

Complementary and Supplementary Fit: A Theoretical and Empirical Integration

Daniel M. Cable and Jeffrey R. Edwards
University of North Carolina at Chapel Hill

Complementary and supplementary fit represent 2 distinct traditions within the person–environment fit paradigm. However, these traditions have progressed in parallel but separate streams. This article articulates the theoretical underpinnings of the 2 traditions, using psychological need fulfillment and value congruence as prototypes of each tradition. Using a sample of 963 adult employees ranging from laborers to executives, the authors test 3 alternative conceptual models that examine the complementary and supplementary traditions. Results show that an integrative model dominates the other two, such that both traditions simultaneously predict outcomes in different ways.

According to the person–environment (P-E) fit paradigm, attitudes and behaviors result from the congruence between attributes of the person and the environment (Endler & Magnusson, 1976; Pervin, 1989; Schneider, 1987). Person characteristics may include individuals' biological or psychological needs, values, goals, abilities, or personality; environment characteristics may refer to intrinsic or extrinsic rewards, physical or psychological demands, cultural values, or environmental conditions such as heat, shelter, or availability of food. In the organizational setting to which we restrict the present investigation, researchers have drawn from the P-E fit paradigm to predict outcomes that span all stages of work lives, ranging from the careers that individuals choose (J. L. Holland, 1985), to the companies they join (Cable & Judge, 1996; Turban & Keon, 1993), to the satisfaction and stress they feel once they are on the job (Edwards, 1996; Locke, 1976), to their decisions to quit (O'Reilly, Chatman, & Caldwell, 1991).

The P-E fit paradigm comprises two longstanding traditions of research (Muchinsky & Monahan, 1987). One tradition is based on the notion of *complementary fit*, which occurs when a person's or an organization's characteristics provide what the other wants. Thus, *complementary fit* refers to occasions when "the weaknesses or needs of the environment are offset by the strength of the individual, and vice-versa" (Muchinsky & Monahan, 1987, p. 271). Complementary fit therefore can mean that an employee has a skill set that an organization requires, or it can mean that an organization offers the rewards that an individual wants. In the P-E fit research domain, the complementary fit tradition is exemplified by research on psychological need fulfillment (Edwards, 1991), which examines how people's attitudes are affected by the fit between their desires and the supplies in the work environment available to meet those desires (e.g., whether an organization offers the amount of autonomy that an employee wants).

The second tradition of the P-E fit paradigm draws from the concept of *supplementary fit*, which exists when a person and an

organization possess similar or matching characteristics. Supplementary fit could occur if an organization hires an employee with skills that replicate those already widely possessed in its workforce. However, the supplementary fit tradition is most typically represented by research examining value congruence between employees and organizations (e.g., whether an employee and an organization both consider autonomy important; Kristof, 1996).

Psychological need fulfillment and value congruence thus represent two distinct traditions within the P-E fit paradigm. These two traditions offer different conceptualizations of fit and offer different theoretical explanations for why fit should affect employee attitudes and behaviors. Perhaps because they emerged independently from different literatures, the psychological need fulfillment and value congruence traditions have progressed in parallel but separate streams. Researchers within one tradition rarely discuss the measures or theoretical rationales from the other tradition, and findings generated from the two traditions are rarely compared or integrated (Kristof, 1996). This lack of integration is unfortunate, because both traditions draw from the same general paradigm and predict the same outcome variables, suggesting that parsimony is being sacrificed. Moreover, the two literatures sometimes overlap in terminology, creating the potential for confusion that must be resolved for this area to advance. Perhaps most important, there are theoretical linkages among the components of psychological need fulfillment and value congruence that have not yet been specified or studied.

In summary, the complementary and supplementary traditions of the P-E fit paradigm have developed independently, with little conceptual or empirical integration. The present article addresses this shortcoming as follows. First, we articulate the theoretical underpinnings of the two traditions, using psychological need fulfillment and value congruence as dominant prototypes of each tradition. Second, we develop three alternative conceptual models that explain how the traditions may be integrated. Third, we test these models using data from a large sample of employed adults. As we demonstrate, both traditions predict outcomes in meaningful ways, yet one of the integrative models we develop dominates the other two models. Hence, this article contributes to research into the complementary and supplementary traditions as well as the overarching P-E fit paradigm that encompasses these traditions.

Daniel M. Cable and Jeffrey R. Edwards, Kenan–Flagler Business School, University of North Carolina at Chapel Hill.

Correspondence concerning this article should be addressed to Daniel M. Cable, Kenan–Flagler Business School, University of North Carolina, Chapel Hill, NC 27599-3490. E-mail: dan_cable@unc.edu

Theoretical Overview of Psychological Need Fulfillment and Value Congruence

Psychological Need Fulfillment

As noted previously, psychological need fulfillment is the most common way researchers have conceptualized and operationalized the complementary tradition of the P-E fit paradigm (Edwards, 1991). In this article, we follow the majority of the need fulfillment literature (e.g., French & Kahn, 1962; Harrison, 1978, 1985; Maslow, 1954; Porter, 1961, 1962; Wanous & Lawler, 1972), which focuses on psychological needs acquired through learning and socialization rather than innate biological needs (e.g., food, shelter). To examine P-E fit, psychological needs are compared with *environmental supplies*, which refer to extrinsic and intrinsic resources and rewards (e.g., money, social involvement, achievement). In the present article, we focus on people's subjective perceptions of needs and supplies, on the basis of the premise that a person can respond to misfit between needs and supplies only when he or she is aware that such misfit exists (e.g., Endler & Magnusson, 1976; French, Caplan, & Harrison, 1982). Thus, the process underlying psychological need fulfillment is a person's cognitive comparison of the desired amount of a resource or reward relative to the amount that is perceived to be supplied by the organization (French et al., 1982).

Theories of psychological need fulfillment indicate that people become dissatisfied when the supplies provided by the environment fall short of what the person desires. Conversely, these theories predict that satisfaction increases as supplies increase toward desires. Reactions to excess supplies (i.e., receiving more supplies than desired) depend on the particular needs under investigation and may follow different functional forms (Edwards, 1996; Edwards, Caplan, & Harrison, 1998; French et al., 1982; Harrison, 1978; Locke, 1976; Rice, McFarlin, Hunt, & Near, 1985). For the present study, it is not critical to develop predictions regarding the precise form of the relationship between need fulfillment and outcomes, given that our purpose is to integrate psychological need fulfillment and value congruence as broad theoretical concepts and compare the magnitudes of their relationships with outcomes. Nonetheless, in the present article we use methods of analysis that are sensitive to alternate functional forms, and we summarize their conceptual interpretation.

Value Congruence

Within the supplementary tradition of the P-E fit paradigm, research on value congruence is the most prominent, particularly within the field of organizational behavior (Chatman, 1989; Kristof, 1996). In this stream of research, *values* (a) are beliefs that transcend specific situations, (b) pertain to desirable end states or behaviors, (c) guide selection or evaluation of behavior and events, and (d) vary in terms of relative importance (Schwartz, 1992). Individuals' values—that is, what they believe is important—thus guide their decisions and behaviors; likewise, organizational value systems provide norms that specify how organizational resources should be allocated and how organizational members should behave. *Value congruence* refers to the similarity between an individual's values and the cultural value system of an organization (Chatman, 1989; Kristof, 1996).

Theoretically, value congruence should affect employees' attitudes and behaviors because people are more attracted to and trusting of others who are similar to them (e.g., Byrne, 1969; Tsui & O'Reilly, 1989). Thus, an employee would find it comfortable to work in an organization where the things that are most important to that employee are also important to other employees. An individual who shares the values of other employees also enjoys improved communication and increased predictability in social interactions (Festinger, 1954; O'Reilly et al., 1991; Tsui & O'Reilly, 1989). In other words, individuals who hold similar values share common aspects of cognitive processing and a common way of interpreting events, reducing uncertainty and improving interpersonal relationships (Kalliath, Bluedorn, & Strube, 1999). Moreover, because an organization's values are reflected onto the employees who work there (Dutton & Dukerich, 1991), value incongruence results in cognitive dissonance and dissatisfaction (O'Reilly et al., 1991). Thus, employee attitudes should be most positive when value congruence is maximized.

Key Distinctions Between Psychological Need Fulfillment and Value Congruence

The goal of this article is to examine complementary and supplementary fit by integrating the psychological need fulfillment and value congruence literatures. Integrating these literatures reveals some conceptual overlap and potential confusion in terminology that must be resolved for the field to progress. Thus, it is important to highlight the conceptual distinctions between psychological needs and values to clarify how these concepts have been defined and measured in the literature.

As described above, research on psychological need fulfillment characterizes needs as the desired *amount* of an attribute (e.g., how much autonomy an employee wants). In contrast, research on value congruence conceptualizes values as the *importance* of an attribute (e.g., how important autonomy is to the employee). Thus, in the P-E fit literature, what distinguishes psychological needs from values is not the *content* dimension to which needs and values refer (e.g., autonomy, security, prestige, altruism, and so forth) but rather the *conceptual* dimension along which needs and values vary (i.e., desired amount for psychological needs versus importance for values).

The distinction between desired amount and importance clearly is evident in streams of research related to P-E fit. For instance, discrepancy theories of job satisfaction (Katzell, 1964; Lawler, 1973; Locke, 1976; Rice et al., 1985) distinguish the desired amount and importance of job attributes and emphasize that job satisfaction depends on the comparison of perceived job attributes to their desired amounts, not their importance. However, unlike the P-E fit literature, the job satisfaction literature tends to use the word *values* as an umbrella word under which desired amount and importance are then distinguished. For instance, Katzell (1964) refers to desired amount and importance as the "magnitude" and "intensity" of a value, respectively. Locke (1976) also differentiates values into amount and importance and retains the word *needs* to refer to biological requirements for survival. To maintain consistency with previous P-E fit research, in the present article we use the phrase *psychological needs* to represent the desired amount of organizational attributes and *values* to represent the importance of organizational attributes.

Hypothesis Development

As described in the introduction, the complementary and supplementary traditions within the P-E fit paradigm have established independent theoretical rationales for why psychological need fulfillment and value congruence should affect employee attitudes. To date, no research has integrated these perspectives into a single theoretical framework or empirically compared the traditions within a single study (Kristof, 1996). In this section, we develop three conceptual models—an employment relationship model, a social identity model, and a simultaneous effects model—that focus on the theoretical linkages between the psychological need fulfillment and value congruence perspectives. Each model has distinct origins and offers different implications for how psychological need fulfillment and value congruence relate to one another and affect employee attitudes.

Employment Relationship Model

The basic logic of employment relationships is that people accept and keep jobs based primarily on the rewards provided in return for their investments of time and talent (Simon, 1951; Tsui, Pearce, Porter, & Tripoli, 1997). From this perspective, people enter the labor market and accept jobs to obtain supplies that organizations offer as inducements. Therefore, employees' work attitudes should primarily reflect the extent to which their desires are met by the rewards of the job, such that the psychological needs of the employee are fulfilled.

Although an employment relationship perspective underscores the primacy of psychological need fulfillment, it does not imply that value congruence is irrelevant. Rather, individual and organizational values may be framed as the mechanisms underlying employee desires and organizational rewards entailed in employment relationships (Kristof, 1996). In other words, what is important in an organization affects the types of rewards that the organization supplies to employees (Schein, 1992). Analogously, what is important to a person affects his or her desires (Hogan, 1991). For example, organizations with cultural values that emphasize autonomy may be more likely to offer employees opportunities to be autonomous on the job. Likewise, employees who believe autonomy is important are likely to want greater amounts of autonomy than employees who do not consider autonomy important.

From an employment relationship perspective, then, employees are primarily concerned with the degree to which their desires are fulfilled by the organization's rewards. The effect of value congruence is indirect, such that organizational values affect the supplies that are offered to employees, and what an employee believes is important affects his or her desires. Psychological need fulfillment therefore represents a proximal cause of employee attitudes, such that attitudes are influenced directly by the degree to which organizational rewards fulfill employee desires (Diener, 1984; Locke, 1976; Kalliath et al., 1999). In contrast, value congruence is a distal cause, such that it affects employee attitudes only by virtue of its effects on psychological need fulfillment. It follows that the effects of value congruence on employee attitudes are mediated by psychological need fulfillment, and these effects should therefore vanish when psychological need fulfillment is controlled. This employment relationship perspective therefore

implies that the tradition of value congruence research (e.g., Cable & Judge, 1996; Chatman, 1991; O'Reilly et al., 1991) is essentially misspecified, because it has not incorporated psychological need fulfillment as the proximal predictor of employee attitudes. Thus, based on the employment relationship perspective, we hypothesize:

Hypothesis 1: Psychological need fulfillment mediates the effect of value congruence on employee attitudes.

Social Identity Model

A second perspective on the relationship between psychological need fulfillment and value congruence focuses on the role of identity in the workplace. According to social identity theory, people classify themselves into social categories on the basis of group membership, such as the organization in which they work, in order to define or locate themselves within society (Ashforth & Mael, 1989). Social classification allows individuals to answer the fundamental question, Who am I? (Stryker & Serpe, 1982), and therefore helps satisfy people's basic existential motives (Ashforth & Mael, 1989).

A social identity perspective suggests that value congruence should be more fundamental than psychological need fulfillment as a predictor of employee attitudes. Although employees undoubtedly want returns for their investments of time and talent, their skill level generally constrains them to certain types of jobs with certain levels of rewards. However, joining a particular organization is a concrete, public expression of a person's values (Ashforth & Mael, 1989; Popovich & Wanous, 1982). Thus, what is important to the organization to which a person belongs sends signals to society about that person's self and therefore has implications for self-definition, regardless of job level (Dutton & Dukerich, 1991; Dutton, Dukerich, & Harquail, 1994). When the values of the person are incongruent with the values of the employing organization, the person will experience cognitive dissonance and negative job attitudes. Moreover, communication and friendships with other organizational members are more difficult when an employee does not hold common values and the resulting shared ways of interpreting events, which also leads to negative work attitudes (Schneider, 1987). From a social identity perspective, psychological need fulfillment represents a narrow viewpoint because it is tied to a particular job, whereas value congruence transcends jobs by referring to employees' relationships with the organization as a whole.

Although a social identity model emphasizes value congruence over psychological need fulfillment, the two types of fit are not independent. As described above, an organization's values affect the types of rewards that the organization supplies (Schein, 1992), just as a person's values affect his or her desires (Hogan, 1991). Therefore, the social identity perspective casts value congruence as a common cause of psychological needs, organizational supplies, and work attitudes. From this perspective, the effects of psychological need fulfillment on attitudes are spurious and should become insignificant once value congruence is controlled (Simon, 1954). Hence, the social identity perspective leads to the conclusion that psychological need fulfillment is the shadow rather than the substance of what influences employee attitudes. Once value congruence is used to predict both psychological need fulfillment

and employee attitudes, the relationship between psychological need fulfillment and employee attitudes should disappear.

Hypothesis 2: The relationship between psychological need fulfillment and employee attitudes is spurious because of value congruence as a common cause.

Simultaneous Effects Model

A final perspective on the relationship between value congruence and psychological need fulfillment is that they represent distinct theoretical processes with independent, unique effects on employee attitudes. The simultaneous effects viewpoint is consistent with the P-E fit framework offered by Kristof (1996), which depicts both complementary and supplementary fit as separate processes with different underlying logic. According to Kristof (1996, p. 6), "*Optimum* P-O fit may be achieved when each entity's needs are fulfilled by the other *and* they share similar fundamental characteristics." From this perspective, psychological need fulfillment and value congruence are important to employees for different reasons and operate through processes that are separate and distinct. Therefore both predictors should independently affect attitudes.

Hypothesis 3: Both psychological need fulfillment and value congruence independently affect employee attitudes, such that each predicts attitudes when the other is controlled.

Method

Sample

Data were collected from employees in four large water treatment agencies. Employees occupied a wide range of job types and levels. Thus, the sample provided a wide range of employees in different organizations and was well suited to provide variation on the variables of interest. The senior manager of each district sent an e-mail inviting employees to complete a survey via the Internet, such that surveys were made available to 3,649 employees. Data from completed surveys were returned directly to us, thereby preserving respondent anonymity. In total, 997 employees completed the survey, yielding a 27% response rate. Because of missing data, the final usable sample size ranged from 958 to 963.

Respondents represented the full range of job types and levels of the water agencies. In terms of job type, 2% of respondents worked in customer service, 2% in public information, 3% in finance, 3% in human resources, 5% in planning, 5% in information technology, 7% in administrative services, 23% in engineering, 34% in operations and maintenance, and 15% in other job types. Regarding job level, 3% of respondents were executives or senior managers, 17% were first-level supervisors, 23% were middle managers or project managers, and 57% were nonsupervisory employees. The modal organizational tenure of respondents was 11–15 years (28%), and tenure ranged from less than 6 months (3%) to more than 20 years (17%). The modal age classification was 41–45 years (24%), and ages ranged from less than 25 years (2%) to 61–65 years (2%). Sixty-nine percent of respondents were men and 31% were women: 7% were African American, 14% were Hispanic, 59% were Caucasian, 12% were Asian, and 7% represented other races.

Measures

To meaningfully compare results for psychological need fulfillment and value congruence, it was necessary to measure all person and organization constructs on the same content dimensions (otherwise, differences between

complementary and supplementary fit would be confounded with differences in the content dimensions on which they were assessed). It also was desirable that these dimensions were comprehensive, such that they captured variation in person and organization constructs for employees across districts, job levels, and job types. To meet these requirements, we drew from the Work Values Survey (WVS; Edwards & Cable, 2002).

The WVS is based on the circumplex model of human values developed by Schwartz (1992), which was derived using data from 40 samples in 20 countries to reflect the "universal requirements of human existence to which all individuals and societies must be responsive" (Schwartz, 1992, p. 4). Although Schwartz's values scale is useful because it identifies humans' basic values, we could not use it in its original form, because of several problems. First, we sought to study people in an organizational context, whereas Schwartz's scale deals with many dimensions that are not applicable to work organizations (e.g., sample items include "a spiritual life," "national security," "mature love," "family security," and "honoring parents and elders"). Also, Schwartz's empirical validation used smallest-space analysis to identify clusters of related values, which is not based on classical measurement theory and therefore makes it difficult to evaluate its construct validity. Edwards and Cable (2002) used Schwartz's results to identify conceptual dimensions but derived items using the domain sampling procedure (Nunnally, 1978), evaluated the measure using confirmatory factor analysis, and used the results to form a nomothetic multi-item scale for each value that could be applied to needs, supplies, and values and that could be analyzed using an appropriate methodology.

Like Schwartz's (1992) scale, the WVS model is organized around two axes that differentiate basic human motivations. The first axis is *openness to change* versus *conservation*, which distinguishes values in terms of pursuing new intellectual and emotional interests versus seeking certainty and preserving the status quo. The second axis is *self-enhancement* versus *self-transcendence*, which arrays values in terms of enhancing personal interests versus promoting the welfare of others. Drawing from this model, Edwards and Cable (2002) identified eight core work values representing altruism, relationships, pay, security, authority, prestige, variety, and autonomy (see the Appendix). Each work value was measured using three items adapted from existing measures of work values, including the Minnesota Importance Questionnaire (Gay, Weiss, Hendel, Dawis, & Lofquist, 1971), the Work Aspects Preference Scale (Pryor, 1983), and the Work Values Inventory (Super, 1970). Edwards and Cable conducted a confirmatory factor analysis of the WVS using data from 183 MBA students and obtained a comparative fit index (CFI; Bentler, 1990) of .93 and a root-mean-square error of approximation (RMSEA; Steiger, 1990) of .07, indicating good model fit (Browne & Cudeck, 1993; Hu & Bentler, 1999). Reliabilities for the three-item scales ranged from .73 to .87 and averaged .82.

To measure the constructs underlying psychological need fulfillment and value congruence, we asked respondents to evaluate the 24 WVS items in four different ways. For psychological needs, we asked respondents to answer "How much is the right amount for you?"; responses ranged from 1 (*none*) to 5 (*a very great amount*). For organizational supplies, respondents answered the question "How much is present in your work?" Responses again ranged from 1 (*none*) to 5 (*a very great amount*). The questions used to elicit psychological needs and organizational supplies are consistent with prior research, which frames these concepts as desired and perceived amounts, respectively, of job attributes (e.g., French et al., 1982; Locke, 1976). For individual values, respondents answered the question "How important is this to you?" Responses ranged from 1 (*not important at all*) to 5 (*extremely important*). Finally, for organizational values, our goal was to assess respondents' personal beliefs about their organizations' values. Respondents thus answered the question "How important is this at your organization?" Again, responses ranged from 1 (*not important at all*) to 5 (*extremely important*). The questions used to assess individual and organizational values follow from value congruence research, which operationalizes *values* as the importance of attributes to the person and

organization, respectively (e.g., Chatman, 1989; Kristof, 1996; Schwartz, 1992).

We measured three outcomes of psychological need fulfillment and value congruence: Intent to stay, job satisfaction, and organizational identification. Intent to stay was measured with the four-item scale described by O'Reilly et al. (1991), which assesses thoughts and actions that reflect intentions to stay or leave an organization (e.g., "I have thought seriously about changing organizations since beginning to work here"). Job satisfaction was measured with three items used by Edwards and Rothbard (1999) that describe overall satisfaction and liking of the job (e.g., "All in all, the job I have is great"). Finally, we measured organizational identification with the six items used by Saks and Ashforth (1997) that indicate a perceived oneness or belonging to an organization (e.g., "When someone criticizes my firm, it feels like a personal insult").

Analyses

Analyses were guided by the general path model shown in Figure 1, which summarizes the relationships relevant to Hypotheses 1, 2, and 3. We tested both strict and moderate versions of each hypothesis. Hypothesis 1 predicted that psychological need fulfillment mediates the effect of value congruence on attitudes. This mediated effect corresponds to the product of Paths A and B in Figure 1, and this product represents the indirect effect of value congruence on attitudes (Alwin & Hauser, 1975). A strict version of Hypothesis 1 would stipulate that the indirect effect of value congruence is positive and the direct effect (i.e., Path C) equals zero, meaning that the effect of value congruence on attitudes is fully mediated by psychological need fulfillment. A moderate version of Hypothesis 1 would require that the indirect effect is larger than the direct effect, such that the effect of value congruence on attitudes is channeled primarily but not exclusively through psychological need fulfillment.

Hypothesis 2 stated that the relationship between psychological need fulfillment and attitudes is spurious, attributable to value congruence as a common cause. The spurious component of the relationship between psychological need fulfillment and attitudes is captured by the product of Paths A and C (Alwin & Hauser, 1975). A strict version of Hypothesis 2 would require that the product of Paths A and C is positive and Path B equals zero, meaning that value congruence fully explains the relationship between psychological need fulfillment and attitudes. A moderate version of Hypothesis 2 would indicate that the product of Paths A and C is greater than Path B, such that the relationship between psychological need fulfillment and attitudes is mostly but not entirely spurious.

Finally, Hypothesis 3 predicted that psychological need fulfillment and value congruence both predict attitudes, as represented by Paths B and C, respectively. A strict version of Hypothesis 3 would place psychological need fulfillment and value congruence on equal footing, such that Paths B and C are both positive and equal in magnitude. A moderate version of Hypothesis 3 would drop the requirement that Paths B and C are equal, such that the effects of psychological need fulfillment and value congruence on attitudes are both positive but may differ in magnitude. The combinations of paths corresponding to the moderate and strict versions of Hypotheses 1, 2, and 3 are summarized in Table 1.

The analysis of models such as that shown in Figure 1 is straightforward when each term in the model is a single variable. However, psychological

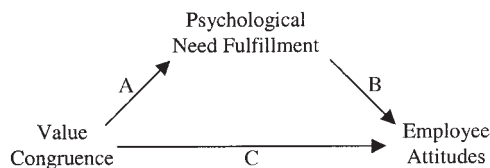


Figure 1. General path model relating value congruence, psychological need fulfillment, and employee attitudes.

Table 1
Comparisons for Strict and Moderate Versions of Hypotheses 1, 2, and 3

Strict version	Moderate version
Hypothesis 1	
AB > 0 C = 0	AB > 0 AB > C
Hypothesis 2	
AC > 0 B = 0	AC > 0 AC > B
Hypothesis 3	
B > 0 C > 0 B = C	B > 0 C > 0

Note. Table entries are path coefficients from the model shown in Figure 1.

need fulfillment and value congruence each comprise two variables (i.e., organizational supplies and employee desires, organizational values and employee values), and estimating the effects of the fit between these variables often requires nonlinear and interactive terms. An equation that can capture an extensive variety of fit effects is as follows (Edwards, 1994; Edwards & Parry, 1993):

$$Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e. \quad (1)$$

For psychological need fulfillment, X and Y represent organizational supplies and employee desires, respectively. For value congruence, X and Y signify organizational and individual values, respectively. In both cases, Z is the attitude treated as the outcome of psychological need fulfillment or value congruence.

To cast the effects represented by Equation 1 in terms of the path model in Figure 1, we created block variables for psychological need fulfillment and value congruence. A block variable is constructed by regressing a dependent variable on a set of independent variables and using the predicted value of the dependent variable in place of the independent variables (Heise, 1972; Marsden, 1982). Block variables are used in path analysis to summarize the effects of a set of conceptually related variables (Marsden, 1982) and to depict nonlinear and interactive effects in terms of a single path coefficient (Jagodzinski & Weede, 1981). For each content dimension and attitudinal outcome, we used Equation 1 to create two block variables, one by regressing the attitude on the five psychological need fulfillment terms, and the other by regressing the attitude on the five value congruence terms (Igra, 1979). The correlations among these two block variables and the attitude variable were used to derive estimates of Paths A, B, and C and the combinations of paths in Table 1 (Pedhazur, 1997).

The comparisons summarized in Table 1 entailed products of paths that were themselves based on nonlinear combinations of variables as shown in Equation 1. Therefore, we could not apply conventional procedures for constructing confidence intervals and conducting significance tests. As an alternative, we applied the bootstrap (Efron & Tibshirani, 1993; Stine, 1989). For each content dimension and attitudinal outcome, we drew 1,000 bootstrap samples and constructed block variables for psychological need fulfillment and value congruence using regression weights from the full sample. We then computed the path coefficients and comparisons listed in Table 1 for each bootstrap sample and used these results to construct 95% confidence intervals based on the bias-corrected percentile method (Stine, 1989).

Each hypothesis was tested using eight content dimensions and three attitudinal outcomes, yielding 24 tests in all. This number of tests risked

inflating Type I error. To counteract this, we applied the sequential Bonferroni procedure (Holm, 1979) as follows. For each hypothesis, we listed the probability levels of the 24 tests in order of size. The smallest probability was then multiplied by 24, representing the total number of tests. If this probability remained below the nominal value (i.e., .025 for a two-tailed test, with alpha at .05), the next probability was then multiplied by the total number of remaining tests (i.e., 23). This procedure continued until all 24 probabilities were corrected, and only those that remained below the nominal alpha were deemed significant. This procedure holds Type I error for a set of tests below the nominal level and avoids the excessive loss of statistical power associated with the standard Bonferroni correction (B. S. Holland & Copenhagen, 1988; Seaman, Levin, & Serlin, 1991).

Results

Descriptive Statistics

Table 2 presents means, standard deviations, correlations, and reliability estimates (Cronbach's alpha) for all measures used in the study. Means and standard deviations indicated that all measures exhibited good dispersion and showed little evidence of floor or ceiling effects. Correlations among the eight dimensions of psychological needs, organizational supplies, personal values, and organizational values were generally modest in magnitude, with higher correlations between dimensions representing conceptually similar dimensions (e.g., variety and autonomy). Correlations between psychological needs, organizational supplies, personal values, and organizational values were variable. As expected, higher correlations were found for measures that referred to the same content dimension, particularly for psychological needs and personal values and for organizational supplies and values. Intent to stay, job satisfaction, and organizational identification were positively correlated, as would be expected from prior research. Reliability estimates were generally high, averaging .82 for psychological needs, .81 for organizational supplies, .88 for personal values, and .86 for organizational values.

Reliability estimates for the outcome measures averaged .85, and a confirmatory factor analysis of the three outcome factors yielded a CFI of .95 and an RMSEA of .08. Confirmatory factor analyses of the measures of psychological needs, organizational supplies, personal values, and organizational values also indicated good fit, as evidenced by CFI values of .99, .98, .97, and .98 and RMSEA values of .04, .05, .04, and .06, respectively. Because we measured organizational values and supplies from respondents using the same item roots, it is possible that we actually just measured the same construct twice. To test this possibility, we conducted a confirmatory factor analysis of the organizational importance and supplies items in a single 16-factor model. Results suggested that the items tapped different constructs, as the proposed model fit the data very well (CFI = .99, RMSEA = .045). Taken together, this evidence indicates that our measures were suitable for the purposes of our study.

Tests of Hypotheses

The results pertaining to the hypotheses are reported in Tables 3, 4, and 5. Each table represents an outcome (e.g., job satisfaction, intent to stay, and organizational identification). The columns in the Tables reflect the paths presented in Figure 1 (i.e., A, B, and C) as well as the hypothesis tests suggested in Table 1 (e.g., AB – C).

Employment relationship model. Hypothesis 1, which was based on the employment relationship model, predicted that psychological need fulfillment mediates the relationship of value congruence with attitudes. The strict version of Hypothesis 1 required that the indirect effect of value congruence on attitudes (i.e., the product of Paths A and B) is positive and the direct effect (i.e., Path C) is zero. Across all content dimensions and outcomes, the indirect effect of value congruence was positive. However, the direct effect was also positive in all cases, except prestige combined with job satisfaction and intent to stay. The moderate version of Hypothesis 1 stipulated that the indirect effect of value congruence is positive but allowed the direct effect to be nonzero, provided it is smaller than the indirect effect. This comparison, which is captured by the AB – C difference, was supported only for prestige combined with job satisfaction and intent to stay (the same combinations for which the direct effect of value congruence did not differ from zero). To the contrary, the direct effect of value congruence was larger than the indirect effect for relationships, pay, and variety across all outcome variables. The direct effect was also larger than the indirect effect for autonomy with job satisfaction and organizational identification as outcomes and for altruism with organizational identification as the outcome. These results offer little support for the strict or moderate versions of Hypothesis 1. Instead, they indicate that the direct effect of value congruence on attitudes is comparable to or larger than the indirect effect that is mediated by psychological need fulfillment.

Social identity model. Hypothesis 2 drew from the social identity model and predicted that the relationship between psychological need fulfillment and attitudes is spurious, because of value congruence as a common cause. The strict version of Hypothesis 2 required that the spurious component of this relationship (i.e., the product of Paths A and C) is positive and, when this component is taken into account, the direct effect of psychological need fulfillment (i.e., Path B) is zero. As shown in Tables 3, 4, and 5, results indicate that the spurious component of the relationship between psychological need fulfillment and attitudes was positive in all instances except prestige with job satisfaction and intent to stay as outcomes. However, in every case, the direct effect of psychological need fulfillment on attitudes remained positive. The moderate version of Hypothesis 2 required that the spurious component is positive but allowed the direct effect to differ from zero, provided it is smaller than the spurious component. This comparison, which is represented by the AC – B difference, was not supported for any content dimension or outcome. Instead, the spurious component was smaller than the direct effect for prestige across all outcomes. Hence, rather than supporting the strict or moderate versions of Hypothesis 2, these results indicate that the spurious component of the relationship between psychological need fulfillment and attitudes is comparable to or smaller than the direct effect of psychological need fulfillment on attitudes.

Simultaneous effects model. Hypothesis 3 was based on the simultaneous effects model and stated that psychological need fulfillment and value congruence both independently predict attitudes. The strict version of Hypothesis 3 required that these effects are equal, whereas the moderate version allowed the effects to differ in magnitude. Results showed that the direct effects of psychological need fulfillment were positive in all instances, whereas the direct effect of value congruence was positive in all cases except prestige with job satisfaction and intent to stay as

Table 2
Descriptive Statistics

Measure	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Personal needs															
1. Altruism	3.61	0.77	(.86)												
2. Relationships	3.27	0.79	.38	(.91)											
3. Pay	3.94	0.64	.21	.22	(.87)										
4. Security	4.14	0.78	.17	.18	.46	(.92)									
5. Authority	3.58	0.72	.27	.28	.28	.35	(.87)								
6. Prestige	3.43	0.70	.39	.44	.35	.25	.36	(.79)							
7. Variety	3.67	0.70	.34	.32	.29	.14	.25	.37	(.88)						
8. Autonomy	3.74	0.64	.31	.29	.34	.17	.29	.43	.57	(.79)					
Organizational supplies															
9. Altruism	3.06	0.93	.47	.20	.19	.15	.23	.21	.15	.16	(.88)				
10. Relationships	2.85	0.81	.18	.39	.12	.04	.18	.20	.21	.17	.48	(.90)			
11. Pay	3.36	0.78	.17	.16	.21	.07	.16	.09	.15	.13	.35	.38	(.89)		
12. Security	3.11	1.06	.17	.14	.13	.12	.17	.15	.14	.15	.41	.47	.47	(.95)	
13. Authority	3.31	0.97	.18	.11	.11	.10	.01	.16	.19	.13	.32	.27	.25	.37	(.90)
14. Prestige	2.92	0.86	.21	.20	.12	.11	.20	.19	.18	.16	.50	.52	.37	.47	.44
15. Variety	3.16	0.90	.15	.17	.12	.05	.20	.14	.39	.25	.35	.42	.28	.30	.23
16. Autonomy	3.10	0.82	.18	.16	.14	.08	.20	.14	.28	.35	.43	.46	.37	.46	.30
Personal values															
17. Altruism	4.08	0.69	.73	.35	.11	.14	.24	.32	.25	.21	.32	.17	.17	.15	.11
18. Relationships	3.62	0.81	.27	.77	.11	.17	.20	.36	.21	.22	.17	.28	.11	.10	.07
19. Pay	4.27	0.60	.09	.17	.56	.44	.23	.25	.15	.19	.18	.10	-.01	.08	.05
20. Security	4.39	0.72	.05	.12	.32	.78	.28	.16	.05	.08	.14	.02	-.01	.04	.04
21. Authority	3.82	0.76	.21	.24	.19	.30	.73	.28	.14	.17	.23	.13	.07	.08	-.08
22. Prestige	3.68	0.71	.31	.33	.21	.21	.28	.74	.22	.27	.23	.16	.03	.14	.12
23. Variety	3.80	0.70	.25	.24	.13	.10	.16	.35	.67	.37	.08	.12	.06	.08	.11
24. Autonomy	3.90	0.62	.20	.23	.23	.15	.17	.35	.38	.61	.09	.10	.04	.10	.05
Organizational values															
25. Altruism	3.50	0.92	.23	.10	.06	.13	.19	.13	.10	.05	.70	.38	.29	.34	.28
26. Relationships	2.81	0.89	.20	.24	.04	.06	.18	.18	.12	.10	.48	.61	.28	.40	.25
27. Pay	3.48	0.87	.16	.13	.07	.04	.11	.10	.12	.09	.31	.33	.61	.44	.27
28. Security	3.12	1.09	.16	.12	.06	.03	.17	.13	.11	.13	.39	.39	.38	.72	.29
29. Authority	3.55	0.99	.11	.08	.03	.03	-.09	.12	.11	.06	.26	.24	.20	.31	.73
30. Prestige	3.30	0.88	.17	.16	.05	.07	.12	.11	.10	.06	.38	.39	.33	.36	.33
31. Variety	2.82	0.89	.19	.18	.04	.14	.22	.16	.16	.09	.42	.37	.22	.29	.18
32. Autonomy	2.88	0.86	.21	.15	.07	.15	.25	.17	.16	.14	.49	.40	.29	.45	.30
Outcomes															
33. Job Satisfaction	3.69	0.92	.12	.13	.09	.16	.18	.07	.13	.12	.44	.36	.28	.36	.22
34. Intent to Stay	2.41	0.88	-.03	-.08	-.13	-.27	-.18	-.03	-.07	-.08	-.36	-.28	-.22	-.27	-.17
35. Organizational Identification	3.53	0.82	.27	.25	.07	.12	.17	.21	.14	.14	.41	.30	.20	.22	.15

Note. N = 941. Correlations greater than .06 in absolute magnitude are statistically significant at $p < .05$. Values in parenthesis along the diagonal are reliability estimates (Cronbach's alpha).

outcomes. Moreover, for all outcomes, the direct effects of psychological need fulfillment and value congruence did not differ for altruism, pay, security, authority, variety, and autonomy. For prestige, the direct effect of psychological need fulfillment was larger with job satisfaction and intent to stay as outcomes, whereas for relationships, the direct effect of value congruence was larger with job satisfaction and organizational identification as outcomes. Thus, in most instances, the strict version of Hypothesis 3 was supported.

Interpretation of functional forms. As noted previously, the particular functional forms relating need fulfillment and value congruence to outcomes were not the focus of our study. Nonetheless, results from the polynomial regression analyses used to create the block variables permit interpretation of the form of these relationships and thus offer information about the extent to which they represented fit effects (vs. the effects of the person or environment separately). We considered three theo-

retical types of fit relationships (Edwards et al., 1998). First, the relationship between the person, the environment, and the outcome may be parabolic, such that the outcome is maximized when the environment matches the person, and the outcomes decline in either direction from optimal match. Second, the functional form of the fit relationship may be monotonic, such that the outcome increases as the environment increases to the person, and the outcome continues to increase as the environment exceeds the person. Finally, the functional form of the fit relationship may be asymptotic, such that the outcome increases as the environment increases to the person, but then levels off as the environment exceeds the person. These functional forms were assessed using coefficients from Equation 1 along with response surface methodology (Edwards & Parry, 1993). We tested the shapes of surfaces along the $Y = -X$ line, which captures the degree of fit between the person and environment, as represented by Y and X, respectively.

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
(.81)																					
.41	(.90)																				
.51	.62	(.82)																			
.18	.14	.17	(.81)																		
.15	.11	.09	.41	(.86)																	
.08	.08	.10	.17	.23	(.84)																
.09	.01	.03	.13	.19	.52	(.90)															
.15	.13	.16	.29	.29	.33	.35	(.85)														
.16	.07	.12	.37	.39	.34	.25	.38	(.70)													
.11	.18	.11	.29	.28	.20	.12	.17	.38	(.79)												
.08	.12	.15	.26	.29	.29	.18	.22	.39	.49	(.69)											
.41	.26	.31	.28	.13	.17	.17	.23	.23	.08	.10	(.84)										
.47	.30	.37	.25	.32	.15	.09	.21	.24	.19	.14	.55	(.86)									
.35	.23	.30	.19	.14	.03	.00	.06	.13	.10	.08	.38	.44	(.85)								
.43	.25	.36	.19	.12	.05	.03	.14	.18	.11	.12	.41	.56	.60	(.92)							
.35	.17	.21	.08	.06	.02	.01	-.11	.16	.10	.07	.34	.34	.34	.36	(.86)						
.55	.33	.31	.21	.17	.05	.06	.10	.14	.12	.10	.42	.49	.44	.43	.43	(.69)					
.40	.51	.38	.24	.21	.15	.17	.28	.23	.22	.16	.47	.55	.33	.40	.24	.41	(.81)				
.50	.39	.55	.22	.17	.17	.17	.26	.24	.16	.18	.52	.60	.44	.57	.36	.46	.61	(.75)			
.46	.35	.43	.16	.15	.14	.16	.17	.10	.08	.04	.44	.43	.26	.37	.21	.28	.39	.46	(.90)		
-.34	-.28	-.34	-.08	-.12	-.18	-.32	-.19	-.08	-.01	-.03	-.36	-.33	-.19	-.26	-.15	-.20	-.35	-.38	-.73	(.77)	
.38	.28	.33	.31	.27	.15	.15	.18	.23	.11	.09	.38	.40	.25	.27	.13	.28	.37	.39	.53	-.46	(.88)

For need fulfillment, results suggested that the functional forms represent one of the three fit relationships in 92% of the cases. In 54% of the need fulfillment relationships, the functional form was parabolic, indicating that attitudes were the most positive when needs and supplies matched. In 38% of the need fulfillment relationships, the functional form indicated asymptotic relationships, such that attitudes became more positive as supplies approached needs, but attitudes leveled off and did not become more negative when there were more supplies than needs. Eight percent of the relationships showed that only the environment (i.e., supplies) was affecting the outcomes.

For value congruence, the functional forms represented parabolic relationships in 79% of the cases, such that attitudes were optimized when individual and organizational values were congruent. Eight percent of the relationships were asymptotic, such that attitudes became more positive as organizational values approached individual values, but attitudes leveled off and did not

become more negative when the organization valued an attribute more than a person did. For 4% of the relationships, the functional form was monotonic, such that intent to stay increased as the organizational value increased to the person's values, and intent to stay continued to increase as the organizational value exceeded the person's values. In 8% of the cases, results revealed that only the environment (i.e., organizational values) was related to the outcomes.

Discussion

Complementary fit and supplementary fit represent distinct traditions within the P-E fit paradigm that have developed independently with little cross-fertilization. The goal of this article was to articulate the logic underlying each tradition, integrate the research streams, and derive testable predictions about how the traditions intersect. To this end, we focused on psychological need fulfill-

Table 3
Path Analytic Results for Job Satisfaction

Work value	A	B	C	AB	AC	AB - C	AC - B	B - C
Altruism	.73**	.27**	.28**	.20**	.21**	-.08	-.06	-.01
Relationships	.60**	.16**	.38**	.09**	.23**	-.29**	.07	-.22*
Pay	.55**	.17**	.30**	.10**	.16**	-.20*	-.01	-.13
Security	.76**	.24**	.27**	.18**	.21**	-.09	-.03	-.03
Authority	.70**	.22**	.25**	.15**	.17**	-.10	-.05	-.03
Prestige	.60**	.48**	.06	.29**	.04	.23**	-.45**	.42**
Variety	.55**	.23**	.35**	.13**	.20**	-.22**	-.03	-.12
Autonomy	.59**	.27**	.34**	.16**	.20**	-.18**	-.07	-.07

Note. *N* ranged from 959 to 963. All significance tests were based on bias-corrected confidence intervals constructed using the bootstrap and were adjusted using the sequential Bonferroni procedure. Entries in A, B, and C columns refer to paths shown in Figure 1. Entries in the AB column refer to products of Paths A and B, and entries in the AC column refer to products of Paths A and C.

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

ment and value congruence as common versions of complementary and supplementary fit. We then proposed three theoretical models to highlight important differences in the logic behind why psychological need fulfillment and value congruence matter to employees, and to reveal predictions about the relationships *between* psychological need fulfillment and value congruence.

Results from this study clearly supported our simultaneous effects model over the employment relationship and the social identity models, suggesting that psychological need fulfillment and value congruence both play important roles in affecting employees' work attitudes. Moreover, results supported the strict version of the simultaneous effects hypothesis, such that psychological need fulfillment and value congruence were equally predictive of attitudes across work dimensions and outcomes. Thus, there appear to be two different processes underlying the complementary and supplementary traditions of P-E fit research, each with equal footing. On the one hand, people become dissatisfied when they have psychological needs that are not met by the environment (French & Kahn, 1962; Maslow, 1954; Porter, 1962). On the other hand, individuals become dissatisfied when their personal values are incongruent with their organizations' values (Chatman, 1989; O'Reilly et al., 1991).

Next, consistent with the logic proposed by Kristof (1996) and other researchers (e.g., Hogan, 1991; Schein, 1992), we found

strong relationships between personal values and psychological needs and also between organizational values and supplies. Thus, one major conclusion of this article is that complementary and supplementary fit are interrelated but that both contribute independently to outcomes. These results strongly support the notion that complementary and supplementary fit should be integrated into a larger theoretical framework that explains their interrelationships as well as their relationships with outcomes that are important to individuals and organizations.

Finally, the conventional notion in fit research is that attitudes are maximized when psychological needs and supplies are equal (i.e., a parabolic relationship between person, environment, and outcomes). However, results in the present study suggested that several of the functional forms relating psychological need fulfillment to outcomes deviated from this pattern. In particular, almost 80% of the value congruence relationships were parabolic, but only 54% of the need fulfillment relationships were parabolic. Thirty-eight percent of the need fulfillment relationships were asymptotic. This trend suggests that although optimal match is important in the context of values, employees are not adversely affected when they receive "too much" of the organizational supplies examined in this study (e.g., altruism, peer relationships, prestige). These results suggest that oversupply may actually be the optimal position for need-supply fit (from the recipient's

Table 4
Path Analytic Results for Intent to Stay

Work value	A	B	C	AB	AC	AB - C	AC - B	B - C
Altruism	.72**	.28**	.19**	.20**	.13**	.01	-.15	.09
Relationships	.60**	.14**	.28**	.08**	.17**	-.20**	.03	-.14
Pay	.54**	.17**	.27**	.09**	.14**	-.18**	-.03	-.10
Security	.77**	.23**	.27**	.18**	.21**	-.09	-.02	-.04
Authority	.69**	.22**	.21**	.15**	.14**	-.06	-.08	.01
Prestige	.58**	.37**	.04	.21**	.02	.17**	-.35**	.33**
Variety	.55**	.17**	.32**	.09**	.17**	-.23**	.00	-.15
Autonomy	.59**	.20**	.28**	.12*	.17**	-.16	-.03	-.08

Note. *N* ranged from 958 to 962. All significance tests were based on bias-corrected confidence intervals constructed using the bootstrap and were adjusted using the sequential Bonferroni procedure. Entries in A, B, and C columns refer to paths shown in Figure 1. Entries in the AB column refer to products of Paths A and B, and entries in the AC column refer to products of Paths A and C.

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

Table 5
Path Analytic Results for Organizational Identification

Work value	A	B	C	AB	AC	AB - C	AC - B	B - C
Altruism	.74**	.19**	.35**	.14**	.26**	-.21	-.07	-.16
Relationships	.68**	.11*	.39**	.08*	.26**	-.31**	-.15	-.28**
Pay	.54**	.08*	.30**	.04*	.16**	-.26**	.08	-.22
Security	.74**	.11*	.26**	.08*	.19**	-.18	.08	-.15
Authority	.67**	.17**	.20**	.11**	.13**	-.09	-.04	-.03
Prestige	.62**	.33**	.17**	.20**	.11**	.03	-.22**	.16
Variety	.56**	.15**	.33**	.09**	.19**	-.25**	.04	-.18
Autonomy	.60**	.19**	.30**	.11**	.18**	-.19*	-.01	-.11

Note. *N* ranged from 958 to 961. All significance tests were based on bias-corrected confidence intervals constructed using the bootstrap and were adjusted using the sequential Bonferroni procedure. Entries in A, B, and C columns refer to paths shown in Figure 1. Entries in the AB column refer to products of Paths A and B, and entries in the AC column refer to products of Paths A and C.

* *p* < .05. ** *p* < .01.

perspective, of course!). These need fulfillment findings are consistent with the general trend of results from equity theory suggesting that overpayment is not as troubling to employees as underpayment (Mowday, 1996; Pritchard, 1969). Finally, for both value congruence and psychological need fulfillment, 8% of the cases did not conform to any of the fit relationships. In all of these cases, environmental supplies played a larger role than psychological needs in explaining outcomes, consistent with recent research that has examined the relative importance of person versus situation variables (Edwards & Harrison, 1993; Edwards & Rothbard, 1999). Theoretically, the environment may be more likely to dominate fit relationships than person effects because environmental supplies change more frequently than personal needs and therefore are more salient to people.

Limitations and Strengths

This article has several limitations that should be considered. First, in order to conduct competitive tests of the logic behind the complementary and supplementary traditions of P-E fit, this study demanded intraperson data regarding values, psychological needs, and supplies. Although intraperson data is valuable because it permits a direct test of competing models, this data collection method also poses possible limitations, such as inflating the overall correlations between all predictors and outcomes. This issue should not affect our basic test of complementary versus supplementary fit, however, because although it is more likely that the two types of fit each are related to outcomes, it also is true that collecting all data together increases the correlation between the two types of fit. Thus, collecting all data at the same time makes it less likely that independent effects for complementary and supplementary fit would be found. Our data collection strategy also could cause priming or hypothesis guessing, and therefore it would have been useful to complement the intraperson fit data with objective turnover and peer-reported work attitudes. Unfortunately, anonymity was a condition of delivering the survey to all employees at the four agencies, precluding data matching and necessitating self-report data.

In the present study, we focused on people's subjective perceptions of their organizations' values and supplies, based on the assumption that people can respond to misfit only when they are

aware that such misfit exists (Endler & Magnusson, 1976; French et al., 1982). However, other research has examined P-E fit by gathering third-party reports about organizational values and supplies (e.g., O'Reilly et al., 1991). On the one hand, third-party reports are useful because they offer insight into the "actual" environment as it is perceived across respondents. On the other hand, P-E fit predictions based on third-party reports probably reduce the variance accounted for in outcome variables, because this approach relies on more distal predictors of attitudes and behaviors. A fair test of complementary versus supplementary fit such as that offered in the present study could be conducted using either data collection approach, as long as the same approach was used to represent both constructs.

Next, some characteristics of our sample and scales should be noted because they affect the generalizability of the results. Thus, even though our data were collected across all job levels at four different utilities, all of our data come from the water management industry. Accordingly, it is possible that certain values, psychological needs, or supplies are over- or underrepresented in this industry. However, idiosyncrasies such as these would not affect our tests of the theoretical processes underlying psychological need fulfillment and value congruence (e.g., the relationships between values, psychological needs, supplies, and work attitudes) because these tests are based on the covariances among our measures, not their mean levels. Likewise, although the WVS (Edwards & Cable, 2002) seemed to perform well in this investigation, it may have limitations in terms of the dimensions it focused on and the particular wording of the items. In any case, it would be worthwhile to replicate these findings using other samples and other scales of values, psychological needs, and supplies.

Finally, this article focused on psychological need fulfillment because it is the typical way that the literature has studied complementary fit (Edwards, 1991) and because it allows direct comparisons with value congruence on the same content dimensions. However, another important form of complementary fit is between employee's abilities and a job's demands. Likewise, value congruence is the most common way that past research has examined supplementary fit (Kristof, 1996), although some supplementary fit researchers have discussed goals and personality (Schneider, 1987). Thus, although the present study uses common operation-

alizations of both complementary and supplementary fit, it would be useful for future research to include alternative types of fit. In this study we examined value congruence and psychological need fulfillment without emphasizing the distinction between the job and the organization, although some research has distinguished person–job fit from person–organization fit (Cable & DeRue, 2002). Although our approach seems reasonable because an organization must supply whatever rewards are offered to employees (at any job level), it is possible that employees “extrapolated” from their jobs when answering our questions about organizational supplies. It would be interesting to investigate whether employees distinguish between organizational and job-based rewards.

The limitations of this study are countered by some important strengths. First, we combined two parallel literatures that have not been integrated in past empirical research, and we developed and tested theoretical linkages between the literatures. Given that both traditions draw from the same paradigm and predict the same types of employee attitudes, this lack of integration represented an important omission because it is important to understand how the approaches differ and how they are related. Results from this article suggested that the two approaches have both unique logic and independent effects on outcomes and thus demonstrate the value of maintaining both the complementary and supplementary traditions of P-E fit. The support we found for both traditions also opens the way for future research to examine the boundary conditions regarding when one tradition may be dominant over the other.

Next, this article examined a large sample of employed adults with very diverse job types and levels. This diversity was important in order to obtain variance in terms of organizational values and supplies, as well as individual values and psychological needs. Moreover, both the demographic and employment diversity of our sample suggest that the results regarding our psychological need fulfillment and value congruence models generalize to most employees and are not confined to a limited type of people or level of work.

This article also used a broad, theory-based typology of work dimensions that could be used to assess both psychological needs and values. Because this scale was developed from Schwartz’s (1992) Universal Values Scale, our study examines a comprehensive set of work dimensions while permitting a direct, competitive test of psychological need fulfillment and value congruence. Although future research may benefit from examining other types of values and needs, each of the eight dimensions from Schwartz’s typology significantly predicted each of our outcomes, suggesting that the scale permitted an adequate test of complementary and supplementary fit.

Finally, we used a method of analysis that is sensitive to different functional forms. This is important because the goal of this article was to test competing theoretical models of psychological need fulfillment and value congruence, not specific functional forms. Thus, our analyses allowed us to forego typical assumptions about the functional form of the fit relationship and thus to more accurately model the true relationships reflected in the data.

References

- Alwin, D. F., & Hauser, R. M. (1975). The decomposition of effects in path analysis. *American Sociological Review*, *40*, 37–47.
- Ashforth, B. E., & Mael, F. (1989). Social identity theory and the organization. *Academy of Management Review*, *14*, 20–39.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238–246.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Byrne, D. (1969). Attitudes and attraction. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 4, pp. 35–89). New York: Academic Press.
- Cable, D. M., & DeRue, S. (2002). The construct, convergent, and discriminant validity of subjective fit perceptions. *Journal of Applied Psychology*, *87*, 875–884.
- Cable, D., & Judge, T. A. (1996). Person–organization fit, job choice decisions, and organizational entry. *Organizational Behavior and Human Decision Processes*, *67*, 294–311.
- Chatman, J. (1989). Improving interactional organizational research: A model of person–organization fit. *Academy of Management Review*, *14*, 333–349.
- Chatman, J. (1991). Matching people and organizations: Selection and socialization in public accounting firms. *Administrative Science Quarterly*, *36*, 459–484.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, *95*, 542–575.
- Dutton, J. E., & Dukerich, J. M. (1991). Keeping an eye on the mirror: Image and identity in organizational adaptation. *Academy of Management Journal*, *34*, 517–554.
- Dutton, J. E., Dukerich, J. M., & Harquail, C. V. (1994). Organizational images and member identification. *Administrative Science Quarterly*, *39*, 239–263.
- Edwards, J. R. (1991). Person–job fit: A conceptual integration, literature review, and methodological critique. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (Vol. 6, pp. 283–357). New York: Wiley.
- Edwards, J. R. (1994). The study of congruence in organizational behavior research: Critique and a proposed alternative. *Organizational Behavior and Human Decision Processes*, *58*, 51–100.
- Edwards, J. R. (1996). An examination of competing versions of the person–environment fit approach to stress. *Academy of Management Journal*, *39*, 292–339.
- Edwards, J. R., & Cable, D. M. (2002). *The measurement of work-related values: Development and validation of the Work Values Survey (WVS)*. Manuscript in preparation, Kenan–Flagler Business School, University of North Carolina.
- Edwards, J. R., Caplan, R. D., & Harrison, R. V. (1998). Person–environment fit theory: Conceptual foundations, empirical evidence, and directions for future research. In C. L. Cooper (Ed.), *Theories of organizational stress* (pp. 28–67). Oxford, England: Oxford University Press.
- Edwards, J. R., & Harrison, R. V. (1993). Job demands and worker health: Three-dimensional reexamination of the relationship between person–environment fit and strain. *Journal of Applied Psychology*, *78*, 628–648.
- Edwards, J. R., & Parry, M. E. (1993). On the use of polynomial regression equations as an alternative to difference scores in organizational research. *Academy of Management Journal*, *36*, 1577–1613.
- Edwards, J. R., & Rothbard, N. P. (1999). Work and family stress and well-being: An examination of person–environment fit in the work and family domains. *Organizational Behavior and Human Decision Processes*, *77*, 85–129.
- Efron, B., & Tibshirani, R. (1993). *An introduction to the bootstrap*. New York: Chapman & Hall.
- Endler, N. S., & Magnusson, D. (1976). *Interactional psychology and personality*. New York: Wiley.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*, 117–140.

- French, J. R. P., Jr., Caplan, R. D., & Harrison, R. V. (1982). *The mechanisms of job stress and strain*. New York: Wiley.
- French, J. R. P., Jr., & Kahn, R. L. (1962). A programmatic approach to studying the industrial environment and mental health. *Journal of Social Issues, 18*, 1–48.
- Gay, E. G., Weiss, D. J., Hendel, D. D., Dawis, R. V., & Lofquist, L. H. (1971). *Manual for the Minnesota Importance Questionnaire*. Minnesota Studies in Vocational Rehabilitation, 28 (Bulletin No. 54): Minneapolis: University of Minnesota Press.
- Harrison, R. V. (1978). Person–environment fit and job stress. In C. L. Cooper & R. Payne (Eds.), *Stress at work* (pp. 175–205). New York: Wiley.
- Harrison, R. V. (1985). The person–environment fit model and the study of job stress. In T. A. Beehr & R. S. Bhagat (Eds.), *Human stress and cognition in organizations* (pp. 23–55). New York: Wiley.
- Heise, D. R. (1972). Employing nominal variables, induced variables, and block variables in path analysis. *Sociological Methods & Research, 1*, 147–173.
- Hogan, R. T. (1991). Personality and personality assessment. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (pp. 833–871). Palo Alto, CA: Consulting Psychologists Press.
- Holland, B. S., & Copenhaver, M. D. (1988). Improved Bonferroni-type multiple testing procedures. *Psychological Bulletin, 104*, 145–149.
- Holland, J. L. (1985). *Making vocational choices: A theory of vocational personalities and work environments*. Englewood Cliffs, NJ: Prentice Hall.
- Holm, S. (1979). A simple sequentially rejective multiple test procedure. *Scandinavian Journal of Statistics, 6*, 65–70.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.
- Igra, A. (1979). On forming variable set composites to summarize a block recursive model. *Social Science Research, 8*, 253–264.
- Jagodzinski, W., & Weede, E. (1981). Testing curvilinear propositions by polynomial regression with particular reference to the interpretation of standardized solutions. *Quantity and Quality, 5*, 447–463.
- Kalliath, T. J., Bluedorn, A. C., & Strube, M. J. (1999). A test of value congruence effects. *Journal of Organizational Behavior, 20*, 1175–1198.
- Katzell, R. A. (1964). Personal values, job satisfaction, and job behavior. In H. Borow (Ed.), *Man in a world of work* (pp. 341–363). Boston: Houghton Mifflin Company.
- Kristof, A. L. (1996). Person–organization fit: An integrative review of its conceptualizations, measurements, and implications. *Personnel Psychology, 49*, 1–49.
- Lawler, E. E. (1973). *Motivation in work organizations*. Monterey, CA: Brooks/Cole.
- Locke, E. A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1297–1349). Chicago: Rand McNally.
- Marsden, P. V. (1982). A note on block variables in multiequation models. *Social Science Research, 11*, 127–140.
- Maslow, A. H. (1954). *Motivation and personality*. New York: Harper.
- Mowday, R. T. (1996). Equity theory predictions of behavior in organizations. In R. M. Steers, L. W. Porter, & G. A. Bigley (Eds.), *Motivation and leadership at work* (pp. 8–33). New York: McGraw-Hill.
- Muchinsky, P. M., & Monahan, C. J. (1987). What is person–environment congruence? Supplementary versus complementary models of fit. *Journal of Vocational Behavior, 31*, 268–277.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- O'Reilly, C., Chatman, J., & Caldwell, D. F. (1991). People and organizational culture: A profile comparison approach to assessing person–organization fit. *Academy of Management Journal, 34*, 487–516.
- Pedhazur, E. J. (1997). *Multiple regression in behavioral research* (3rd ed.). New York: Holt.
- Pervin, L. A. (1989). Persons, situations, interactions: The history of a controversy and a discussion of theoretical models. *Academy of Management Review, 14*, 350–360.
- Popovich, P., & Wanous, J. P. (1982). The realistic job preview as persuasive communication. *Academy of Management Review, 7*, 570–578.
- Porter, L. W. (1961). A study of perceived need satisfactions in bottom and middle management jobs. *Journal of Applied Psychology, 45*, 1–10.
- Porter, L. W. (1962). Job attitudes in management: I. Perceived deficiencies in need fulfillment as a function of job level. *Journal of Applied Psychology, 46*, 375–384.
- Pritchard, R. D. (1969). Equity theory: A review and critique. *Organizational Behavior and Human Performance, 4*, 176–211.
- Pryor, R. G. L. (1983). *Manual for the work aspect preference scale*. Melbourne, Victoria, Australia: Australian Council for Education Research.
- Rice, R. W., McFarlin, D. B., Hunt, R. G., & Near, J. P. (1985). Organizational work and the perceived quality of life: Toward a conceptual model. *Academy of Management Review, 10*, 296–310.
- Saks, A. M., & Ashforth, B. E. (1997). A longitudinal investigation of the relationships between job information sources, applicant perceptions of fit, and work outcomes. *Personnel Psychology, 50*, 395–426.
- Schein, E. H. (1992). *Organizational culture and leadership*. San Francisco: Jossey-Bass.
- Schneider, B. (1987). The people make the place. *Personnel Psychology, 40*, 437–453.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology, 25*, 1–65.
- Seaman, M. A., Levin, J. R., & Serlin, R. C. (1991). New developments in pairwise multiple comparisons: Some powerful and practicable procedures. *Psychological Bulletin, 110*, 577–586.
- Simon, H. A. (1951). A formal theory of the employment relationship. *Econometrica, 19*, 293–305.
- Simon, H. A. (1954). Spurious correlation: A causal interpretation. *Journal of the American Statistical Association, 49*, 467–479.
- Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25*, 173–180.
- Stine, R. (1989). An introduction to bootstrap methods. *Sociological Methods & Research, 18*, 243–291.
- Stryker, S., & Serpe, R. T. (1982). Commitment, identity salience, and role behavior: Theory and research example. In W. Ickes & E. S. Knowles (Eds.), *Personality, roles, and social behavior*. New York: Springer-Verlag.
- Super, D. E. (1970). *Work values inventory*. Boston: Houghton-Mifflin.
- Tsui, A. S., & O'Reilly, C. A. (1989). Beyond simple demographic effects: The importance of relational demography in superior subordinate dyads. *Academy of Management Journal, 32*, 402–423.
- Tsui, A. S., Pearce, J. L., Porter, L. W., & Tripoli, A. M. (1997). Alternative approaches to the employee–organization relationship: Does investment in employees pay off? *Academy of Management Journal, 40*, 1089–1121.
- Turban, D. B., & Keon, T. L. (1993). Organization attractiveness: An interactionist perspective. *Journal of Applied Psychology, 78*, 184–193.
- Wanous, J. P., & Lawler, E. E. (1972). Measurement and meaning of job satisfaction. *Journal of Applied Psychology, 56*, 95–105.

Appendix

Mapping Schwartz's (1992) Values Circumplex Model Onto the Work Values Survey

Schwartz's conceptual dimensions	Schwartz's universal values	Work values dimensions	Specific items used in present study
Self-transcendence	Universalism	Altruism	Making the world a better place Being of service to society Contributing to humanity
	Benevolence	Relationships with others	Forming relationships with coworkers Getting to know your fellow workers quite well Developing close ties with coworkers
Self-enhancement	Achievement/hedonism	Pay	Salary level Total compensation The amount of pay
	Power	Prestige	Gaining respect Obtaining status Being looked up to by others
Conservation	Security	Security	Being certain of keeping my job Being sure I will always have a job Being certain my job will last
	Conformity/tradition	Authority	Distinct reporting relationships A clear chain of command Definite lines of authority
Openness to change	Stimulation	Variety	Doing a variety of things Doing something different every day Doing many different things on the job
	Self-direction	Autonomy	Doing my work in my own way Determining the way my work is done Making my own decisions

Received March 28, 2003

Revision received October 15, 2003

Accepted October 21, 2003 ■

E-Mail Notification of Your Latest Issue Online!

Would you like to know when the next issue of your favorite APA journal will be available online? This service is now available to you. Sign up at <http://watson.apa.org/notify/> and you will be notified by e-mail when issues of interest to you become available!