. n.s.	1. F = 2.757*	1. n.s.
		2. --	2. F = 9.606***	2. --
		3. --	3. B = .155***	3. --
Org. Commitment	Social Values	1. F = 4.048***	1. n.s.	1. F = 7.616***
		2. F = 2.198*	2. --	2. F = 2.740**
		3. B = .368***	3. --	3. B = .362***
	Reward Values	1. F = 2.764**	1. F = 10.364***	1. n.s.
		2. F = 4.441***	2. F = 16.534***	2. --
		3. B = .365***	3. B = .243***	3. --
	Work Aspect Values	1. n.s.	1. n.s.	1. n.s.
		2. --	2. --	2. --
		3. --	3. --	3. --
Extra-Role Behavior	Social Values	1. n.s.	1. F = 38.115	1. F = 8.713***
		2. --	2. F = 24.251***	2. F = 13.746***
		3. --	3. B = .202***	3. B = .188***
	Reward Values	1. n.s.	1. n.s.	1. n.s.
		2. --	2. --	2. --
		3. --	3. --	3. --
	Work Aspect Values	1. n.s.	1. n.s.	1. n.s.
		2. --	2. --	2. --
		3. --	3. --	3. --

Note: Entry 1 represents the regression of the mediator on the independent variable. Entry 2 represents the regression of the dependent variable on the independent variable. Entry 3 represents the unstandardized regression coefficient for the mediator variable in the equations including both the mediator and the predictor.
* $p < .05$; ** $p < .01$; *** $p < .001$

Table 16
Tests of Mediation
Mediator = Job Ambiguity

Criterion	Predictor	Actual Congruence	Subord. Perc. Congr.	Mgr. Perc. Congr.
Facet Satisfaction	Social Values	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --	1. F = 7.346*** 2. F = 11.412*** 3. B = .253**
	Reward Values	1. n.s. 2. -- 3. --	1. F = 5.681** 2. F = 23.713*** 3. B = .178***	1. n.s. 2. -- 3. --
	Work Aspect Values	1. F = 3.302* 2. F = 4.714** 3. B = .223***	1. F = 4.977*** 2. F = 9.606*** 3. B = .188**	1. F = 4.388*** 2. F = 4.830*** 3. B = .200**
Org. Commitment	Social Values	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --
	Reward Values	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --
	Work Aspect Values	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --
Extra-Role Behavior	Social Values	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --
	Reward Values	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --	1. n.s. 2. -- 3. --
	Work Aspect Values	1. F = 3.433* 2. F = 5.205** 3. B = .334***	1. n.s. 2. -- 3. --	1. F = 2.727** 2. F = 2.808** 3. B = .302**

Note: Entry 1 represents the regression of the mediator on the independent variable. Entry 2 represents the regression of the dependent variable on the independent variable. Entry 3 represents the unstandardized regression coefficient for the mediator variable in the equations including both the mediator and the predictor.
* $p < .05$; ** $p < .01$; *** $p < .001$

reductions being greater than 3% (with exception to the model of social values predicting organizational commitment where the reduction was 1.6%). Only four of the remaining 18 models showed evidence for the mediating effect. While these variance reductions are not large in an absolute sense, the overall pattern lends some evidence to the notion that social value congruence exerts its effect on these outcomes by first influencing the effectiveness of the communication between managers and subordinates. These data suggest that shared value for fairness, honesty, and concern for others may create an environment of more frequent and effective communication, which in turn results in higher job satisfaction, greater organizational commitment, and more frequent extra-role behavior. The more sporadic findings for reward value congruence and work aspect value congruence are not surprising since these types of value similarity would not necessarily be expected to lead to more effective communication. Additionally, measurement mode appears not to have influenced this finding since roughly equal numbers of significant findings were observed across modes.

Job Ambiguity. The results for the mediating effect of job ambiguity (Table 16) lend little or no support for a mediating effect. While a number of cases showed significant results for all three model tests, all subsequent tests for complete mediation were rejected, and the tests for partial mediation revealed very weak evidence. More specifically, the average reduction in variance accounted for by the independent variable set when the mediator was added was less than 1% (M = .0092). As such, little evidence was obtained to suggest that job ambiguity mediates the congruence outcome relationship. As mentioned

above, these analyses represent a less-than-optimal means of testing for mediational relationships, and future studies employing more rigorous methods may reveal more conclusive evidence in this area. These data do, however, represent an interesting first step which suggests that, contrary to the positions put forth in past research, job ambiguity was not found to mediate the congruence-outcome relationship.

Discussion

The results obtained in this investigation begin to address the research questions asked above, and also serve to raise new questions about the nomological network in which work value congruence operates (Cronbach & Meehl, 1955), and the mechanism by which value congruence exerts it influence. This final section summarizes the evidence gained which helps answer research questions, and discusses the additional questions that have arisen from this research.

Evaluating Traditional Congruence Measurement Approaches

As expected, the traditional congruence analyses employing profile similarity indices as predictors showed results that were consistent with past findings, but that conflicted with one another and were potentially misleading. The results from the traditional analyses revealed significant correlations between value congruence indices and satisfaction, commitment, and extra-role behavior. While the findings for D and D^2 were similar to one another, both were substantially different from the D^1 results. Any single researcher looking only at one similarity index would have likely drawn different conclusions than a different researcher examining a different index. The researcher using

the D or D^2 index would have concluded that a highly positive relationship between value congruence and satisfaction, commitment, and extra-role behavior was evident, and that neither the measurement mode nor the predictor set (i.e., specific value comparator) impacted that relationship. By contrast, the researcher employing D^1 would have likely concluded that there was no evidence for a positive congruence effect, and that there was even some evidence for a negative congruence effect (i.e., lower outcomes associated with high congruence). Additionally, neither researcher would have been able to comment on the specific source(s) (i.e., dimensions) which accounted for the degree of congruence, nor would they have been able to address the differences between different absolute levels of congruence or incongruence.

A second finding was that the constrained regression models implied by the D, D^1, and D^2 indices uniformly failed the confirmatory tests. Across all measurement modes, predictor sets, and criterion measures, constrained models were rejected in favor of unconstrained models. This supports the original contention that the constraints imposed on the analytic model by difference score-based profile similarity indices are overly restrictive, and fail to adequately represent congruence relationships. Additionally, the exploratory analyses revealed that the complexity of the response surfaces typically went beyond the complexity of the constrained analytic models. That is, unconstrained quadratic and cubic models typically provided the best fits to the data, while linear solutions were most often too simplistic to adequately represent the data. Furthermore, the 3-dimensional approach performed as well or nearly as well as the global perceived similarity measure

which some past researchers have claimed to be the single best-performing congruence measure (i.e., in explaining criterion variance; White et al., 1985). Despite its explanation of equivalent portions of the criterion variance, however, the perceived similarity measure which conceptualizes congruence as one global variable, cannot begin to provide the in-depth explanatory power that is afforded by the actual congruence and perceptual congruence measures.

Taken together, these findings support the notion that traditional conceptions of the value congruence - outcome relationship have been limited in their ability to comprehensively explain these relationships. The results obtained here showed that the 3-dimensional approach had more explanatory power than approaches employing profile similarity indices. Thus, the 3-dimensional approach demonstrated a series of advantages over the traditional methods. However, it should be noted here that the 3-dimensional approach is not without its own limitations. As discussed below in the "limitations" section, there are aspects of the traditional congruence approach which maintain advantages over the 3-dimensional approach.

Actual Congruence

The first hypothesis put forth in this investigation predicted that the highest outcome levels would be associated with the cases in which managers and their subordinates shared high value for a given job attribute. This hypothesis received strong support across all measurement modes and outcome variables. Consistent with past theories and research findings, the mutual desire for similar work environment attributes was related not only to

positive employee attitudes, but also to more frequent observations of prosocial organizational behavior. Additionally, this finding extended beyond the actual congruence mode into the perceptual congruence mode, indicating that the accurate perception of another's values is also associated with positive employee attitudes and behaviors.

The nature of these congruence relationships was further detailed by investigating the impact of shared *lack* of desire for job attributes (i.e., congruence at low absolute levels). Prior to this investigation, no research had distinguished between different levels of congruence. As predicted by Hypothesis 2, positive slopes were frequently observed along the X=Y line, indicating lower outcome levels when managers and subordinates shared low value for given aspects of their jobs. Also as predicted, this finding was most prevalent with respect to social values (i.e., concern for others, honesty, fairness). Thus, it has been shown here that simple similarity in values is not sufficient to create more positive employee attitudes and behavior; rather, both persons must have high desire for the same attribute for the positive relationship to be observed. When neither manager nor subordinate desired the attribute in question, outcomes were not as positive, and were often negative. Furthermore, when *social* values were seen as mutually undesirable, the associated employee attitudes were even more negative and extra-role behavior was observed less frequently.

Finally, stronger congruence effects were also found in the models incorporating facet satisfaction than in models associated with the other two outcomes. For the satisfaction models, the response surfaces corresponding to the raw data were less

sporadic, and more congruent with the predicted surfaces. Also, all three of these surfaces revealed significant slopes along the X=Y line. For organizational commitment and extra-role behavior, only the plots for social values revealed the same significant slopes along the X=Y line. Thus, the actual congruence results for job satisfaction were somewhat stronger and more consistent than those for either organizational commitment or extra-role behavior.

The actual congruence findings lend indirect support to the behavioral supply and reinforcement theory of value congruence put forth above. Support comes especially from models related to social values, which are more directly behavioral in nature (i.e., as opposed to reward values or work aspect values). As discussed above, the notion is that when managers and subordinates share high value for the same work attributes, the behavior of both persons will be driven at least in part by their mutual work-related desires, thereby increasing the available supply of value-fulfilling resources (i.e., behaviors) in the work environment. Managers and subordinates who place high value on concern for others, for example, would be expected to more frequently help one another in difficult times, provide social support, behave in more collegial ways, etc. Additionally, these value-driven behaviors would be more frequently reinforced in an environment where the manager and subordinate share high value for the attribute.

At the other end of the high congruence continuum, managers and subordinates are similar in their *lack* of desire for a given work attribute. Again, both persons are expected to behave in value-driven ways, which will result in fewer behaviors which act to fulfill the value, and result in less frequent reinforcement of value-consistent behavior. As such, it

would seem on the surface that this would be acceptable to the individual who reports that the attribute is not one of his or her values. However, as mentioned above, it seems likely that a mutual disinterest in certain environmental variables (i.e., social values like concern for others, honesty, and fairness) could lead to a neglect of certain environmental attributes to a point which could influence attitudes and behavior. To reiterate, the current data cannot provide direct support for these postulates; however, the presence of a positive slope along the line of congruence (mainly for social values) shows that some mechanism is in operation which results in lower outcome levels in the regions of shared low value. The behavioral supply and reinforcement theory is but one potential explanation. Other researchers may derive other competing explanations. Future research could build on this investigation by gathering more detailed behavioral data in conjunction with value measures to provide a more direct test of these concepts.

With regard to incongruence, the patterns observed in the actual congruence mode were largely consistent with expectations, with several exceptions. The basic notion that incongruence would be associated with negative attitudes and behavior was supported. The more subtle distinction between the two different types of incongruence, however, received only tenuous support. That is, both types of incongruence tended to result in equally low outcome levels. Only several examples showed the predicted finding of moderate outcome levels when manager values were high and subordinate values were low. Recall that it was predicted that since all values are expected to be at least somewhat desirable to most people, incongruence of the form just described would not lead to

extreme negative outcomes; but would rather lead to moderate outcomes. Thus, the findings for incongruence lend only partial support to the behavioral supply and reinforcement explanation of the congruence mechanism.

Perceptual Congruence

The results from both types of perceptual congruence failed to provide support for the behavioral prediction explanation for the positive effect of accurate perceptions. To the contrary, the results are more akin to the behavioral supply and reinforcement theory put forth herein. Both Kluckholn (1951) and Katz & Kahn (1978) theorized that accurate predictions of others' behavior would lead to greater role clarity, and thus positive behavioral and attitudinal outcomes. (Note: The analyses here use work values as a proxy for behavior in this theoretical framework, making the assumption that perceptions of work values are closely related to behavioral expectations.) Hypothesis 5 predicted a nonsignificant slope along the X=Y line, indicating no difference in outcomes between perceptual congruence at high and low absolute levels. Support for Hypothesis 5, if found, would support the behavioral prediction theory (Katz & Kahn, 1978; Kluckholn, 1951) The obtained surfaces, however, often showed positive slopes along the X=Y lines, indicating that the positive effect of accurate perceptions was not universal. To the contrary, perceptual congruence at low absolute levels was typically associated with low outcome levels, indicating that accurate perceptions can also be associated with low satisfaction, commitment, and extra-role behavior, thus refuting the behavioral prediction theory. Not surprisingly, the effect was more prevalent in the SPC measurement mode

than in the MPC mode. That is, subordinates' accurate perceptions of their managers' low values were associated with low outcome levels, as shown by the number of significant positive X=Y slopes in those models. For MPC, however, managers' accurate perceptions of subordinates' low values were not necessarily associated with low outcome levels; rather, they were associated with outcome levels similar to those related to their accurate perceptions of high values (i.e., Only 1 of the 9 MPC models revealed a significant slope along the X=Y line.)

These findings are not surprising, yet they refute the notion that accurate prediction alone is sufficient to create positive outcomes. The important caveat, it seems, is *accurate prediction of what?* If the answer is 'high value for job attributes', then outcomes can be expected to be positive. However, if the answer is 'low value for job attributes', then outcomes can be expected to be negative in the SPC mode, and moderate in the MPC mode. It seems, then, that in the case of SPC, the positive effect of accurately perceiving one's manager's values is outweighed by the awareness that the manager does not value key job attributes. As mentioned above, these findings lend greater support to the behavioral supply and reinforcement theory. One in favor of that theory might argue here that the subordinate, upon the awareness that his or her manager has little desire for important job attributes, may anticipate receiving few value-fulfilling resources in the work environment. Thus, the resulting attitudes and behaviors of the subordinate are negative.

Recall also that the behavioral prediction theory argues that accurate behavioral prediction results in positive attitudes and behavior by first decreasing job ambiguity. The

results of the tests of the mediating effect of job ambiguity, however, did not support the hypothesized relationship. Only several of the tested relationships provided evidence for a significant mediating effect of job ambiguity, and these results followed no pattern that could be meaningfully interpreted. Thus, the failure of job ambiguity to emerge as a mediator of the congruence-outcome relationship provides yet more evidence that the behavioral prediction theory does not adequately represent the value congruence mechanism.

Also consistent with the findings obtained in the actual congruence mode was that the strongest perceptual congruence effects were observed for social values predicting satisfaction. Again, those values that are most behavioral in nature resulted in the greatest variance in outcomes between the regions of congruence and incongruence (i.e., steepest X=Y slopes and most curvilinear X=-Y slopes). Additionally, the results associated with job satisfaction were most readily interpretable (i.e., revealed the most uniform response surfaces) suggesting that the congruence effects were most predictable for this criterion. Indeed, the largest proportion of variance accounted for was in the model employing social values as predictors and satisfaction as the criterion.

Moderator Effects

Two variables were presented as potential moderators of the value congruence - outcome relationship. First, managerial control over work values was predicted to moderate the congruence effect by accentuating it when control was high and reducing it when control was low. The results of these analyses revealed little evidence for the

predicted effect. Several plots did show the predicted differences between low and high managerial control. However, these findings were few among a much larger set of analyses, suggesting that overall, the moderating effect was not found. This was especially the case among the perceptual congruence analyses where the moderator analyses revealed some significant moderating effects, but no patterns suggesting any consistent moderating effect.

Second, frequency of interaction was expected to influence congruence relationships by reducing congruence effects when managers and subordinates interacted less frequently. The results, however, revealed the opposite finding. Where low frequency of interaction was reported, stronger congruence effects were observed. (Note: As with the managerial control results, moderating effects were observed primarily in the actual congruence models, and only rarely in the perceptual congruence models.) Recall that the primary distinction between low and high frequency of interaction models was the line of incongruence (i.e., greater curvature along that line), suggesting more negative effects of incongruence when interaction was infrequent. In cases where managers and subordinates were incongruent in their work values, resulting attitudes and behavior were more negative when the dyads reported spending less time interacting with one another, and less negative (more positive) when they reported spending more time together. One potential explanation for this effect is that an adaptability mechanism may operate within manager-subordinate relationships where work value incongruence is present. To sustain a constructive working relationship, the two must learn to deal with their differences. In

those cases where differences are too great, one or the other may take action to sever the relationship (e.g., resign, transfer, etc.), resulting in few observations of cases in which frequent interaction combined with value incongruence is associated with moderate or high outcomes. Stated differently, when managers and subordinates who have different work values must interact frequently, the options are to adapt or withdraw from the relationship. Those who adapt can be expected to report more moderate levels of satisfaction and commitment, while those who cannot adapt are likely to resign or transfer (and therefore do not contribute data points in studies such as this). On the other hand, if the two rarely interact, there may be less opportunity to adapt to differences, making the relationship more burdensome to the two individuals, which results in more negative employee attitudes and behavior. However, since interaction is less frequent, individuals may be less likely to resign or transfer, or may tolerate differences longer than those who must interact more frequently with incongruent others. This speculative line of reasoning would, of course, require more directed research to substantiate its propositions.

Mediator Effects

Some evidence was presented suggesting that the effectiveness with which managers and subordinates communicate may mediate the congruence-outcome relationship when social values are being compared. Preliminary evidence suggested that managers and subordinates who share value for honesty, fairness, and concern for others, also communicate more effectively and understand one another better, resulting in more positive employee attitudes and behavior. Not surprisingly, this relationship was not observed for

reward value congruence or work-aspect value congruence, for which the link between these values and communication effectiveness is less obvious. These results support Katz & Kahn's (1978) proposition that the effects of congruence work through interpersonal communication in influencing employee attitudes and behavior. Clearly, this effect would need further testing and evaluation under more rigorous methods. However, these preliminary data suggest that without effective communication between managers and subordinates, value congruence is unlikely to have any effect.

Summary

The present research has presented an application of the use of the 3-dimensional approach to value congruence measurement over the traditional 2-dimensional approach employing profile similarity indices and difference scores. The 2-dimensional approach was shown to be inconsistent and misleading for this application, and the constraints inherent to that approach have been shown to be inappropriate. The 3-dimensional approach, by contrast, consistently explained more variance in the outcomes and provided much more interpretational value by allowing for consideration of different dimensions of values and the sources of value congruence. Additionally, it was shown that the type of congruence being measured (i.e., measurement mode) is an important consideration as well in the investigation of value congruence, as many different findings were observed in the different measurement modes.

Beyond the methodological considerations, the specific nature of manager-subordinate value congruence was shown to be somewhat different than what has been

conceptualized in the past. First, high congruence in values was not unconditionally positive as past researchers have assumed. Rather, only congruence at high absolute levels was positive, while congruence at low absolute levels was generally negative, indicating that the shared lack of desire for certain work attributes is associated with lower levels of employee attitudes and behaviors. Contrary to predictions, incongruence was typically associated with negative outcomes, regardless of its form.

Perceptual congruence was also shown to be an important predictor of employee attitudes and behavior. In fact, models in the SPC measurement mode generally accounted for the more variance than the AC or MPC measurement modes. Clearly, the accuracy of one's perceptions of a manager's or subordinate's values can be related to satisfaction, commitment, and extra-role behavior. Contrary to predictions, the perceptual congruence results were not consistent with the behavioral prediction explanation for perceptual congruence effects. Rather, the findings were more consistent with the behavioral supply and reinforcement theory put forth above.

Social value congruence was clearly identified as the most consistent predictor of satisfaction, commitment, and extra-role behavior. While reward values and work aspect values showed significant predictor-criterion relationships, these models typically accounted for less variance in criteria, and revealed less uniform, interpretable response surfaces than the social value models. It seems from these results that social values (e.g., honesty, fairness, concern for others) are the most powerful components of the manager-subordinate value comparison.

The value congruence relationship was also shown to be moderated by the frequency with which managers and subordinates interact. When interacting less frequently, congruence effects tend to be accentuated. This was primarily the case with respect to incongruence, where outcomes associated with incongruence were more negative when managers and subordinates reported infrequent interaction.

Finally, preliminary evidence suggested that the effectiveness with which managers and subordinates communicate mediates the relationship between social value congruence and employee attitudes and behaviors. Consistent with Katz & Kahn's (1978) theory, value congruence may exert its effect by first influencing communication effectiveness, which in turn results in higher levels of satisfaction, commitment, and extra-role behavior.

Limitations

The first limitation of the present research is related to the use of the 3-dimensional approach. While this approach offers many advantages in the study of congruence, it also sacrifices an advantage of using a profile similarity approach. Under the latter, profiles are compared item by item, thereby accounting for differences in profile shape, elevation, and scatter. Under the 3-dimensional approach, scale means are constructed which eliminate item level comparisons. As a result, the primary comparison is of elevation. While the 3-dimensional plots can assist with the examination of shape and scatter, there is no statistical accounting for these profile differences. To be sure, the two approaches are different in their representation of congruence. This paper has argued for the use of the 3-dimensional approach, but the application of that approach forfeits some advantages to making

comparisons at the item level.

Next, the present findings could be substantially enhanced by adding behavioral data to the self-report data collected here. Considerable speculation and theory was presented which incorporated predictions about how work values might be related to work behaviors. For example, it was suggested in one case that managers who reported high value for a given work attribute could be expected to behave in ways that maximize the presence of that attribute in the work environment. The current work value literature has not comprehensively addressed the link between values and behavior, and much could be done to address that issue. For the present research, an attempt has been made to provide general behavioral framework in which the mechanism of value congruence can be interpreted and explained. More research is needed to test these notions.

A third limitation is that multiple work values were combined into more global work value categories or factors in order to address the competing goals of sampling the wide range of values that can potentially be measured, while at the same time maintaining adequate power to obtain significant effects. Future research could build on this research by measuring more specific work values and making comparisons between them. A recommended starting point is to measure several social values independently and compare the results between them. This research combined several social values into one scale to maintain statistical power. Since this value measure revealed the most consistent congruence findings, future researchers would do well to further explore its nature and components.

As is inherent to all survey research, common method bias can also be identified as a potential limitation, in that it may account for relationships among certain measures. As mentioned above, there is evidence here that common method variance is not the primary factor accounting for the relationships among the variables herein. While value measures were generally rated highly (as expected), there was considerable variance in each of these measures and correlations between values were at the moderate level (Nunnally, 1978) suggesting that different values were perceived as substantially different by study participants.

Conclusion

This research re-evaluated the relationships between value congruence and the outcomes of job satisfaction, organizational commitment, and extra-role behavior, under the direction of a new approach to this research. This new approach incorporates concepts from value congruence research, similarity research, and the 3-dimensional approach to congruence proposed by Edwards (1991; 1994). Past theories and hypotheses regarding congruence relationships were challenged on the premise that they fail to consider the complete nature of these relationships. By relying on a 2-dimensional conceptualization, and not addressing the differences between different types of congruence, past research falls short of providing a comprehensive explanation of the outcomes of value congruence. A critical distinction between past theories and the present approach is that in the latter, value congruence is not assumed to be unconditionally positive, and incongruence is not assumed to be unconditionally negative. It has been shown here that two necessary

components in the analysis of congruence include (a) specification of the type of congruence being measured, and (b) knowledge of the absolute level at which congruence occurs.

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Appendix A

WORK VALUES SURVEY
Subordinate Form

Each of us has our own unique set of values. This survey deals with work values. Work values are those attributes and conditions of your job/workplace that you feel to be the most desirable or "valuable". Your manager's values are also important since you must interact with him/her regularly. This survey asks you to think both about your own work values, and your managers work values.

SECTION 1 - Your values - Rate the extent to which YOU find each of the following conditions to be a valuable/desirable aspect of your work environment. Use the following scale to make your ratings.

1 slightly desirable	2 somewhat desirable	3 moderately desirable	4 average	5 quite desirable	6 highly desirable	7 among my most-desired job attributes

_____ Truthfulness	_____ High pay/salary	_____ A manageable amount of work
_____ Honesty	_____ Opportunities to increase pay	_____ Not having too much work to do
_____ Freedom to express opinions openly	_____ Good benefits (e.g., insurance, IRAs)	_____ A light workload
_____ Helpful/encouraging atmosphere	_____ Opportunity for career advancement	_____ Enjoyable work
_____ Personal friendships at work	_____ A job with many career opportunities	_____ A job with meaningful results
_____ Coworker support during difficult times	_____ Many promotional opportunities	_____ Pleasurable work tasks
_____ Fair treatment at work	_____ Appreciation for a job well done	_____ A physically comfortable workplace
_____ Equal opportunities for all employees	_____ Credit for good performance	_____ A good geographic work location
_____ Fairness among employees	_____ Recognition for working hard	_____ Clean/attractive surroundings

SECTION 2 - Your manager's values - Think about YOUR MANAGER or supervisor. Rate the extent to which you perceive each of the following attributes/conditions to be valuable/desirable to your manager or supervisor. Use the following scale to make your ratings:

1 slightly desirable	2 somewhat desirable	3 moderately desirable	4 average	5 quite desirable	6 highly desirable	7 among his/her most-desired job attributes

_____ Truthfulness	_____ High pay/salary	_____ A manageable amount of work
_____ Honesty	_____ Opportunities to increase pay	_____ Not having too much work to do
_____ Freedom to express opinions openly	_____ Good benefits (e.g., insurance, IRAs)	_____ A light workload
_____ Helpful/encouraging atmosphere	_____ Opportunity for career advancement	_____ Enjoyable work
_____ Personal friendships at work	_____ A job with many career opportunities	_____ A job with meaningful results
_____ Coworker support during difficult times	_____ Many promotional opportunities	_____ Pleasurable work tasks
_____ Fair treatment at work	_____ Appreciation for a job well done	_____ A physically comfortable workplace
_____ Equal opportunities for all employees	_____ Credit for good performance	_____ A good geographic work location
_____ Fairness among employees	_____ Recognition for working hard	_____ Clean/attractive surroundings

SECTION 3 - Your manager's control - Think again about YOUR MANAGER or supervisor. Rate the extent to which you feel he/she has control/influence over the amount of each attribute/condition that you experience. Use the following scale to make your ratings:

1	2	3	4	5	6	7
very little control	slight control	moderate control	average	considerable control	much control	a great deal of control

_____ Truthfulness	_____ High pay/salary	_____ A manageable amount of work
_____ Honesty	_____ Opportunities to increase pay	_____ Not having too much work to do
_____ Freedom to express opinions openly	_____ Good benefits (e.g., insurance, IRAs)	_____ A light workload
_____ Helpful/encouraging atmosphere	_____ Opportunity for career advancement	_____ Enjoyable work
_____ Personal friendships at work	_____ A job with many career opportunities	_____ A job with meaningful results
_____ Coworker support during difficult times	_____ Many promotional opportunities	_____ Pleasurable work tasks
_____ Fair treatment at work	_____ Appreciation for a job well done	_____ A physically comfortable workplace
_____ Equal opportunities for all employees	_____ Credit for good performance	_____ A good geographic work location
_____ Fairness among employees	_____ Recognition for working hard	_____ Clean/attractive surroundings

SECTION 4 - Your satisfaction - Rate the extent to which you feel satisfied with the current level of each attribute/condition in your current job. Use the following scale to make your ratings:

1	2	3	4	5	6	7
not at all satisfied	slightly satisfied	somewhat satisfied	average	quite satisfied	highly satisfied	extremely satisfied

_____ Truthfulness	_____ High pay/salary	_____ A manageable amount of work
_____ Honesty	_____ Opportunities to increase pay	_____ Not having too much work to do
_____ Freedom to express opinions openly	_____ Good benefits (e.g., insurance, IRAs)	_____ A light workload
_____ Helpful/encouraging atmosphere	_____ Opportunity for career advancement	_____ Enjoyable work
_____ Personal friendships at work	_____ A job with many career opportunities	_____ A job with meaningful results
_____ Coworker support during difficult times	_____ Many promotional opportunities	_____ Pleasurable work tasks
_____ Fair treatment at work	_____ Appreciation for a job well done	_____ A physically comfortable workplace
_____ Equal opportunities for all employees	_____ Credit for good performance	_____ A good geographic work location
_____ Fairness among employees	_____ Recognition for working hard	_____ Clean/attractive surroundings

SECTION 5 - Please respond to these additional questions using the following scale:

1	2	3	4	5	6	7
disagree strongly	disagree	disagree slightly	neutral	agree slightly	agree	agree strongly

_____ 1. I firmly stand behind the goals and values of the company I work for.

_____ 2. I am willing to work extremely hard to help my company meet its objectives.

_____ 3. I have a definite interest in remaining a part of the company I work for.

_____ 4. The goals and objectives of the company I work for are worth my support.

1	2	3	4	5	6	7
disagree strongly	disagree	disagree slightly	neutral	agree slightly	agree	agree strongly

_____ 5. My manager and I see things in much the same way.

_____ 6. My manager and I are alike in a number of areas.

_____ 7. My manager and I are able to communicate very well together

_____ 8. My manager and I are very good about keeping each other informed about important information.

_____ 9. I feel comfortable discussing things with my manager.

_____ 10. I am certain how to go about getting my job done (the methods to use).

_____ 11. I know what is the best way (approach) to go about getting my work done.

_____ 12. I know how to get my work done (what procedures to use).

_____ 13. I know when I should be doing a particular aspect (part) of my job.

_____ 14. I am certain about the sequencing of my work activities (when to do what).

_____ 15. My job is such that I know when I should be doing a given work activity.

_____ 16. I know what my supervisor considers satisfactory work performance.

_____ 17. It is clear to me what is considered acceptable performance by my supervisor.

_____ 18. I know what level of performance is considered acceptable by my supervisor.

_____ 19. I interact with my manager very frequently.

_____ 20. My manager and I are in very frequent contact.

_____ 21. I like my manager.

_____ 22. I get along well with my manager.

_____ 23. Working for my manager is a pleasure.

Descriptive Information

24. Your Age _____

25. Sex (circle one) male female

26. Type of Employment (circle one) part time full time

27. Your Current Position (job title) _____

28. Type of Organization (i.e., service, manufacturing, etc.) _____

29. Number of months working under your current manager _____

30. Do you intend to deliver a version of this survey to your manager/supervisor? yes no

If not, why? _____

WORK VALUES SURVEY
Manager Form

Each of us has our own unique set of values. This survey deals with work values. Work values are those attributes and conditions of your job/workplace that you feel to be the most desirable or "valuable". Your subordinate's values (i.e., the person who gave you this survey) are also important since you must interact with him/her regularly. This survey asks you to think both about your own work values, and your subordinate's work values.

SECTION 1 - Your values - Rate the extent to which YOU find each of the following conditions to be a valuable/desirable aspect of your work environment. Use the following scale to make your ratings:

1 slightly desirable	2 somewhat desirable	3 moderately desirable	4 average	5 quite desirable	6 highly desirable	7 among my most-desired job attributes

_____ Truthfulness	_____ High pay/salary	_____ A manageable amount of work
_____ Honesty	_____ Opportunities to increase pay	_____ Not having too much work to do
_____ Freedom to express opinions openly	_____ Good benefits (e.g., insurance, IRAs)	_____ A light workload
_____ Helpful/encouraging atmosphere	_____ Opportunity for career advancement	_____ Enjoyable work
_____ Personal friendships at work	_____ A job with many career opportunities	_____ A job with meaningful results
_____ Coworker support during difficult times	_____ Many promotional opportunities	_____ Pleasurable work tasks
_____ Fair treatment at work	_____ Appreciation for a job well done	_____ A physically comfortable workplace
_____ Equal opportunities for all employees	_____ Credit for good performance	_____ A good geographic work location
_____ Fairness among employees	_____ Recognition for working hard	_____ Clean/attractive surroundings

SECTION 2 - Your subordinate's values - Think about YOUR SUBORDINATE (i.e., the person who gave you this survey). Rate the extent to which you perceive each of the following attributes/conditions to be valuable/desirable to your subordinate. Use the following scale to make your ratings:

1 slightly desirable	2 somewhat desirable	3 moderately desirable	4 average	5 quite desirable	6 highly desirable	7 among his/her most-desired job attributes

_____ Truthfulness	_____ High pay/salary	_____ A manageable amount of work
_____ Honesty	_____ Opportunities to increase pay	_____ Not having too much work to do
_____ Freedom to express opinions openly	_____ Good benefits (e.g., insurance, IRAs)	_____ A light workload
_____ Helpful/encouraging atmosphere	_____ Opportunity for career advancement	_____ Enjoyable work
_____ Personal friendships at work	_____ A job with many career opportunities	_____ A job with meaningful results
_____ Coworker support during difficult times	_____ Many promotional opportunities	_____ Pleasurable work tasks
_____ Fair treatment at work	_____ Appreciation for a job well done	_____ A physically comfortable workplace
_____ Equal opportunities for all employees	_____ Credit for good performance	_____ A good geographic work location
_____ Fairness among employees	_____ Recognition for working hard	_____ Clean/attractive surroundings

SECTION 3 - Your control over job attributes/conditions - Rate the extent to which you feel you have control/influence over the amount of each attribute/condition that your subordinate experiences. Use the following scale to make your ratings:

1	2	3	4	5	6	7
very little control	slight control	moderate control	average	considerable control	much control	a great deal of control

_____ Truthfulness	_____ High pay/salary	_____ A manageable amount of work
_____ Honesty	_____ Opportunities to increase pay	_____ Not having too much work to do
_____ Freedom to express opinions openly	_____ Good benefits (e.g., insurance, IRAs)	_____ A light workload
_____ Helpful/encouraging atmosphere	_____ Opportunity for career advancement	_____ Enjoyable work
_____ Personal friendships at work	_____ A job with many career opportunities	_____ A job with meaningful results
_____ Coworker support during difficult times	_____ Many promotional opportunities	_____ Pleasurable work tasks
_____ Fair treatment at work	_____ Appreciation for a job well done	_____ A physically comfortable workplace
_____ Equal opportunities for all employees	_____ Credit for good performance	_____ A good geographic work location
_____ Fairness among employees	_____ Recognition for working hard	_____ Clean/attractive surroundings

SECTION 4 - Think again about your SUBORDINATE (i.e., the person who gave you this survey), and respond to the remaining items. Use the following scale to make your ratings:

1	2	3	4	5	6	7
disagree strongly	disagree	disagree slightly	neutral	agree slightly	agree	agree strongly

_____ 1. My subordinate frequently performs helpful tasks which go beyond his/her job description.

_____ 2. My subordinate often volunteers to do extra work to help others.

_____ 3. My subordinate readily accepts difficult assignments, even if they are not part of his/her usual job duties.

_____ 4. My subordinate looks out for the company's interests.

Descriptive Information

5. Your Age _____

6. Your Sex (circle one) male female

7. Your Current Position (job title) _____

Appendix B

Figure 1
Hypothesized Surface for Actual Congruence

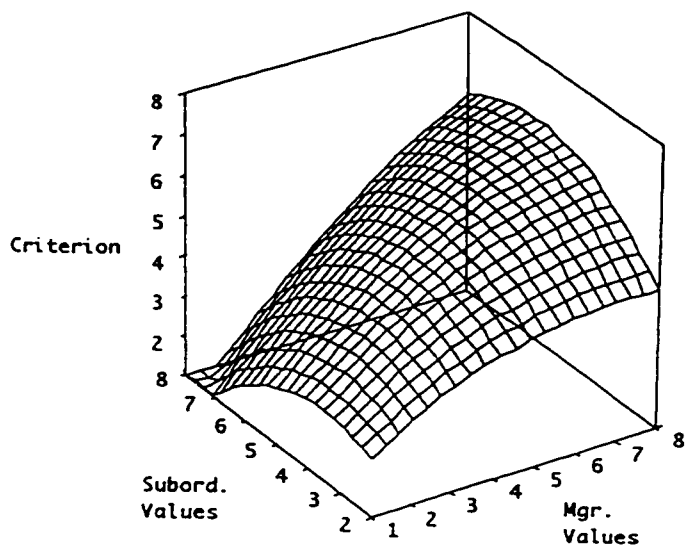


Figure 2
Hypothesized Surface for
Subordinate Perceptual Congruence

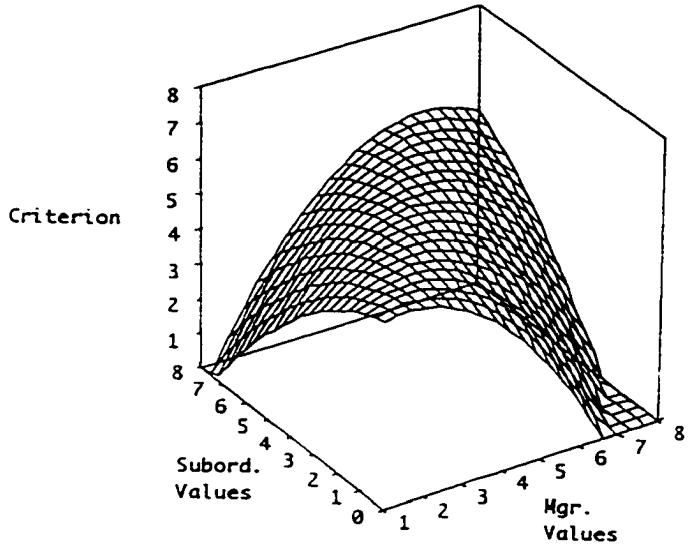


Figure 3
Hypothesized Surface for
Manager Perceptual Congruence

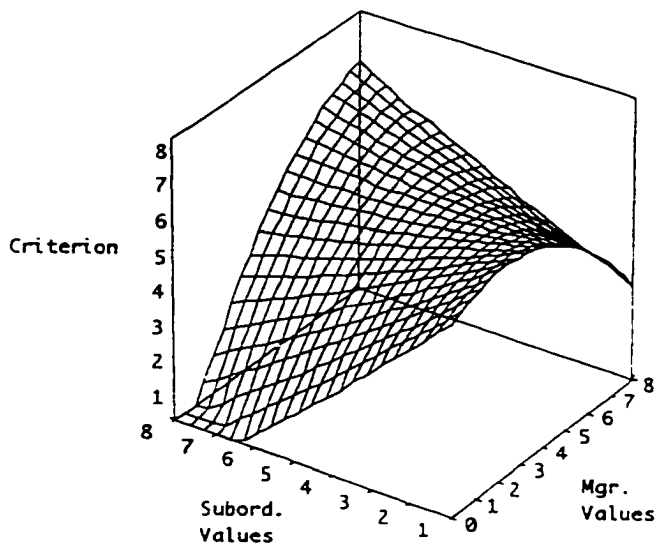
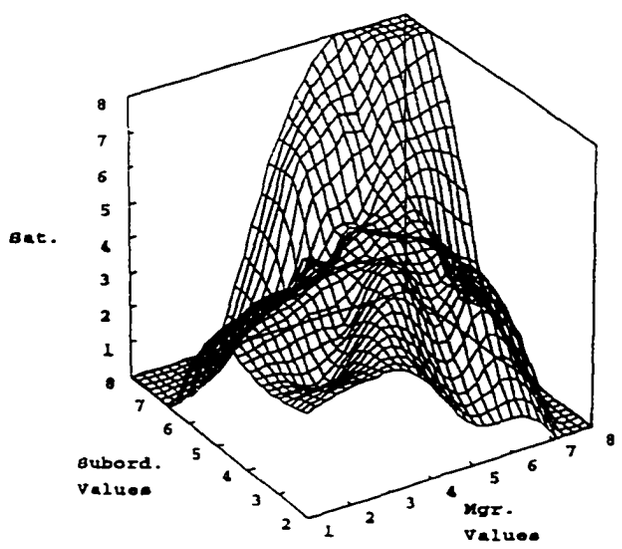


Figure 4
Mode: Actual Congruence
Criterion: Satisfaction (Social)
Predictor: Social Values



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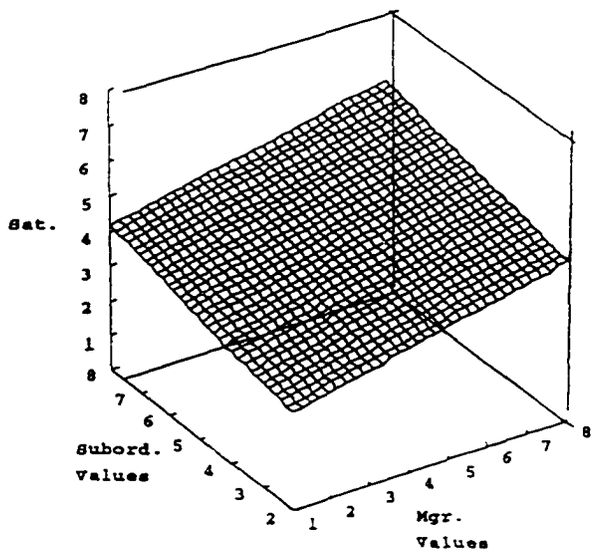

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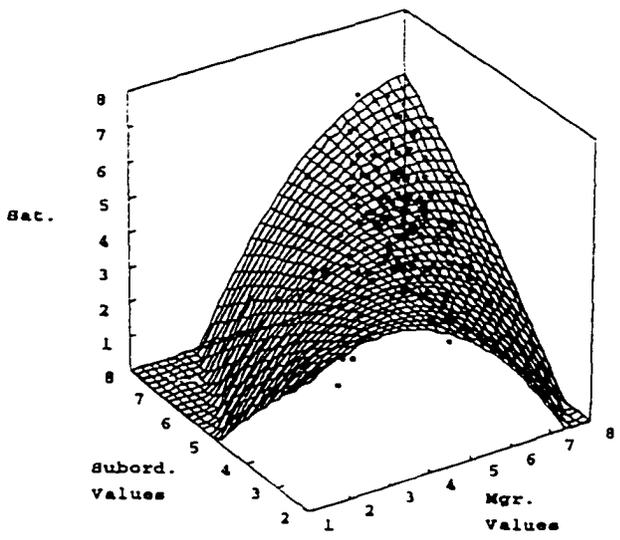

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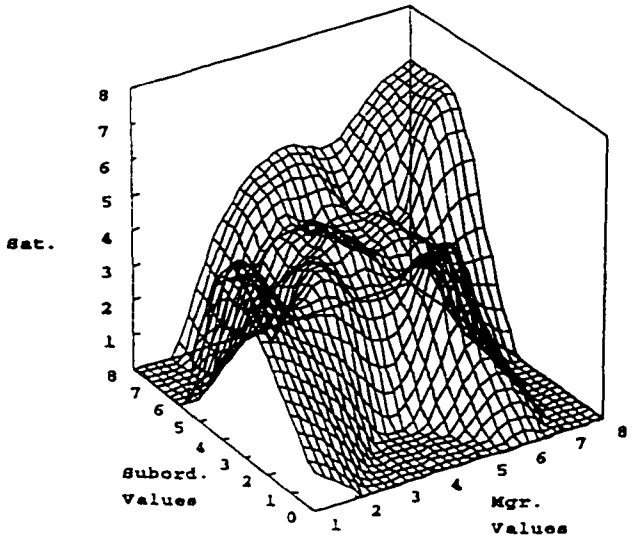
Figure 5
Mode: Actual Congruence
Criterion: Satisfaction (Reward)
Predictor: Reward Values



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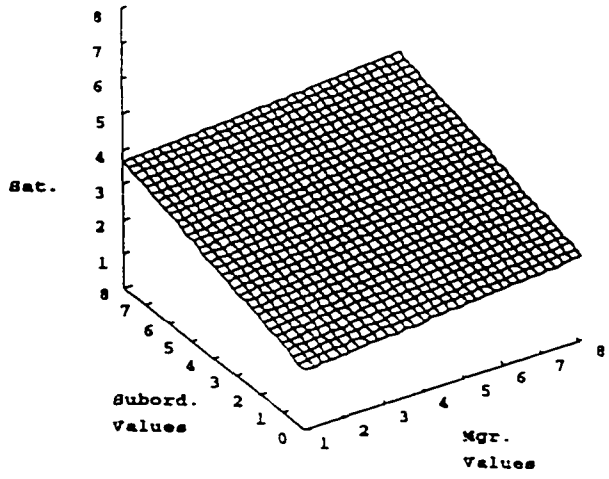

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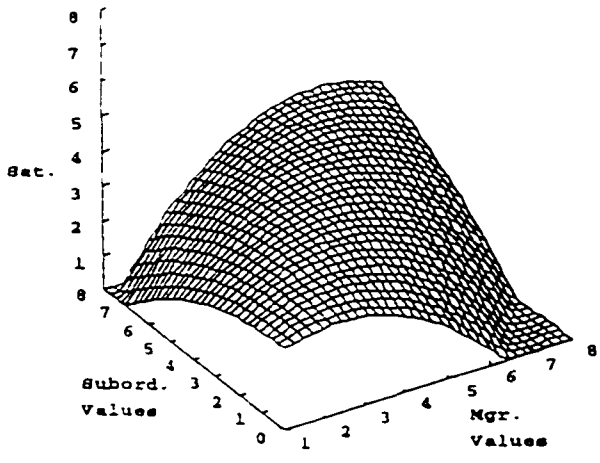
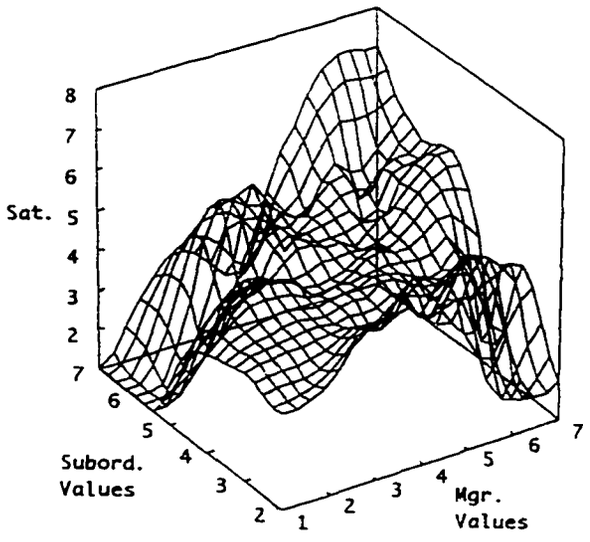
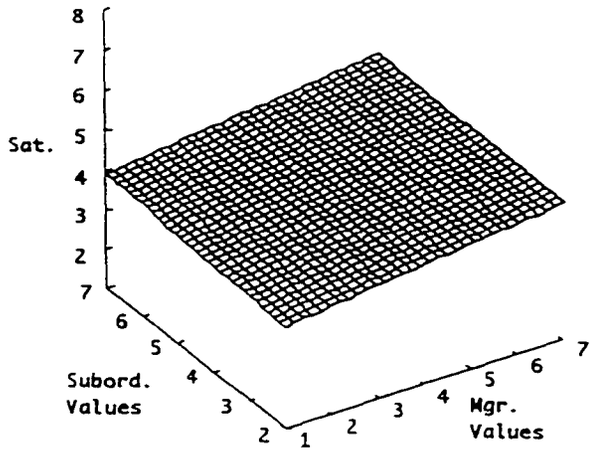


(c) quadratic solution

Figure 6
Mode: Actual Congruence
Criterion: Satisfaction (Work Aspect)
Predictor: Work Aspect Values



(a) raw data



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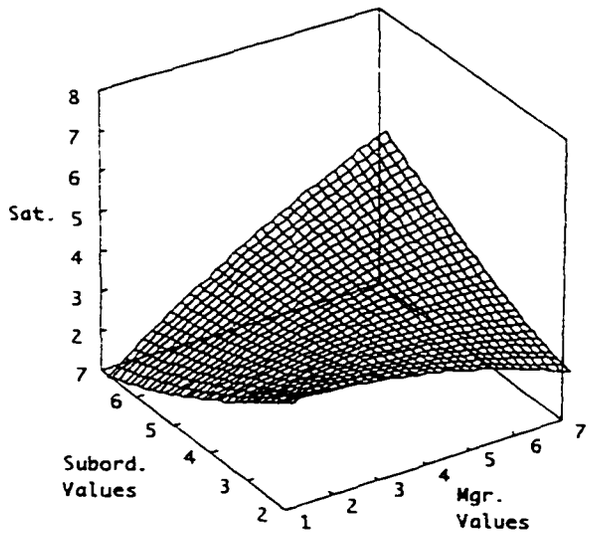
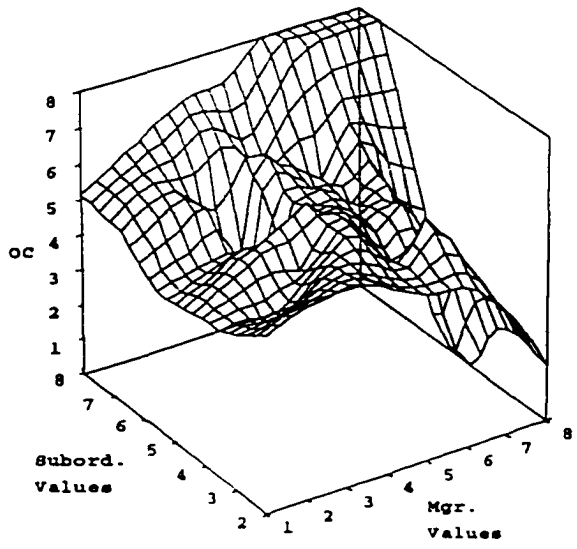
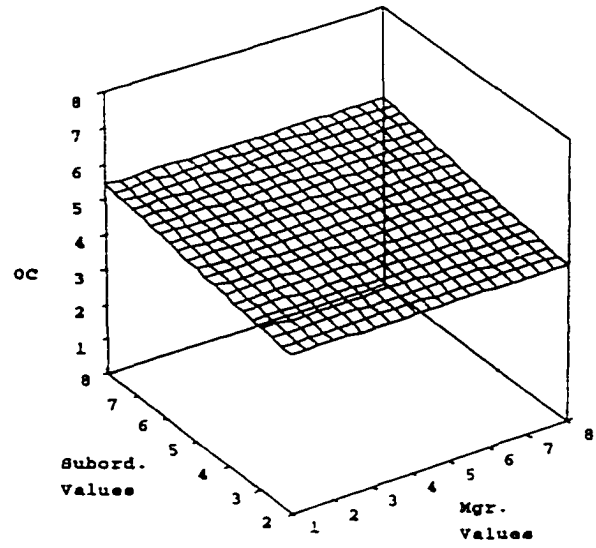


(c) quadratic solution

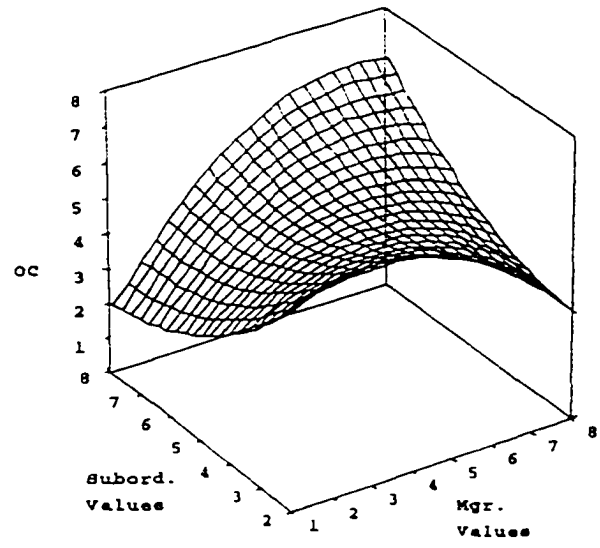
Figure 7
Mode: Actual Congruence
Criterion: Org. Commitment
Predictor: Social Values



(a) raw data

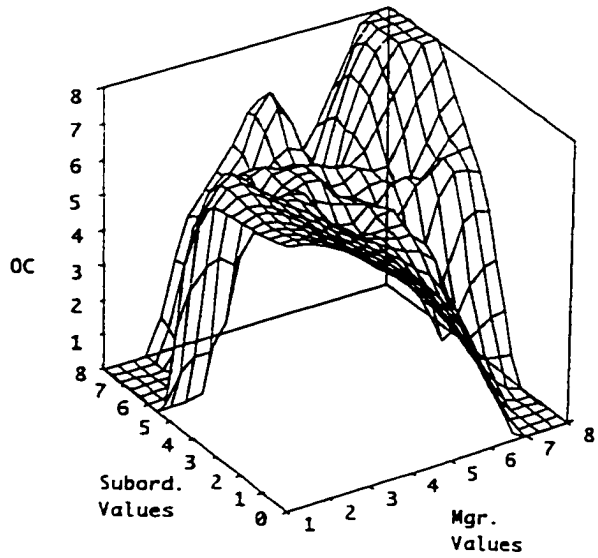


(b) linear solution

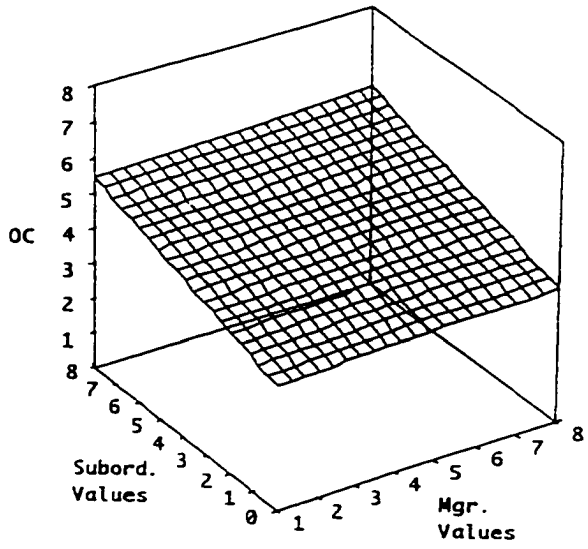


(c) quadratic solution

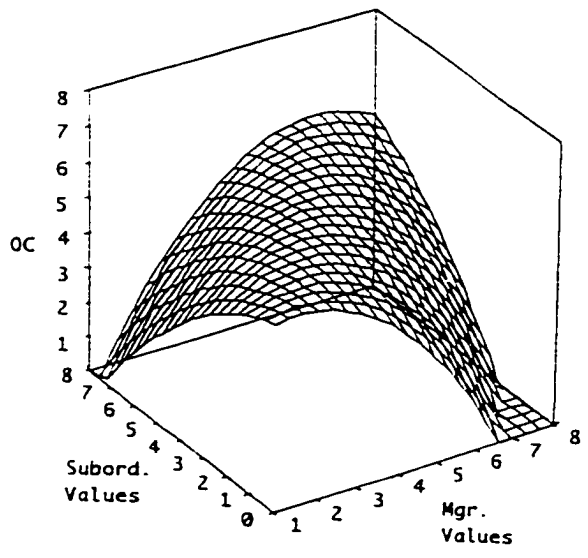
Figure 8
Mode: Actual Congruence
Criterion: Org. Commitment
Predictor: Reward Values



(a) raw data

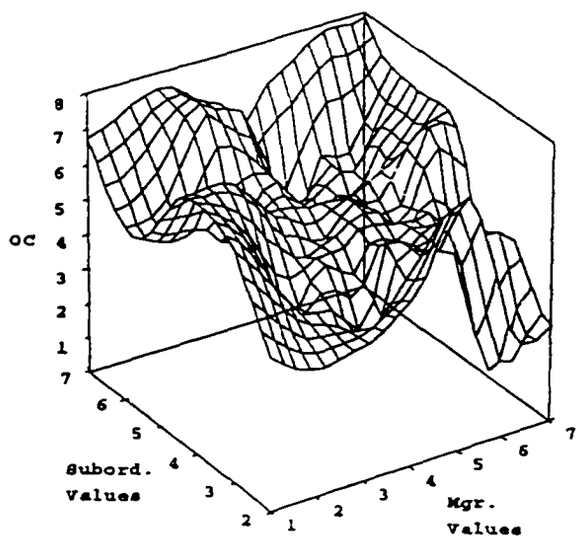


(b) linear solution

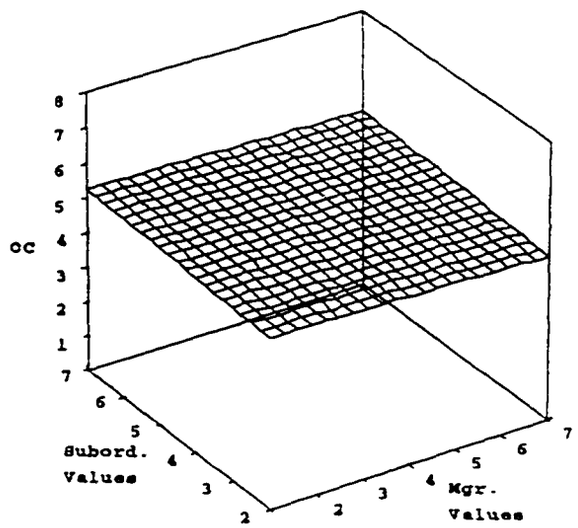


(c) quadratic solution

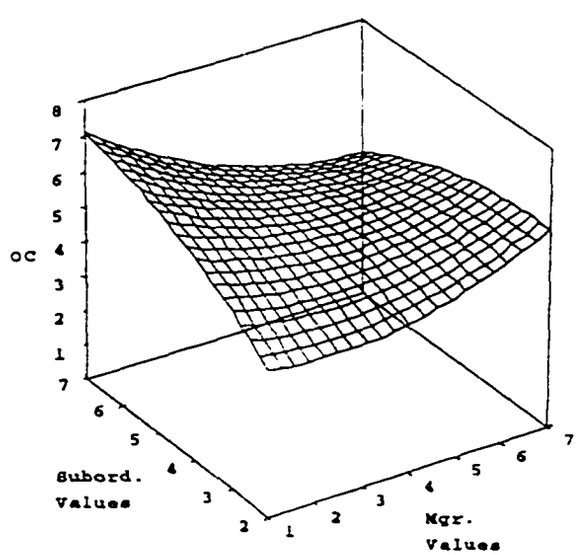
Figure 9
Mode: Actual Congruence
Criterion: Org. Commitment
Predictor: Work Aspect Values



(a) raw data

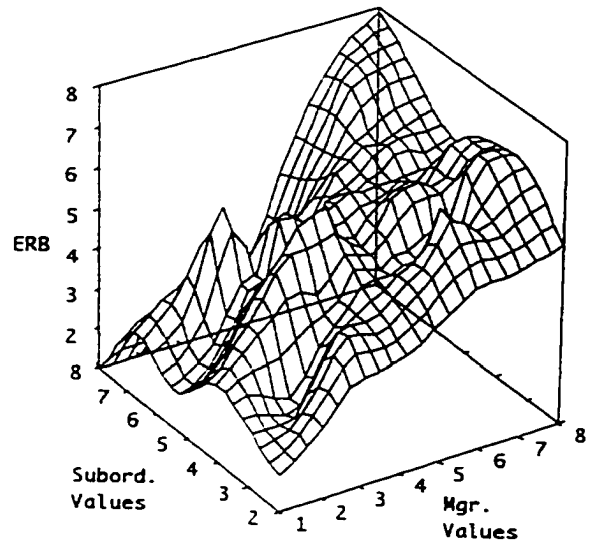


(b) linear solution

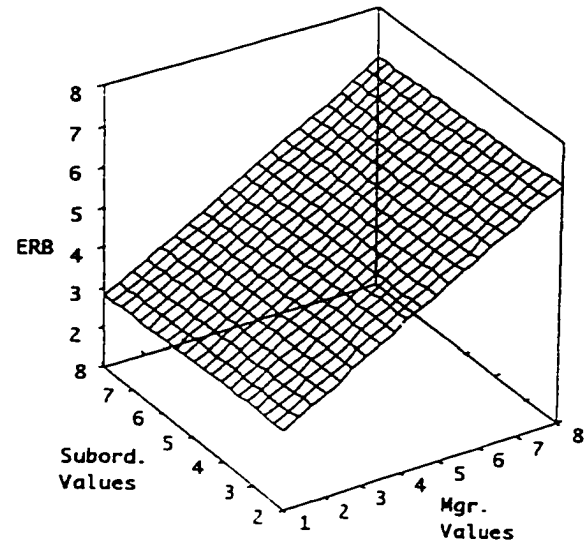


(c) quadratic solution

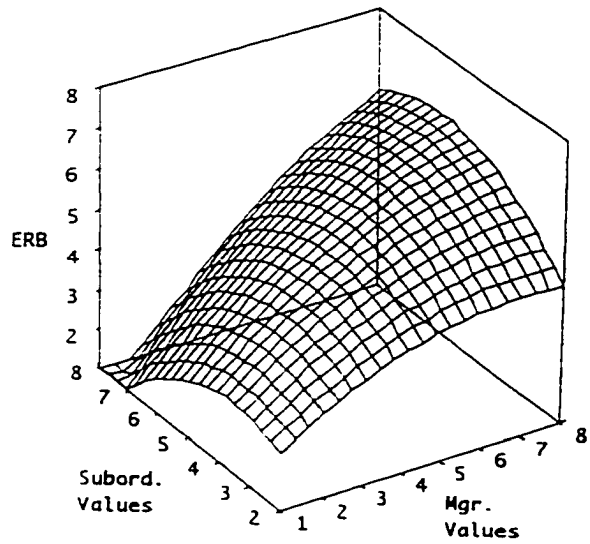
Figure 10
Mode: Actual Congruence
Criterion: Extra-Role Behavior
Predictor: Social Values



(a) raw data

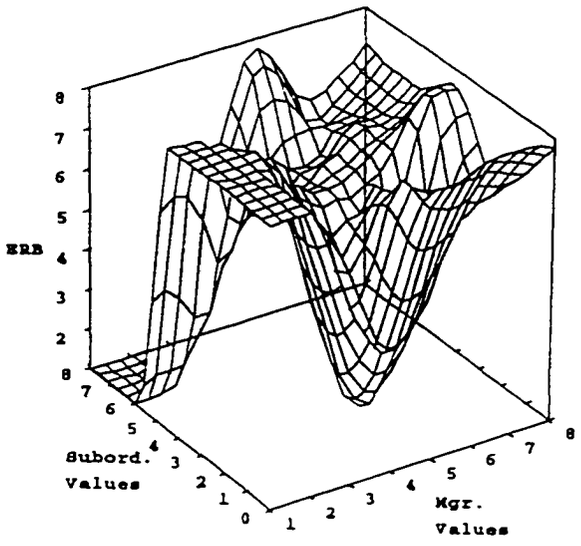


(b) linear solutions

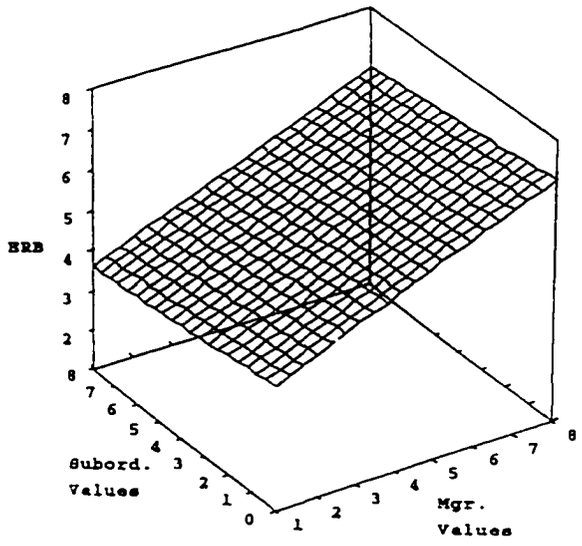


(c) quadratic solution

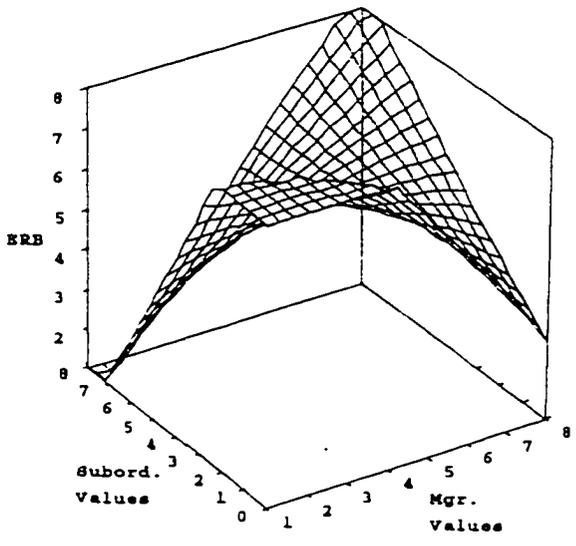
Figure 11
Mode: Actual Congruence
Criterion: Extra-Role Behavior
Predictor: Reward Values



(a) raw data

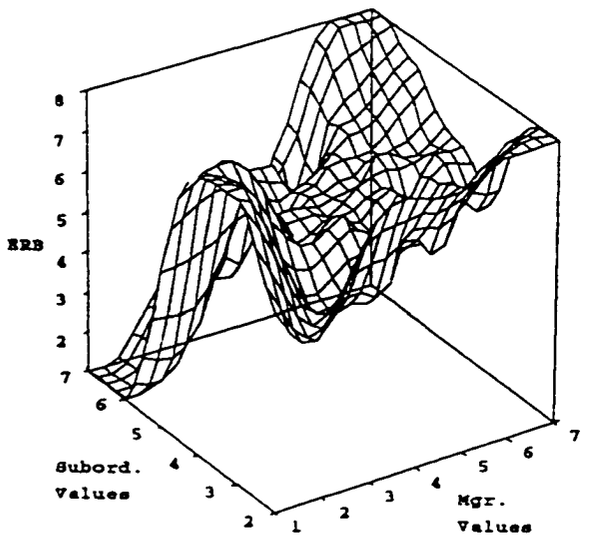


(b) linear solution

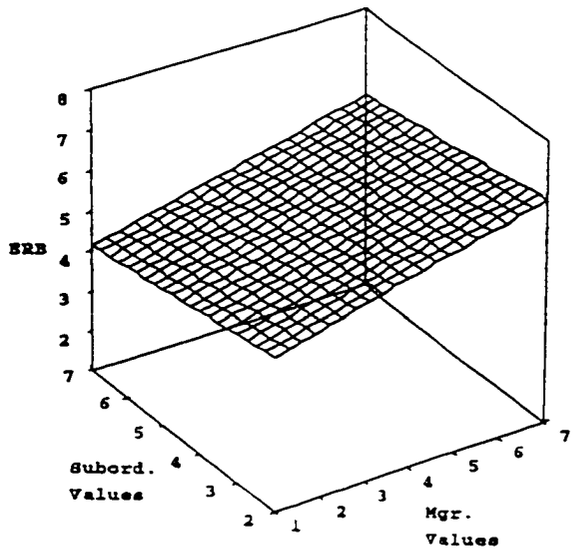


(c) quadratic solution

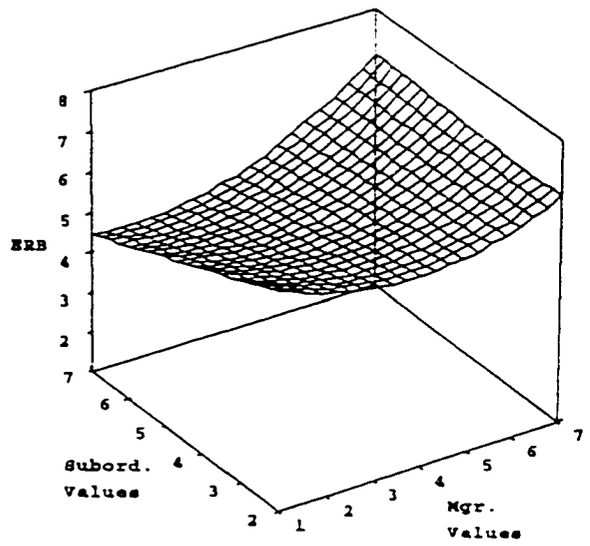
Figure 12
Mode: Actual Congruence
Criterion: Extra-Role Behavior
Predictor: Work Aspect Values



(a) raw data

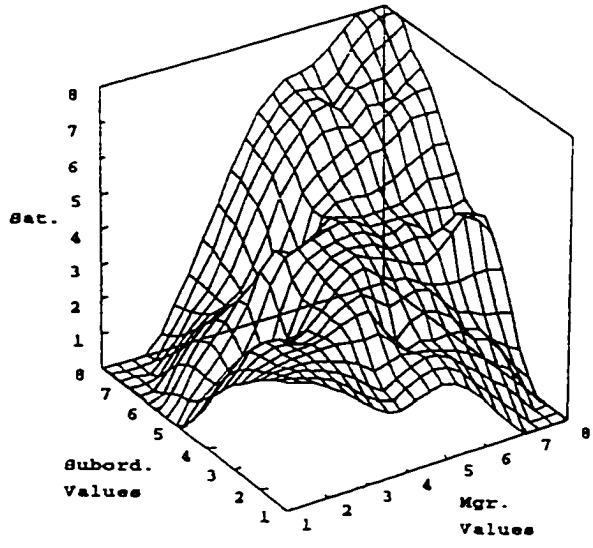


(b) linear solution

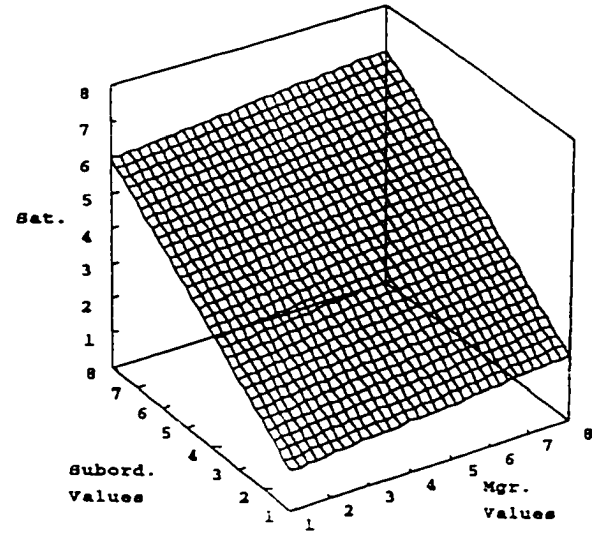


(c) quadratic solution

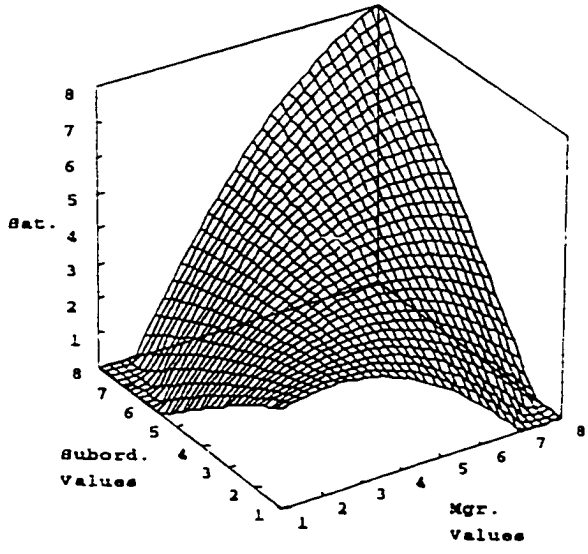
Figure 13
Mode: Subordinate Perceptual Congruence
Criterion: Satisfaction (Social)
Predictor: Social Values



(a) raw data

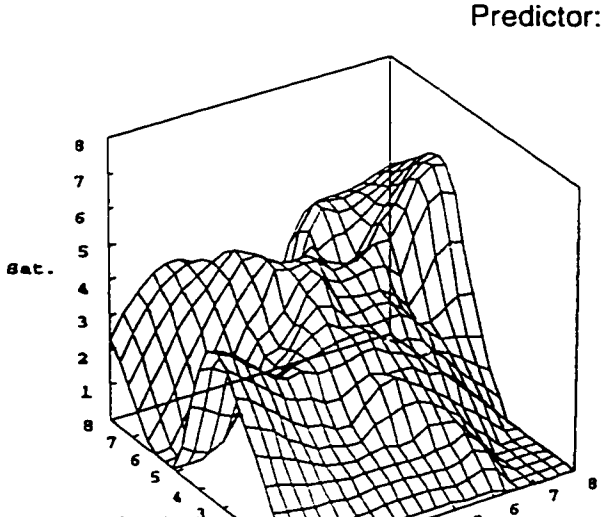


(b) linear solution

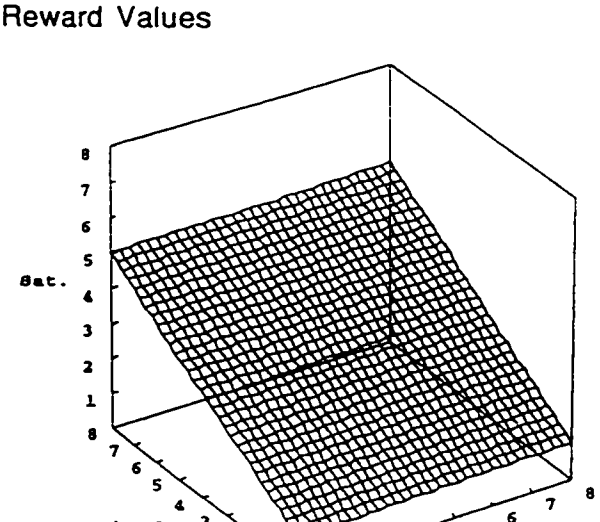


(c) quadratic solution

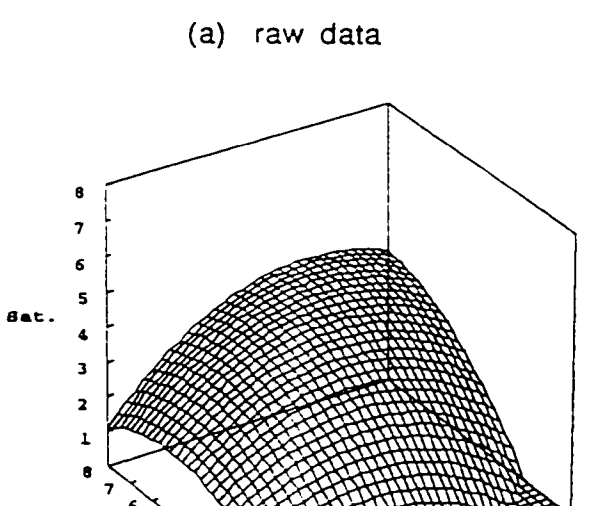
Figure 14
Mode: Subordinate Perceptual Congruence
Criterion: Satisfaction (Reward)
Predictor: Reward Values



(a) raw data

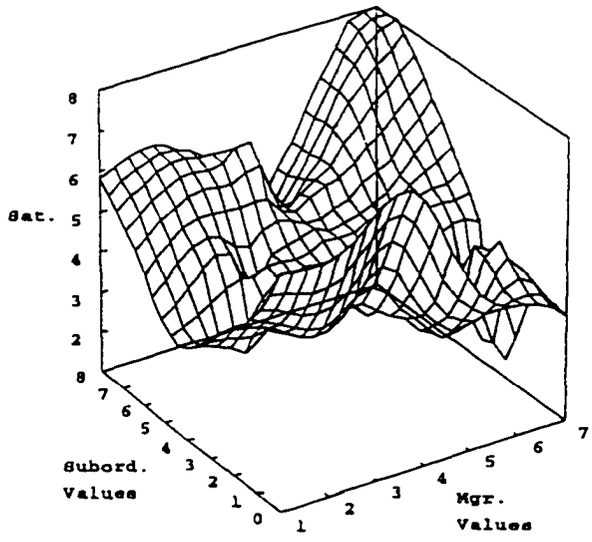


(b) linear solution

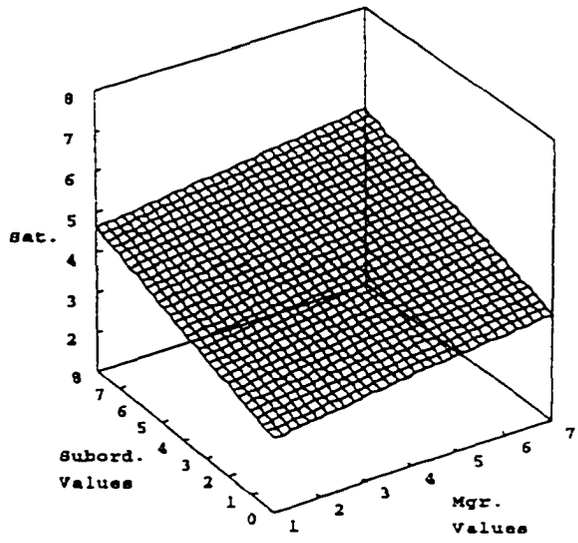


(c) quadratic solution

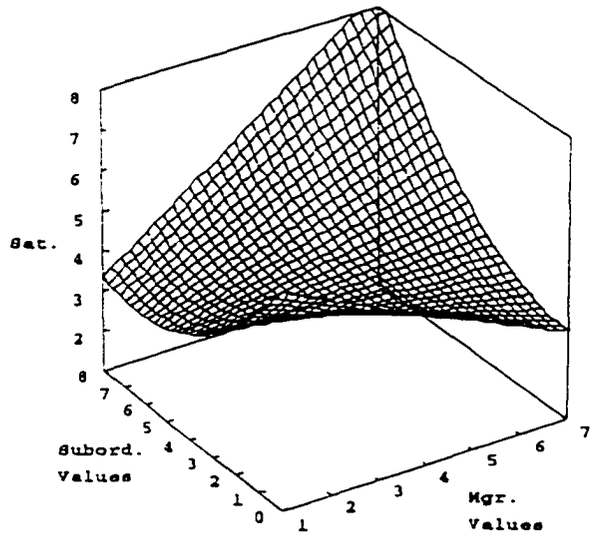
Figure 15
Mode: Subordinate Perceptual Congruence
Criterion: Satisfaction (Work Aspect)
Predictor: Work Aspect Values



(a) raw data

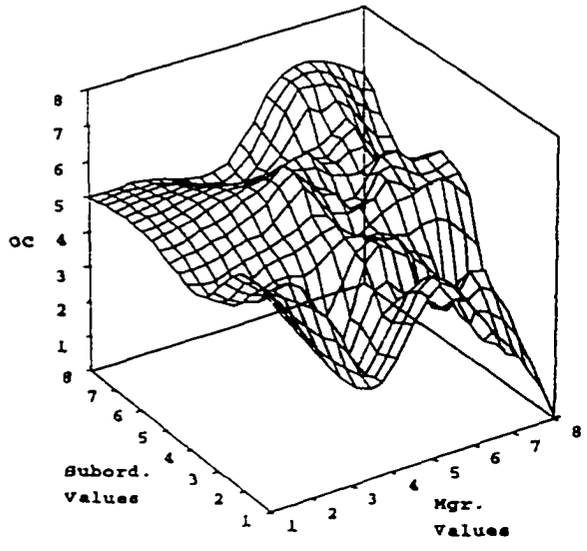


(b) linear solution

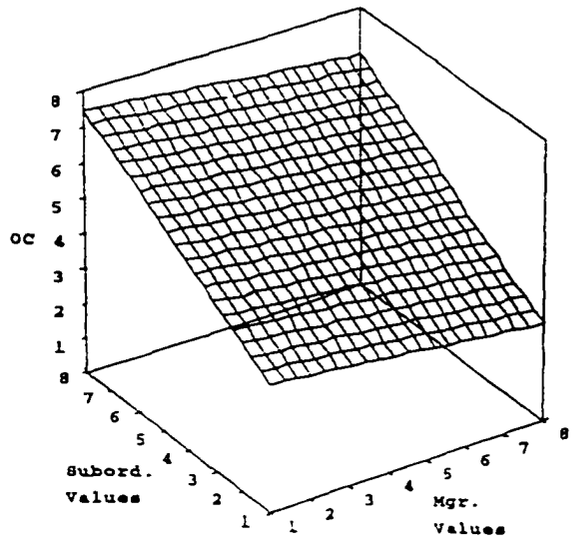


(c) quadratic solution

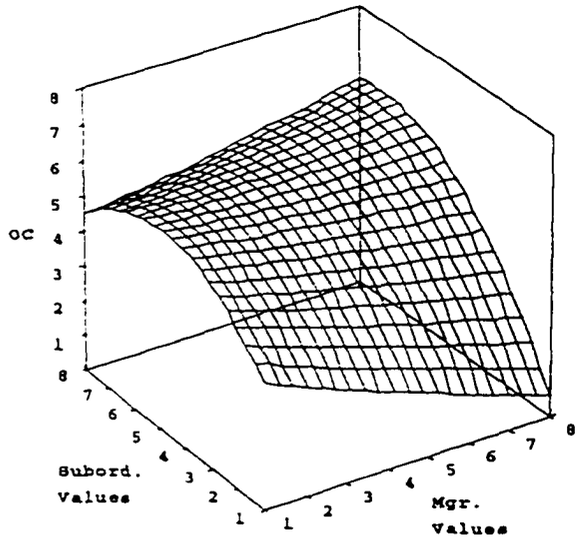
Figure 16
Mode: Subordinate Perceptual Congruence
Criterion: Org. Commitment
Predictor: Social Values



(a) raw data

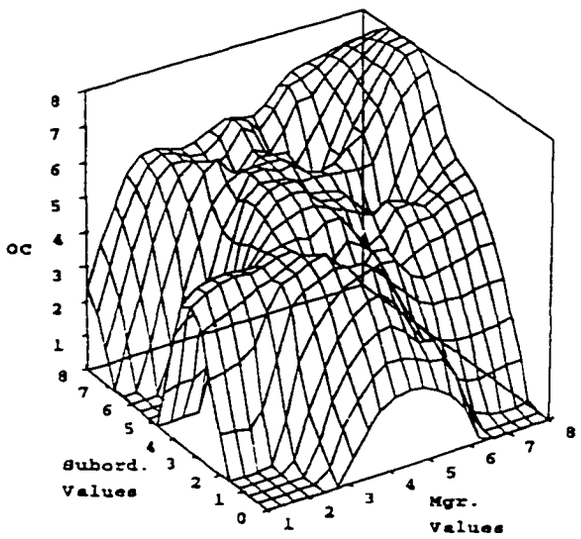


(b) linear solution

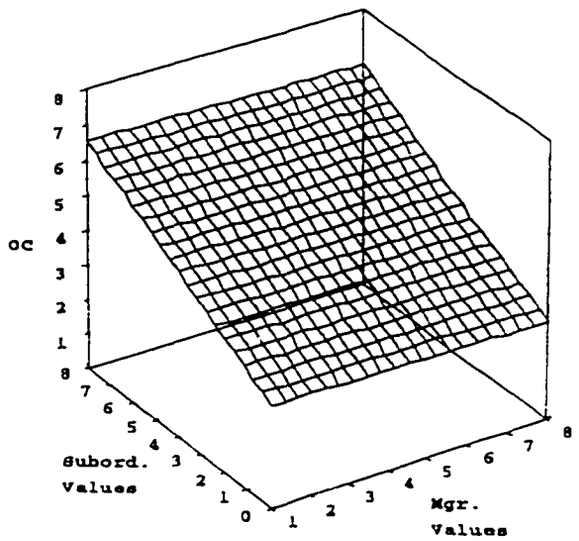


(c) quadratic solution

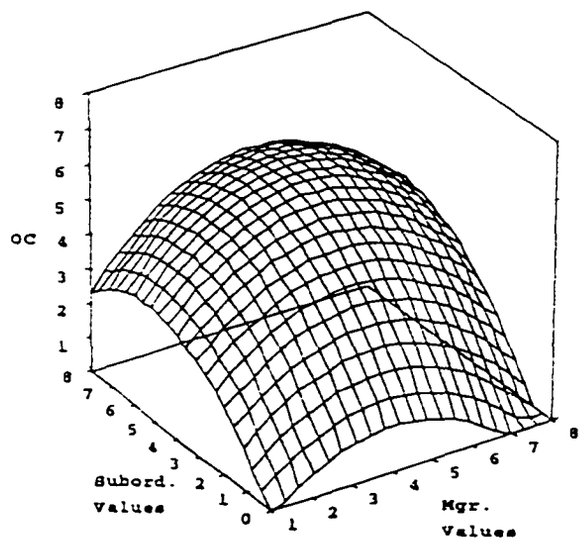
Figure 17
Mode: Subordinate Perceptual Congruence
Criterion: Org. Commitment
Predictor: Reward Values



(a) raw data

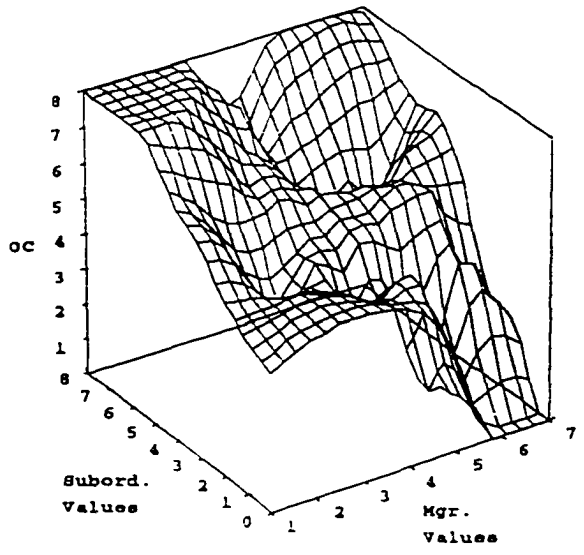


(b) linear solution

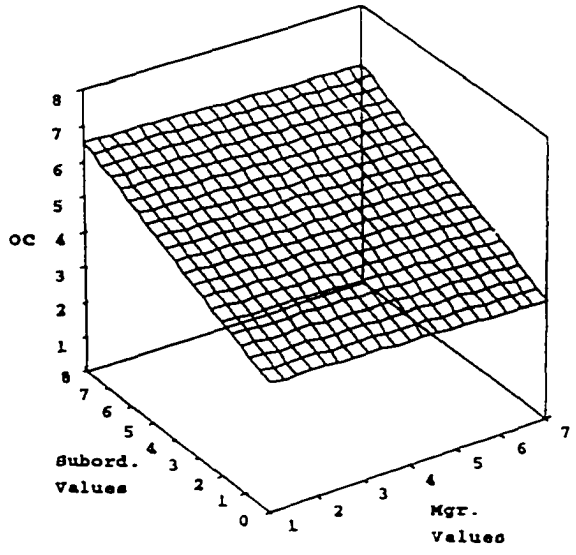


(c) quadratic solution

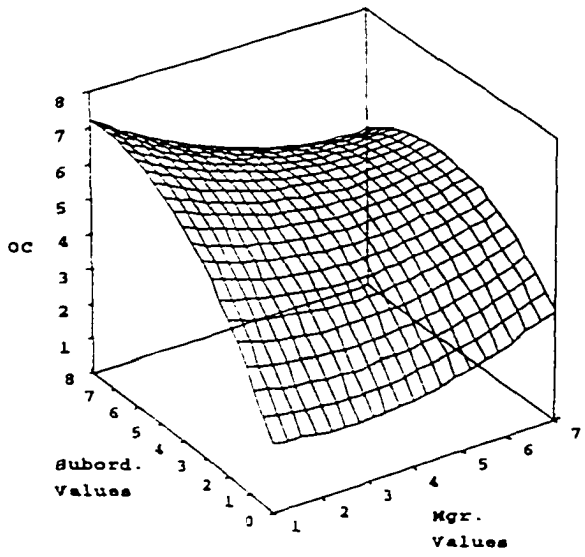
Figure 18
Mode: Subordinate Perceptual Congruence
Criterion: Org. Commitment
Predictor: Work Aspect Values



(a) raw data

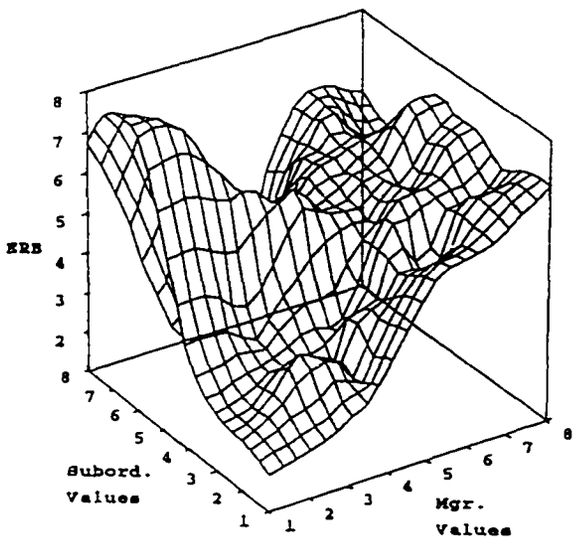


(b) linear solution

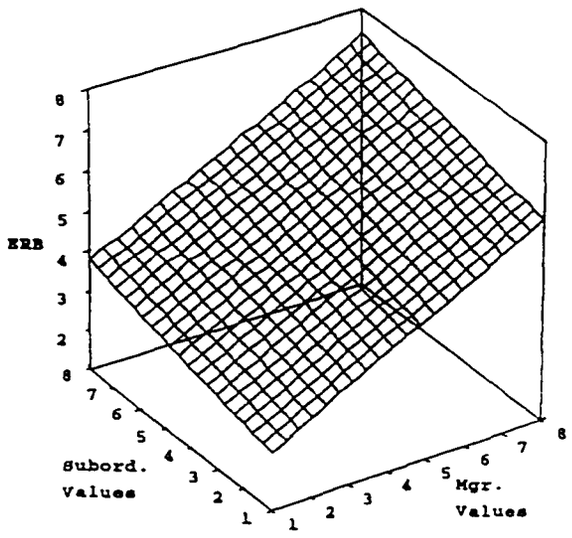


(c) quadratic solution

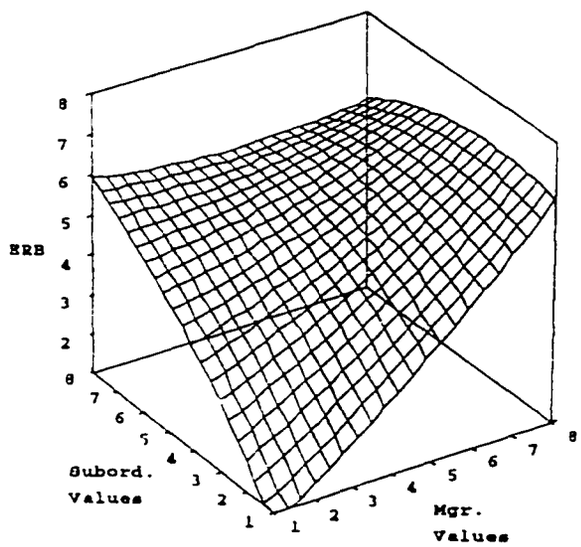
Figure 19
Mode: Subordinate Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Social Values



(a) raw data

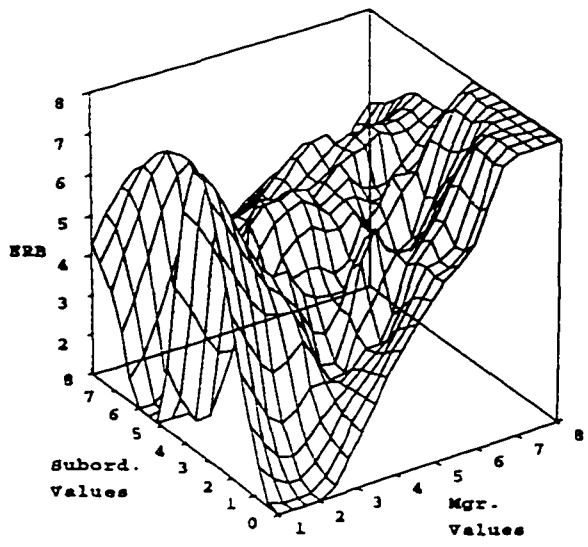


(b) linear solution

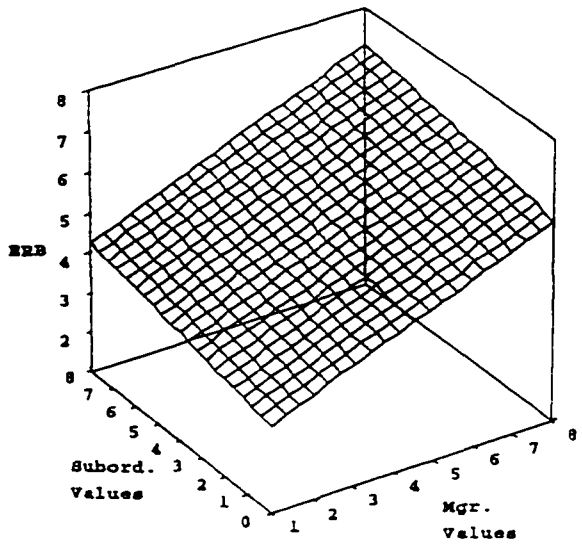


(c) quadratic solution

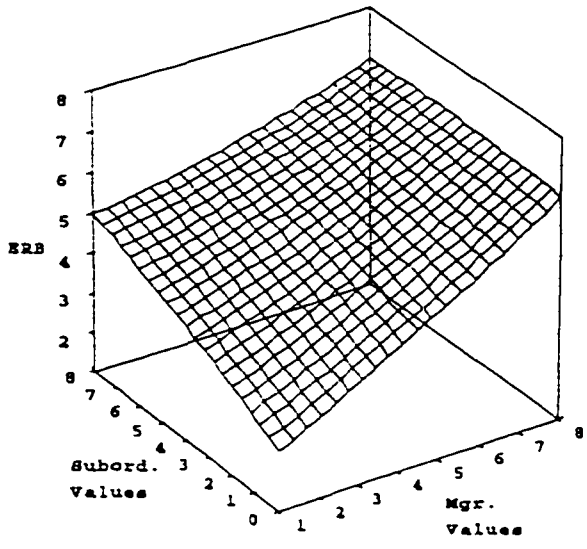
Figure 20
Mode: Subordinate Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Reward Values



(a) raw data

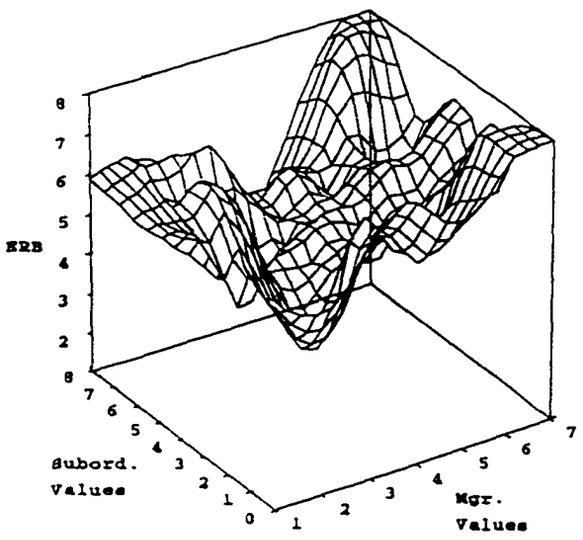


(b) linear solution

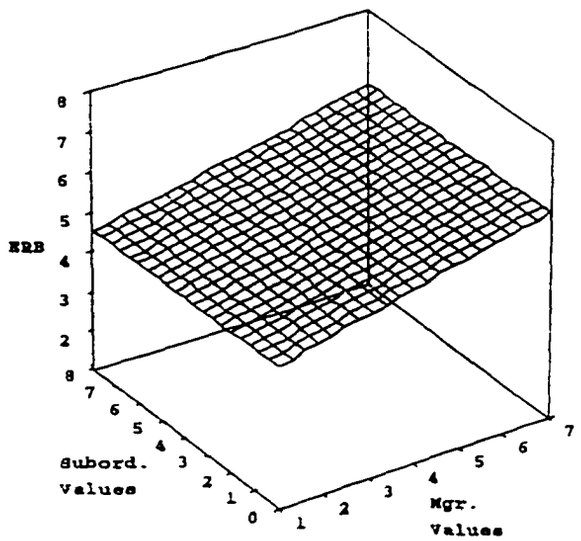


(c) quadratic solution

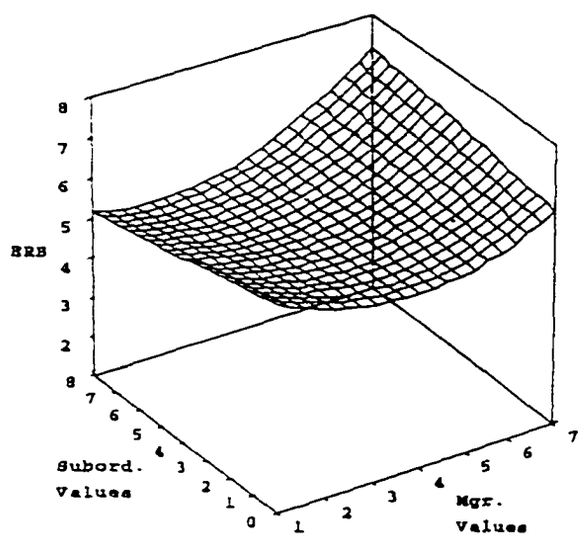
Figure 21
Mode: Subordinate Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Work Aspect Values



(a) raw data

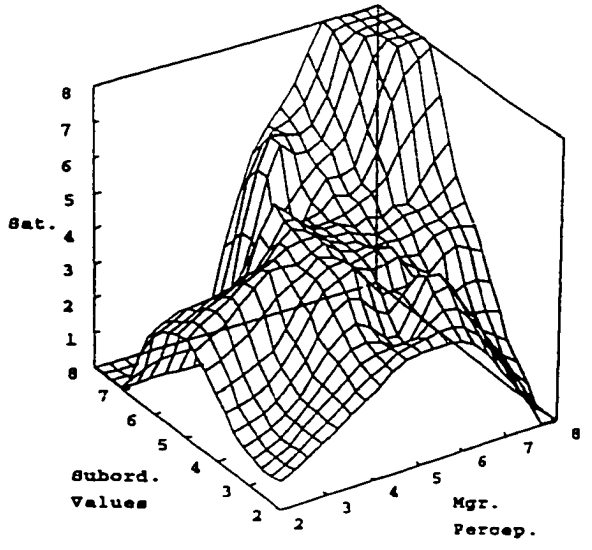


(b) linear solution

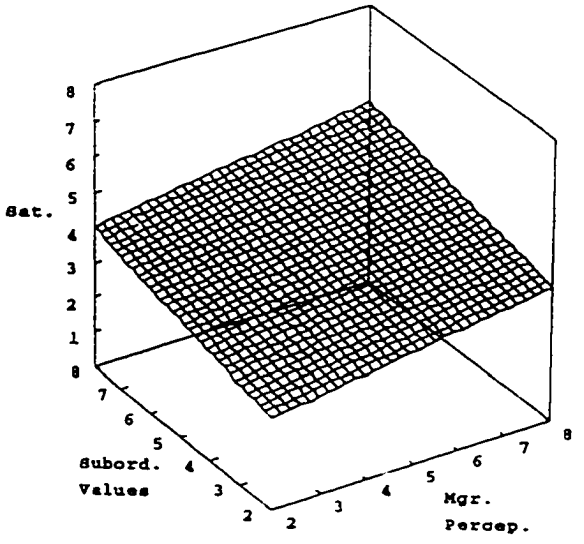


(c) quadratic solution

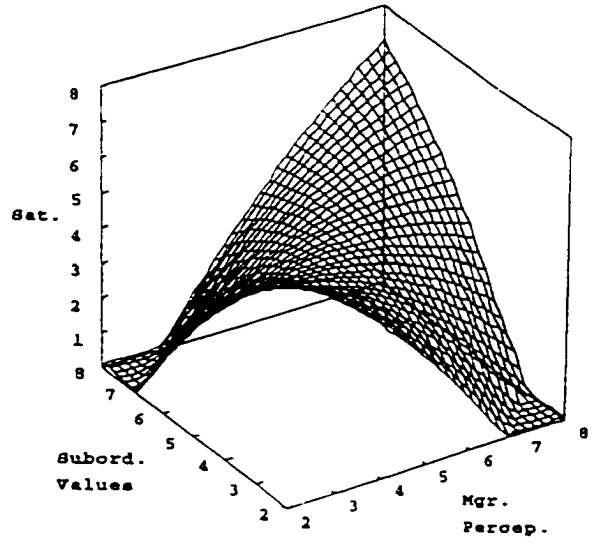
Figure 22
Mode: Manager Perceptual Congruence
Criterion: Satisfaction (Social)
Predictor: Social Values



(a) raw data

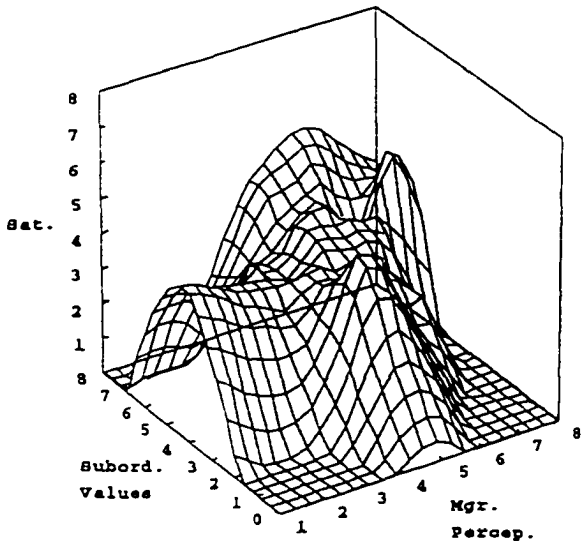


(b) linear solution

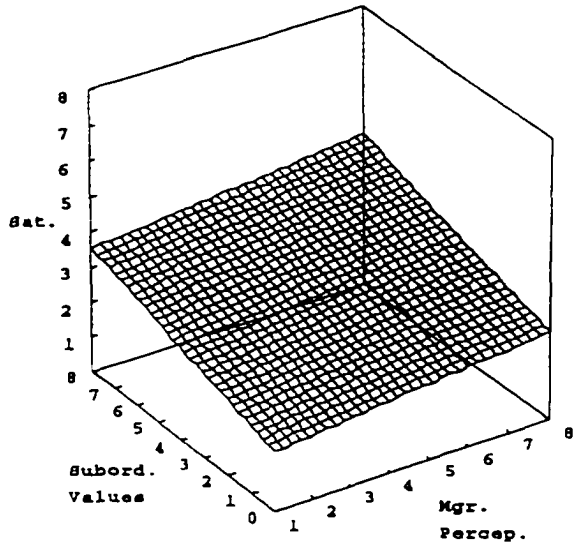


(c) quadratic solution

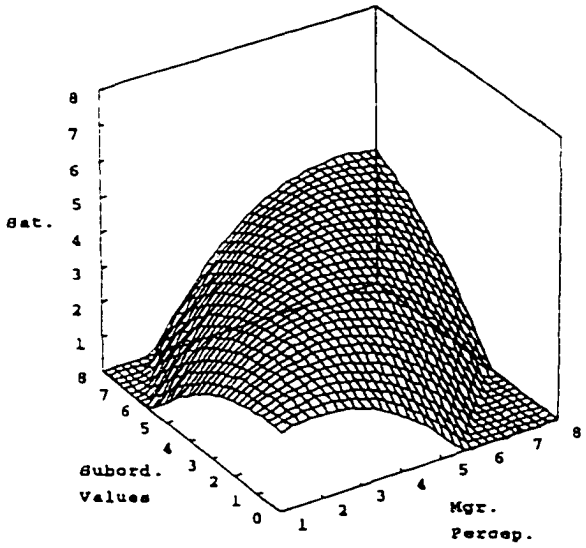
Figure 23
Mode: Manager Perceptual Congruence
Criterion: Satisfaction (Reward)
Predictor: Reward Values



(a) raw data

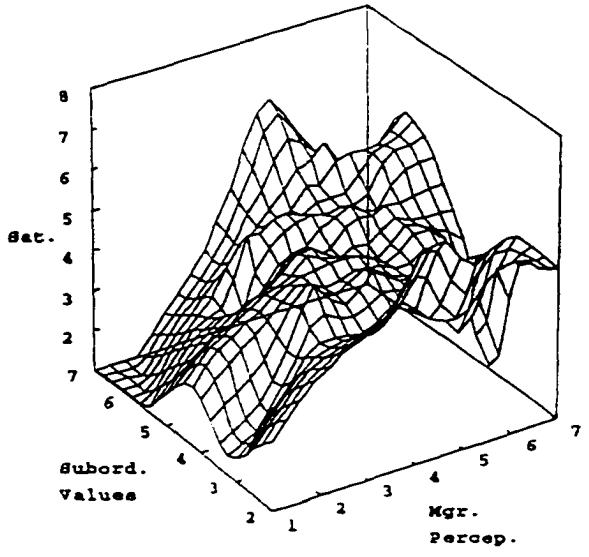


(b) linear solution

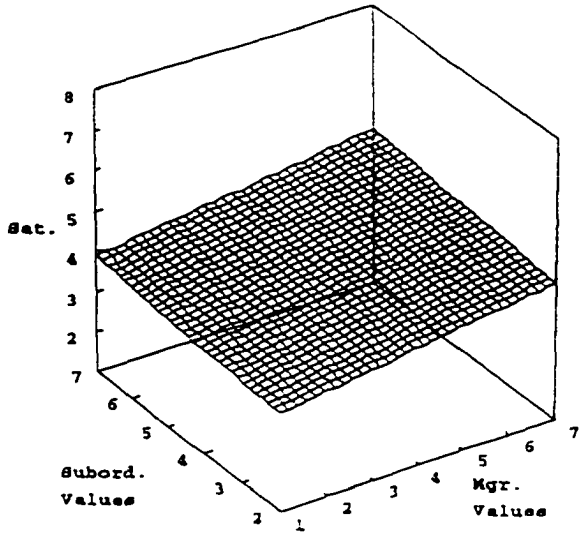


(c) quadratic solution

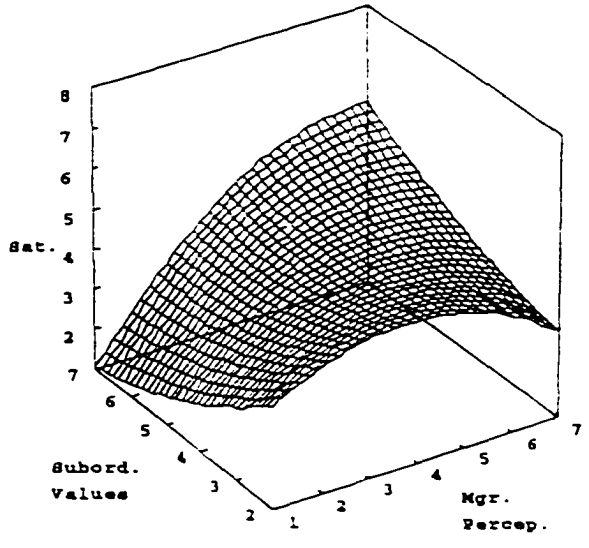
Figure 24
Mode: Manager Perceptual Congruence
Criterion: Satisfaction (Work Aspect)
Predictor: Work Aspect Values



(a) raw data

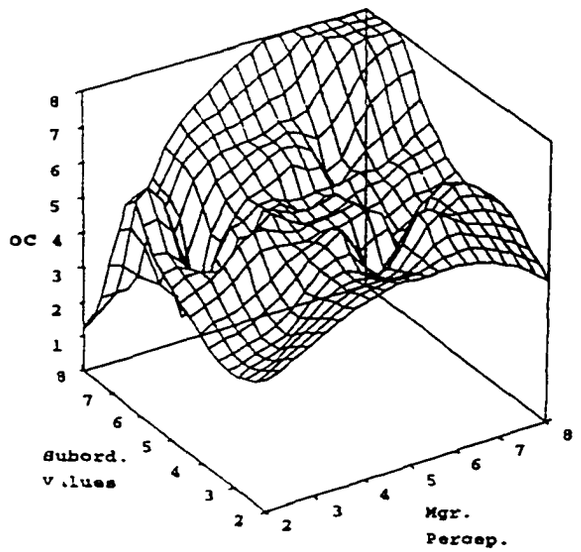


(b) linear solution

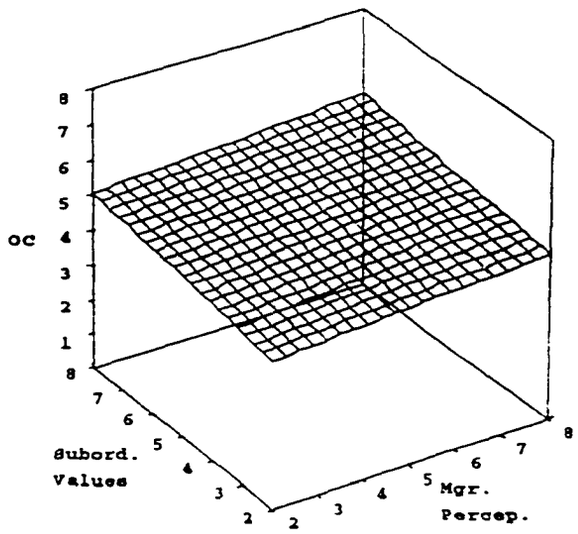


(c) quadratic solution

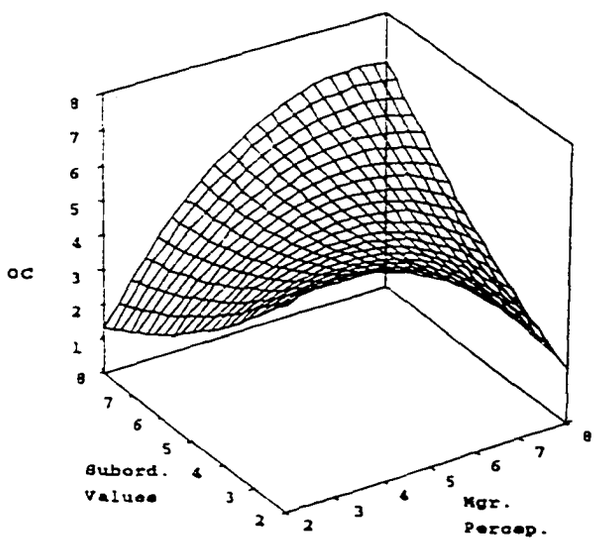
Figure 25
Mode: Manager Perceptual Congruence
Criterion: Org. Commitment
Predictor: Social Values



(a) raw data

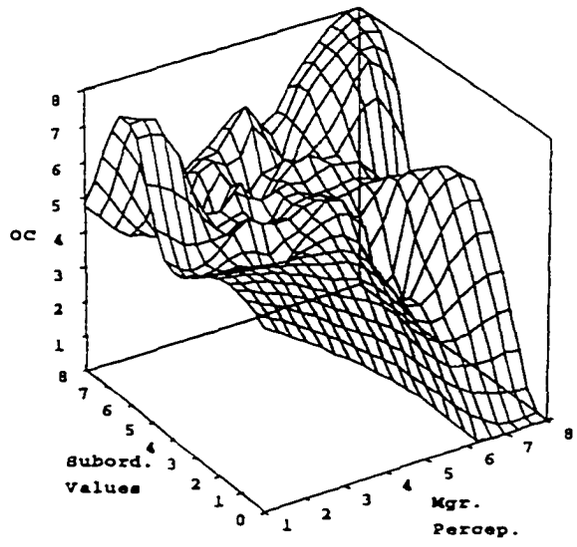


(b) linear solution

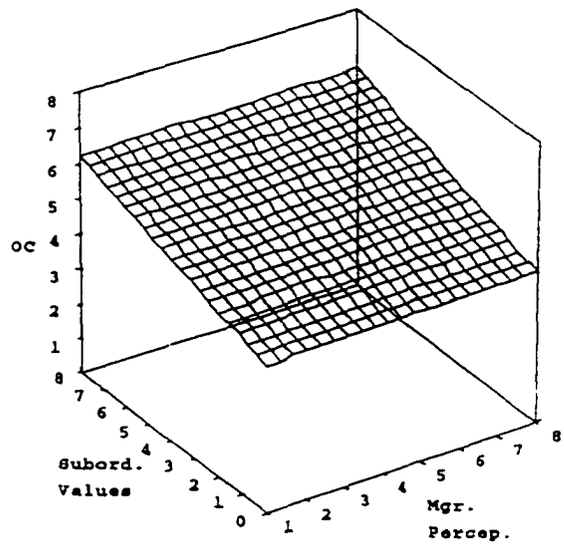


(c) quadratic solution

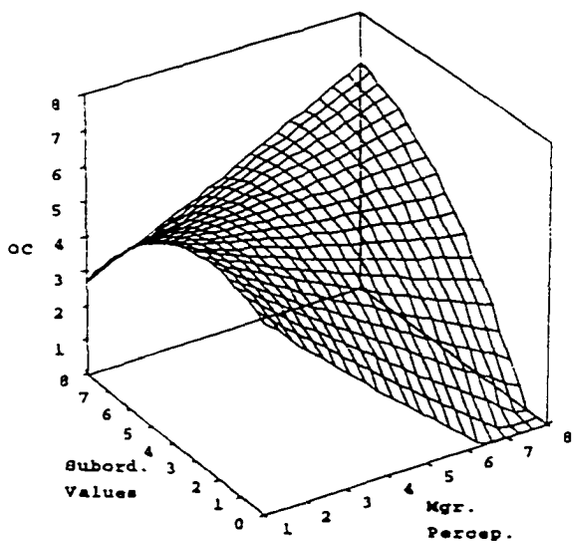
Figure 26
Mode: Manager Perceptual Congruence
Criterion: Org. Commitment
Predictor: Reward Values



(a) raw data

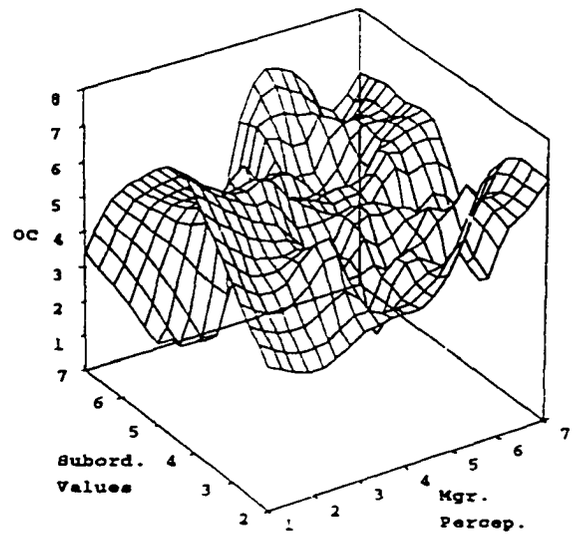


(b) linear solution

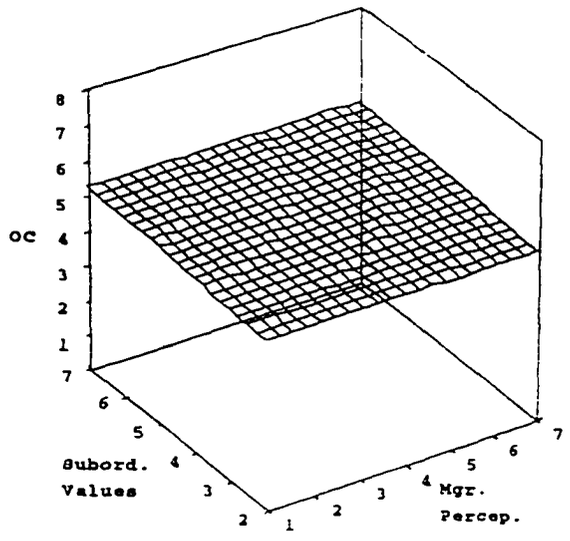


(c) quadratic solution

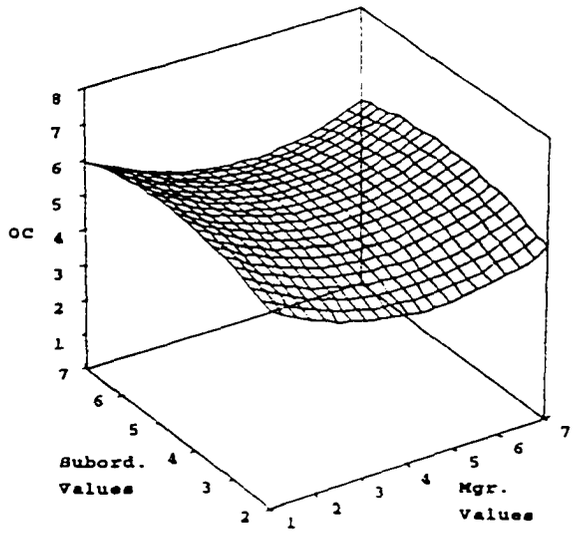
Figure 27
Mode: Manager Perceptual Congruence
Criterion: Org. Commitment
Predictor: Work Aspect Values



(a) raw data

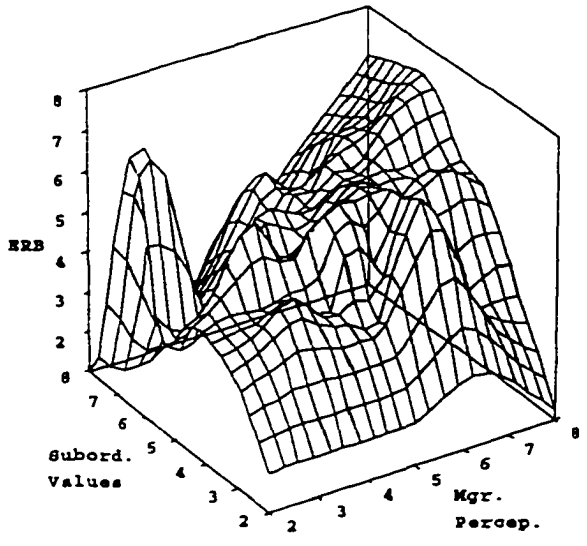


(b) linear solution

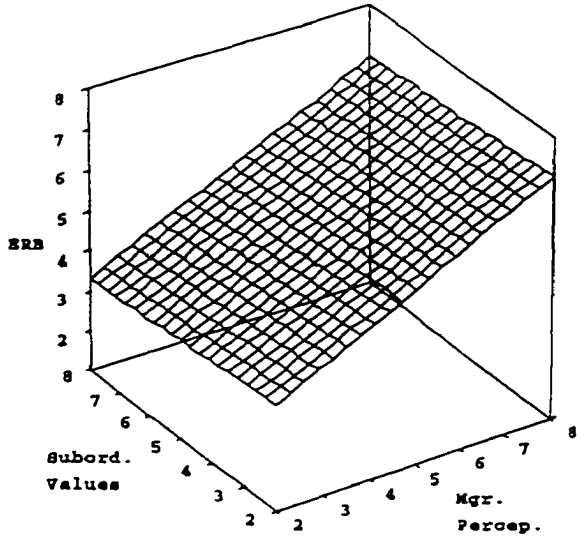


(c) quadratic solution

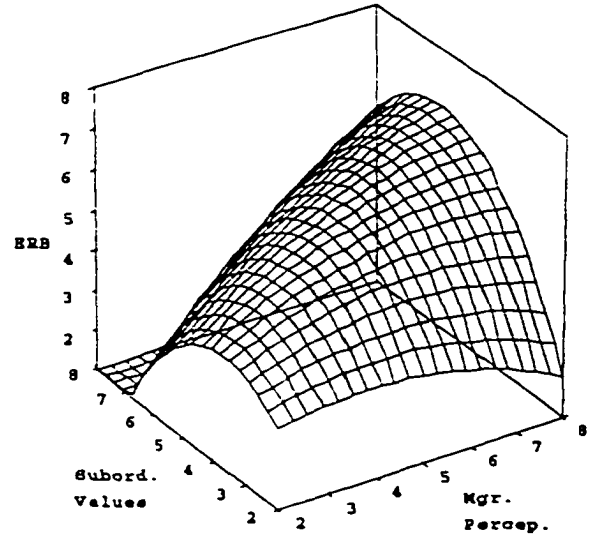
Figure 28
Mode: Manager Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Social Values



(a) raw data

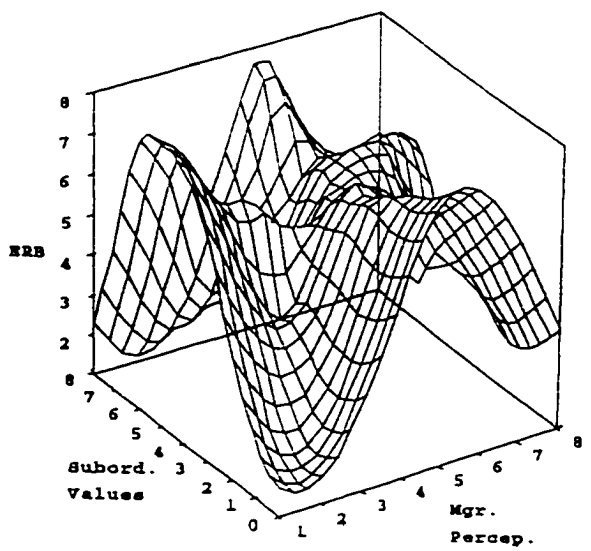


(b) linear solution

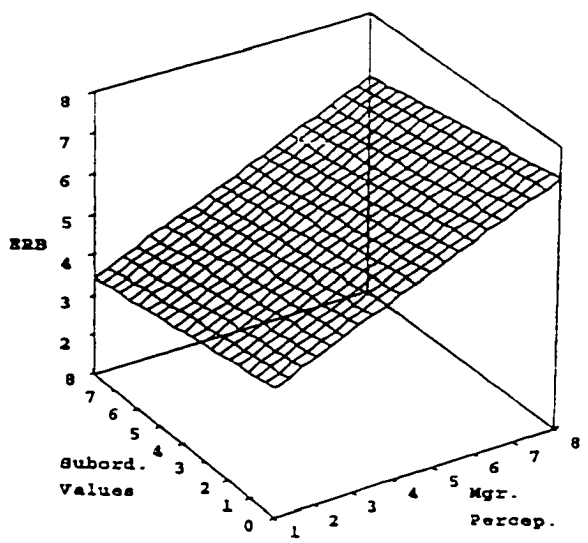


(c) quadratic solution

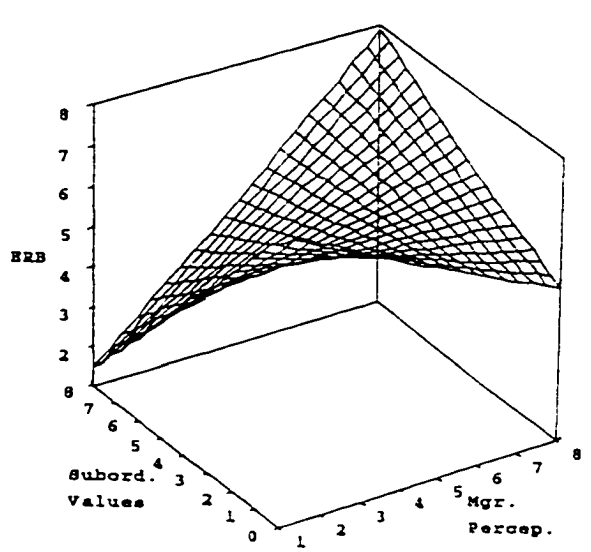
Figure 29
Mode: Manager Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Reward Values



(a) raw data

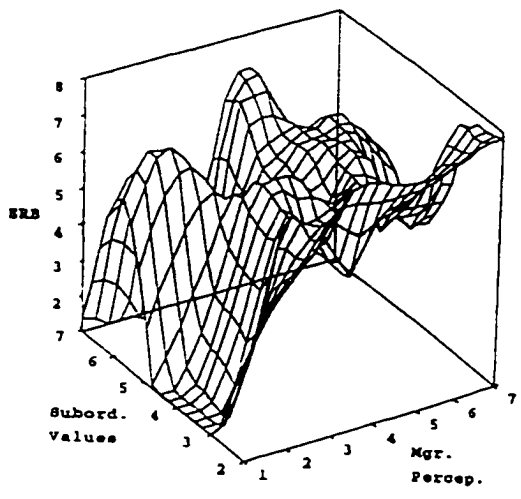


(b) linear solution

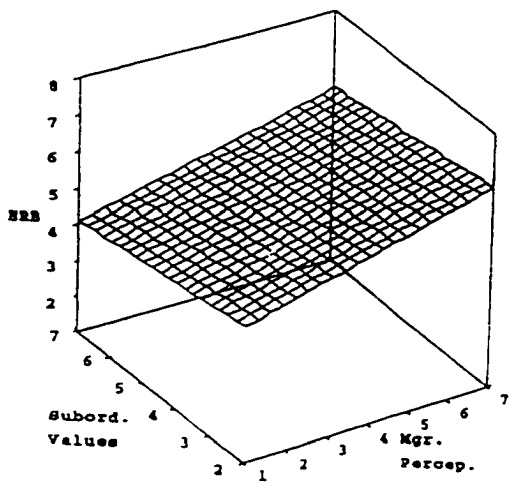


(c) quadratic solution

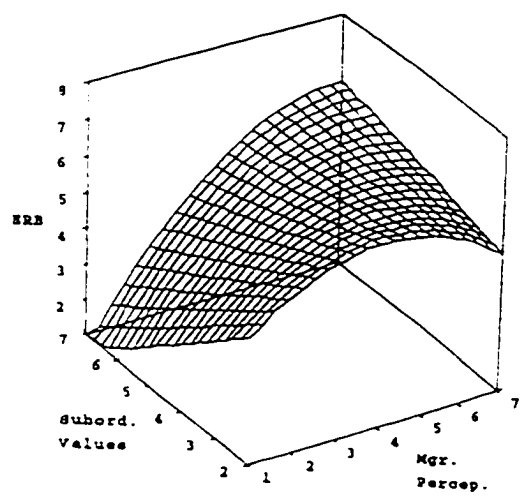
Figure 30
Mode: Manager Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Work Aspect Values



(a) raw data



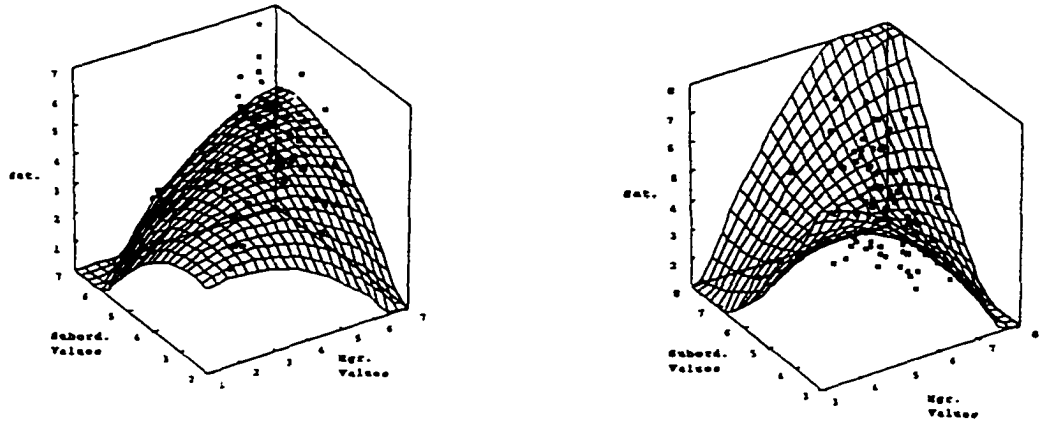
(b) linear solution



(c) quadratic solution

Figure 31

Mode: Actual Congruence
Criterion: Satisfaction (Social)
Predictor: Social Values
Moderator: Control

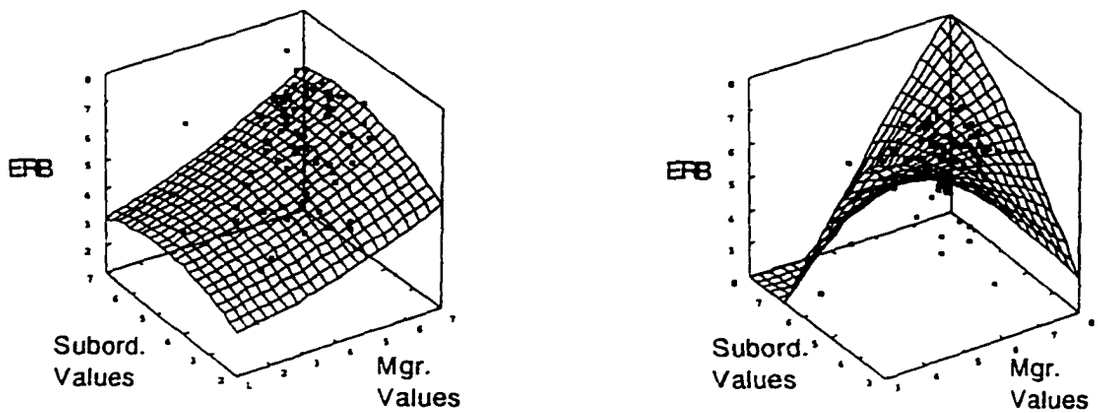


(a) low control

(b) high control

Figure 32

Mode: Actual Congruence
Criterion: Extra-Role Behavior
Predictor: Social Values
Moderator: Control

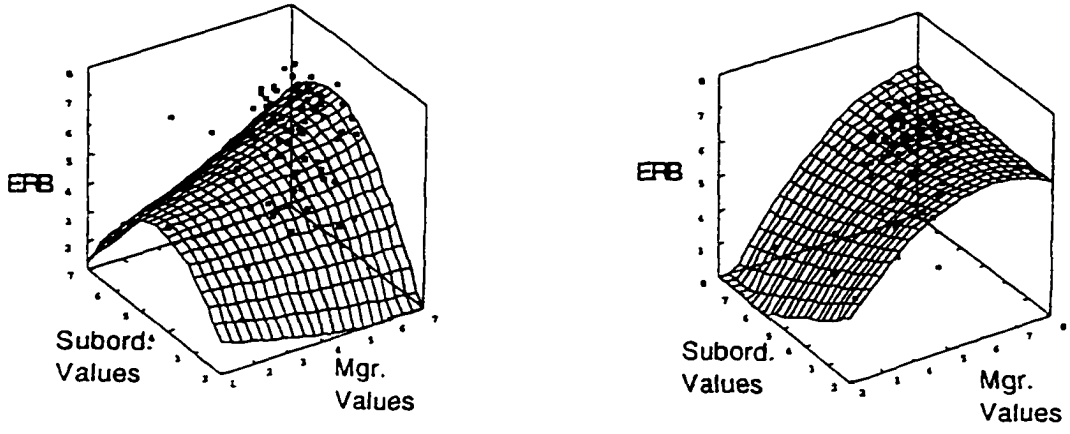


(a) low control

(b) high control

Figure 33

Mode: Actual Congruence
Criterion: Extra-Role Behavior
Predictor: Work Aspect Values
Moderator: Control

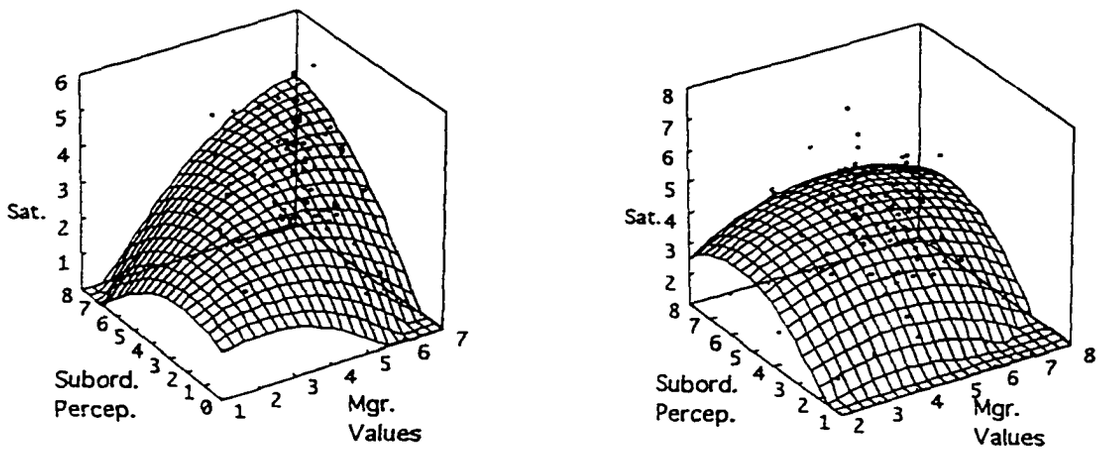


(a) low control

(b) high control

Figure 34

Mode: Subordinate Perceptual Congruence
Criterion: Satisfaction (Reward)
Predictor: Reward Values
Moderator: Perceived Control

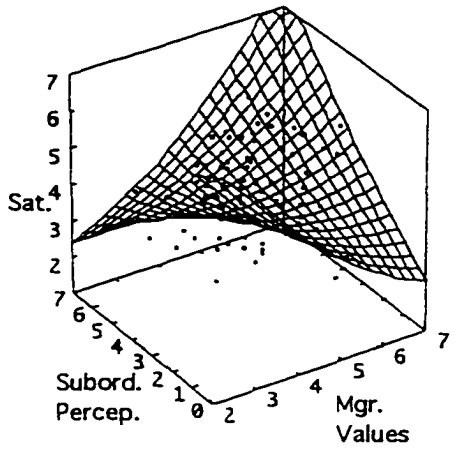


(a) low control

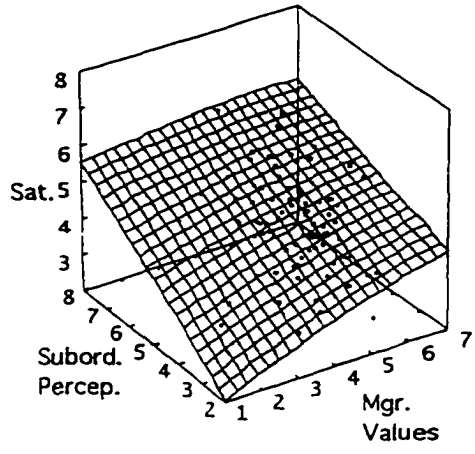
(b) high control

Figure 35

Mode: Subordinate Perceptual Congruence
Criterion: Satisfaction (Work Aspect)
Predictor: Work Aspect Values
Moderator: Perceived Control



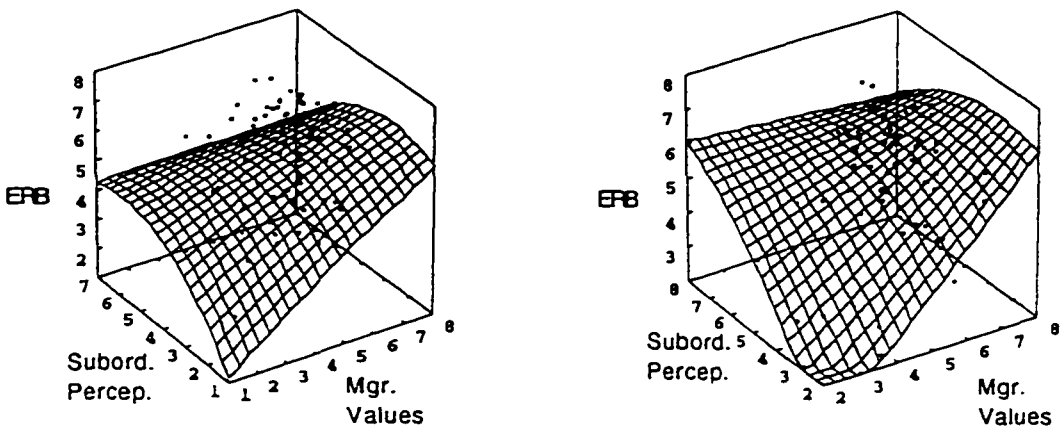
(a) low control



(b) high control

Figure 36

Mode: Subordinate Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Social Values
Moderator: Perceived Control

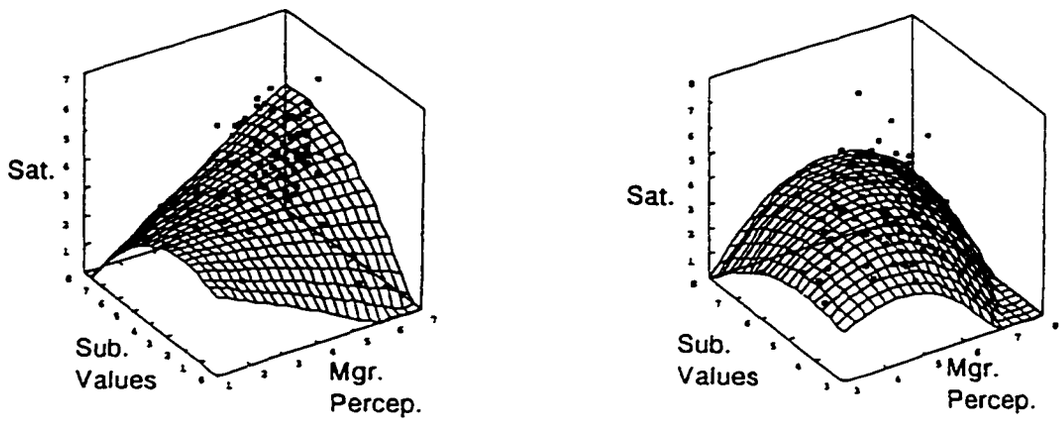


(a) low control

(b) high control

Figure 37

Mode: Manager Perceptual Congruence
Criterion: Satisfaction (Reward)
Predictor: Reward Values
Moderator: Control

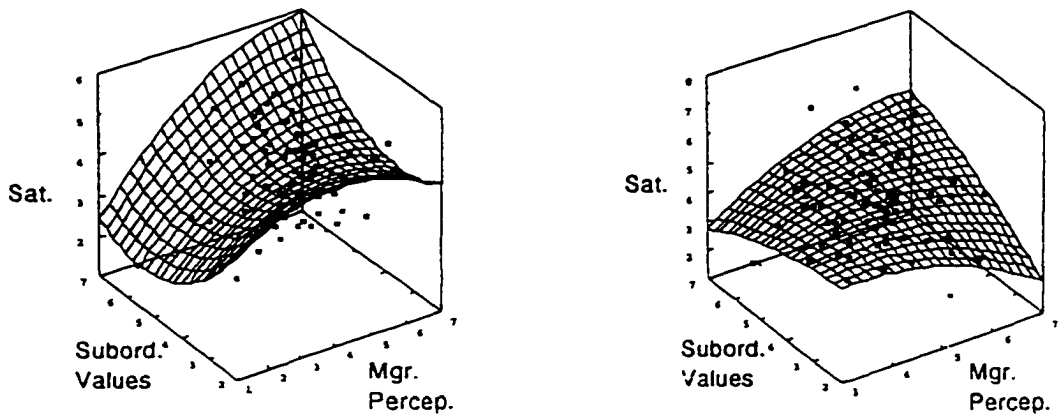


(a) low control

(b) high control

Figure 38

Mode: Manager Perceptual Congruence
Criterion: Satisfaction (Work Aspect)
Predictor: Work Aspect Values
Moderator: Control

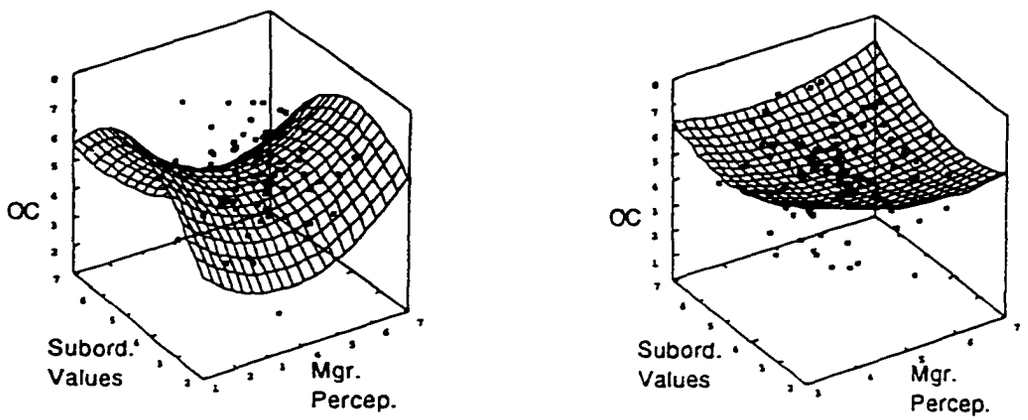


(a) low control

(b) high control

Figure 39

Mode: Manager Perceptual Congruence
Criterion: Organizational Commitment
Predictor: Work Aspect Values
Moderator: Control

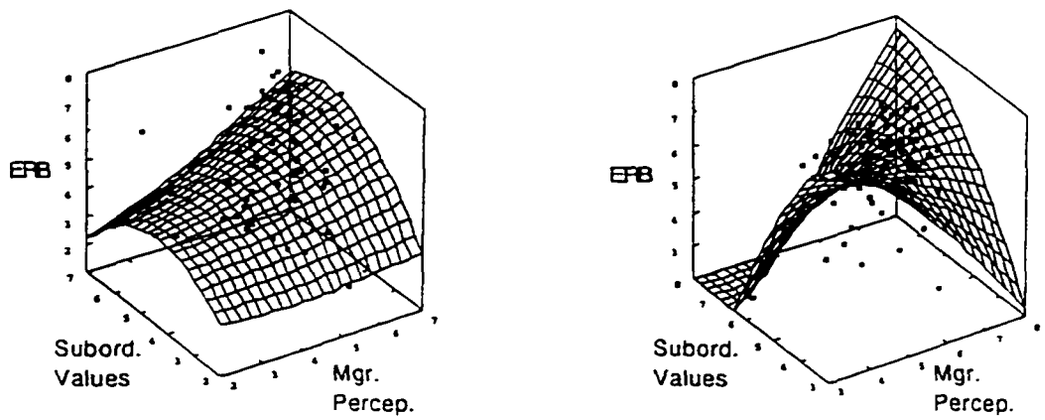


(a) low control

(b) high control

Figure 40

Mode: Manager Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Social Values
Moderator: Control

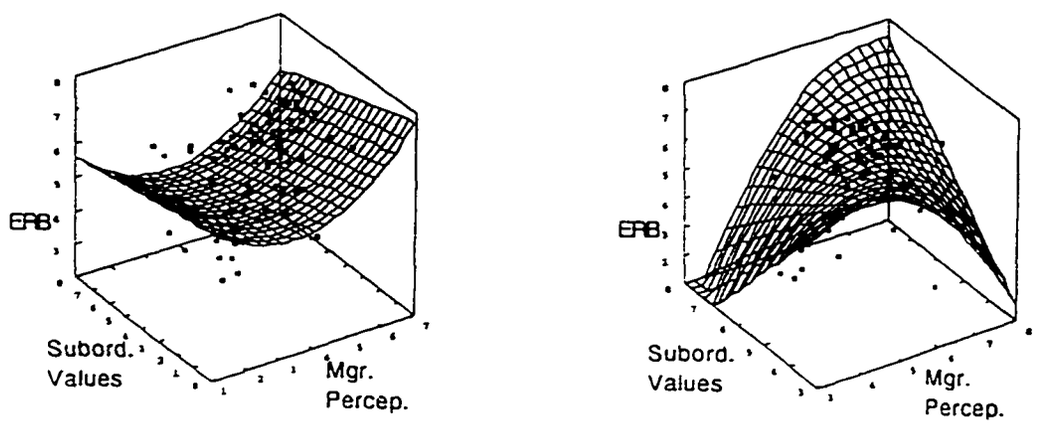


(a) low control

(b) high control

Figure 41

Mode: Manager Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Reward Values
Moderator: Control

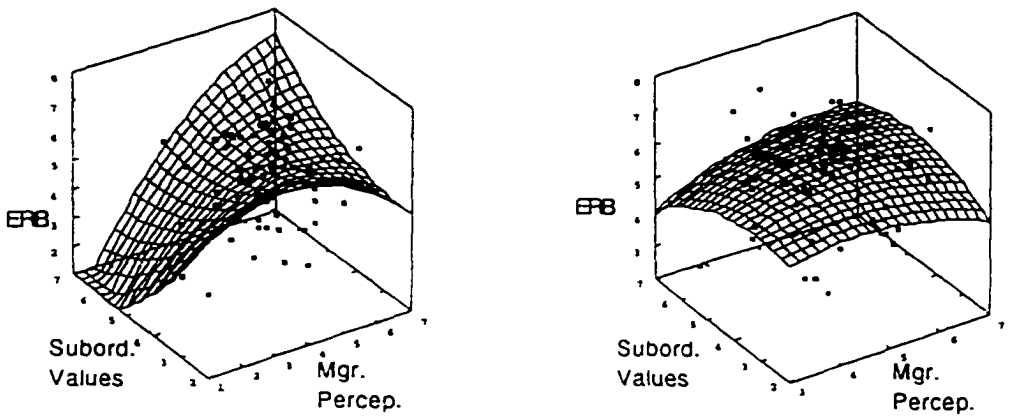


(a) low control

(b) high control

Figure 42

Mode: Manager Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Work Aspect Values
Moderator: Control

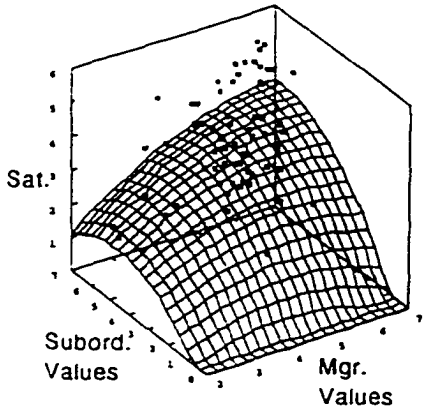


(a) low control

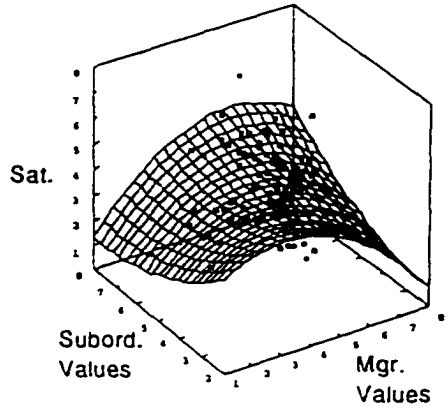
(b) high control

Figure 43

Mode: Actual Congruence
Criterion: Satisfaction (Reward)
Predictor: Reward Values
Moderator: Frequency of Interaction



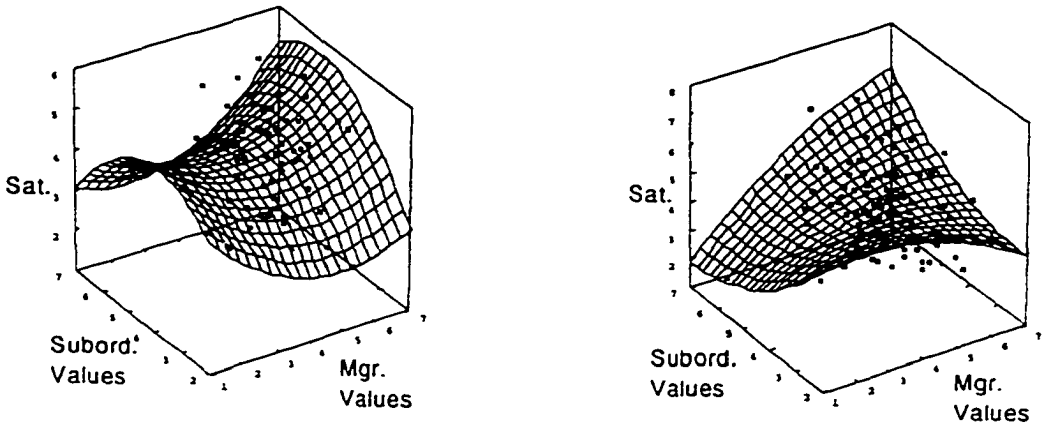
(a) low frequency



(b) high frequency

Figure 44

Mode: Actual Congruence
Criterion: Satisfaction (Work Aspect)
Predictor: Work Aspect Values
Moderator: Frequency of Interaction

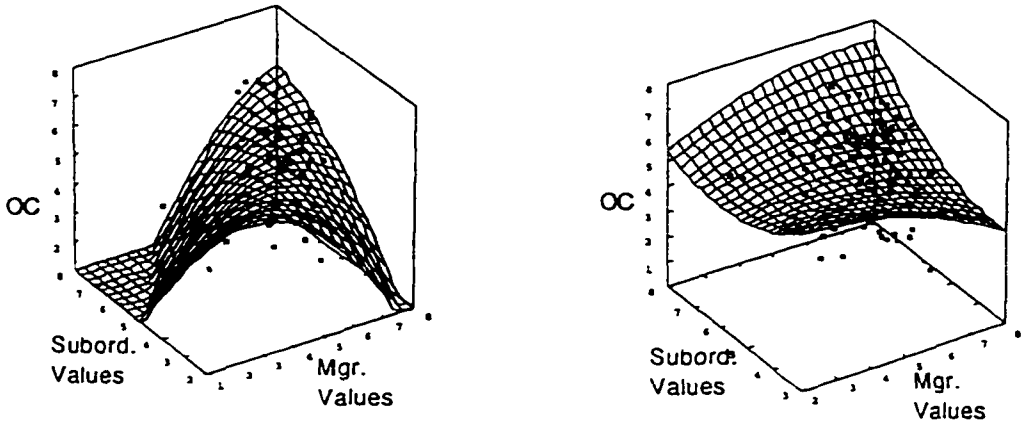


(a) low frequency

(b) high frequency

Figure 45

Mode: Actual Congruence
Criterion: Organizational Commitment
Predictor: Social Values
Moderator: Frequency of Interaction

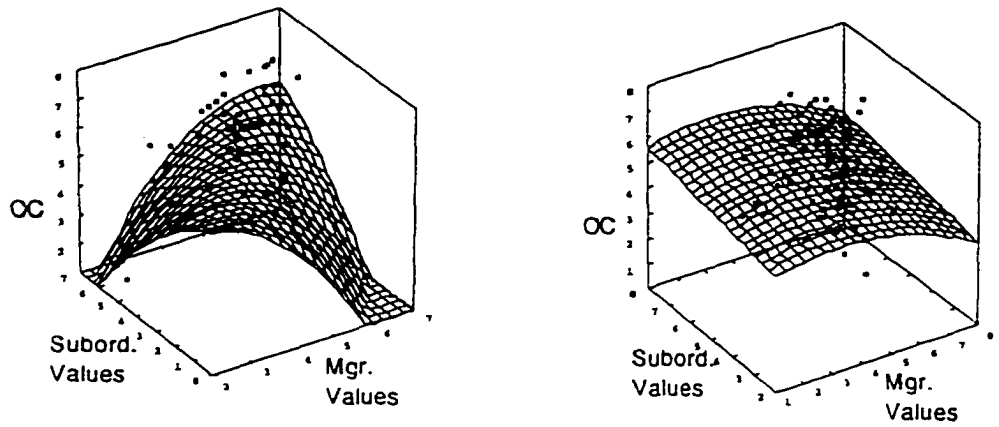


(a) low frequency

(b) high frequency

Figure 46

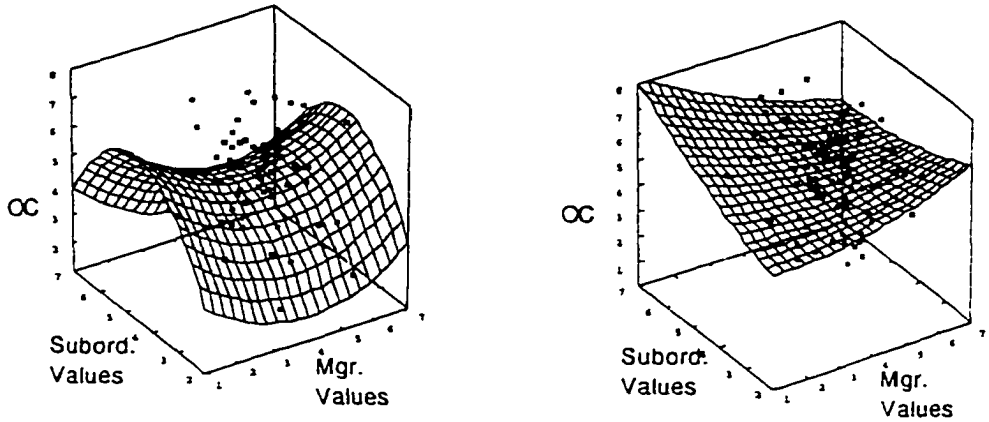
Mode: Actual Congruence
Criterion: Organizational Commitment
Predictor: Reward Values
Moderator: Frequency of Interaction



(a) low frequency (b) high frequency

Figure 47

Mode: Actual Congruence
Criterion: Organizational Commitment
Predictor: Work Aspect Values
Moderator: Frequency of Interaction

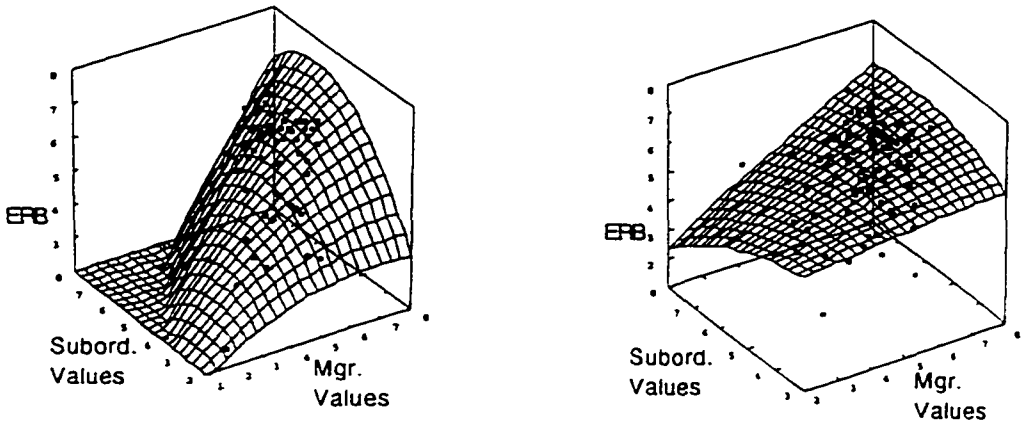


(a) low frequency

(b) high frequency

Figure 48

Mode: Actual Congruence
Criterion: Extra-Role Behavior
Predictor: Social Values
Moderator: Frequency of Interaction

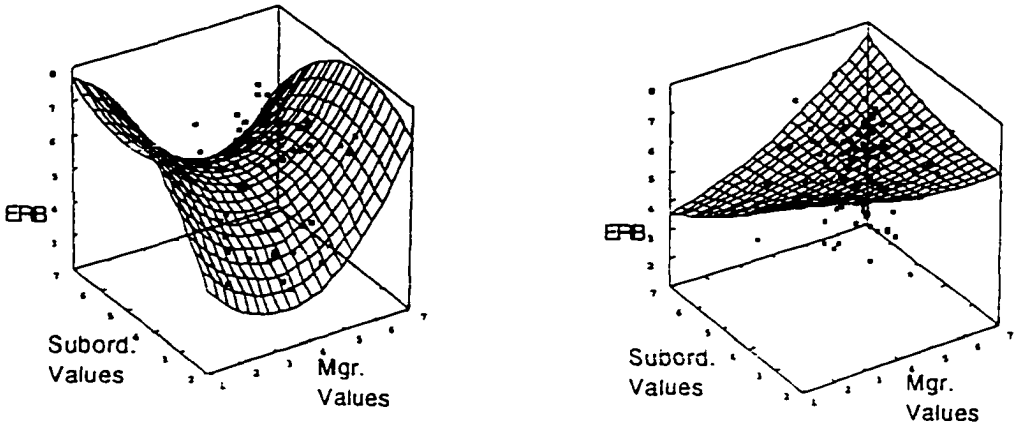


(a) low frequency

(b) high frequency

Figure 49

Mode: Actual Congruence
Criterion: Extra-Role Behavior
Predictor: Work Aspect Values
Moderator: Frequency of Interaction

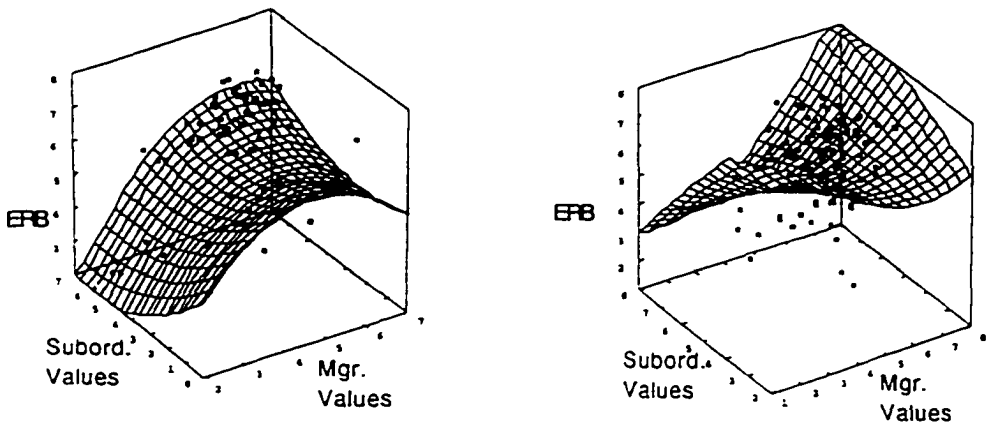


(a) low frequency

(b) high frequency

Figure 50

Mode: Actual Congruence
Criterion: Extra-Role Behavior
Predictor: Reward Values
Moderator: Frequency of Interaction

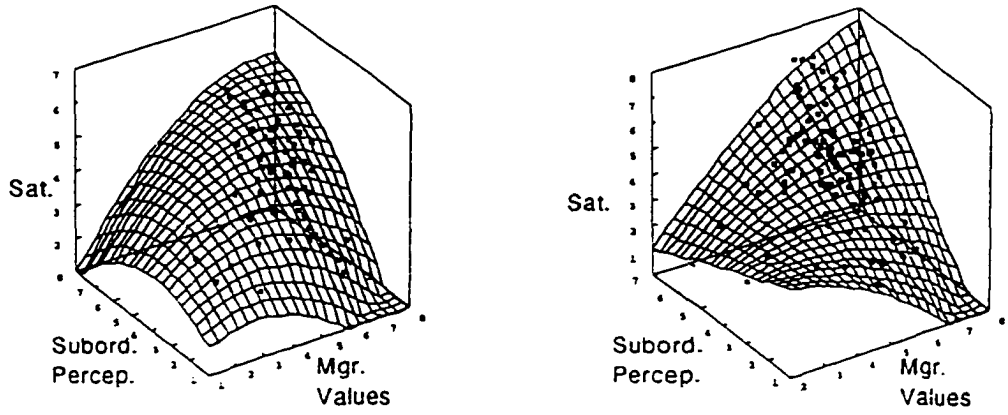


(a) low frequency

(b) high frequency

Figure 51

Mode: Subordinate Perceptual Congruence
Criterion: Satisfaction (Social)
Predictor: Social Values
Moderator: Frequency of Interaction

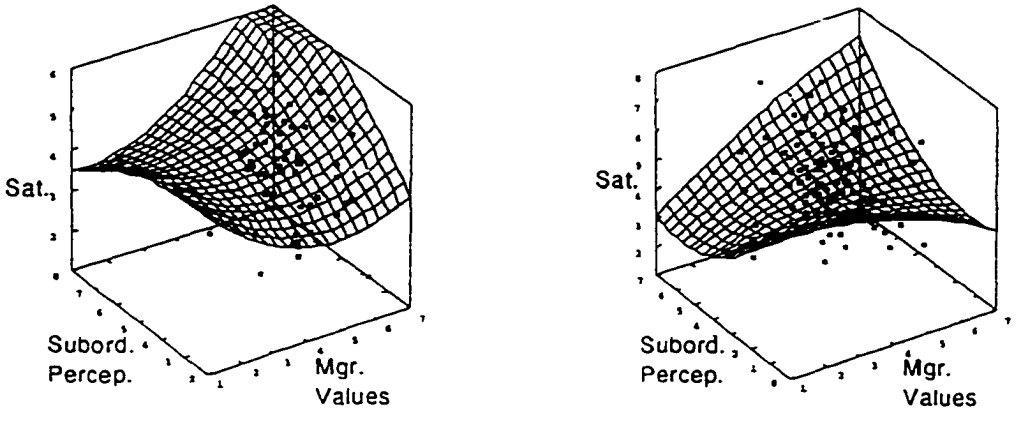


(a) low frequency

(b) high frequency

Figure 52

Mode: Subordinate Perceptual Congruence
Criterion: Satisfaction (Work Aspect)
Predictor: Work Aspect Values
Moderator: Frequency of Interaction

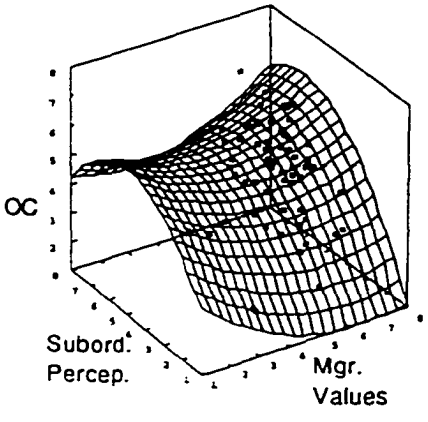


(a) low frequency

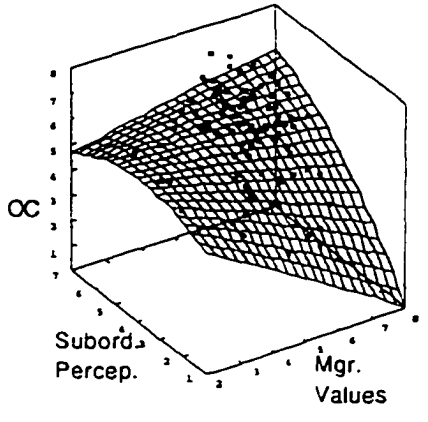
(b) high frequency

Figure 53

Mode: Subordinate Perceptual Congruence
Criterion: Organizational Commitment
Predictor: Social Values
Moderator: Frequency of Interaction



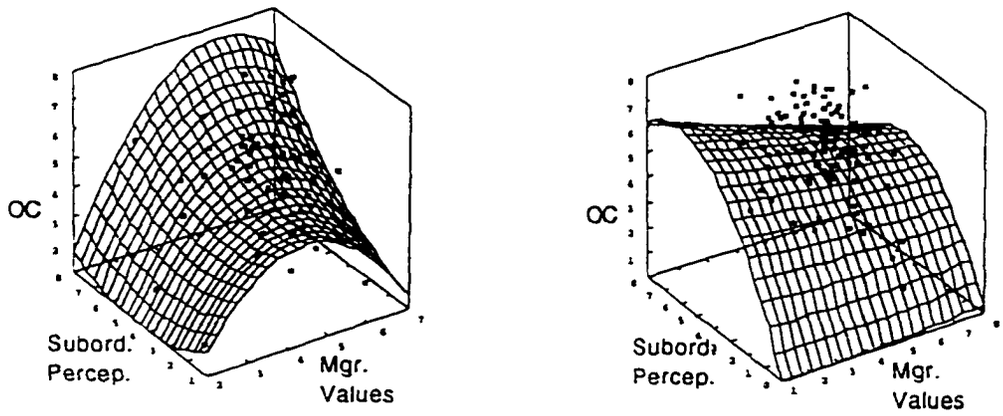
(a) low frequency



(b) high frequency

Figure 54

Mode: Subordinate Perceptual Congruence
Criterion: Organizational Commitment
Predictor: Reward Values
Moderator: Frequency of Interaction

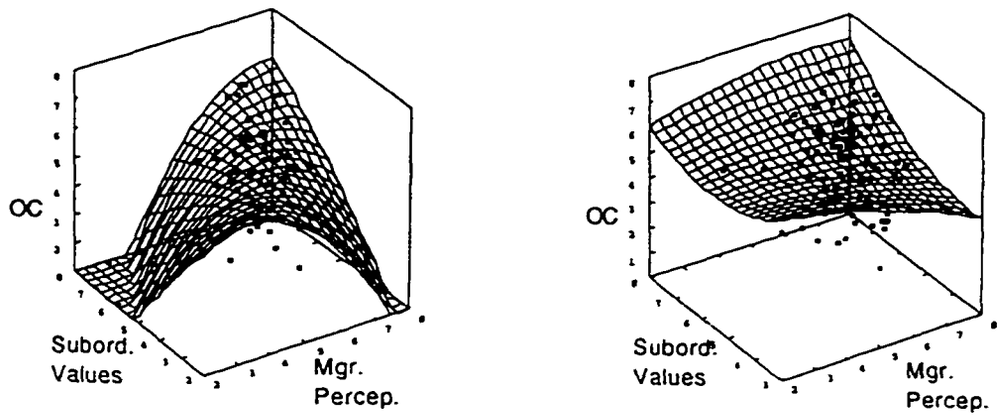


(a) low frequency

(b) high frequency

Figure 55

Mode: Manager Perceptual Congruence
Criterion: Organizational Commitment
Predictor: Social Values
Moderator: Frequency of Interaction

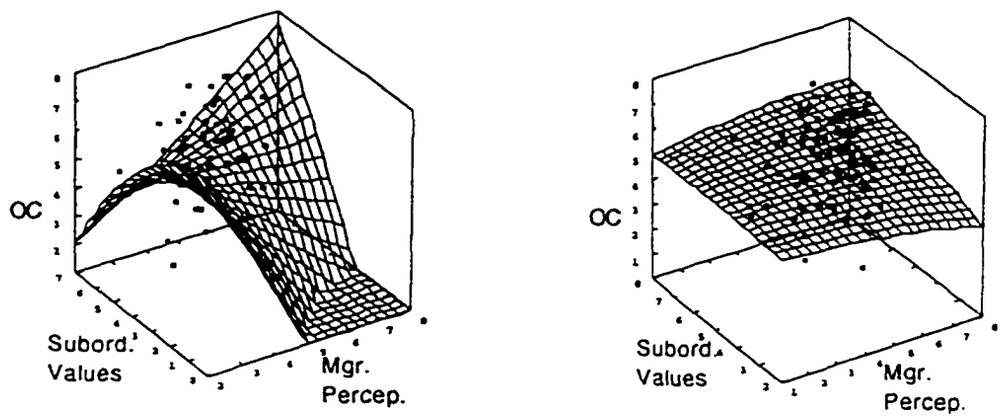


(a) low frequency

(b) high frequency

Figure 56

Mode: Manager Perceptual Congruence
Criterion: Organizational Commitment
Predictor: Reward Values
Moderator: Frequency of Interaction

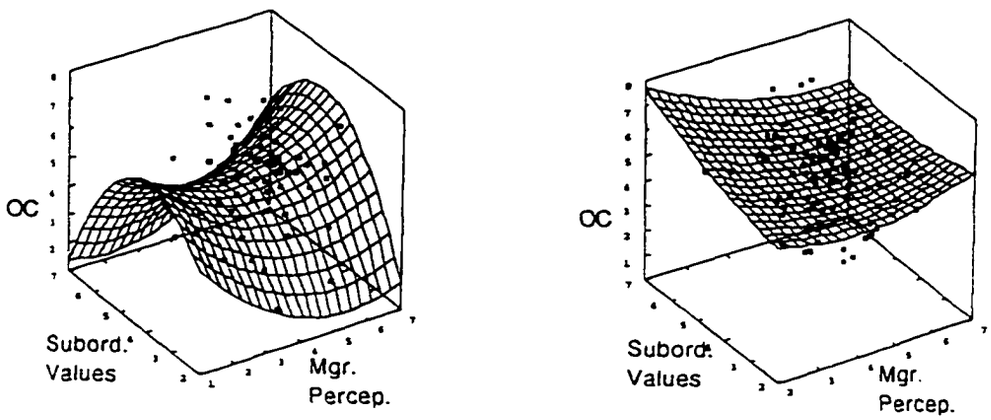


(a) low frequency

(b) high frequency

Figure 57

Mode: Manager Perceptual Congruence
Criterion: Organizational Commitment
Predictor: Work Aspect Values
Moderator: Frequency of Interaction

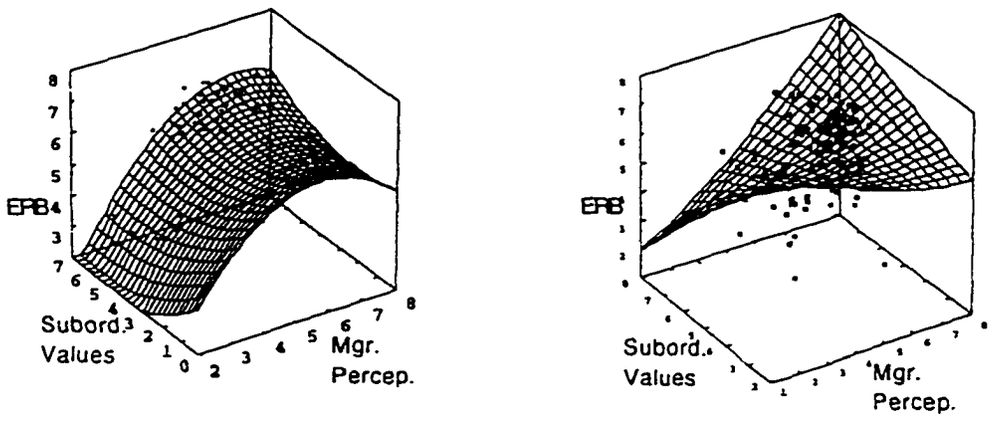


(a) low frequency

(b) high frequency

Figure 58

Mode: Manager Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Reward Values
Moderator: Frequency of Interaction

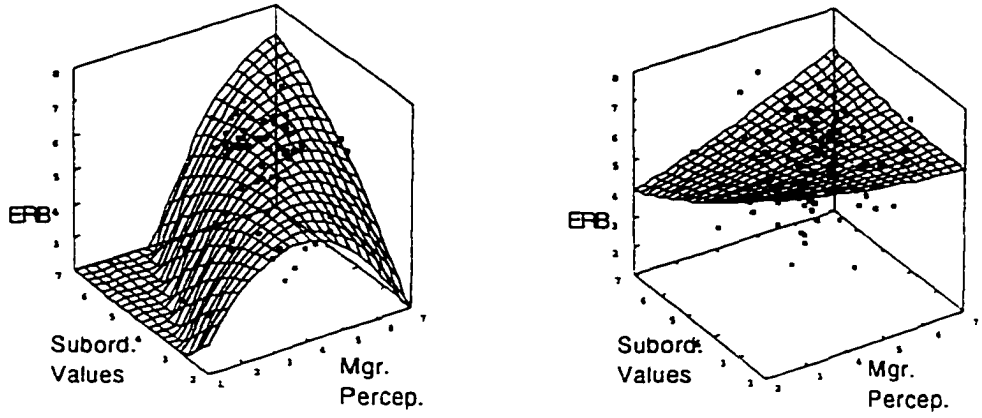


(a) low frequency

(b) high frequency

Figure 59

Mode: Manager Perceptual Congruence
Criterion: Extra-Role Behavior
Predictor: Work Aspect Values
Moderator: Frequency of Interaction



(a) low frequency (b) high frequency