

The Formative Nature of Perceived Person-Environment Fit

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Dedication

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Abstract of Dissertation

The Formative Nature of Perceived Person-Environment Fit

This dissertation explores the concept of person-environment (PE) fit. There has been a push recently to move beyond unidimensional definitions of fit and to consider fit at a variety of levels simultaneously. This has led to questions about how this multidimensional construct should be conceptualized. The study focused on two main research questions. First, is PE fit a formative or reflective construct? Second, how does specifying PE fit as formative or reflective affect the prediction of outcomes? Six hundred and eighty-eight employees rated their fit with various aspects of their work environment and several attitudinal and behavioral outcomes. The results supported the hypotheses that PE fit should be conceptualized as a formative construct. Model fit was better for formative models than for the reflective models, both before and after outcome variables were included. The results also suggest that formative models slightly improve the prediction of outcomes. This suggests that the dimensions and levels of fit combine to form employees' perceptions of fit. Researchers and practitioners should consider a variety of individual and contextual characteristics when studying PE fit. Future work should also focus on how fit at differing levels of the work environment combine to form overall perceptions of fit. Limitations, directions for future research, and implications for theory and practice are discussed.

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Glossary of Terms

Complementary fit: occurs when one entity (either the person or the environment) supplies something that the other needs. Content dimensions of complementary fit include demands-abilities fit and needs-supplies fit.

Demands-abilities fit: the degree to which a person's knowledge, skills, and abilities meet the environment's demands.

Conceptualizations of fit: fit can be based on one of two theoretical paradigms: similarity-attraction and need-fulfillment. Similarity-attraction forms the basis of supplementary fit, whereas need-fulfillment underlies complementary fit.

Content dimensions of fit: fit at each level is operationalized using specific content dimensions found in the environment. Supplementary fit has been operationalized using similarity in values, personality, and goals. Complementary fit has been assessed using demands-abilities fit and needs-supplies fit.

Formative construct: the indicators collectively define the construct.

Levels of fit: the aspects of the work environment at which fit can occur; the levels include vocation, organization, group, job, and person. Person-person fit may focus on supervisors, other coworkers, applicants, and recruiters.

Needs-supplies fit: the degree to which the environment satisfies a person's needs and preferences.

Person-environment (PE) fit: the match between a person and his or her work environment.

Person-group (PG) fit: the match between a person and his or her work group/team.

Person-job (PJ) fit: the match between a person and his or her job.

Person-supervisor (PS) fit: the match between a person and his or her supervisor/leader.

Person-organization (PO) fit: the match between a person and his or her organization.

Person-vocation (PV) fit: the match between a person and his or her occupation.

Reflective construct: the indicators are manifestations of the underlying construct.

Supplementary fit: occurs when a person possesses characteristics that are similar to those of other individuals in the environment. The most common characteristics used to operationalize supplementary fit are values, personality, and goals.

Chapter 1: Introduction

The concept of fit between people and their work environments is pervasive in industrial/organizational psychology. Saks and Ashforth (1997) argued that this topic is “a cornerstone of industrial/organizational psychology and human resources management” (p. 395), and Schneider (2001) asserted that “the concept of person-environment fit is so pervasive as to be one of, if not the, dominant conceptual forces in the field” (p. 142). The idea of fit is the basis of employee selection theory, in which people are selected on the basis of how well their abilities match the demands of the job (Kristof-Brown & Guay, 2011). Fit is an important component of employee recruitment; job seekers consider their likely fit with organizations and jobs when deciding between job offers (e.g., Cable & Judge, 1996). Further, post-entry fit is a strong predictor of various job attitudes such as job satisfaction and organizational commitment and intentions to leave organizations (Kristof-Brown, Zimmerman, & Johnson, 2005). Fit with work environments is broadly applicable to organizational research.

Person-environment (PE) refers to the compatibility between individual and work environment characteristics (Kristof-Brown & Guay, 2011). PE fit has been studied at various levels of the work environment: vocation, organization, group, job, and person (e.g., supervisor or recruiter).¹ We have begun to learn a great deal about how these levels of fit relate to outcomes. Meta-analysis suggests that attitudes about various aspects of the work environment are most strongly related to the corresponding level of fit (e.g., job satisfaction is most strongly predicted by person-job fit; Kristof-Brown, Zimmerman, & Johnson, 2005). Although the various levels of fit seem to explain unique variance in outcomes (e.g., Kristof-Brown, 2000), they are strongly intercorrelated. Meta-

¹ A glossary of terms used can be found on page x.

analytic results by Kristof-Brown et al. (2005) suggest that the relationships among the levels of fit range from .37 to .72. This has led to the conclusion that overall PE fit should be a strong predictor of work-related outcomes and that one way to test this would be to model a higher-order latent construct (Kristof-Brown & Guay, 2011).

Further, each level of PE fit is composed of several content dimensions. Fit is operationalized based on specific characteristics of the person and environment, such as values, demands-abilities (the degree to which a person's abilities meet the demands of the environment), and needs-supplies (the degree to which an environment meet a person's needs; Edwards & Shipp, 2007). Although it has been suggested that the most promise lies in using multidimensional measures of fit (e.g., Kristof-Brown & Jansen, 2007), most measures used in PE fit research are unidimensional. This is especially common for person-organization (PO) fit (Piasentin & Chapman, 2006). However, meta-analytic results suggest that relationships between fit and outcomes may differ based on which dimensions are measured. For instance, Kristof-Brown et al. (2005) found an estimated true score correlation of .44 between job satisfaction and PO fit; however, the correlations differed widely when PO fit was measured using needs-supplies ($\rho = .46$), values ($\rho = .51$), personality ($\rho = .08$), and goals ($\rho = .31$). This suggests that the dimensions that are used to measure fit can dramatically affect the conclusions that are drawn. The tendency to study the levels of PE fit in isolation using unidimensional measures provides an incomplete picture of how people experience fit at work.

Thus, there has been a recent push to study multiple levels and dimensions of fit simultaneously in order to provide a more holistic understanding of PE fit. For instance, Jansen and Kristof-Brown (2006) argued that researchers should examine how various

levels of fit combine to predict overall PE fit. In terms of measurement, there have been pushes to use multidimensional measures of fit (e.g., Kristof-Brown & Jansen, 2007). This has several implications, both for research and practice. If researchers begin studying various levels and dimensions of fit simultaneously, it will raise questions as to how to properly model fit, especially if structural equation modeling is used. Improperly specifying models could lead to confusion about the nature of the construct and lead to inaccurate conclusions. Practitioners may also need to change the way they think about employees' fit. When recruiting, selecting, and developing employees, employers may need to consider fit more broadly than they have in the past. A better understanding of PE fit may also inform policy issues, such as attracting students to careers in science, technology, engineering, and math (STEM). This study will focus on addressing these issues and provide guidance to researchers and practitioners interested in focusing on holistic perceptions of fit.

Modeling person-environment fit

When studying various levels of fit and overall PE fit, it is important to think carefully about how the construct should be conceptualized and what conceptual model should be applied. In order to model overall PE fit, Kristof-Brown and Guay (2011) suggested using structural equation modeling. This would allow researchers to study how the various dimensions and levels of fit combine to predict overall fit with the work environment and subsequent outcomes. Adopting this strategy, however, raises questions about how the data should be modeled. In particular, some researchers (e.g., MacKenzie, Podsakoff, & Jarvis, 2005) have suggested that the model that is used for most latent constructs is not appropriate for some constructs. Typically, dimensions of a higher-order

construct are presumed to be reflections of the construct. That is, responses for items that measure the dimensions are caused by that construct (i.e., the dimensions are reflections of that construct). This is an appropriate model for many constructs. If the indicators are manifestations of the construct and are conceptually interchangeable, reflective measurement will be an appropriate strategy.

However, reflective-indicator models may not be appropriate for some constructs. Instead, using a formative-indicator model, in which causality flows from the dimensions to the higher-order construct, may be more well-suited for some constructs. For instance, a formative model would be more appropriate for studying socioeconomic status (SES); the indicators, such as income and education, collectively define SES. Because SES does not cause income or educational attainment, a reflective model would not be appropriate. In formative models, the dimensions are the causes of the higher-order constructs.

There are several conditions that make this a more appropriate course of action. In some cases, the dimensions of a construct collectively define the construct's meaning and removing or adding dimensions would change the nature of the construct. It would be inappropriate to model this type of construct using a reflective-indicator strategy since it places assumptions on the data that are simply inappropriate. Doing so can result in inaccurate unstandardized structural parameter estimates and lead to Type I or Type II errors of inference. Using Monte Carlo simulations, MacKenzie et al. (2005) found that measurement model misspecification can inflate parameter estimates by as much as 400% or decrease them by as much as 80%, potentially leading to Type I and Type II errors. Failing to model formative constructs appropriately can also hamper our ability to learn more about the nature of the construct and encourage poor measurement. This study

will focus on whether PE fit should be conceptualized as a reflective or formative construct and what the implications of this decision are.

Reflective and Formative Models of Person-Environment Fit

Fit is typically conceptualized one of two ways, depending on the content dimensions that are studied. Some content dimensions focus on similarity. *Supplementary fit* refers to fit based on congruence or similarity between the person and the environment (Kristof, 1996; Muchinsky & Monahan, 1987) and is most often operationalized using values, personality, or goals. Conversely, other dimensions are based on need-fulfillment: *complementary fit* occurs when one entity (either the person or the environment) supplies something that the other needs (Kristof, 1996; Muchinsky & Monahan, 1987).

Complementary fit is typically operationalized as the degree to which the environment's supplies satisfy the person's needs or the degree to which the person's abilities meet the demands of the environment. These dimensions are nested within levels of the environment. PE fit research suggests that employees experience fit with various aspects of their work environment: their vocation, organization, work group, job, and supervisor. These levels combine to form overall fit with the work environment.

This implies a model with three levels of conceptual abstraction. The content dimensions (i.e., supplementary, needs-supplies, and demands-abilities) are at the lowest level of conceptual abstraction. The levels of fit (e.g., vocation, organization) are at the next highest level of abstraction. The reasoning behind placing the content dimensions at a lower level of abstraction than the levels of fit rather than the other way around is that the content dimensions are nested within the levels of fit. Within each level, the content dimensions tap into aspects of that level of the environment. Essentially, the content

dimensions are ways of operationalizing fit at each of the levels of the environment. Inversely, the levels have not been discussed as being dimensions of supplementary, demands-abilities, and needs-supplies fit. So modeling the content dimensions as being nested within the levels of fit is more consistent with PE fit research and provides more clarity. Finally, overall PE fit is at the highest level of abstraction. In the reflective model (see Figure 1), the dimensions are presumed to be manifestations of the levels of fit, so the causality flows from the levels to the dimensions. Likewise, when the levels are specified as reflective indicators of overall PE fit, overall PE fit is presumed to cause fit at each of the levels.

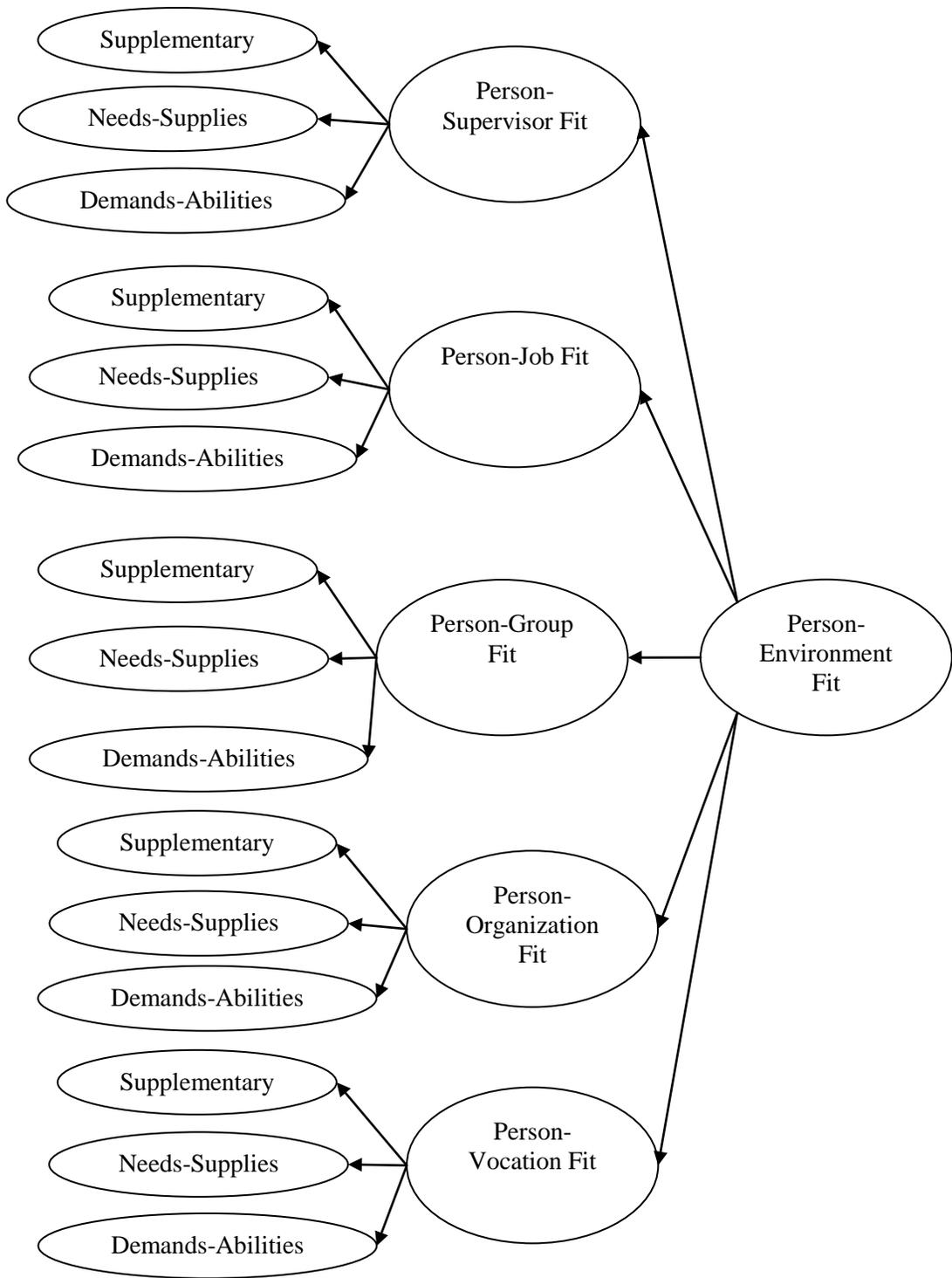


Figure 1. Higher-order reflective model.

In the formative model (Figure 2), the dimensions cause fit at the various levels.

Fit at the levels, in turn, cause overall PE fit.

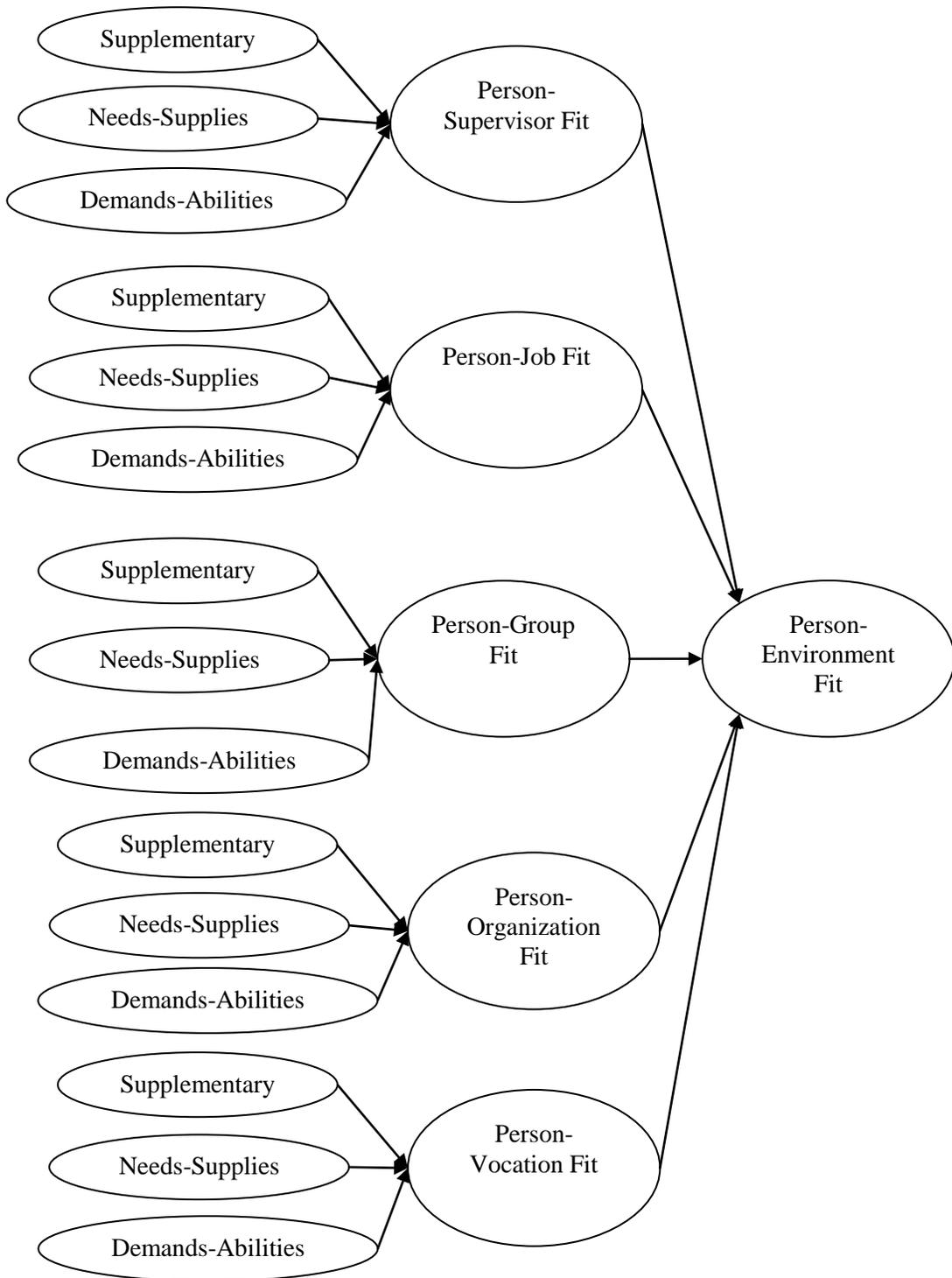


Figure 2. Higher-order formative model.

In this dissertation, I will explore these issues by focusing on two main research questions. First, is PE fit a reflective or a formative construct? It seems to be most appropriately considered as a formative construct based on MacKenzie et al.'s (2005) criteria. As discussed above, the dimensions and levels are more likely defining characteristics of PE fit rather than manifestations of it; for instance, excluding certain types of fit would alter the definition of the underlying construct. Further, the dimensions and levels do not appear to be conceptually interchangeable since they are based on different aspects of people and organizations. The indicators do not necessarily covary with one another because it is possible for a person to perceive one type of fit to be low and another type to be high. Finally, theory suggests that the dimensions and levels of fit may have different consequences. I hypothesize that PE fit is best characterized by a formative-indicator model. I expect that the model fit will be better when the measurement model is specified as formative rather than reflective. I will also test whether the indicators covary and whether they have different consequences.

The second research question I will address is whether the conceptualization of PE fit (formative versus reflective) will affect the conclusions that are drawn about the relationships between fit and outcomes. PE fit has been used to predict outcomes including job attitudes, contextual and task performance, and turnover intentions. Monte Carlo simulation suggests that structural parameter estimates and standard errors are inflated when formative constructs are incorrectly specified as reflective. Although it is impossible to test whether these estimates are actually inflated or if they are based on true differences without using simulated data, incorrect specification of constructs will likely affect the model fit when predicting outcomes. Thus, I hypothesize that the model fit will

be improved when PE fit is specified as a formative construct. I anticipate that these analyses will further illustrate the problems associated with modeling PE fit as a reflective construct.

Exploring whether PE fit is a formative construct can impact the practice and theory of fit research. If the individual levels of PE fit are reflective, then it would not be problematic to use the measures interchangeably. We would be able to measure the construct using fewer items, which would be useful for practitioners who have tight constraints for survey length and help reduce participant fatigue. However, if they are formative, measuring them using one dimension but referring to it as the general construct is misleading and leads to confusion about the nature of the construct.

Confusion about the meaning of PE fit could hamper this line of research and limit its relevance to practitioners. If researchers measure only certain dimensions of each level of fit but are not clear about the fact that they are focusing on a subset of the construct, this will lead to confusion about which aspect of fit is actually being studied. The results of studies depend on how variables are measured. The conclusions that can be drawn from a study will differ based on whether or not the measure is multidimensional. If researchers do not measure various aspects of fit and it is a formative construct, then they will be capturing an incomplete picture of how employees experience fit with their work environments. This could lead to misleading findings about how PE fit relates to other constructs.

Inconsistency in the research creates confusion in how practitioners should consider fit in human resource practices. For instance, the research would seem to suggest that PO fit based on values similarity is particularly important for fostering

organizational commitment and job satisfaction (e.g., Kristof-Brown et al., 2005).

However, it could just be the case that PO values fit seems influential because it has been the most frequently studied dimension of fit (Piasentin & Chapman, 2006). Confusion in the meaning and measurement of PE fit may also be confusing for job seekers. It may be unclear what information they should consider when choosing a vocation or types of fit they should think about when evaluating potential jobs and organizations.

I anticipate that this research will also inform practitioners beyond the measurement of PE fit. The attraction selection attrition framework (Schneider, 1987) suggests that people are attracted to organizations based on their similarity with current members, organizations select those who they perceive to be a good fit, and employees who do not fit will eventually exit the organization. This is expected to lead to homogeneity and organizational stagnation. However, if PE fit is in fact formative and the dimensions do not necessarily covary, organizations could still recruit employees who are similar in some respects (e.g., have similar goals) but are diverse in other ways (e.g., through values), which could help avoid problems associated with homogeneity.

I also expect that this research will inform PE fit theory. As I will illustrate, authors have frequently discussed PE fit in ways that suggest that it is a formative construct. In fact, it fits all four of MacKenzie and colleagues' (2005) criteria for formative constructs. To date, however, PE fit has not been formally theorized or tested as a formative construct. Doing so will enhance our knowledge of PE fit and inform future research. If it is a formative construct, researchers will need to be clearer about how they are defining and measuring the various levels of PE fit and justify the conceptualizations they choose to adopt. They will also need to be more careful about

measurement. For instance, if a researcher is interested in PO fit in general, then it would be difficult to justify measuring it just in terms of values. Finally, this research will guide decisions about the specifications of structural equation models. This is especially important since misspecification of formative constructs can lead to errors of inference (MacKenzie et al., 2005). Due to the ubiquity of PE fit in organizational research, this gap in our knowledge, and the potential implications for theory and practice, this is a worth topic of study.

Finally, this study is expected to have many practical implications. If PE fit is in fact a formative construct, it may be dangerous to ignore dimensions or levels of fit. In terms of recruitment, it would be unwise to focus just on recruiting applicants who are similar to other organizational members because complementary fit may be just as important for ensuring that employees are successful and satisfied. This research could also inform vocational choice research. An improved understanding of how employees conceptualize their vocational fit could allow career counselors to leverage information about people's personalities, abilities, and skills to advise them about career paths that would provide the best fit.

Chapter 2: Literature Review

Reflective and Formative Constructs

Historically, the measurement of latent constructs has been based on classical test theory, which assumes that the variation in responses is due to true score plus error (Crocker & Algina, 2008). This idea of true scores on some construct suggests that the underlying latent construct causes the observed variation in measures (Bollen, 1989; Nunnally, 1978). In this type of model, indicators are referred to as *effect* indicators because these models assume that covariation among indicators is caused by variation in the common latent factor (Bollen & Lennox, 19991; MacCallum & Browne, 1993). In this type of measurement model, each item is presumed to be an imperfect measure of the latent construct, and the meaning flows from the construct to the measures (MacKenzie et al., 2005). These models, which are often referred to as *reflective-indicator models* because the indicators are assumed to be reflections of the underlying construct, have been the dominant paradigm in measurement theory. Indeed, Bollen (2002) notes that “nearly all measurement in psychology and the other social sciences assumes effect indicators” (p. 616). The defining characteristic of reflective-indicator models is that “the latent construct is empirically defined in terms of the common variance among the indicators” (MacKenzie et al., 2005, p. 710).

One example of a reflective construct is general mental ability (GMA). It is often measured in terms of different dimensions of mental ability, such as verbal and reasoning abilities. However, GMA is defined as the portion of the variation that is common to these indicators. That is, the facets are reflections of a person’s GMA. GMA is assumed

to influence success in all cognitive processes, so measures of intelligence are effects of GMA (e.g., Spearman, 1904).

Although reflective measurement is the dominant approach, it may not be appropriate for all constructs (Bollen & Lennox, 1991). For some constructs, the indicators are not reflections or effects of the underlying construct and instead combine to form them. That is, the meaning of the construct is defined by the indicators (MacKenzie et al., 2005). These models are typically referred to as *formative-indicator models*.

Because the meaning flows from the indicators to the underlying construct, they are often referred to as *causal indicators* (Bollen & Lennox, 1991). Formative models differ from reflective models in that “the latent construct is empirically defined in terms of the total variance among its indicators, and the indicators only capture the entire conceptual domain as a group” (MacKenzie et al., 2005, p. 710). That is, the variation that is unique to each indicator is included in the higher-order construct rather than just the variance that is shared among the indicators.

A frequently used example of a formative construct is socioeconomic status (SES). SES is typically measured by variables such as educational attainment and income. Reflective-indicator models assume that the measures are caused by the latent construct. In this example, SES would be the cause of the measures. However, it does not make sense to argue that a person’s SES causes their educational attainment or income. Rather, these indicators combine to form their SES, which is consistent with a formative-indicator model.

Reflective and formative models can be distinguished in several ways (Bollen & Lennox, 1991). First, the direction of causality that is assumed differs depending on

which type of model is adopted. In reflective models, the construct is collectively determined the indicators (i.e., the indicators are effects of the underlying construct) and changes in the construct are hypothesized to cause changes in the indicators (Podsakoff, Shen, & Podsakoff, 2006). That is, measures are assumed to be manifestations of the construct (Edwards, 2011). In formative models, the direction of causality is reversed; the indicators cause the construct. Changes in the indicators are hypothesized to result in changes in the underlying construct.

Second, the effects of excluding an indicator vary dramatically between the two types of models. Theoretically, reflective indicators should be interchangeable so long as they have the same reliability because all indicators are assumed to be equally valid indicators of the underlying construct (i.e., each indicator is assumed to capture the entire conceptual domain; Jarvis, MacKenzie, & Podsakoff, 2003). Reflective items may differ some in their actual content, but they are designed to measure the same conceptual domain. Taking out a reflective item should not make a difference because it should be covering similar content to the other items. The effects of removing a formative indicator are potentially much more damaging because the indicators only capture the entire conceptual domain as a group (Podsakoff et al., 2006). Formative indicators may tap different aspects of the conceptual domain, so “dropping a measure from a formative-indicator model may omit a unique part of the conceptual domain and change the meaning of the variable, because the construct is a composite of all the indicators” (MacKenzie et al., 2005, p. 712). Thus, dropping an indicator could result in dramatic changes in the meaning of the underlying construct.

The final major difference between reflective- and formative-indicator models concerns the treatment of measurement error. In reflective-indicator models, error is modeled at the indicator level rather than at the construct level and represents the invalidity of each individual indicator. In contrast, in formative-indicator models, error is represented at the construct level and it represents the overall invalidity of the set of indicators. That is, “one obtains an estimate of the overall amount of random error in the set of items rather than an estimate attributable to each individual item” (Jarvis et al., 2003, p. 202).

Distinguishing between reflective- and formative-indicator models²

MacKenzie and colleagues (2005) argue that theory should drive the decision about whether constructs should be modeled as formative or reflective. They outlined several guidelines that can be used to distinguish between the types of models, which are summarized in Table 1.

Table 1

Differences between Reflective and Formative Models

Reflective	Formative
Dimensions are manifestations of the construct	Dimensions collectively define the construct
Dimensions are conceptually interchangeable	Dimensions may be conceptually distinct
Dimensions should covary	Dimensions do not necessarily covary
Dimensions should have same antecedents and consequences	Antecedents and consequences of the dimensions may vary

² Many of the discussions of reflective and formative constructs have focused on measured variables as indicators. However, specifying this type of indicator as formative can be problematic because it assumes that the indicators have no measurement error (Edwards, 2011). It is less problematic to say that one construct causes a second construct. This issue can be avoided by treating the formative indicators as latent constructs that are measured by several reflective measures. This avoids the measurement error and reaps the benefits of multiple-item measurement. For clarity, I will compare these models in terms of reflective and formative *dimensions* of higher-order constructs that are measured by reflective items.

Are the dimensions defining characteristics of the construct or manifestations of it? This distinction relates to the direction of causality between the dimensions and the construct. If the dimensions are manifestations of the construct (i.e., responses on questions about the dimensions are determined by the construct), a reflective-indicator is more appropriate. However, if the direction of causality flows from the dimensions to the construct, a reflective-indicator model should not be adopted. When the dimensions are defining characteristics that collectively explain the meaning of the construct (i.e., the indicators collectively define the construct), a formative-indicator model is more appropriate.

Are the dimensions conceptually interchangeable? Reflective indicators are caused by the construct, and each dimension is presumed to capture the entirety of the construct. The dimensions may differ in the specific content they include, but they should share a similar theme. Because reflective indicators are sampled from the same construct domain, the dimensions should measure similar content and are therefore conceptually interchangeable. Switching dimensions should not change the meaning of the construct. Formative dimensions differ in that they may not share a common theme. They may or may not be conceptually interchangeable because they could capture different aspects of the construct domain.

Are the dimensions expected to covary with each other? Because reflective dimensions share a common cause and are manifestations of the same underlying construct, they should be strongly correlated with each other. Formative-indicator models, on the other hand, make no assumptions about the correlations among the dimensions. Theoretically, it is possible that these indicators could be completely

uncorrelated if they capture different aspects of the construct domain. Therefore, correlations among formative dimensions can be high, moderate, or low.

Are the dimensions expected to have the same antecedents and/or consequences? Reflective dimensions are supposed to be reflections of the same underlying construct and should be conceptually interchangeable, so they should have all the same antecedents and consequences. Formative dimensions, however, are not necessarily interchangeable and may tap unique aspects of the construct, so they may not necessarily have the same antecedents and/or consequences.

Formative constructs in organizational research

Although it is not particularly common to formally test formative models in organizational research, many of the most frequently studied constructs in organizational research fit Mackenzie et al.'s (2005) criteria for formative constructs. For instance, job satisfaction is often conceptualized and measured in terms of facets. These measures typically include subscales for satisfaction with various aspects of the job. For example, the Job Satisfaction Survey (Spector, 1985) includes nine facets: pay, promotion, supervision, fringe benefits, contingent rewards, operating conditions, coworkers, nature of work, and communication. For these types of scales, a total job satisfaction score can be computed by combining all of the items (Spector, 1997).

Facet job satisfaction meets Mackenzie et al.'s criteria for formative constructs. First, it is more likely that the facets are defining characteristics of the construct rather than manifestations of it. It does not make sense to argue that overall job satisfaction causes employees' satisfaction with individual facets such as benefits and communication. Instead, it makes more sense that satisfaction with various aspects of the

job would combine to form employees' overall sense of job satisfaction. Second, the facets do not appear to be conceptually interchangeable. Reflective indicators are presumed to capture the entire construct domain. The facets of job satisfaction, however, capture different parts of the construct domain, such as the nature of the work and supervision. Third, the indicators may not covary with one another. It is feasible that an employee could be satisfied with some aspects of her job, such as communication within the organization, but be dissatisfied with others, like benefits. For instance, in a recent validation of the Job Descriptive Index, the correlations among the facets ranged from .07 (pay and colleagues) to .41 (colleagues and supervision; McIntyre & McIntyre, 2010). Fourth, the facets do not necessarily have the same antecedents and consequences. Satisfaction with some facets is probably caused by characteristics of the job itself, while others are more likely the result of interactions with supervisors or coworkers. Likewise, some facets like satisfaction with pay and promotion opportunities may be more strongly related to turnover intentions but others like coworkers and supervision may be more predictive of interpersonal outcomes.

Job satisfaction provides a good example of a construct studied in organizational research that should be specified as a formative construct. PE fit is similar to job satisfaction in that it can be measured in reference to various aspects of the work environment and that these perceptions may differ. This suggests that PE fit may also need to be specified as a formative construct. Indeed, it fits the criteria for formative constructs, as I will discuss next.

Person-Environment Fit

The match between people and their work environments is a ubiquitous concept in industrial/organizational psychology and has its roots in interactional psychology (e.g., Schneider, 1983; Terborg, 1981). Person-environment (PE) fit broadly refers to the degree of compatibility or match between people and their work environments (Dawis & Lofquist, 1984; Kristof-Brown et al., 2005). Within PE fit research, the environment has been conceptualized at several levels, such as supervisor, job, work group, organization, and vocation. Within, each level, fit can be composed of various dimensions.

Conceptualizations of fit

Supplementary fit. Muchinsky and Monahan (1987) distinguished between two main conceptualizations of PE fit. The first, *supplementary fit*, occurs when an individual possesses characteristics that are similar to other individuals in the environment.

Specifically, “By supplementary we mean that a person fits into some environmental context because he or she supplements, embellishes, or possesses characteristics which are similar to other individuals in this environment” (p. 269). Supplementary fit forms the basis such as Chatman’s (1989) definition, which is based on similarity in values and Holland’s (1997) theory of vocation choice, in which individuals are proposed to choose a vocation because they have similar interests to other people in that profession.

Several content dimensions have been used to define and measure supplementary PO fit. Early PO fit research focused on the match between people’s personalities with the organization’s personality. For instance, Tom (1971) found that people’s preferred organizations were those with the same “personality” profile. Similarly, Judge and Cable (1997) found that Big Five personality traits were generally related to preferences for the

corresponding culture dimensions. However, there are some concerns with anthropomorphizing individual personality traits to the organizational level (Kristof-Brown & Guay, 2011). Many studies have conceptualized PO fit as value congruence. For instance, the most common indirect measure of fit, the Organizational Culture Profile (O'Reilly, Chatman, & Caldwell, 1991), operationalizes fit in terms of congruence between personal and organizational values. This conceptualization has also been common in recruitment research (e.g., Cable & Judge, 1996). The third most common operationalization of supplementary PO fit is goal similarity. For instance, Vancouver and Schmitt (1991) measured PO fit as the similarity between employees' ratings of goal importance and the ratings of other employees in the organization.

Although various content dimensions have been used to operationalize supplementary PO fit, some theoretical and empirical work suggests that it is composed of a single dimension. It is possible to treat these content areas as separate dimensions, but there is evidence to suggest that treating the content areas of supplementary fit as a single dimension is also a viable decision. Regardless of the operationalization, supplementary fit is based on the same underlying psychological process: the similarity-attraction paradigm (Byrne, 1971). Because similarity in goals, values and personality are based on the same psychological process, it is not likely that they will affect outcomes differently. In their theoretical framework, Edwards and Shipp (2007) treated all types of supplementary fit as a single dimension. In a recent scale validation study, Badger and Behrend (2013, April) found only a small increase in goodness of fit when perceived PO fit based on value and goal congruence were loaded on separate factors suggesting that supplementary fit may be characterized by a single dimension.

Complementary fit. Muchinsky and Monahan (1987) labeled the second conceptualization *complementary fit*, which occurs when individuals' characteristics make whole the environment or add to it what is missing, or vice versa. This view is based on whether the environment and the person are meeting one another's needs (Kristof-Brown & Guay, 2011). Muchinsky and Monahan's original definition focused on the organization's perspective: "By complementary we mean the characteristics of an individual serve to 'make whole' or complement the characteristics of an environment" (p. 271). This type of fit is labeled *demands-abilities* and refers to the whether a person's knowledge, skills, and abilities fulfill the environment's demands. This view reflects traditional research on employee selection in which people are hired based on whether they have the necessary abilities required by a job (Kristof-Brown & Guay, 2011). Muchinsky and Monahan's definition of complementary fit has since been expanded to include characteristics of the environment that complement people. This refers to *needs-supplies* fit, which occurs when the environment satisfies a person's needs and preferences. This type of fit has its roots in discrepancy theories of job satisfaction (e.g., Locke, 1969), which are based on the idea that "job satisfaction results from the comparison between what the job provides and what the employee needs, wants, or desires from the job" (Edwards, 2008, p. 175). Both types of complementary fit are based on the same underlying mechanism or need-fulfillment, but they differ in their specific definitions. Demands-abilities fit concerns whether the person satisfies the environment's needs, whereas needs-supplies fit is defined as the degree to which the environment satisfies a person's needs. As such, they should be treated as distinct dimensions because

they differ in terms of which entity's needs are being fulfilled and their effects on outcomes (Edwards & Shipp, 2007; Kristof-Brown & Guay, 2011).

Demands-abilities and needs-supplies fit have typically been conceptualized at the job level. However, Edwards and Shipp argued that both dimensions of fit can occur at other levels of the work environment. They argued that “demands can be unique to the experiences of an individual or shared by all incumbents of a job or members of a workgroup, department, organization, or vocation” (p. 213), suggesting that demands-abilities fit occurs at the organizational level. In the case of needs-supplies fit, “supplies can be framed at levels analogous to those of demands” (p. 213).

Levels of fit

Person-Vocation fit. The broadest level of PE fit is person-vocation (PV) fit, which refers to a person's match with his or her occupation. PV fit includes vocational choice theories, which posit that people should be matched with vocations based on their interests. For instance, Holland's (1997) model, defines PV fit as the congruence between an employee's vocational or personality type and his occupation. These models suggest that PV fit is based on supplementary fit. However, PV fit is also applicable to the theory of work adjustment (Dawis & Lofquist, 1984; Lofquist & Dawis, 1969), which suggests that adjustment and satisfaction occur when employees' needs are met by the occupational environment. This suggests that needs-supplies fit is also relevant to PV fit. PV fit has usually been studied in relation to various measures of well-being, including satisfaction, stability, and achievement (Assouline & Meir, 1987; Spokane, 1985).

Person-Organization fit. Person-organization (PO) fit refers to the match or compatibility between a person and an organization. The earliest definitions of PO fit

focused on similarity between people and organizations. Chatman (1989), who first coined the term PO fit, defined it as “the congruence between the norms and values of organizations and the values of persons” (p. 339). However, since this initial focus on similarity-based fit, researchers have expanded the definition to include instances in which either the person or the organization complements, or makes whole, characteristics of the other (e.g., Muchinsky & Monahan, 1987). Kristof (1996) defined PO fit as occurring when “(a) at least one entity provides what the other needs, or (b) they share similar fundamental characteristics, or (c) both” (p. 4-5). This definition accounts for a broader set of criteria for fit (i.e., beyond values and norms) and allows for the consideration of multiple perspectives of fit. PO fit has frequently been used to predict job satisfaction, organizational commitment, intent to quit, task performance, and contextual performance (Kristof-Brown et al., 2005).

Person-Group fit. Person-group (PG) fit, also known as person-team fit, focuses on the match between employees and their work groups. Although there has been a considerable amount of interest in team member similarity in demographic variables (e.g., Joshi & Roh, 2009), less research has examined the effects of PG fit in terms of supplementary, needs-supplies, and demands-abilities fit on outcomes. Seong and Kristof-Brown (2012) note that PG fit is one of the least-studied areas of PE fit and that when fit is measured, it is usually assessed as a single conceptualization, such as values-based fit. However, PG fit has been measured using both supplementary (e.g., goals; Kristof-Brown & Stevens, 2001; values; Seong & Kristof-Brown, 2012) and complementary fit (e.g., demands-abilities; Seong & Kristof-Brown, 2012). PG fit has

most commonly been studied in relation to organizational commitment, job satisfaction, coworker satisfaction, and political perceptions (Kristof-Brown et al., 2005).

Person-Job fit. Person-job (PJ) fit refers to the match between a person and the characteristics of a job. It is similar to PV fit, but it is defined more narrowly in terms of the tasks performed at work (Kristof-Brown et al., 2005). PJ fit has typically been conceptualized in terms of complementary fit. Much PJ fit research has its roots in the basic personnel selection model, in which employees are selected based on how well their abilities match the demands of the job (i.e., demands-abilities fit; Ployhart, Schneider, & Schmitt, 2006). Other PJ fit research has developed out of discrepancy theories of job satisfaction which focus on how well supplies of a job meet employees' needs (i.e., needs-supplies fit; Caplan, 1983; French, Caplan, & Harrison, 1982; Locke, 1969). The outcomes most commonly linked to PJ fit have been job satisfaction, task performance, intent to quit, and strain (Kristof-Brown et al., 2005).

Person-Supervisor fit. Fit has also been studied in terms of match with individuals in the work environment. Person-person fit can occur between coworkers (e.g., Antonioni & Park, 2001), applicants and recruiters (e.g., Graves & Powell, 1995), and mentors and protégés (e.g., Turban & Dougherty, 1994). However, fit with supervisors is the most commonly studied type of dyadic fit. Although fit with coworkers, recruiters, and mentors likely has some effect on outcomes, it is likely that fit with supervisors has a stronger impact on employees' experiences at work. With regard to recruiters, new employees may not have much contact with recruiters after they enter an organization. Recruitment research on source effects has suggested that recruiters are actually not very influential (e.g., Rynes, 1991). With regard to mentors, some employees

may not have a mentoring relationship. Supervisors are likely to be influential because they probably have some influence over employees' day-to-day activities and performance management processes. Employees probably have a fair amount of day-to-day interaction with their supervisors, so they seem like they would have a fair amount of influence on employees' experiences at work. Person-supervisor (PS) fit is usually studied in terms of supplementary fit, with content dimensions including values (e.g., Colbert, 2004), personality (e.g., Schaubroeck & Lam, 2002), and goals (e.g., Witt, 1998). PS fit has been linked to supervisor satisfaction, leader-member exchange, and organizational commitment (Kristof-Brown et al., 2005).

At each of these levels of the environment, fit can be conceptualized using each of the three main dimensions. Typically, the levels of fit have been studied using only one or two of these dimensions, so differences between environmental levels are often confounded with the differences between dimensions (Edwards & Shipp, 2007). For instance, PO fit is usually operationalized as supplementary fit, while PJ fit is typically operationalized as needs-supplies and/or demands-abilities fit. However, for supplementary fit, "environmental levels refer to varying degrees of aggregation of people in the environment" (Edwards & Shipp, 2007, p. 213), so it is applicable to all levels of PE fit. In the case of needs-supplies and demands-abilities fit, supplies and demands can be shared by all members of a particular level of the environment (Edwards & Shipp, 2007). This suggests that complementary fit is relevant at all levels of the environment. Table 2 illustrates the dimensions of fit at each level of the environment, including examples and measures for each dimension within each level.

Table 2

Levels and Dimensions of Person-Environment Fit: Definitions, Examples, and Measurement

Level of fit	Conceptualization of fit		
	Supplementary	Complementary	
		Needs-Supplies	Demands-Abilities
<i>Person-Supervisor</i>	Similarity between the person and the supervisor	Match between the person's needs and the supervisor's supplies	Match between the person's abilities and the supervisor's demands
Example	An employee and his supervisor have differing values	The supervisor provides the amount of feedback that the person needs	The employee is not able to produce work as quickly as the supervisor would like
Measure	Van Vianen et al (2011)	N/A*	N/A
<i>Person-Job</i>	Similarity between the person and other job incumbents	Match between the person's needs and the job's supplies	Match between the person's abilities and the job's demands
Example	An employee's personality is similar to other people who hold the same job	The job provides the level of autonomy the employee desires	The employee's knowledges, skills, and abilities allow her to meet the demands of the job
Measure	N/A	Cable & DeRue (2002)	Cable & DeRue (2002)
<i>Person-Group</i>	Similarity between the person and members of the workgroup	Match between the person's needs and the workgroup's supplies	Match between the person's abilities and the workgroup's demands
Example	The members of a workgroup have similar goals	The workgroup provides the level of social support that the employee desires.	An employee's skills are a good fit with the requirements of the team's task

Level of fit	Conceptualization of fit		
	Supplementary	Complementary	
		Needs-Supplies	Demands-Abilities
Measure	Seong & Kristof-Brown (2012)	N/A	Seong & Kristof-Brown (2012)
<i>Person-Organization</i>	Similarity between the person and members of the organization	Match between the person's needs and the organization's supplies	Match between the person's abilities and the organization's demands
Example	The employee has similar values to other members of the organization	The organization provides fewer vacation days than the employee desires	An employee is not able to work the number of hours demanded by the organization
Measure	Cable & DeRue (2002)	Saks & Ashforth (2002)	N/A
<i>Person-Vocation</i>	Similarity between the person and members of the vocation	Match between the person's needs and the vocation's supplies	Match between the person's abilities and the vocation's demands
Example	The members of a vocation have similar personalities	An employee's occupation allows her to explore her professional interests.	An employee's training is sufficient to meet the demands of the vocation
Measure	Holland (1985)	N/A	Vogel & Feldman (2009)

Note: *N/A=Not applicable, there is no scale available to measure this dimension at this level

Measurement of PE fit

To date, PE fit has typically been measured one of three ways (Kristof-Brown et al., 2005). *Objective fit* is measured indirectly through a comparison of person (P) and environment (E) variables, which are reported by different sources (e.g., P collected from organizational members, E rated by subject matter experts). *Subjective fit* is also measured indirectly, but the P and E variables are reported by the same person (e.g., individuals rate themselves and their organization on the same attributes). *Perceived fit* involves individuals' direct assessments of the compatibility between P and E (e.g., individuals rate their degree of fit with their organization). Although direct assessments of fit have been labeled as both perceived and subjective, I adopt Kristof-Brown et al.'s (2005) terminology.

When a person has an accurate view of the environment and an accurate self-assessment, these various measures should be expected to produce similar results (Kristof-Brown et al., 2005). However, in practice, the measures are only weakly related (Edwards, Cable, Williamson, Lambert, & Shipp, 2006). Because people tend to interpret the environment in ways that allow them to maintain a positive self-concept (e.g., Endler & Magnusson, 1976), it is likely that objective, subjective, and perceived fit differ in what they represent conceptually (Edwards et al., 2006; Kristof-Brown et al., 2005). Objective measures are expected to be the most accurate assessments of fit because there is no opportunity for cognitive manipulation on the part of respondents. Because the reality of the environment must be filtered through peoples' perceptions, objective fit is expected to have the weakest relationships with outcomes (Kristof-Brown et al., 2005). Subjective fit is more likely to be manipulated by the individual because information of

the person and the environment are reported by the same person. However, people are not able to apply their own weighting scheme to the various aspects of the environment, so subjective fit is more accurate than perceived fit (Kristof-Brown et al., 2005). Perceived and subjective fit are believed to be the most proximal predictors of outcomes, especially attitudes, because they are reported a single source (Kristof-Brown et al., 2005). Indeed, Cable and Judge (1997) found that interviewers' perceptions of applicant fit were stronger predictors of hiring recommendations than were direct measures objective fit. Objective fit should be the least proximal predictor because this objective reality must be filtered through people's perceptions (Kristof-Brown et al., 2005).

In addition to these measurement strategies, PE fit has been measured at various levels of specificity. Edwards and Shipp (2007) delineated a continuum ranging from general to specific. At the most general level are *global* measures assess fit in general, without reference to any dimensions. Measures at the *domain* level focus on broad areas of comparison, but do not distinguish within those areas. Finally, facet-level measurement focuses on specific dimensions within the broader areas.

Model and Hypotheses

Research Question 1: Is person-environment fit a formative or reflective construct?

An examination of Mackenzie et al.'s (2005) criteria for formative constructs suggests that PE fit may be best characterized as a formative construct. The question of whether PE fit is a formative construct applies in two ways. First, are the dimensions used to measure fit (i.e., supplementary, demands-abilities, and needs-supplies fit) formative indicators of each level of fit? Second, are the levels of fit (i.e., PV, PO, PG, PJ, and PS fit) formative indicators of overall PE fit?

Dimensions of fit

As discussed above, Mackenzie et al. (2005) delineated four criteria for differentiating reflective and formative constructs. Applying these criteria to the dimensions of fit suggests that they should be specified as formative indicators.³

Are the indicators defining characteristics of the construct or manifestations of it? It is more likely that changes in the dimensions (i.e., supplementary, needs-supplies, and demands-abilities fit) will produce changes in overall fit assessments than vice versa. It is unlikely that changes in fit perceptions at a given level will change perceptions of similarity or need fulfillment. An example of a more plausible event is that an employee's needs might change and that their needs-supplies fit would change, which in turn would affect their overall perceptions of fit at that level. It is also likely that changes in the dimensions that are measured will change the latent construct. For instance, if only supplementary fit is used to measure PO fit, this will give a different picture of PO fit than if needs-supplies and demands-abilities fit are also measured. Each dimension represents distinct aspects of the construct domain, so the nature of the latent construct will depend on the dimensions that are measured. This evidence that the dimensions of fit are defining characteristics of the construct suggests that they are formative indicators.

³ A question worth addressing here is whether some dimensions may be reflective while some may be formative. It is possible that perceptions of similarity based on values and goals may be malleable and susceptible to influence from overall perceptions of fit. Perceptions of needs-supplies fit and demands-abilities fit, however, are likely to be less subjective because they are based on concrete aspects of people and the environment. They are less likely to be affected by overall fit perceptions. Therefore, it is feasible that supplementary fit could be a reflective indicator while needs-supplies and demands-abilities fit are formative indicators. Combined models for each level of the environment will be included as post-hoc analyses.

Do the indicators appear to be conceptually interchangeable? The dimensions of fit have been discussed in terms of two main categories: supplementary and complementary (Kristof, 1996; Muchinsky & Monahan, 1987). These categories are based on distinct theoretical paradigms. Supplementary fit, which taps into similarity between the person and the environmental level of interest, is based on the attraction-similarity paradigm (Cable & Edwards, 2004). Supplementary fit should affect outcomes because people are more attracted to and trusting of those who are similar to them (Byrne, 1969). On the other hand, complementary fit occurs when one entity helps make the other whole by providing something that it needs (Kristof, 1996). This type of fit is based on psychological need-fulfillment (Cable & Edwards, 2004), which refers to how well the environment is able to satisfy a person's needs and desires. The two types of complementary fit, needs-supplies and demands-abilities, are conceptually distinct because needs-supplies fit occurs when the environment supplies what the person needs, whereas demands-abilities fit occurs when the person supplies what the environment needs (Kristof, 1996).

Empirical evidence suggests that the dimensions of fit are conceptually distinct. Cable and DeRue (2002) developed a measure of PJ fit that included both needs-supplies and demands-abilities subscales. Confirmatory factor analysis suggested that these dimensions are distinct. Further, Piasentin and Chapman (2007) found that both perceived similarity and perceived complementarity explained unique variance in subjective PO fit. Both theory and empirical research suggest that the dimensions of fit are conceptually distinct, which implies that they are formative indicators.

Are the indicators expected to covary with one another? Because the dimensions of fit refer to fit with differing aspects of the work environment (e.g., values, personality, demands, supplies), it is possible that employees could fit well based on some dimensions and poorly based on others. For instance, an employee could perceive values congruence with the other members of her work group but also perceive that her abilities are not able to meet the demands of the group. Because each content dimension refers to different aspects of the environment, it is a reasonable assumption that the dimensions may not covary.

Are all of the indicators expected to have the same consequences? Each dimension of fit is based on distinct theoretical mechanisms, so they may predict different outcomes. Edwards and Shipp (2007) created a model predicting which dimensions would be more strongly related to outcomes. They predicted that needs-supplies fit would be the best predictor of job satisfaction because evaluating one's needs-supplies fit is closely related to the comparison process underlying discrepancy theories of job satisfaction (e.g., Locke, 1969) in which desired and perceived amounts of job characteristics are compared to determine job satisfaction. They also predicted that demands-abilities fit would strongly predict task performance because abilities foster the development of job knowledge and skills, which in turn affect task performance. Finally, they predicted that supplementary fit would be a more distal predictor and would affect outcomes primarily through its impact on needs-supplies fit. Some empirical research suggests that the dimensions may relate to different outcomes. Meta-analytic data suggests that when measured at the job level (i.e., PJ fit), needs-supplies fit predicts job satisfaction more strongly than does demands-abilities fit (Kristof-Brown et al., 2005). As

a whole, this evidence suggests that the dimensions of fit have different consequences and should be treated as formative indicators.

Hypothesis 1a: Person-vocation fit is best characterized by a measurement model in which the dimensions are specified as formative indicators.

Hypothesis 1b: Person-organization fit is best characterized by a measurement model in which the dimensions are specified as formative indicators.

Hypothesis 1c: Person-group fit is best characterized by a measurement model in which the dimensions are specified as formative indicators.

Hypothesis 1d: Person-job fit is best characterized by a measurement model in which the dimensions are specified as formative indicators.

Hypothesis 1e: Person-supervisor fit is best characterized by a measurement model in which the dimensions are specified as formative indicators.

Levels of fit

First, are the indicators defining characteristics of the construct or manifestations of it? Each level of fit taps into a different aspect of the work environment (i.e., person, job, group, organization, and vocation). It is not likely that changes in overall PE fit would produce changes in fit at the various levels. It is more reasonable that characteristics of each level would drive perceptions of fit. Theorists have described how levels of fit “combine and differentially *affect* the overall experience of PE fit” (Jansen & Kristof-Brown, 2006, pp. 197-198, emphasis added). Perceptions of similarity and complementarity at a given level are probably more reliable predictors of fit at that level than are perceptions of fit with the overall work environment. For instance, it is more likely that changes perceived similarity in personalities with other members of a work group would affect PG fit than would changes in overall PE fit.

Likewise, the levels that are measured will affect the nature of the latent construct. If just one of the levels is measured, the construct will be defined differently

than if several levels are measured. This provides evidence that the levels are formative indicators of overall PE fit.

Second, do the indicators appear to be conceptually interchangeable? At each level of the environment, fit is based on interactions with different people, and each level is likely to have different characteristics, demands, and supplies. For instance, an employee's work group may have different demands from her job. If so, her demands-abilities fit would differ at the group and job levels. Empirical research also suggests that the levels of fit are conceptually distinct. Using confirmatory factor analysis, Cable and DeRue (2002) found evidence that PO fit (measured using values) is distinct from PJ fit (measured with needs-supplies and demands-abilities dimensions), but it is possible that the differences were attributable to the content dimensions used. Kristof-Brown (2000) found that recruiters' perceptions of applicants' PJ and PO fit predicted unique variance in hiring recommendations. Finally, Badger and Behrend (2013, April) found evidence in two studies that needs-supplies fit is distinct at the job and organization levels. This provides evidence that fit at the various levels is distinct even if the same dimension is measured and that they should be treated as formative indicators.

Third, are the indicators expected to covary with one another? As discussed above, fit at each environmental level is influenced by different environmental variables, so fit at the different levels does not necessarily covary. It is possible that employees could have good fit in some areas but poor fit in others. It is entirely possible that an employee could perceive good fit at the vocational level, but poor fit with his organization. Indeed, there is empirical evidence suggesting that the levels of fit differ in their relationships with one another. Meta-analytically derived correlations suggest that

some of the relationships among the levels may be stronger than others. Kristof-Brown et al. (2005) found that although all of the intercorrelations were significant, there was substantial variation in the effect sizes. The estimated true score correlations ranged from .37 (PG-PS fit) to .72 (PO-PJ). If the levels were reflective indicators and therefore tapped into the entirety of the latent construct, we would expect the correlations to be more uniform.

Fourth, are all of the indicators expected to have the same consequences?

Meta-analytic evidence suggests that the strongest predictor of a particular outcome tends to be the type of fit that uses that level as a referent (Kristof-Brown et al., 2005). For instance, PJ fit is the strongest predictor of job satisfaction, and PO fit is the strongest predictor of organizational commitment. Results from studies that have measured more than one type of fit simultaneously suggest that the levels of fit may have different consequences. Cable and DeRue (2002) found that organizational identification and perceived organizational support were more strongly related to PO fit and that PJ fit was the best predictor of job satisfaction, career satisfaction, and occupational commitment. Similarly, Saks and Ashforth (2002) found that PJ fit was a stronger predictor of job attitudes, whereas PO fit was a stronger predictor of organizational attitudes. These findings suggest that the levels of fit have different consequences and that they are formative indicators of overall PE fit.

Hypothesis 2: Overall person-environment fit is best characterized by a measurement model in which the levels of fit are specified as formative indicators.⁴

⁴ A related question that may arise when discussing the contribution of various levels of fit is whether some levels of fit are more important in determining overall perceptions of fit. It is possible that fit at some levels may be more influential. If so, misfit at these levels could be particularly problematic. On the other hand, good fit at these levels could compensate for poor fit at other levels. This is a compelling reason for testing formative models because it allows researchers to study how people combine fit with the different aspects

Consequences of Model Misspecification

Research Question 2: Will the conceptualization of the construct (formative vs. reflective) affect the conclusions that are drawn?

Research suggests that the way in which the indicators are specified will affect results and the conclusions that are drawn. In their discussion of formative and reflective measurement, MacKenzie et al. (2005) empirically tested the effects of model misspecification using a Monte Carlo simulation. They found that when the exogenous factor (i.e., the predictor variable) was incorrectly specified as reflective, the structural parameter estimate was inflated by over 400%. This suggests that model misspecification could cause errors of inference and lead to incorrect assumptions about the strength of the effects of PE fit on outcomes. Thus, it appears that incorrectly specifying a formative construct could have important consequences. However, when analyzing real data, it is impossible to tell if a difference between the parameter estimates reflects inflation or an actual difference between the parameter estimates. Therefore, I will evaluate this research question in terms of model fit.

Hypothesis 3: For models including criterion variables, model fit will be best when PE fit is specified as a formative construct.

of their environment to create their overall perceptions of fit. This can be done by examining the parameter estimates for the various levels of fit.

Ch. 3: Method

Study Design

A correlational design was used to address the research questions. The research questions are not concerned with changes in PE fit, so a longitudinal design was not necessary. Likewise, this study does not address whether an intervention leads to changes in PE fit; therefore, an experimental design was not appropriate. The research questions are more concerned with the correlation among the different dimensions and levels of PE fit. Therefore, a cross-sectional survey design is sufficient to address the research questions.

Sample

Participants were recruited via Amazon Mechanical Turk (MTurk; Amazon Web Services, 2005-2011), an online marketplace that allows researchers to post studies for participants to complete in return for a monetary incentive. Participation was limited to working adults in the general U. S. population who are employed part-time or full-time. Participants who completed the study received US\$.50.

As of 2011, over 500,000 workers from more than 190 countries were registered on MTurk (Barger, Behrend, Sharek, & Sinar, 2011). Participants recruited through MTurk tend to be more diverse than participants recruited through a traditional psychology undergraduate subject pool in terms of age, race/ethnicity, education experience, and work experience (Behrend, Sharek, Meade, & Wiebe, 2011). Compared to the U. S. workforce, workers on MTurk tend to be younger, are more likely to be female, have higher levels of education, and have similar levels of household income (Barger et al., 2011). An advantage of using MTurk for this study is that it allows for the

sampling of employees from a variety of organizations, vocations, and jobs. In a recent study collected through MTurk (Badger, Kaminsky, & Behrend, in press), the participants had been in their current jobs for an average of 3.17 years ($SD = 4.00$) and had worked in an average of 2.19 jobs in the past five years ($SD = 3.16$). The participants were employed in a variety of professions (see Table 3). Compared to information from the U. S. Bureau of Labor Statistics (2012) on the distribution of occupations in the United States, the most common occupations include Office and Administrative Support, Sales, Food Preparation, and Transportation. In the MTurk sample, “white collar” professions, such as Management and Computer and Mathematical professions were overrepresented.

MTurk allows researchers to collect data quickly and inexpensively, which may raise questions about the quality of the data. This is a concern that can be valid unless proper precautions are taken. However, several studies have found that when precautions are taken, such as including attention check items (Meade & Craig, 2012), the data tends to have sufficient quality. Behrend et al. (2011) compared the quality of data collected through MTurk and an undergraduate student sample on a variety of measures, including Big Five personality and goal orientation. They found slightly higher quality data in the MTurk sample and measurement invariance between groups for the majority of items. However, social desirability was higher among the MTurk participants (Cohen’s $d = -.37$). Paolacci, Chandler, and Ipeirotis (2010) replicated several well-established decision-making experiments using three samples, including MTurk participants, and found only negligible differences in the results between the samples. Buhrmeister, Kwang, & Gosling (2011) found that the reliability of data collected through MTurk met

or exceeded the standards associated with published research. They also compared MTurk participants to those from a traditional internet sample and found no differences in task scores. On the whole, this evidence suggests that MTurk provides a valid source of data when proper precautions are taken to identify careless responses. In the Procedure section, I discuss the data quality assurance steps that were taken.

In the current study, the final sample had 688 participants. 56.5% of the participants were female. The average age of the participants was 33.8 ($SD = 11.04$). 7% of the participants were of Hispanic origin, while 75.6% were White/Caucasian, 10.9% were Black/African American, 0.7% were American Indian or Alaska Native, and 8.6% were Asian. English was the first language for 96.8% of the participants. The participants tended to be well educated (see Table 3).

Table 3

Participant Education

Education	<i>N</i>	Percent
Some high school	6	0.9%
High school diploma or equivalent (e.g., GED)	68	9.9%
Some college	198	28.8%
Associate degree (e.g., AA, AS)	77	11.2%
Bachelor's degree (e.g., BA, AB, BS)	242	35.2%
Master's degree (e.g., MA, MS, MSW, MBA)	75	10.9%
Professional degree (e.g., MD, DDS, LLB, JD)	14	2.0%
Doctorate degree (e.g., PhD, EdD)	7	1.0%

Note. $N = 687$

In terms of employment status, 74.3% were employed part-time, and 24.7% were employed full-time. The participants had been working at their organizations for an average of 5.15 years ($SD = 5.46$); they had been in their current jobs for an average of

4.66 years (SD = 5.2). The participants were fairly diverse in terms of occupation (see Table 4).

Table 4

Participant Occupations

Profession	<i>N</i>	Percent	Profession	<i>N</i>	Percent
Management	56	8.1%	Protective Service	7	1.0%
Business and Financial			Food Preparation and		
Operations	70	10.2%	Serving	40	5.8%
Computer and			Building and Grounds		
Mathematical	64	9.3%	Cleaning and Maintenance	9	1.3%
Architecture and			Personal Care and Service	7	1.0%
Engineering	11	1.6%	Sales	64	9.3%
Life, Physical, and			Office and Administrative		
Social Sciences	20	2.9%	Support	81	11.8%
Community and Social			Farming, Fishing, and		
Services	21	3.1%	Forestry	4	.6%
Legal	17	2.5%	Construction and		
Education, Training,			Extraction	2	.3%
and Library	77	11.2%	Installation, Maintenance,		
Arts, Design,			and Repair	10	1.5%
Entertainment, and	37	5.4%	Production	19	2.8%
Sports			Transportation and		
Healthcare Practitioner	31	4.5%	Material Moving	13	1.9%
and Technical					
Healthcare Support	28	4.1%			

Note. *N* = 688.

Sample size

Based on the benchmark of ten participants for each parameter estimated (Schreiber, Nora, Stage, Barlow, & King, 2006), the estimated required sample size for the study was 520. The survey was administered to 728 participants. After participants who were not employed or did not pass the attention check items were removed from the

sample, the final sample size was 688 (see Procedure section). This was considered large enough to reveal significant relationships among variables in the data.

Procedure

The data were collected online through MTurk (www.mturk.com). An advertisement, known as a human intelligent task (HIT) was posted online. The HIT included a brief description of the study and a link to an online informed consent form and questionnaire (see Appendix A). After the questionnaire was completed, participants were asked to create a completion code. In order to receive credit, they had to enter this same completion code on the MTurk website. Participants who provided the completion code received a monetary incentive of \$0.50. This level of compensation was chosen in an attempt to be close to the median pay for HITs requiring similar tasks and time commitments.

Data Quality Assurance

Several steps were taken to assure the quality of the data. The HIT was only visible to participants who are located in the United States. In addition, participants were only eligible to participate if they had a HIT approval rate of at least 95% and if they had successfully completed at least 100 HITs. That is, participants were able to view the HIT if their previous work had been approved at least 95% of the time. Although the advertisement that is posted on MTurk specified that only people who were employed either part- or full-time were eligible to participate, some people who were not employed completed the survey regardless of these instructions. An item about employment status (response options: full-time, part-time, unemployed, or retired) was included in the

questionnaire. Participants who were not employed part-time or full-time ($N = 11$) were removed from the analyses.

Because the data was collected from a single source at a single point in time, common method bias was a potential concern. Podsakoff, MacKenzie, and Podsakoff (2012) recommended procedures that can help encourage participant motivation and accurate responding. An attempt was made to decrease the difficulty of responding accurately by using clear and concise language, avoiding double-barreled items, and labeling all scale points instead of just the anchors. Any potentially unfamiliar or ambiguous terms were defined, including vocation, organization, team/workgroup, and job. The survey instructions stressed the importance of responding accurately (e.g., “We are interested in your honest opinions”). Finally, distracter tasks were included in order to decrease the motivation to respond stylistically. These tasks were designed to be brief and fun in order to reduce boredom. They included checklists of movies that they have seen and hobbies they enjoy.

Additional data quality assurance procedures were employed after the data were collected. First, following the recommendations of Barger et al. (2011), two attention-check items were embedded in the questionnaire (e.g., “Please select ‘agree’ if you are paying attention”). These types of bogus items are not vulnerable to figurative interpretation, and they provide an obvious metric for scoring as correct or incorrect (Meade & Craig, 2012). Participants who did not answer at least one of these questions correctly were removed from the dataset ($N = 31$). Answering one question correctly shows that participants were paying attention at least some of the time. Because the survey included hundreds of questions, it’s possible that participants could be paying

attention but miss one due to fatigue. Second, in an effort to receive compensation without actually completing surveys, some people may use computer programs to complete surveys. In order to identify any such responses, participants were presented with a Captcha (aka “Completely Automated Public Turing test to tell Computers and Humans Apart”). Participants were presented with a distorted image and were asked to type the two words that appeared. Any cases that did not include a correct response were removed from further analyses (N = 0). Finally, a visual inspection was conducted to detect cases that dropped out partway through the survey. Any cases with excessive amounts of missing data (more than 20%) were removed (N = 1).

Measures

A complete list of the measures that were used can be found in Appendix B. Unless otherwise noted, scales were measured using a 5-point response scale (*strongly disagree* to *strongly agree*).

Prior Measurement of Person-Environment Fit

All measures of PE fit used in this study were perceptual. Although fit can also be measured using objective measurement, in which the person (P) and environment (E) are rated by different people, and subjective measurement, in which the P and E variables are rated separately by the employee (Kristof-Brown et al., 2005), Edwards and colleagues (2006) found evidence that perceptual measures of fit tap into a different construct than subjective measures. Perceptual measures, however, should be a more proximal predictor of outcomes (Cable & DeRue, 2002). Using objective and subjective measures of fit creates special conditions for analyzing the data. Traditionally, these indirect measures have been measured using difference scores or profile comparison methods (e.g.,

O'Reilly et al., 1991). These strategies suffer from various methodological problems (Edwards, 2001), so polynomial regression has been suggested as an alternative analysis strategy (Edwards & Parry, 1993). However, using this strategy would make it impossible to test the hypotheses of the current study. Therefore, PE fit was measured using direct perceptions.

Scale development procedures. To date, most PE fit measures have focused on a single conceptualization of fit. For instance, PO fit is typically assessed using supplementary fit (Piasentin & Chapman, 2006) whereas PJ fit is usually measured using complementary fit (i.e., needs-supplies and demands-abilities; e.g., Cable & DeRue, 2002). Therefore, it was necessary to develop measures for some of the dimensions at the various levels of fit.

In a series of two studies, Badger and Behrend (2013, April) developed a multidimensional measure of perceived PO fit. We developed an initial pool of items, which included adapting items from existing measures (e.g., Cable & DeRue, 2002). This included subscales for supplementary fit, needs-supplies fit, and demands-abilities fit. We tested them using a student sample and reduced the number of items. We then validated the refined scales in an employee sample collected through MTurk.

Dimensionality. The results suggested that PO fit is multidimensional and that it is composed of supplementary fit and needs-supplies fit. The demands-abilities scale was not distinguishable from this dimension of fit at the job level. We adapted these items from Cable and DeRue's (2002) demands-abilities PJ fit scale, changing the referent from job to organization. In retrospect, these items may still have been too specific to abilities at the job level. For instance, one of the items references training, which may be more

applicable to the job level than at the organizational level. Based on theory suggesting that demands can be conceptualized at various levels of the environment (Edwards & Shipp, 2007), this problem can likely be remedied by revising the items.

Reliability. The subscales had high internal consistency with alpha ranging from .85 to .90 in both studies.

Validity. The items were reviewed by several industrial/organizational psychology doctoral students in order to ensure construct validity. Exploratory and confirmatory factor analyses provided evidence that PO fit is distinct from PJ fit, thereby demonstrating divergent validity. We also found support for the criterion-related validity of the scale. Using path analysis, we found that needs-supplies PO fit predicted affective organizational commitment, perceived organizational support, job satisfaction, and turnover intentions. Supplementary PO fit predicted perceived organizational support and job satisfaction. For a full description of this scale development, see Badger and Behrend (2013).

Measurement in the Current Study

PE fit was measured at several different levels of specificity. Overall PE fit was measured at the global level; that is, participants were explicitly asked to rate how well they fit with their work environments in general. Fit was also measured globally for each level of fit (i.e., Overall, how well do they fit with their vocation?). Finally, each level of fit was measured using three dimensions: supplementary, needs-supplies, and demands-abilities. The supplementary dimensions assessed similarity based on values, personality and goals, the content areas that have most frequently be used to operationalize this conceptualization of fit (Piasentin & Chapman, 2006). The levels of the environment that

were measured include person-vocation (PV), person-organization (PO), person-group (PG), person-job (PJ), and person-supervisor (PS). When possible, established measures were used. Otherwise, existing measures were adapted. All items are listed in Appendix B.

Overall Person-Environment Fit. *Overall PE fit* was measured using an adapted version of Piasentin and Chapman's (2007) global PO fit scale in which the referent was edited to refer to the work environment in general. This scale contains three items, including "I think other people would say that I fit into my overall work environment."

Global fit. Global fit for each level of the environment was measured using an adapted version of Piasentin and Chapman's (2007) global PO fit scale. The referent was adjusted for each level. The three items include "This occupation is a good fit for me in terms of what I look for in an occupation." Piasentin and Chapman found an alpha of .83. In their study, global PO fit was related to organizational tenure ($r = .16$), job satisfaction ($r = .67$), turnover intentions ($r = -.59$), and organizational commitment ($r = .71$). A reverse-scored item was removed from the original scale.

Domain fit. Within each level of the environment, fit was measured based on three dimensions: supplementary, needs-supplies, and demands-abilities. *Supplementary fit* was measured using Badger and Behrend's (2013, April) four-item supplementary PO fit scale. This includes items assessing perceived similarity based on values, personality, and goals. For PO fit, the scale had high internal consistency ($\alpha = .85$) in the validation study. Items include "My personality matches my organization's culture." *Needs-supplies fit* was measured using Badger and Behrend's four-item needs-supplies PO fit scale ($\alpha = .90$). Items include "My organization fulfills what I need from an employer." *Demands-*

abilities fit was measured using an adapted version of Cable and DeRue's (2002) PJ fit demands-abilities scale. The original items mention training and education, which may not be relevant to demands-abilities fit at levels other than the job. Some of the original items that were double-barreled were reworded. Finally, a fourth item was added: "I am able to meet the demands of my organization." For their original scale, Cable and DeRue found an alpha of .89; in their study, PJ demands-abilities fit was related to perceived organizational support ($r = .34$), job satisfaction ($r = .33$), and career satisfaction ($r = .27$).

Outcome Measures

Two outcome variables were measured for each corresponding level of the environment. At each level, one variable will assess an attitude and one measured a behavior or behavioral intention.

Overall-level. Overall PE fit is likely to predict broad outcomes such as satisfaction, withdrawal, and adjustment (Jansen & Kristof-Brown, 2006). *Overall satisfaction* was measured using a faces satisfaction scale. Participants were asked to consider all aspects of their work environment and select the face that best describes their feelings about their work environments. The image included five faces, ranging from very sad to neutral to very happy (see Appendix B). Higher scores represented higher satisfaction. Wanous, Reichers, and Hudy (1997) found evidence that faces measures had a corrected mean correlation of .66 with scales of overall job satisfaction. *Turnover intentions* were measured using Boroff and Lewin's (1997) two-item scale. Items include "I am seriously considering quitting this organization for an alternative employer."

Badger and Behrend (2013, April) found that this scale had good reliability ($\alpha = .84$) and was related to dimensions of PO and PJ fit (correlations ranged from $-.55$ to $-.41$).

Vocation-level. *Affective occupational commitment* was measured using Meyer, Allen, and Smith's (1993) six-item scale. Sample items include "I am proud to be in my profession." Cronbach's alpha ranged from $.85$ to $.87$ in their study. Meyer and colleagues found that this scale was related to job satisfaction ($r = .53$) and intent to leave the occupation ($r = -.52$). They also found that occupational commitment provided incremental prediction of organization-relevant variables when organizational commitment was controlled for. *Intentions to leave the vocation* were measured using three items from Meyer et al (1993; e.g., "How likely is it that you will leave your profession within the next year?"). This was measured on a five-point scale (*not at all likely to extremely likely*). They found a Cronbach's alphas of $.67$ and $.71$.

Organization-level. *Organizational identification* was measured with the six items used by Mael and Ashforth (1992). Sample items include "When someone criticizes my organization it feels like a personal insult." They found Cronbach's alphas ranging from $.81$ to $.89$ in various samples. The organizational identification scale was related to perceived organizational prestige ($r = .32$) and satisfaction with the organization ($r = .51$). Organization-level behavior was assessed using *organizational citizenship behaviors* (OCBs) focused toward the organization (as opposed to behaviors directed towards specific people). Self-report OCB-Organization was measured using Williams and Anderson's (1991) six-item scale. Sample items include "I give advance notice when I am unable to come to work." Williams and Anderson found an alpha of $.75$. They found that OCB-O was related to in-role behaviors ($r = .55$) and to affective

and cognitive aspects of job satisfaction (positive arousal: $r = .16$, intrinsic job cognitions: $r = .19$; extrinsic job cognitions: $r = .25$)

Group-level. *Group cohesion* was measured using Dobbins and Zaccaro's (1986) eight-item scale. Items include "The members of my group get along well together." They found the measure to have high reliability ($\alpha = .91$). In Dobbins and Zaccaro's study, cohesion was related to satisfaction with coworkers ($r = .72$), satisfaction with the organization ($r = .26$), and satisfaction with the work ($r = .33$). *OCBs* focused towards the group were measured using an adapted version of Williams and Anderson's (1991) seven-item OCB-Individual scale. Sample items include "I help team members who have been absent." They found a Cronbach's alpha of .88. In their study, OCB-I was related to in-role behaviors ($r = .52$) and affective and cognitive aspects of job satisfaction (positive arousal: $r = .24$; intrinsic job cognitions: $r = .28$; extrinsic job cognitions: $r = .24$).

Job-level. *Job satisfaction* was measured using the three-item Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1979). Items include "All in all I am satisfied with my job." This scale has been found to have sufficient reliability ($\alpha = .82$; Bruck, Allen, & Spector, 2002). Lovelace and Rosen (1996) found that job satisfaction measured using Cammann et al.'s scale was related to PO fit ($r = .65$) and intentions to leave ($r = -.70$). Self-reported *job performance* was measured using an adapted version of Van Dyne and LePine's (1998) four-item in-role behaviors scale. To reduce the likelihood of bias in the self-reporting of job performance, I used Schat and Frone's (2011) procedure in which the referent for each item is changed such that participants were asked to respond from the perspective of their supervisor (e.g., "My supervisor would say that I perform the tasks that are expected as part of the job"). In

Van Dyne and LePine's study, Cronbach's alpha for the scale was .93. They found that supervisor ratings of job performance were related to OCBs (voice: $r = .57$; helping: $r = .65$).

Supervisor-level. *Leader member exchange (LMX)* was measured using an adapted version of Scandura and Graen's (1987) seven-item scale. Items include "My supervisor recognizes my potential." Scandura and Graen found Cronbach's alphas of .84 and .86 for the scale. Wayne, Shore, and Liden (1997) found that it was related to perceived organizational support ($r = .50$), affective commitment ($r = .36$), and intentions to quit ($r = -.40$). *OCBs* toward the supervisor were measured using Williams and Anderson's (1991) OCB-I scale that was adapted to refer to the supervisor. Sample items include "I go out of my way to help my supervisor."

Ch. 4: Analyses and Results

Data Screening

Before testing my hypotheses, I screened the data for assumption violations and quality concerns. Unless otherwise noted, I followed the procedures outlined by Tabachnick and Fidell (2007). Initial data cleaning and screening was completed using SPSS 21.

Outliers

Because every variable was measured on a five-point scale, outliers were not a concern in this study. It is possible that extreme responses could lead to skewed scales. Therefore, the normality of the data was examined next.

Normality

Variables should be normally distributed in order to use some estimation procedures in SEM, such as maximum likelihood estimation. In order to evaluate the normality of the items, I examined the skew and kurtosis for each item. Extreme nonnormality occurs when skew is greater than 3 and kurtosis is greater than 10 (Kline, 2005). The skew and kurtosis did not exceed these thresholds for any of the variables (the item-level descriptive statistics, skew, and kurtosis are displayed in Appendix C). Multivariate normality is difficult to test directly, but it was assessed indirectly by examining the normality, linearity, and homoscedasticity of individual variables (Tabachnick & Fidell, 2007).

Linearity

In order to screen for linearity, it is typically recommended to examine the bivariate scatterplots (Tabachnick & Fidell, 2007) for each set of variables. If two

variables are normally distributed and linearly related, the scatterplot will be oval shaped. However, given the number of items in this study, it would be burdensome to examine all possible pairs. There is no *a priori* reason to believe that certain variables will be nonlinearly related. Instead of testing all possible relationships for nonlinearity, I checked a random subset of 20 relationships. Based on visual inspection, all relationships appeared to be linear.

Homoscedasticity

Homoscedasticity can also be detected by examining bivariate scatterplots. If two variables are homoscedastic, the bivariate scatterplots will have roughly the same width all over with a slight bulge toward the middle. Again, it was not feasible to examine the scatterplots between all possible pairs of items. Therefore, I examined pairs of items for which the skewness statistics suggested that nonnormality and heteroscedasticity may have been a problem. For these relationships, there was no evidence of heteroscedasticity. Because the normality, linearity, and homoscedasticity screenings suggested that multivariate normality was achieved, no variables were transformed.

Multicollinearity

Multicollinearity can be a problem if there is a singularity issue. Singularity means that one variable is a combination of two or more of the other variables. This is a potential problem in this study because PE fit was measured at several levels of abstraction. First, I checked for bivariate multicollinearity by examining the bivariate correlations at the item level. The majority of the correlations were less than .50 suggesting that multicollinearity was not a major concern. However, five correlations greater than .85 were flagged. Two of the job performance items were highly correlated

($r = .857$), so the item with lower variance was removed (“I perform the tasks that are expected as part of the job.”). The two items for turnover intentions were highly related ($r = .855$). However, the reliability would have suffered if one of the items were removed, so both were retained. Tabachnick and Fidell (2007) suggested creating a composite of the redundant variables, which is consistent with the analysis plan for the current study. Finally, three of the relationships among the items for person-supervisor needs-supplies fit exceeded the threshold. None of the items were involved in more than two of the flagged correlations. Removing redundant items would have left only two items in the scale. However, because I used an analysis of structure (structural equation modeling), including all of the items is not be terribly problematic (Tabachnick & Fidell, 2007). I have retained all person-supervisor needs-supplies fit and will pay particular attention to the error terms for these items.

Second, I checked for multivariate multicollinearity using the regression feature in SPSS to check the collinearity diagnostics. According to Tabachnick and Fidell (2007), for each variable, tolerance should be higher than .10, and variance inflation factors (VIF) should not be greater than 10. If the condition index is greater than 30 there is multicollinearity, and if at least two of the variance proportions are greater than .50 this multicollinearity is a problem.

Three items had tolerances lower than .10 or VIFs greater than 10. However, only one of these items had bivariate correlations with other items that exceeded .85 (“The attributes that I look for in a supervisor are fulfilled very well by my present supervisor,” from the PS needs-supplies fit scale). This item was removed. Several of the condition

indices exceeded 30, but none of the variance proportions exceeded .50. This suggests that multicollinearity was not a problem.

Preliminary Analyses

Psychometric Properties of the Scales

The scales were evaluated in terms of their reliability and validity. First, I calculated Cronbach's alpha for each scale. For each item, I evaluated the alpha if the item is removed and the item-scale total correlation in order to identify poor-quality items. It should be noted that a low alpha is not necessarily a problem. Indeed, it may be a sign that formative measurement is more appropriate. Therefore, the alphas of the PE fit scales were evaluated, but no items were removed on the basis of internal consistency.

Because all outcome measures that were used have been previously validated, they were included in the SEM models as measured variables (e.g., path analysis). However, I performed exploratory factor analyses (EFAs) in order to ensure that they were unidimensional. I used the principal axis factor model and oblique rotation (promax). Factor solutions were derived based on theory, Kaiser's criterion (eigenvalues ≥ 1), scree plots, and the interpretability of the factors. Items with low factor loadings ($< .30$) were removed. Because the PE fit items were later evaluated using confirmatory factor analysis, EFAs were only performed for the outcome variables (turnover intentions, affective occupational commitment, intent to leave the vocation, organizational identification, OCB-organization, group cohesion, OCB-group, job satisfaction, job performance, leader-member exchange, and OCB-supervisor).

The majority of the scales loaded on a single factor and had high internal consistency. One item with a low item-total correlation was removed from the cohesion

scale (“I find that I generally do not get along with the other members of my group”).

Citizenship behaviors focused toward the organization (OCB-organization) initially loaded on two factors, but most items loaded on both factors. I removed an item that did not load strongly on either factor (“I adhere to informal rules devised to maintain order”); following the removal of this item, a single-factor solution was reached. The resulting internal consistency was not optimal ($\alpha = .75$), but the reliability would not have been improved by removing any of the remaining items. With the exception of OCB-organization, all scales had high internal consistency (all α s $\geq .80$; see Table 5).

Table 5

Reliability of Final Scales

Scale	Items Removed	Final Number of Items	Alpha
Overall PE Fit	N/A	3	.87
Turnover Intentions	N/A	2	.92
Overall PV Fit	N/A	3	.80
Supplementary PV Fit	N/A	4	.84
Needs-Supplies PV Fit	N/A	4	.94
Demands-Abilities PV Fit	N/A	4	.85
Occupational Commitment	N/A	6	.90
Intent to Leave the Occupation	N/A	3	.88
Overall PO Fit	N/A	3	.82
Supplementary PO Fit	N/A	4	.90
Needs-Supplies PO Fit	N/A	4	.94
Demands-Abilities PO Fit	N/A	4	.87
Organizational Identification	N/A	6	.88
OCB-Organization	1 (#6)	5	.75
Overall PG Fit	N/A	3	.88
Supplementary PG Fit	N/A	4	.88
Needs-Supplies PG Fit	N/A	4	.95
Demands-Abilities PG Fit	N/A	4	.87
Group Cohesion	1 (#6)	7	.91
OCB-Group	N/A	6	.87
Overall PJ Fit	N/A	3	.82
Supplementary PJ Fit	N/A	4	.89
Needs-Supplies PJ Fit	N/A	4	.94
Demands-Abilities PJ Fit	N/A	4	.86
Job Satisfaction	N/A	3	.89
Job Performance	N/A	3	.92
Overall PS Fit	N/A	3	.92
Supplementary PS Fit	N/A	4	.90
Needs-Supplies PS Fit	N/A	3	.94
Demands-Abilities PS Fit	N/A	4	.90
Leader-Member Exchange	N/A	7	.91
OCB-Supervisor	N/A	6	.91

Descriptive Statistics and Correlations

Means and standard deviations of the scales are reported in Appendix C. The scales tended to be slightly negatively skewed, but the skewness and kurtosis were within

the acceptable range for all scales. Correlations among the scales are displayed in Table 6. The table is organized such that the corresponding dimensions of fit and the outcome variables for each level of the environment are grouped together in order to aid in the evaluation of convergent and discriminant validity. The correlations among the dimensions of fit within each level of fit tended to be moderate to high (generally ranging from .50 to .80). For overall fit at each level, the correlations among the types of fit ranged from .46 (PV fit and PS fit) to .75 (PV fit and PJ fit).

Table 6

Correlations Among Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Overall PV Fit	—										
2. Supplementary PV Fit	.79	—									
3. NS PV Fit	.71	.78	—								
4. DA PV Fit	.58	.50	.50	—							
5. Occ. Commitment	.72	.76	.74	.43	—						
6. Intent to Leave Voc.	-.53	-.57	-.66	-.35	-.68	—					
7. Overall PO Fit	.69	.64	.60	.48	.55	-.47	—				
8. Supplementary PO Fit	.65	.75	.69	.44	.66	-.55	.80	—			
9. NS PO Fit	.57	.62	.70	.42	.59	-.56	.74	.81	—		
10. DA PO Fit	.52	.44	.38	.71	.38	-.34	.61	.53	.53	—	
11. Org. Identification	.45	.54	.52	.27	.56	-.42	.55	.65	.59	.33	—
12. OCB-O	.25	.20	.13	.33	.24	-.14	.28	.18	.16	.33	.05
13. Overall PG Fit	.58	.50	.46	.48	.45	-.38	.69	.58	.54	.52	.45
14. Supplementary PG Fit	.58	.63	.58	.44	.55	-.46	.65	.69	.63	.44	.56
15. NS PG Fit	.53	.54	.54	.44	.47	-.41	.61	.61	.61	.47	.45
16. DA PG Fit	.50	.44	.37	.66	.37	-.30	.54	.47	.45	.70	.32
17. Group Cohesion	.55	.54	.53	.39	.51	-.42	.62	.61	.58	.42	.51
18. OCB-G	.41	.37	.30	.47	.31	-.18	.46	.35	.31	.47	.34
19. Overall PJ Fit	.75	.73	.67	.56	.69	-.56	.69	.65	.63	.56	.52
20. Supplementary PJ Fit	.64	.73	.64	.45	.63	-.50	.61	.67	.63	.41	.51
21. NS PJ Fit	.63	.67	.78	.48	.68	-.62	.61	.68	.76	.42	.54
22. DA PJ Fit	.55	.46	.40	.76	.42	-.33	.48	.42	.42	.76	.31
23. Job Satisfaction	.67	.67	.72	.45	.76	-.72	.68	.72	.74	.49	.58
24. Job Performance	.29	.20	.15	.42	.20	-.11	.33	.20	.22	.47	.12
25. Overall PS Fit	.46	.44	.39	.38	.38	-.37	.61	.54	.55	.44	.40
26. Supplementary PS Fit	.49	.55	.53	.35	.47	-.46	.61	.63	.61	.39	.47
27. NS PS Fit	.40	.41	.42	.37	.37	-.38	.55	.53	.59	.42	.39
28. DA PS Fit	.40	.32	.25	.54	.30	-.24	.47	.39	.38	.61	.26
29. LMX	.47	.53	.44	.40	.40	-.36	.60	.56	.55	.43	.43
30. OCB-S	.36	.43	.35	.29	.30	-.25	.47	.42	.39	.31	.40
31. Overall PE Fit	.70	.68	.63	.48	.64	-.55	.74	.69	.69	.56	.55
32. Overall Satisfaction	.66	.61	.67	.44	.66	-.61	.68	.71	.73	.50	.57
33. Turnover Intent	-.46	-.49	-.56	-.28	-.59	.75	-.51	-.56	.63	-.35	-.42

Table 6 (continued)

Variable	12	13	14	15	16	17	18	19	20	21	22
1. Overall PV Fit											
2. Supplementary PV Fit											
3. NS PV Fit											
4. DA PV Fit											
5. Occ. Commitment											
6. Intent to Leave Voc.											
7. Overall PO Fit											
8. Supplementary PO Fit											
9. NS PO Fit											
10. DA PO Fit											
11. Org. Identification											
12. OCB-O	—										
13. Overall PG Fit	.30	—									
14. Supplementary PG Fit	.21	.77	—								
15. NS PG Fit	.19	.78	.81	—							
16. DA PG Fit	.34	.66	.58	.63	—						
17. Group Cohesion	.23	.77	.78	.82	.57	—					
18. OCB-G	.36	.56	.50	.47	.54	.55	—				
19. Overall PJ Fit	.28	.63	.64	.59	.55	.59	.44	—			
20. Supplementary PJ Fit	.21	.56	.74	.63	.46	.63	.39	.76	—		
21. NS PJ Fit	.14	.51	.64	.61	.43	.59	.32	.73	.73	—	
22. DA PJ Fit	.37	.50	.44	.45	.72	.42	.51	.64	.49	.50	—
23. Job Satisfaction	.22	.55	.62	.60	.46	.61	.34	.72	.65	.80	.49
24. Job Performance	.48	.33	.22	.22	.45	.25	.44	.33	.22	.20	.46
25. Overall PS Fit	.24	.59	.54	.56	.50	.56	.37	.54	.50	.50	.43
26. Supplementary PS Fit	.18	.55	.65	.58	.45	.58	.35	.55	.65	.58	.38
27. NS PS Fit	.20	.54	.53	.56	.46	.54	.29	.48	.48	.51	.39
28. DA PS Fit	.39	.52	.42	.44	.70	.43	.41	.45	.35	.31	.65
29. LMX	.26	.56	.55	.56	.49	.58	.37	.52	.53	.51	.41
30. OCB-S	.25	.44	.46	.42	.35	.46	.53	.37	.43	.36	.29
31. Overall PE Fit	.26	.68	.67	.66	.56	.68	.47	.77	.68	.70	.56
32. Overall Satisfaction	.18	.56	.62	.61	.46	.63	.31	.67	.61	.71	.45
33. Turnover Intent	-.20	-.39	-.46	-.44	-.31	-.49	-.19	-.49	-.49	-.63	-.32

Table 6 (continued)

Variable	23	24	25	26	27	28	29	30	31	32	33
1. Overall PV Fit											
2. Supplementary PV Fit											
3. NS PV Fit											
4. DA PV Fit											
5. Occ. Commitment											
6. Intent to Leave Voc.											
7. Overall PO Fit											
8. Supplementary PO Fit											
9. NS PO Fit											
10. DA PO Fit											
11. Org. Identification											
12. OCB-O											
13. Overall PG Fit											
14. Supplementary PG Fit											
15. NS PG Fit											
16. DA PG Fit											
17. Group Cohesion											
18. OCB-G											
19. Overall PJ Fit											
20. Supplementary PJ Fit											
21. NS PJ Fit											
22. DA PJ Fit											
23. Job Satisfaction	—										
24. Job Performance	.26	—									
25. Overall PS Fit	.54	.29	—								
26. Supplementary PS Fit	.59	.21	.82	—							
27. NS PS Fit	.55	.25	.87	.79	—						
28. DA PS Fit	.38	.52	.60	.50	.60	—					
29. LMX	.56	.36	.83	.78	.81	.61	—				
30. OCB-S	.43	.28	.59	.61	.56	.41	.66	—			
31. Overall PE Fit	.76	.32	.58	.60	.55	.46	.58	.46	—		
32. Overall Satisfaction	.82	.24	.55	.58	.56	.41	.57	.39	.77	—	
33. Turnover Intent	-.74	-.18	-.43	-.49	-.46	-.46	-.44	-.32	-.57	-.66	—

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was used to test the dimensionality of the PE fit items. These analyses were conducted using Mplus 6.0 (Muthén & Muthén, 1998-2007). The models were evaluated by testing the significance of the change of the chi-square statistic and by evaluating several indices of model fit: the comparative fit index (CFI); the root mean square error of approximation (RMSEA); and the standard root mean square residual. Model fit was assessed based on Hu and Bentler's (1999) recommended standards ($CFI \geq .95$, $RMSEA \leq .06$, $SRMR \leq .08$).

I compared several nested models (described below). The results of the CFAs are displayed in Table 7.

Table 7

Confirmatory Factor Analysis Models

Model	χ^2	<i>df</i>	$\Delta \chi^2$	CFI	RMSEA	SRMR
Person-vocation fit						
One factor	1343.32	54		.78	.19	.11
Two factors	1190.31	53	153.01*	.81	.18	.10
Three factors	297.21	51	893.10*	.96	.08	.05
Person-organization fit						
One factor	1669.79	54		.77	.21	.10
Two factors	1420.70	53	249.09*	.80	.19	.10
Three factors	303.70	51	1117.00*	.96	.09	.03
Person-group fit						
One factor	1350.14	54		.82	.19	.09
Two factors	1156.07	53	194.07*	.84	.17	.08
Three factors	331.25	51	824.82*	.96	.09	.04
Person-job fit						
One factor	1729.01	54		.74	.21	.11
Two factors	1258.22	53	470.79*	.81	.18	.10
Three factors	285.80	51	972.42*	.96	.08	.04
Person-supervisor fit						
One factor	2021.86	54		.75	.23	.11
Two factors	1667.07	53	354.79*	.80	.21	.10
Three factors	461.85	51	1205.22*	.95	.11	.04
Person-environment fit						
One factor	2237.63	90		.71	.19	.08
Five factor	855.32	80	1382.31*	.90	.12	.05

Note. PV = Person-Vocation; PO = Person-Organization; PG = Person-Group; PJ = Person-Job; PS = Person-Supervisor; PE = Person-Environment; DA = Demands-Abilities; NS = Needs-Supplies fit. For each level of fit, two factors: supplementary and complementary (needs-supplies and demands-abilities); three factors: supplementary, needs-supplies, and demands-abilities.

First, I tested the dimension-level items. For clarity, I tested the items for each level separately. For each level of fit, I first tested a one factor model. Based on discussions of PE fit in terms of supplementary and complementary fit (e.g., Kristof, 1996; Muchinsky & Monahan, 1989), two factor models were then tested in which the

supplementary fit items load on a single factor but the needs-supplies and demands-abilities items all loaded on a complementary fit factor. Finally, I tested three factor models based on theory suggesting that PE fit is composed of supplementary, needs-supplies, and demands-abilities dimensions (Edwards & Shipp, 2007). As anticipated, the three factor models provided the best fit to the data. For each level of fit, the model fit improved substantially when a three factor solution was specified.

Second, I tested the factor structure of the global items for each level of fit. I first tested a one factor model. Next, I tested a five factor model, in which all of the correlations were allowed to vary. As anticipated, the five factor model provides better fit to the data. The factors for PV fit and PJ fit were highly correlated ($r = .92$), so I tested a four factor model with the PV and PJ fit items loaded on the same factor. This resulted in an increase in the chi square statistic, and the other fit indices stayed fairly constant. Based on the model fit and the theoretical basis for the distinction between PV and PJ fit, I chose to keep these dimensions separate.

Hypothesis Testing

Structural Equation Models

The hypotheses were tested using structural equation modeling (SEM) in Mplus. Alternative methods, such as vanishing tetrads tests (e.g., Bollen & Ting, 2000), have been recommended for comparing reflective and formative models. However, I chose to follow the approach suggested by Edwards (2011). Rather than testing models that include formative measures, the formative models were modeled as latent constructs and were assessed using multiple reflective measures. This avoids the common critique of formative measures that formative measures are assumed to be free from error. In order

to compare the models, I used Hu and Bentler's (1999) recommended standards for the fit indices ($CFI \geq .95$, $RMSEA \leq .06$, $SRMR \leq .08$). I tested the hypotheses by using chi-square difference tests and by comparing the model fit. The reflective and formative models were not nested, so changes in the other fit indices were considered in addition to the chi-square difference tests.

In order to test Hypothesis 1a-e, which predicted that the dimensions of each level of fit are formative, I tested each of the levels separately. First, I tested a model with the dimensions specified as reflective (see Figure 3 for an example).

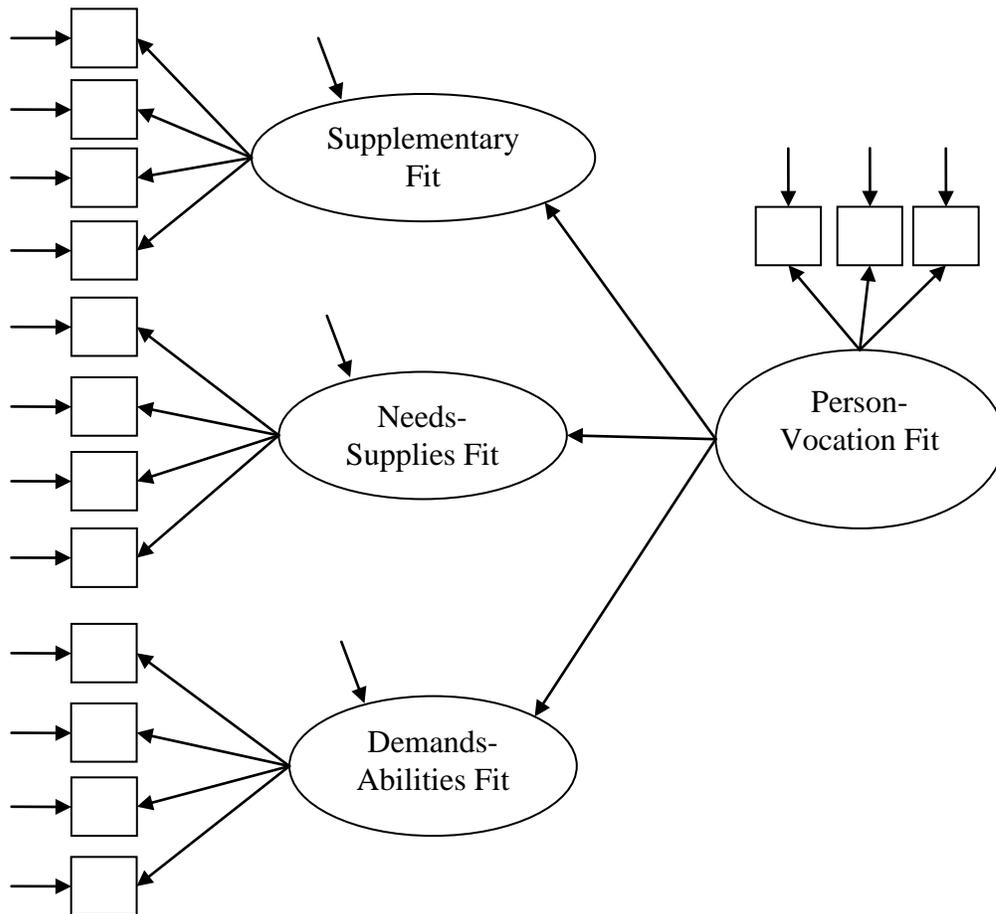


Figure 3. Reflective model for person-vocation fit.

Each dimension is measured by reflective indicators. Each of these items has an error term. The dimensions also have error terms because they are being predicted by the higher-order construct (i.e., they are endogenous variables), in this case PV fit. In addition, the higher-order construct is measured by three direct reflective indicators. This is necessary when the formative model is tested. When a formative construct does not predict some outcome, the model is not identified; however, including direct reflective indicators of the construct enables the model to be identified (formative constructs require at least two reflective measures specified as direct or indirect outcomes in order to achieve identification; Edwards, 2011).

Next, I tested formative model for each level of fit (see Figure 4).

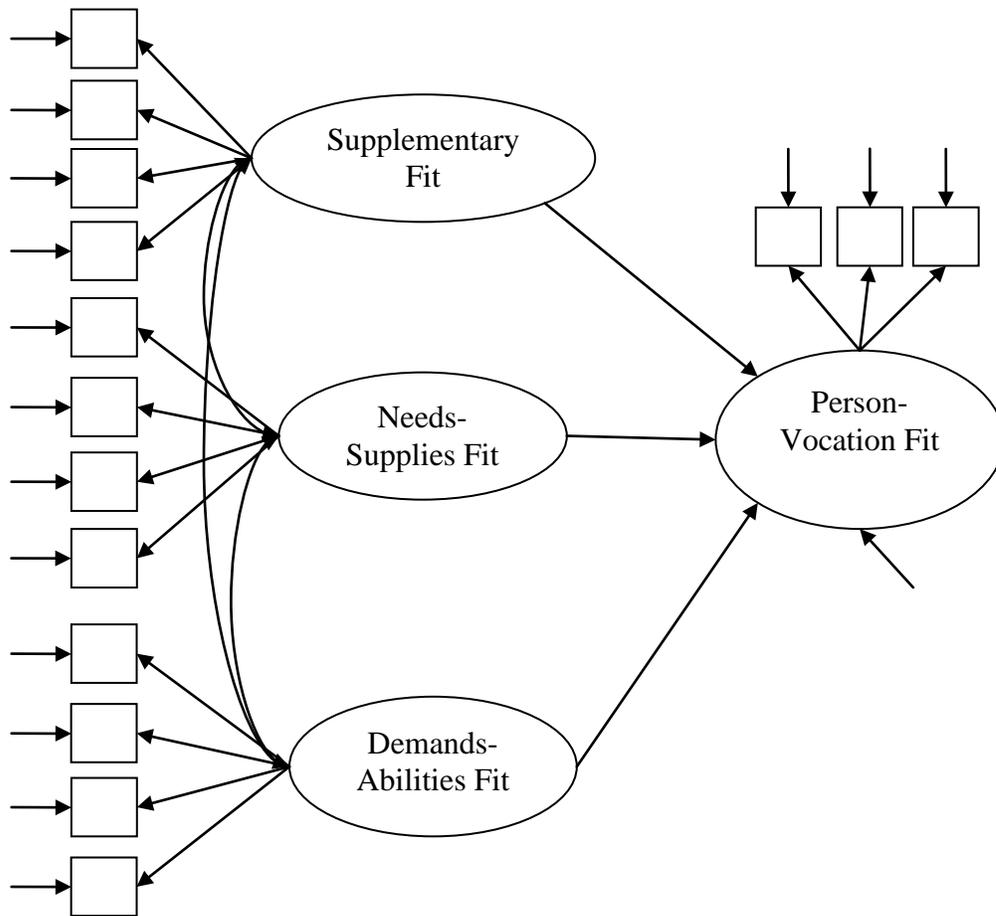


Figure 4. Formative model for person-vocation fit.

The most important change in this model is that the dimensions now predict the higher-order construct. Due to this change, the dimensions no longer have error terms. Instead, the higher-order construct has an error term (because it is an endogenous variable) and the dimensions are allowed to covary. This is a formative model that has replaced formative measures with facet constructs and multiple reflective measures (Edwards, 2011). This avoids many shortcomings of formative measurement (e.g., failing to incorporate measurement error; Edwards, 2011).

I tested Hypothesis 1 (i.e., the hypothesis that each level of fit is formative) by comparing the fit indices for both models. This process was repeated for each of the five levels of fit. The results for Hypothesis 1a-1e are shown in Table 8. Hypotheses 1a-1e were supported, although the differences in model fit were fairly small. For each level, model fit was better when a formative model was specified.

Table 8

Hypothesis 1 Results

Model	χ^2	<i>df</i>	$\Delta \chi^2$	CFI	RMSEA	SRMR
Hypothesis 1a: PV fit is formative						
PV fit reflective	727.81	88		.92	.10	.13
PV fit formative	503.17	84	224.64*	.95	.09	.05
Hypothesis 1b: PO fit is formative						
PO fit reflective	816.98	88		.92	.11	.14
PO fit formative	599.47	84	217.51*	.94	.09	.04
Hypothesis 1c: PG fit is formative						
PG fit reflective	763.49	88		.93	.11	.14
PG fit formative	544.52	84	218.97*	.95	.09	.04
Hypothesis 1d: PJ fit is formative						
PJ fit reflective	711.23	88		.93	.10	.10
PJ fit formative	618.65	84	92.58*	.94	.10	.05
Hypothesis 1e: PS fit is formative						
PS fit reflective	798.28	88		.94	.11	.13
PS fit formative	666.19	84	132.09*	.95	.10	.04

Note. PV = Person-Vocation; PO = Person-Organization; PG = Person-Group; PJ = Person-Job; PS = Person-Supervisor.

In order to test Hypothesis 2 (i.e., the levels of fit are formative indicators of overall PE fit) I first tested a model similar to the reflective models tested for Hypothesis 1. In this case, the levels of fit were specified as reflective indicators of overall PE fit (see

Figure 5). The dimensions of each level of fit were not included in this model because the question of whether they are formative or reflective was addressed in Hypothesis 1.

Instead, the levels of fit were each measured using three reflective indicators.

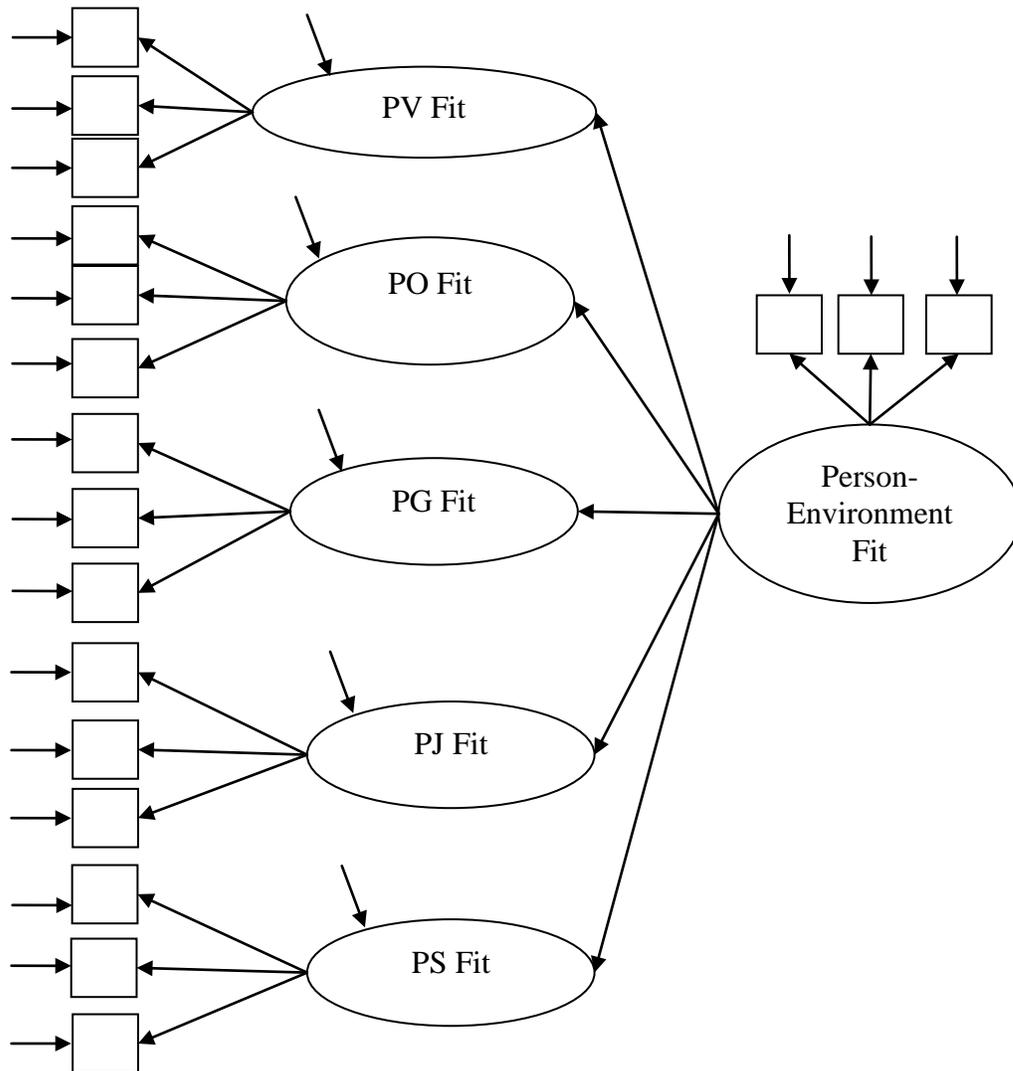


Figure 5. Reflective model for overall PE fit.

Next, I tested a model in which these indicators were specified as formative (see Figure 6).

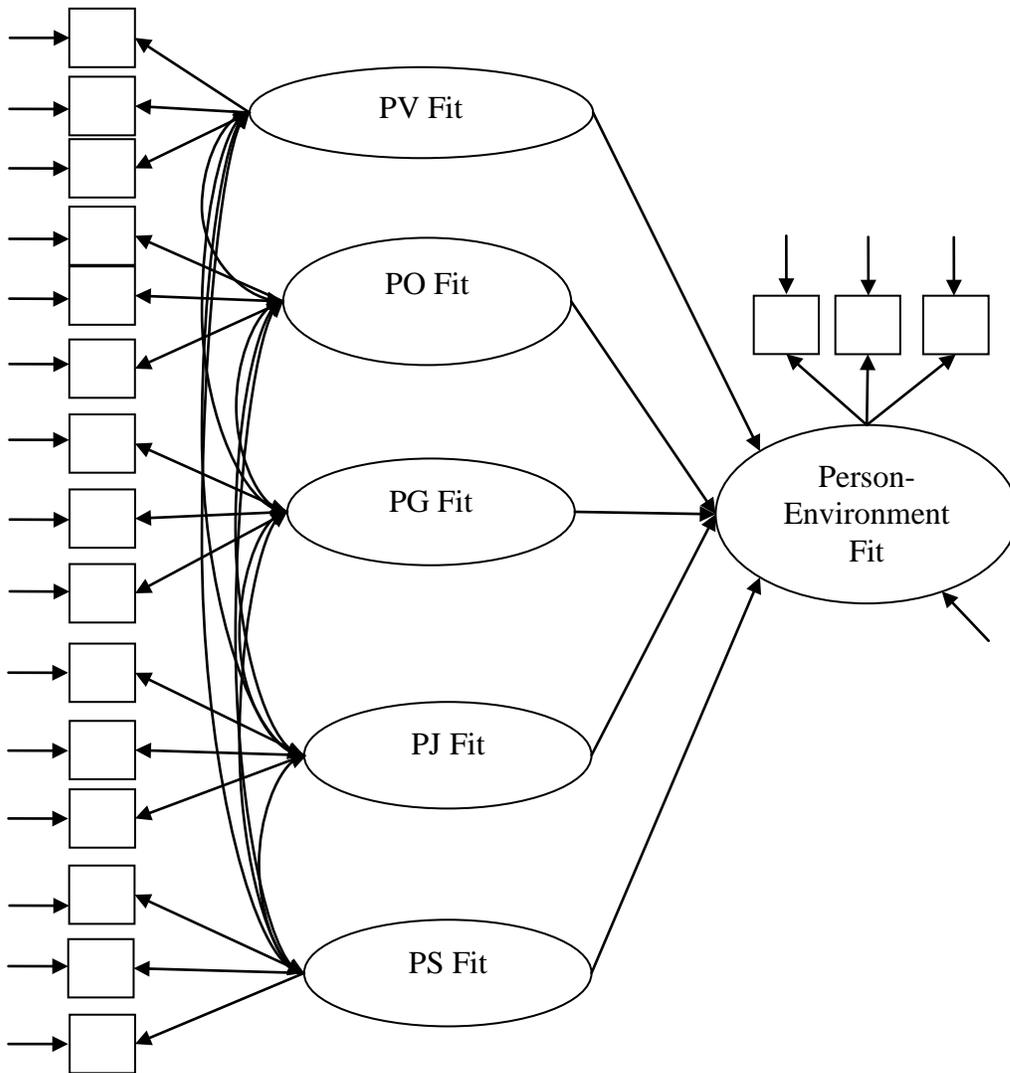


Figure 6. Formative model for overall PE fit.

The results for Hypothesis 2 are shown in Table 9. Model fit improved significantly when overall PE fit was specified as formative. Thus, Hypothesis 2 was supported.

Table 9

Hypothesis 2 Results

Model	χ^2	<i>df</i>	$\Delta \chi^2$	CFI	RMSEA	SRMR
Hypothesis 2: Overall PE fit is formative						
PE fit reflective	1486.32	131		.86	.12	.10
PE fit formative	1268.27	120	217.73*	.88	.12	.05

Note. PE = Person-Environment.

Finally, Hypothesis 3 concerned how the specification of the indicators affects the conclusions that are drawn about PE fit's relationship with outcomes. I used a similar procedure to the one used to test Hypothesis 1 (see Figures 7 and 8). I compared models for each level of fit separately. In this case, however, each level of fit predicted two outcome variables. Because the outcomes were assessed using established measures, these variables were included as measured variables in order to preserve statistical power. Exploratory and confirmatory factor analyses suggested that the scales were unidimensional and that the items loaded strongly on each factor (all loadings were greater than .40, with most loadings greater than .60). The scales also had adequate internal consistency (all alphas greater than .75), supporting the decision to specify them as manifest variables.

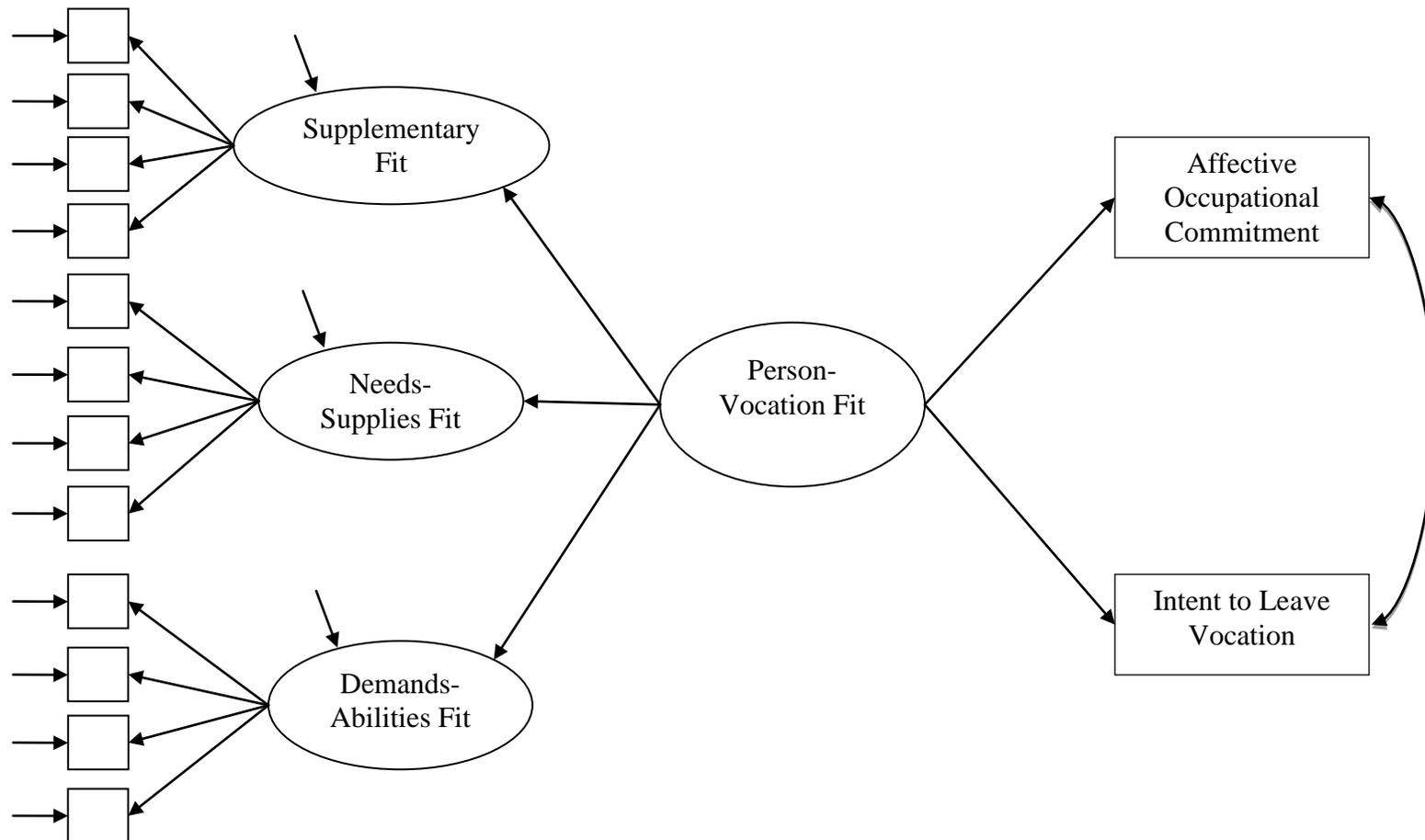


Figure 7. Reflective model for PV fit and outcomes.

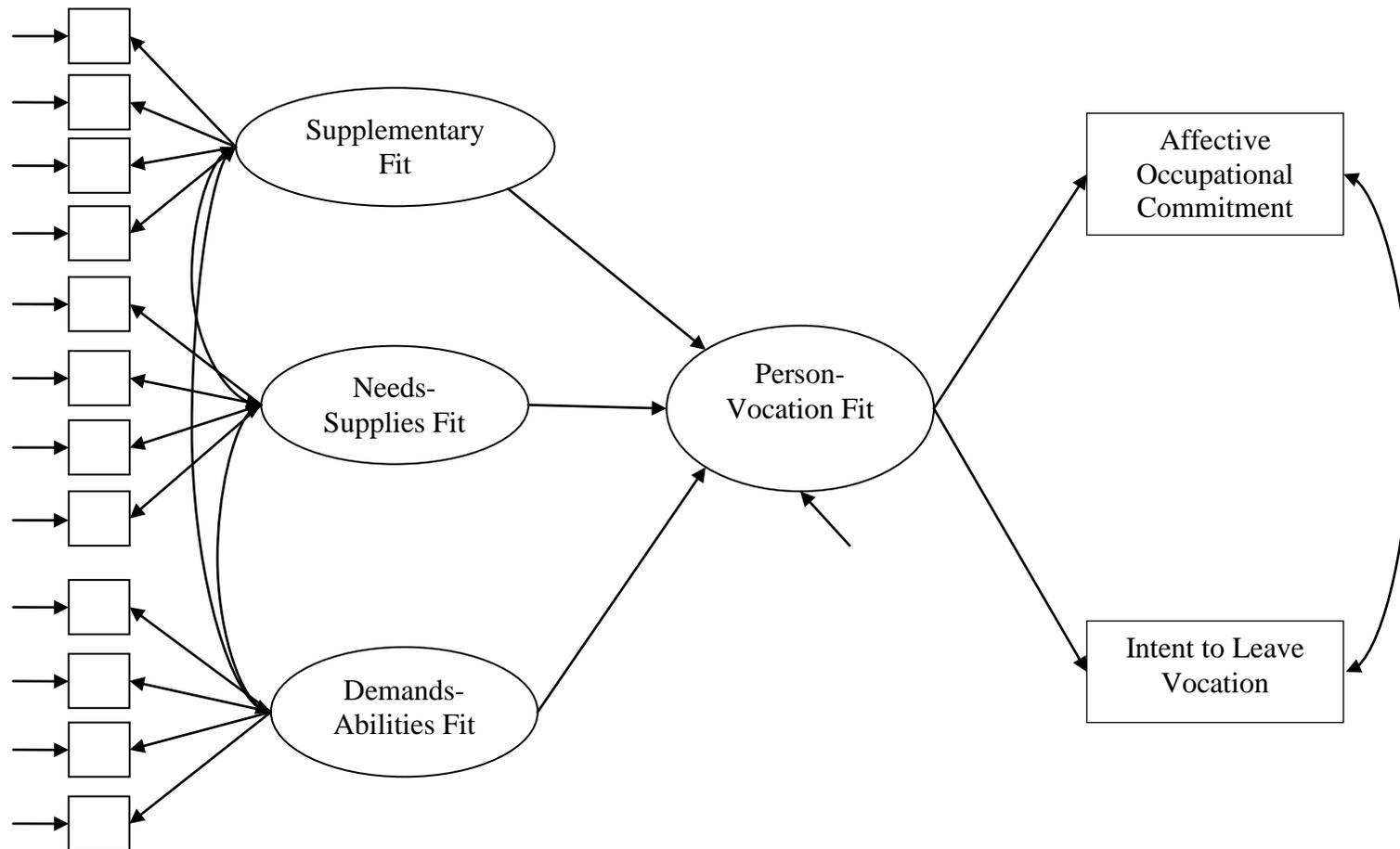


Figure 8. Formative model for PV fit and outcomes.

The results for Hypothesis 3 are displayed in Table 10. Again, the change in chi-square was significant for each level, suggesting that model fit improved when a formative model was specified. Thus, Hypothesis 3 was supported.

Table 10

Hypothesis 3 Results

Model	χ^2	<i>df</i>	$\Delta \chi^2$	CFI	RMSEA	SRMR
<i>Research Question 2: Effects of formative vs. reflective on relationships with outcomes</i>						
<i>Hypothesis 3:</i>						
PV fit reflective	802.95	116		.92	.09	.13
PV fit formative	577.72	112	225.23*	.95	.08	.05
PO fit reflective	927.59	116		.91	.10	.14
PO fit formative	680.61	112	246.98*	.94	.09	.04
PG fit reflective	960.61	116		.92	.10	.14
PG fit formative	745.07	112	215.54*	.94	.09	.04
PJ fit reflective	981.88	116		.91	.10	.10
PJ fit formative	904.66	112	77.22*	.92	.10	.07
PS fit reflective	934.45	116		.93	.10	.13
PS fit formative	781.59	112	152.86*	.95	.09	.04
Overall PE fit reflective	1708.77	165		.86	.12	.10
Overall PE fit formative	1474.80	154	233.97*	.88	.11	.05

Note. PV = Person-Vocation; PO = Person-Organization; PG = Person-Group; PJ = Person-Job; PS = Person-Supervisor; PE = Person-Environment.

All hypotheses were supported. The change in chi-square was significant for each comparison. The fit indices improved for each model when a formative model was specified, with the exception of RMSEA which did not change for some of the comparisons. These results suggest that PE fit should be specified as formative rather than reflective. However, the changes in the fit indices were fairly small.

Across all levels of fit, the outcomes were more strongly predicted when the models were specified as formative (see Table 11). Both the standardized path estimates

and R^2 increased in magnitude when a formative model was used for most levels. This was also the case for overall PE fit. This suggests that prediction improves when fit is specified as formative. In order to test for significant differences between the path weights for the reflective and formative models, the path weights were transformed to z scores using Fisher's r to z transformation. The differences between the z scores for each model were then compared to the critical value for z (1.645, $\alpha = .05$). None of the differences between the z scores exceeded the critical value, suggesting that none of the path weights significantly differed between the reflective and formative models.

Table 11

Standardized Path Estimates and R Squared Estimates for Outcome Variables

Variable	Reflective		Formative	
	β	R^2	β	R^2
<i>Person-Vocation Fit</i>				
Occupational Commitment	.06	.004	.07	.005
Intent to Leave Vocation	.81*	.66	.84*	.71
<i>Person-Organization Fit</i>				
Organizational Identification	-.54*	.29	-.59*	.35
OCB-O	.60*	.36	.66*	.44
<i>Person-Group Fit</i>				
Cohesion	.85*	.72	.87*	.76
OCB-G	.55*	.30	.60*	.35
<i>Person-Job Fit</i>				
Job Satisfaction	.83*	.69	.84*	.70
Job Performance	.29*	.08	.32*	.10
<i>Person-Supervisor Fit</i>				
Leader Member Exchange	.85*	.73	.88*	.78
OCB-S	.57*	.32	.62*	.38
<i>Overall Person-Environment Fit</i>				
Overall Satisfaction (Faces)	.80*	.64	.83*	.70
Turnover Intention	-.58*	.33	-.61*	.38

For PV and PO fit, some of the path estimates indicated unexpected relationships between fit and outcomes. For instance, PV fit was positively correlated with intentions

to leave the vocation. The correlations, however, were in the anticipated direction. In order to explore this finding further, I tested the models without the overall perceptions PV or PO fit (i.e., tested for direct relationships between the dimensions of fit and outcomes). However, this did not affect the direction of the relationships.

Post Hoc Analyses

Fit at some levels of the environment may be affected by aspects of the organizational context above and beyond PE fit. That is, people who work in the same organization may respond more similarly to questions about these levels than people who work in other organizations. PO, PG, and PS fit items seem the most likely to be influenced by the organizational context because they are entities within or encompassing organizations. On the other hand, PV and PJ fit are relatively independent from organizations because people in a given vocation or job may work at any number of organizations. In order to test the question about whether some “organizational context” factor has some effect on responses to these items, the model for Hypothesis 2 (overall PE fit is formative) was tested using a bifactor model in which the items for PO, PG, and PS fit were specified as effect indicators of the new factor.

The fit was significantly improved for the bifactor model compared to the standard formative model ($\Delta\chi^2(14) = 160.59, p < .05$). However, the other fit indices were relatively unchanged ($\Delta CFI = .016$; $\Delta RMSEA = -.001$; $\Delta SRMR = -.003$). These results suggest that adopting a bifactor model increased model fit, but given the small differences, it is unclear whether this is the best approach. The bifactor model adds a great deal of complexity, and it is unclear what information the new factor actually

captures. Given the small improvement in model fit and the difficulty of interpreting the bifactor model, the standard formative model seems more appropriate.

Finally, combined reflective and formative models were tested in which supplementary fit was specified as reflective and needs-supplies fit and demands-abilities fit were specified as formative. It is possible that perceptions of similarity in values and goals may be malleable and susceptible to influence from general perceptions of fit. On the other hand, needs-supplies fit and demands abilities fit are based on more objective characteristics of people and the environment, so it is less likely that they would be affected by general fit perceptions. The results for the combined models are compared to the reflective and formative models in Table 12.

Table 12

Results for Combined Reflective and Formative Models

Model	χ^2	df	$\Delta \chi^2$	CFI	RMSEA	SRMR
<i>Person-Vocation Fit</i>						
PV fit reflective	727.81	88		.92	.10	.13
PV fit combined	544.66	87	183.15*	.94	.09	.05
PV fit formative	503.17	84	41.49*	.95	.09	.05
<i>Person-Organization Fit</i>						
PO fit reflective	816.98	88		.92	.11	.14
PO fit combined	625.61	87	191.37*	.94	.10	.05
PO fit formative	599.47	84	26.14*	.94	.09	.04
<i>Person-Group Fit</i>						
PG fit reflective	763.49	88		.93	.11	.14
PG fit combined	600.80	87	162.69*	.94	.09	.04
PG fit formative	544.52	84	56.28*	.95	.09	.04
<i>Person-Job Fit</i>						
PJ fit reflective	711.23	88		.93	.10	.10
PJ fit combined	663.52	87	47.71*	.93	.10	.05
PJ fit formative	618.65	84	44.87*	.94	.10	.05
<i>Person-Supervisor Fit</i>						
PS fit reflective	798.28	88		.94	.11	.13
PS fit combined	697.72	87	100.56*	.94	.10	.04
PS fit formative	666.19	84	31.53*	.95	.10	.04

Across all levels of the environment, the combined models fit the data better than the reflective models. However, the model fit improved at each level when a formative model was specified, suggesting that a combined model does not provide the best fit to the data.

Chapter 5: Discussion

The goal of this study was to explore whether PE fit is a reflective or formative construct. Across overall fit and several levels of fit, the findings suggest that fit should be conceptualized as a formative construct. All hypotheses were supported across the various levels of PE fit. The results suggest that model fit is improved when fit is modeled as a formative construct. These effects were the most pronounced for PV and PO fit. There was not compelling evidence for the bifactor model, in which PO, PG, and PS fit were specified on a general “organizational context” factor. The results also suggested that model fit was improved when a combined model was used, in which supplementary fit was specified as reflective and needs-supplies fit and demands-abilities fit were specified as formative.

Theoretical Implications

The idea that fit is multidimensional is not a new one; this has been established in prior research (e.g., Cable & DeRue, 2002). However, little research to date has explored the full spectrum of PE fit. In most studies, only snippets of employees’ and job seekers’ fit have been captured. Typically, only one or two levels of fit are measured, often using unidimensional measures. The results of the current study, however, suggest that the levels of fit are multidimensional and that these dimensions and levels determine how employees experience and perceive fit. There is the potential for much richer information that prior research has not capitalized on. The findings of the current study suggest that the fit research has only addressed a small portion of the PE fit construct domain. By adopting a more holistic perspective of fit, researchers have the potential to greatly enhance our understanding of how employees experience and navigate the workplace.

The finding that employees consider various aspects of themselves and their environments suggests that fit is an active process throughout employees' careers. Kammeyer-Mueller (2007) suggests that fit is a dynamic process that begins prior to entry and develops as people choose vocations, jobs, and organizations. It is difficult to say how much fit changes and what causes it to change as there has been a limited amount of longitudinal research in this area. Some types of fit may be more amenable to change than others. Demands-abilities fit could change based on training designed to improve how well employees' knowledge and skills match the demands of the environment. Needs-supplies fit has the potential to change based on changes in the environment. A current example of this is furloughs for government employees. It stands to reason that a large drop in pay, even if temporary, would affect needs-supplies fit. Supplementary fit, especially if based on values, may be less susceptible to change, but there is some evidence to suggest that values-based fit may shift over time. In a two year longitudinal study, Cable and Parsons (2001) found that socialization tactics were associated with changes in newcomers' values and subjective PO fit (i.e., values congruence). Fit, therefore, seems to be a dynamic process in which fit changes over time, but it is difficult to say what the magnitude of these changes would be.

The results of this study suggest that employees actively consider how various aspects of their environment affect their fit, which in turn affects their attitudes and behavioral intentions. Fit is likely a process that occurs throughout people's careers, with prior fit affecting future decisions. If employees perceive a misfit based on certain aspects of the environment, it stands to reason that this would lead to dissatisfaction and that they would be motivated to improve their fit. This may lead to a change in position within an

organization (e.g., a change of supervisor or team), a change to a different organization, a switch to a different career path within the same profession, or even a change of vocations. If fit is considered this way, it seems that fit has the potential to explain decisions employees make throughout their careers.

The results of this study suggest that employees combine their fit at various levels of the environment to form their overall fit perceptions. It is unlikely that all of these fit perceptions contribute equally to overall fit. Rather, there is probably a hierarchy in some levels of fit are more important than others. A recent meta-analysis suggests that there are cultural differences in the importance of different types of fit. Oh and colleagues (2014) found that PJ and PO fit was the most strongly related to job attitudes for North Americans, to a lesser extent for Europeans, and even less for East Asians. Inversely, for the more relational levels of fit (PG and PS fit), the effects were stronger for East Asians than for North Americans. The authors theorized that relational fit is more salient in cultures that are high in collectivism and power distance. This suggests that the hierarchy of the levels of fit may differ based on national culture. It is also possible that the importance of fit may be affected by individual differences. For instance, PG and PS fit may be particularly important for people who are extroverted and agreeable. The importance of the different types of fit should be considered in future research.

In the current study, most of the outcomes were positive in nature (e.g., job satisfaction as opposed to job dissatisfaction). Some of the outcomes were negative (intentions to leave to vocation and organization), and many of the scales included negatively-worded items that were reverse-scored. However, it should be noted that the results could differ if negative attitudes such as strain and perceptions of politics within

teams were included as outcome variables. Meta-analytic research shows that the magnitude of the relationships between fit and negative outcomes are similar for positive outcomes such as organizational commitment (Kristof-Brown et al., 2005). Edwards (2011), however, noted that formative latent constructs become the best possible combination of the formative sub-dimensions that also best predicts the outcomes. It is possible that using negative outcomes could have some effect on the meaning of the latent construct.

The results of this study apply to other areas of industrial/organizational psychology beyond PE fit. Law and Wong (1999) suggested that “constructs such as role conflict and role ambiguity, organizational commitment, occupational health, mental health, and dysfunctional thought processes” should be considered formative constructs (p. 149). Further, MacKenzie and colleagues (2005) argued that many constructs in organizational research, including job performance, transformational leadership, and procedural justice, should be conceptualized as formative constructs. This suggests that there are many more constructs for which a formative model is appropriate. The question of whether a reflective or formative model should be specified is also important when researchers study higher order constructs (e.g., core confidence as a higher order construct with hope, self-efficacy, optimism, and resilience as dimensions; Stajkovic, 2006). When studying multidimensional or higher-order constructs, researchers should use the conceptual criteria outlined by MacKenzie et al. (2005) to ensure that the appropriate model is adopted.

There are also more specific implications for theory and research. PE fit has been implicitly treated as a reflective construct in most research. The results of this study,

however, suggest that it should be conceptualized and modeled as a formative construct. This has a number of implications for how PE fit should be studied. Clarity of construct definitions is always an important consideration in research, but it is especially critical for formative constructs. Because formative constructs are collectively determined by the dimensions that are used to define them, excluding parts of the construct domain can lead to inaccurate conclusions about the construct. In the current study, all indicators were positively correlated, so omitting items would probably not do major harm. If different measures were used, however, there could be the potential for losing information. For instance, if a more specific measure of PJ needs-supplies fit that focused on facets of the job (e.g., pay, autonomy, the nature of the work itself) were used, it is possible that the specific items would not be positively correlated. In this example, omitting an item about a specific facet of the environment could lead to losing some information. If fit is measured and discussed using only a subset of levels and/or dimensions of fit, this could lead to confusion about the construct definition. Using unidimensional measures and not labeling the variable as such may lead to confusion about the content domain, and the results may not be trustworthy.

A good example of this issue is PO fit. It has typically been discussed and measured using perceived similarity of values and, to a lesser extent, personality (Piasentin & Chapman, 2006). However, the current research suggests that goals, needs-supplies, and demands-abilities fit are also important components of PO fit.

Conceptualizing PO fit just in terms of supplementary fit may neglect important parts of the content domain and lead to inaccurate conclusions about the relationships among PO fit and other constructs. Meta-analytic evidence suggests that job satisfaction is more

strongly related to values-based PO fit ($\rho = .66$) than PO fit measured using personality ($\rho = .13$) or goals ($\rho = .28$; Kristof-Brown et al., 2005). This suggests that the over-reliance on values-based measures of PO fit could lead to inflated estimates of the relationships among PO fit and outcome variables.

It is also worth noting that the dimensions of fit likely affect outcomes through different mechanisms, especially when it comes to performance. Demands-abilities fit directly affects performance because it determines whether people are able to fulfill the responsibilities of their jobs. On the other hand, supplementary fit is likely to affect performance more indirectly. If an employee feels that her values and personality are a poor match with others in the organization, she may not be motivated to perform well. Considering how the dimensions of fit affect outcomes differentially, using multidimensional measures of fit will provide a more nuanced understanding of how fit affects employees.

It is also possible that certain dimensions may be more important for some levels of fit than others. For instance, demands-abilities fit is likely to be a particularly strong component of PJ fit; how well an employee's abilities match his or her job are likely to strongly influence job performance. This dimension of fit may be less important for other levels of the environment that are not as directly related to productivity. But given the evidence that PE fit is formative, it is still important to carefully consider how it will be measured and labeled. If researchers have a compelling reason for measuring a level of fit using a single dimension, care should be taken to label it as such (e.g., values-based PO fit as opposed to PO fit). Otherwise, this could lead to inaccurate conclusions about the construct definition of fit and how it relates to other constructs.

Practical Implications

The results of this study also have implications for practice. Vocational choice and career counseling could be improved by considering the results of the current research. The findings suggest that PV fit is shaped by a combination of supplementary, needs-supplies, and demands-abilities fit. Given that PV fit is related to occupational commitment, intent to leave the occupation, and fit with other aspects of the workplace, it is important for people to consider their likely fit with a vocation when considering whether to pursue a certain vocation. Vocational counselors could provide students with information about the vocational personalities of people in a given field (e.g., Holland, 1997), the knowledge, skills, and abilities needed to succeed in the vocation, and the typical benefits associated with working in the vocation. Doing so would allow individuals to ascertain their likely fit with a vocation and choose a vocation that will be a good match.

The findings of this study also have the potential to improve human resources (HR) practices. Research suggests that fit is an important consideration in recruitment (e.g., Cable & Judge, 1996), selection (Werbel & Gilliland, 1999), and socialization (Cooper-Thomas, van Vianen, & Anderson, 2004). Staffing (i.e., the recruitment and selection of employees) provides an example of how the results of this study can be used to improve HR practices. Whereas PV fit should be addressed when people choose vocations, the other levels should be considered during the staffing process. Indeed, research suggests that job seekers base their job choice decisions on perceived PJ fit and PO fit (Chapman, Uggerslev, Carroll, Piasentin, & Jones, 2005). Prior to employment, the most common sources of information job seekers have access to are likely a job

description, information about the company's benefits, and signals about the company's culture (e.g., from the company's website or through word of mouth). Applicants likely have less information about potential supervisors and team members. Given the finding that fit with various aspects of the environment predicts work attitudes and behavioral intentions, employers should focus on considering how potential employees would fit with the environment and provide job seekers with enough information to allow them to infer their probable fit.

PJ fit should already be foundation of a selection system. Job analysis should be used to identify the critical knowledge, skills, abilities, and other characteristics (KSAOs) needed for performing a job well, and selection tools should be developed to assess these KSAOs. Job seekers are also probably provided with detailed job descriptions that include important duties and required qualifications which allows people who are over- or under-qualified to opt out of the selection process. Further steps beyond achieving good demands-abilities PJ fit could be used to attain overall PJ fit. Some personality traits may be shared by successful job incumbents. For instance, extroversion and agreeableness may be common among customer service representatives. Biodata or other measures could be used to assess these characteristics and improve PJ fit.

The results of this study suggest that further steps should be taken to ensure good fit with other aspects of the environment. With regard to PO fit, job seekers typically have access to information about an organizations values and culture through organizational websites, reputation, and word-of-mouth. It is important that this information gives job seekers an accurate picture of values and culture so that potential applicants are able to correctly infer their likely supplementary PO fit. Failing to do so

could result in job seekers falsely perceiving a poor fit and choosing not to pursue employment with an organization. Employers should also consider how well this information is conveyed to job seekers. For instance, the richness of the website is associated with how effectively information about organizational culture is conveyed (Badger et al., in press).

PG and PS fit should also be considered during staffing due to their relationships with outcomes such as contextual performance and LMX, respectively (Kristof-Brown et al., 2005). If the work in an organization is team-based, practitioners should think about what type of person would provide the best fit with the current team-members. A similar or complementary personality type could help improve team processes, and the new team member's KSAOs could be used to fill gaps in current team members' KSAOs. PS fit may be more difficult to assess and select for. At the very least, potential employee-supervisor dyads should have the opportunity to meet during the staffing process. Such meetings could allow both parties to ascertain their likely fit. Considering PE fit beyond demands-abilities PJ fit will likely improve the effectiveness of staffing processes.

HR practitioners should also think carefully about which type of fit is the most influential at the different stages of the employee life cycle. During recruitment, it may be imperative for job seekers to ascertain their potential PO fit, but during selection and socialization, PJ and PG fit may become more important. Practitioners should not, however, focus on one type of fit to the exclusion of others. The results of this study suggest that although some dimensions and levels of fit may be more influential than others, the other aspects of fit still predicted variance in outcomes. Fit is a multifaceted construct and is influenced by the combination of the various dimensions. Practitioners

should consider how they can improve fit at different levels and explore how values, personality, goals, needs, and abilities may affect fit.

The findings of this study could be used to inform interventions to improve fit. Because the dimensions of fit jointly influence fit at each level, this provides additional avenues for improving employees' fit with the work environment. Instead of focusing on the dimensions that have most commonly been used to study a given level of fit (e.g., values and PO fit), practitioners should also focus on the other dimensions that affect fit. For instance, if an organization is interested in fostering PO fit, rather than focusing solely on values, it could be successful to consider how well the organization meets employees' needs. Employee surveys could be used to assess how well employees' needs are being met, which could guide decisions about benefits and job design. For instance, this could show leaders that giving employees the option to telework and increased autonomy would improve PO needs-supplies fit. PO demands-abilities fit could be improved through organization-wide needs assessments. This would identify gaps in knowledge, skills, and abilities that could be addressed through training and development. Thus, the results of this study have the potential to improve how our knowledge of how employees fit (or don't fit) with their work environments and how fit can be improved.

Implications for Society

The results of this study can also be used to address societal issues, such as to address the perceived lack of qualified applicants for high-tech jobs. A pressing issue in this area is learning how to promote interest in science, technology, engineering, and mathematics (STEM) careers. Attracting students to STEM fields has emerged as an important issue for President Obama, who said "we've got to lift our game up when it

comes to technology and math and science. That's, hopefully, one of the most important legacies that I can have as President of the United States" (Executive Office of the President, 2011). The White House has created a campaign focused on engaging girls and others who are represented in STEM careers.

Rather than focusing efforts on educating students on one aspect of PV fit, it may be best to help students evaluate their fit for these vocations based on how well their abilities fit the demands of the vocations, how well careers in these fields would satisfy their needs, and how well their personalities match others in the profession. A potential challenge in attracting students to STEM careers is that they may have stereotypes about the career paths that are available within STEM fields. For instance, students may believe that a career in mathematics is limited to being a professor, when in reality, a degree in mathematics prepares students for a myriad of careers, such as actuary science and finance. Educating young people about the different career tracts available can allow them to form more accurate perceptions of how well they would fit with a STEM vocation. A multi-pronged approach may give students a better sense of how well they would fit with a STEM career and help them make more informed choices. Women may opt out of STEM careers due to stereotypes about women's math and science abilities and perceptions that all career paths in STEM are competitive. Giving young women more information about their aptitude and the nature of STEM careers could attract more women to these fields. Gaining a better understanding of how they dimensions affect fit with various aspects of the work environment and how these fit perceptions combine to create overall PE fit will improve our ability foster good fit between employees and their work environments and promote positive outcomes.

Limitations

This study does have some limitations. First, the data were collected from a single source, which could threaten the internal validity of the study. It is possible that the relationships observed were affected by participants' mood, affective disposition, or social desirability (Sackett & Larson, 1990). Single source bias may also result in inflated correlations among constructs (e.g., Podsakoff et al., 2012). Inflated correlations could increase the likelihood that reflective measurement would be found to be more appropriate than formative measurement.

Despite the issues associated with single source methods, self-report was the most conceptually appropriate source for many of the variables, such as organizational identification and job satisfaction (Sackett & Larson, 1990). Several steps were taken in order to reduce the risk of single-source bias and encourage conscientious responding. The items were screened for clarity, and all levels of the environment were defined in order to make it easier to respond honestly. Questions on unrelated topics were included throughout the survey in order to discourage thoughtless responding. The attention check screen also helped identify participants ($N = 31$) who were responding carelessly. However, collecting data from a single source allowed for the sampling of workers in a multitude of vocations and organizations. This is variation in the environment increases the generalizability of the findings because fit was studied across a variety of situations.

Second, the cross-sectional nature of the study is another threat to internal validity. Collecting data at a single point in time could further inflate relationships among variables. This also prevents causal inferences based on the findings. Because a cross-sectional design was used in the current study, it was not demonstrated that PE fit

precedes the outcome variables. We cannot infer how the results would hold over time, which limits the generalizability of the results (Sackett & Larson, 1990). However, a longitudinal design could have resulted in a large amount of attrition among the participants. Given that the main goal of this study was to enhance understanding of a construct, not to predict outcomes, this limitation is not as harmful to the external validity.

The third major limitation pertains to the sample that was used for the study. Recruiting participants via MTurk allowed for the sampling of employees from a variety of occupations and organizations. However, people who participate in studies on MTurk may not be representative of the general population of the United States. Participation in studies through MTurk is limited to people who have access to the Internet, and people who complete tasks on MTurk are probably not representative of the general population in terms of technological knowledge and skills. Indeed, compared to the U.S. population, white collar professions were somewhat overrepresented in the current study whereas blue collar professions were underrepresented. Therefore, caution should be used when generalizing these findings to other occupations.

Future directions

The limitations of this study suggest several avenues for future research. First, the results of this study should be replicated with different samples. Although the sample from MTurk included employees from a variety of organizations and occupations, it was skewed towards white collar professions and only included participants in the United States. Future research should seek to generalize the results to a more representative sample of occupations and to cross-national samples.

Second, the current research measured fit at a single time-point and focused on current employees. However, fit is a dynamic process that begins before employees choose vocations or join organizations and teams (Kammeyer-Mueller, 2007). It is likely to change over time as a result of factors such as socialization, training, individual development, and other personal and contextual factors. Future research should use longitudinal designs to explore how supplementary, needs-supplies, and demands-abilities fit influence overall fit across time. Measuring the dimensions and overall levels of fit at different time-points would allow researchers to test hypotheses regarding causality and to mitigate the risk of common method bias.

In the current research, fit was assessed using direct assessments of fit. This provided a strong initial test of fit as a formative construct; theoretically, direct assessments of fit will be more highly correlated than indirect assessments because they are provided by a single source. Thus, direct assessments of fit could be more likely to (perhaps incorrectly) be found to be reflective. It would be useful, however, to replicate the current research using indirect assessments of fit (i.e., independent ratings of P and E variables; Kristof-Brown et al., 2005) in order to learn whether the type of measurement affects whether fit is formative or reflective.

Finally, given the evidence that PE fit should be conceptualized as a formative construct rather than as a reflective construct, future research should focus on how employees weigh the different dimensions and levels of fit to form overall fit perceptions. It is possible that some dimensions and levels are more important than others. For instance, is demands-abilities fit the most important determinant of PJ fit or are needs-supplies and supplementary fit just as influential? Researchers should also investigate

whether fit is additive or compensatory. That is, is overall fit simply based on the additive effects of fit at the different levels of the environment? Or can good fit at one level compensate for poor fit at another? Exploring these issues would improve our knowledge of how employees experience and make sense of their fit in the workplace and inform practice.

Conclusion

Person-environment fit is a crucial aspect of how employees experience their work environments. Although the various levels of fit have typically been studied in isolation, often measured unidimensionally, there has been a recent push to conceptualize fit as a multidimensional construct. This raises questions about how fit should be conceptualized; in particular, whether fit should be treated as a reflective or formative construct.

Theoretically, PE fit matches several of the characteristics of formative constructs. This was supported by the results of the current study. Across the levels of fit and overall fit, formative models provided better fit to the data than the reflective models. The results also suggest that using formative models may slightly improve the prediction of variables. This suggests that PE fit should be treated as a formative construct.

It is hoped that the results of this dissertation will contribute to the knowledge of PE fit and inform future research and practice. The findings of this study suggest that various aspects of the person and environment influence fit and that fit should be considered holistically.

References

- Amazon Web Services. (2005-2011). Amazon Mechanical Turk [computer software].
Seattle, WA.
- Antonioni, D., & Park, H. (2001). The effects of personality similarity on peer ratings of contextual work behaviors. *Personnel Psychology, 54*, 331-360.
- Assouline, M., & Meir, E. I. (1987). Meta-analysis of the relationship between congruence and well-being measures. *Journal of Vocational Behavior, 31*, 319-332.
- Badger, J. M., & Behrend, T. S. (2013, April). *The measurement and dimensionality of perceived person-organization fit*. Paper presented at the 28th annual conference of the Society for Industrial & Organizational Psychology, Houston, TX.
- Badger, J. M., Kaminsky, S., & Behrend, T. S. (in press). Media richness and information acquisition in Internet recruitment. *Journal of Managerial Psychology*.
- Barger, P., Behrend, T. S., Sharek, D. J., & Sinar, E. F. (2011). I-O and the crowd: Frequently asked questions about using Mechanical Turk for research. *The Industrial-Organizational Psychologist, 49*, 11-17.
- Behrend, T. S., Sharek, D. J., Meade, A. W., & Wiebe, E. N. (2011). The viability of crowdsourcing for survey research. *Behavior Research Methods, 43*, 800-813.
- Bollen, K. A. (1989). *Structural Equations with Latent Variables*. New York: Wiley.
- Bollen, K. A. (2002). Latent variables in psychology and the social sciences. *Annual Review of Psychology, 53*, 605-634.
- Bollen, K. A. & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin, 110*, 305-314.

- Bollen, K. A., & Ting, K. (2000). A tetrad test for causal indicators. *Psychological Methods, 5*, 3-22.
- Boroff, K. E., & Lewin, D. (1997). Loyalty, voice, and intent to exit a union firm: A conceptual and empirical analysis. *Industrial and Labor Relations Review, 51*, 50-63.
- Bruck, C. S., Allen, T. D., & Spector, P. E. (2002). The relation between work-family conflict and job satisfaction: A finer-grained analysis. *Journal of Vocational Behavior, 60*, 336-353.
- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science, 6*, 3-5.
- Byrne, D. (1969). Attitudes and attraction. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 4, pp. 36-89). New York, NY: Academic Press.
- Byrne, D. (1971). *The attraction paradigm*. New York: Academic Press.
- Cable, D. M., & DeRue, D. S. (2002). The convergent and discriminant validity of subjective fit perceptions. *Journal of Applied Psychology, 87*, 875-884.
- Cable, D. M., & Edwards, J. R. (2004). Complementary and supplementary fit: A theoretical and empirical integration. *Journal of Applied Psychology, 89*, 822-834.
- Cable, D. M., & Judge, T. A. (1996). Person-organization fit, job choice decisions, and organizational entry. *Organizational Behavior & Human Decision Processes, 67*, 294-311.

- Cable, D. M., & Judge, T. A. (1997). Interviewers' perceptions of person-organization fit and organizational selection decisions. *Journal of Applied Psychology, 82*, 546-561.
- Cable, D. M., & Parsons, C. K. (2001). Socialization tactics and person-organization fit. *Personnel Psychology, 54*, 1-23.
- Cammann, C., Fichman, M., Jenkins, D., & Klesh, J. (1979). *The Michigan Organizational Assessment Questionnaire*. Unpublished manuscript, University of Michigan, Ann Arbor.
- Caplan, R. D. (1983). Person-environment fit: Past, present, and future. In C. L. Cooper (Ed.), *Stress Research*, (pp. 35-78). New York: Wiley.
- Chapman, D. S., Uggerslev, K. L., Carroll, S. A., Piasentin, K. A., & Jones, D. A. (2005). Applicant attraction to organizations and job choice: A meta-analytic review of the correlates of recruiting outcomes. *Journal of Applied Psychology, 90*, 928-944.
- Chatman, J. A. (1989). Improving interactional organizational research: A model of person-organization fit. *Academy of Management Review, 14*, 333-349.
- Colbert, A. E. (2004). *Understanding the effects of transformational leadership: The mediating role of leader-follower value congruence*. Unpublished doctoral dissertation, University of Iowa.
- Cooper-Thomas, H. D., van Vianen, A., & Anderson, N. (2004). Changes in person-organization fit: The impact of socialization tactics on perceived and actual P-O fit. *European Journal of Work and Organizational Psychology, 13*, 52-78.

- Crocker, L., & Algina, J. (2008). *Introduction to Classical & Modern Test Theory*. Ohio: Cengage Learning.
- Dawis, R. V., & Lofquist, L. H. (1984). *A psychological theory of work adjustment*. Minneapolis: University of Minnesota Press.
- Dobbins, G. H., & Zaccaro, S. J. (1986). The effects of group cohesion and leader behavior on subordinate satisfaction. *Group & Organization Management, 11*, 203-219.
- Dunham, R. B., & Herman, J. B. (1975). Development of a female faces scale for measuring job satisfaction. *Journal of Applied Psychology, 60*, 629-651.
- Edwards, J. R. (2001). Ten difference score myths. *Organizational Research Methods, 4*, 265-287.
- Edwards, J. R. (2008). Person-environment fit in organizations: An assessment of theoretical progress. *The Academy of Management Annals, 2*, 167-230.
- Edwards, J. R. (2011). The fallacy of formative measurement. *Organizational Research Methods, 14*, 370-388.
- Edwards, J. R., Cable, D. M., Williamson, I. O., Lambert, L. S., & Shipp, A. J. (2006). The phenomenology of fit: Linking the person and environment to the subjective experience of person-environment fit. *Journal of Applied Psychology, 91*, 802-827.
- 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., & Shipp, A. J. (2007). The relationship between person-environment fit and outcomes: An integrative theoretical framework. In C. Ostroff & T. A. Judge (Eds.), *Perspectives on Organizational Fit* (pp.209-258). San Francisco: Jossey-Bass.
- Endler, N. S., & Magnusson, D. (1976). *Interactional psychology and personality*. Washington, DC: Hemisphere.
- Executive Office of the President. (2011). *Women and girls in science, technology, engineering, and math (STEM)*. Retrieved from <http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp-women-girls-stem-november2011.pdf>
- French, J. R. P., Jr., Caplan, R. D., & Harrison, R. V. (1982). *The mechanisms of job stress and strain*. London: Wiley.
- Graves, L. M., & Powell, G. N. (1995). The effect of sex similarity on recruiters' evaluations of actual applicants: A test of the similarity-attraction paradigm. *Personnel Psychology*, 48, 85-98.
- Holland, J. L. (1985). *The vocational preference inventory: Professional manual*. Odessa, FL: Psychological Assessment Resources.
- Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities* (3rd Ed.). Lutz, FL: Psychological Assessment Resources.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure modeling: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55.

- Jansen, K. J., & Kristof-Brown, A. L. (2006). Toward a multidimensional theory of person-environment fit. *Journal of Managerial Issues, 18*, 193-212.
- Jarvis, C. B., MacKenzie, S. B., & Podsakoff, P. M. (2003). A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research, 30*, 199-218.
- Joshi, A., & Roh, H. (2009). The role of context in work team diversity research: A meta-analytic review. *Academy of Management Review, 52*, 599-627.
- Judge, T. A., & Cable, D. M. (1997). Applicant personality, organizational culture, and organizational attraction. *Personnel Psychology, 50*, 359-394.
- Kammeyer-Mueller, J. D. (2007). The dynamics of newcomer adjustment: Dispositions, context, interactions, and fit. In C. Ostroff & T. A. Judge (Eds.), *Perspectives on Organizational Fit* (pp. 99-122). San Francisco: Jossey-Bass.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: The Guilford Press.
- Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualization, measurement, and implications. *Personnel Psychology, 49*, 1-50.
- Kristof-Brown, A. L. (2000). Perceived applicant fit: Distinguishing between recruiters' perceptions of person-job and person-organization fit. *Personnel Psychology, 53*, 643-671.
- Kristof-Brown, A. L., & Guay, R. P. (2011). Person-environment fit. In S. Zedeck (Ed.), *APA Handbook of Industrial and Organizational Psychology* (pp. 3-50). Washington, DC: American Psychological Association.

- Kristof-Brown, A. L., & Jansen, K. J. (2007). Issues of person-organization fit. In C. Ostroff & T. A. Judge (Eds.), *Perspectives on Organizational Fit* (pp.123-153). San Francisco: Jossey-Bass.
- Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology*, 58, 281-342.
- Kristof-Brown, A. L., & Stevens, C. K. (2001). Goal congruence in project teams: Does the fit between members' personal mastery and performance goals matter? *Journal of Applied Psychology*, 86, 1083-1095.
- Kunin, T. (1955). The construction of a new type of attitude measure. *Personnel Psychology*, 8, 65-77.
- Law, K. S., & Wong, C. S. (1999). Multidimensional constructs in structural equation analysis: An illustration using the job perception and job satisfaction constructs. *Journal of Management*, 25, 143-160.
- Locke, E. A. (1969). What is job satisfaction? *Organizational Behavior & Human Decision Processes*, 4, 309-336.
- Lofquist, L. H., & Dawis, R. V. (1969). *Adjustment to work: A psychological view of man's problems in a work-oriented society*. New York: Appleton-Century-Crofts.
- Lovelace, K., & Rosen, B. (1996). Differences in achieving person-organization fit among diverse groups of managers. *Journal of Management*, 22, 703-722.
- MacCallum, R. C., & Browne, M. W. (1993). The use of causal indicators in covariance structure models: Some practical issues. *Psychological Bulletin*, 114, 533- 541.

- MacKenzie, S. B., Podsakoff, P. M., & Jarvis, C. B. (2005). The problem of measurement model misspecification in behavioral and organizational research and some recommended solutions. *Journal of Applied Psychology, 90*, 710-730.
- Mael, F., & Ashforth, B. E. (1992). Alumni and their alma mater: A partial test of the reformulated model of organizational identification. *Journal of Organizational Behavior, 13*, 103-123.
- McIntyre, S. E., & McIntyre, T. M. (2010). Measuring job satisfaction in Portuguese health professionals: Correlates and validation of the job descriptive index and the job in general scale. *International Journal of Selection and Assessment, 18*, 425-431.
- Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psychological Methods, 17*, 437-455.
- Meyer, J. P., Allen, N. J., & Smith, C. A. (1993). Commitment to organizations and occupations: Extension and test of a three-component conceptualization. *Journal of Applied Psychology, 78*, 538-551.
- Muchinsky, P. M., & Monahan, C. J. (1987). What is person-environment fit? Supplementary versus complementary models of fit. *Journal of Vocational Behavior, 31*, 268-277.
- Muthén, L. K., & Muthén, B. O. (1998-2007). *Mplus User's Guide* (5th ed.). Los Angeles, CA: Muthén & Muthén.
- Nunnally, J. C. (1978). *Psychometric Theory*. New York: McGraw Hill.
- Oh, I., Guay, R. P., Kim, K., Harold, C. M., Lee, J., Heo, C., & Shin, K. (2014). Fit happens globally: A meta-analytic comparison of the relationships of person-

- environment fit dimensions with work attitudes and performance across East Asia, Europe, and North America. *Personnel Psychology*, 67, 99-152.
- O'Reilly, C. A., 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.
- Paolacci, G., Chandler, J., & Ipeirotis, P. G. (2010). Running experiments on Amazon Mechanical Turk. *Judgment and Decision Making*, 5, 411-419.
- Piasentin, K. A., & Chapman, D. S. (2006). Subjective person-organization fit: Bridging the gap between conceptualization and measurement. *Journal of Vocational Behavior*, 69, 202-221.
- Piasentin, K. A., & Chapman, D. S. (2007). Perceived similarity and complementarity as predictors of subjective person-organization fit. *Journal of Occupational and Organizational Psychology*, 80, 341-354.
- Ployhart, R. E., Schneider, B., & Schmitt, N. (2006). *Staffing organizations: Contemporary practice and theory*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Podsakoff, N. P., Shen, W., & Podsakoff, P. M. (2006). The role of formative measurement models in strategic management research: Review, critique, and implications for future research. *Research Methodology in Strategy and Management*, 3, 197-252.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 63, 539-569.

- Rynes, S. L. (1991). Recruitment, job choice, and post-hire consequences: A call for new research directions. In M. D. Dunnette & L. M. Hough (eds.), *Handbook of Industrial & Organizational Psychology* (2nd ed., Vol. 2, pp. 399-444). Palo Alto, CA: Consulting Psychologists Press.
- Sackett, P. R., & Larson, J. R., Jr. (1990). Research strategies and tactics in industrial and organizational psychology. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed., Vol. 1, pp. 419-489). Palo Alto, CA: Consulting Psychologists Press.
- 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.
- Saks, A. M., & Ashforth, B. E. (2002). Is job search related to employment quality? It all depends on the fit. *Journal of Applied Psychology, 87*, 646-654.
- Scandura, T. A., & Graen, G. B. (1984). Moderating effects of initial leader-member exchange status on the effects of a leadership intervention. *Journal of Applied Psychology, 69*, 428-436.
- Schat, A. C. H., & Frone, M. R. (2011). Exposure to psychological aggression at work and job performance: The mediating role of job attitudes and personal health. *Work and Stress, 25*, 23-40.
- Schaubroeck, J., & Lam, S. S. K. (2002). How similarity to peers and supervisor influences organizational advancement in different cultures. *Academy of Management Journal, 45*, 1120-1136.

- Schneider, B. (1983). Interactional psychology and organizational behavior. *Research in Organizational Behavior*, 5, 1-31.
- Schneider, B. (1987). The people make the place. *Personnel Psychology*, 40, 437-453.
- Schneider, B. (2001). Fits about fit. *Applied Psychology: An International Review*, 50, 141-152.
- Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., and King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, 99, 3223-337.
- Seong, J. Y., & Kristof-Brown, A. L. (2012). Testing multidimensional models of person-group fit. *Journal of Managerial Psychology*, 27, 536-556.
- Spearman, C. (1904). 'General Intelligence' objectively determined and measured. *American Journal of Psychology*, 15, 201-293.
- Spector, P. E. (1985). Measurement of human service staff satisfaction: Development of the Job Satisfaction Survey. *American Journal of Community Psychology*, 13, 693-713.
- Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences*. Thousand Oaks, CA: Sage.
- Spokane, A. R. (1985). A review of research on person-environment congruence in Holland's theory of careers. *Journal of Vocational Behavior*, 26, 306-343.
- Stajkovic, A. D. (2006). Development of a core confidence-higher order construct. *Journal of Applied Psychology*, 91, 1208-1224.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. (7th ed.). Boston, MA: Pearson.

- Terborg, J. R. (1981). Interactional psychology and research on human behavior in organizations. *Academy of Management Review*, 6, 569-576.
- Tom, V. R. (1971). The role of personality and organizational images in the recruiting process. *Organizational Behavior and Human Performance*, 6, 573-592.
- Turban, D. B., & Dougherty, T. W. (1994). Role of protégé personality in receipt of mentoring and career success. *Academy of Management Journal*, 37, 688-702.
- U. S. Bureau of Labor Statistics. (2012). May 2011 National Occupational Employment and Wage Estimates, United States. Retrieved from http://www.bls.gov/oes/current/oes_nat.htm
- Van Dyne, L., & LePine, J. A. (1998). Helping and voice extra-role behaviors: Evidence of construct and predictive validity. *Academy of Management Journal*, 41, 108-119.
- Van Vianen, A. E. M., Shen, C., & Chuang, A. (2011). Person-organization and person-supervisor fits: Employee commitments in a Chinese context. *Journal of Organizational Behavior*, 32, 906-926.
- Vancouver, J. B., & Schmitt, N. W. (1991). An exploratory examination of person-organization fit: Organizational goal congruence. *Personnel Psychology*, 44, 333-352.
- Vogel, R. M., & Feldman, D. C. (2009). Integrating the levels of person-environment fit: The roles of vocational fit and group fit. *Journal of Vocational Behavior*, 75, 68-81.
- Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology*, 82, 247-252.

Werbel, J. D., & Gilliland, S. W. (1999). Person-environment fit in the selection process.

In G. R. Ferris (Ed.), *Research in human resources management* (Vol. 17, pp. 209-243). US: Elsevier Science/JAI Press.

Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors.

Journal of Management, 17, 601-617.

Witt, L. A. (1998). Enhancing organizational goal congruence: A solution to organizational politics. *Journal of Applied Psychology*, 83, 666-674.

Appendix A

Mechanical Turk Advertisement

You are invited to participate in a research study investigating employees' opinions of their work environments. This study involves responding to a survey that will take approximately 45 minutes to complete.

In order to participate, you will need to be employed (part-time or full-time).

To participate in this study, you will need to do the following:

1. Follow the link to the survey.
2. Complete the survey.
3. Prior to submitting the survey, you will be asked to create a password. When you submit the HIT, please enter this password in the space provided in order to ensure you receive credit.

The compensation rate for your participation is \$0.50. If you have any questions regarding the survey or this study, please email us at jbadger@gwu.edu.

Thank you for participating in this study.

Appendix B

Measures

Unless otherwise noted, items are unchanged from the original scale.

Person-Environment Fit

Overall PE Fit (adapted from Piasentin & Chapman's, 2007 overall PO fit scale)⁵

1. I fit in well with other people in my overall work environment.
2. My overall work environment is a good fit for me in terms of what I look for in my professional life.
3. I think other people would say that I fit into my overall work environment.

Overall PV Fit (adapted from Piasentin & Chapman's, 2007 overall PO fit scale)

1. I fit in well with other people who work in my occupation.
2. This occupation is a good fit for me in terms of what I look for in an occupation.
3. I think other people would say that I fit into this occupation.

Supplementary PV Fit (adapted from Badger & Behrend's, 2013, April, supplementary PO fit scale)

1. My values "match" or fit my occupation.
2. My personality matches my occupation's culture.
3. The things that I hope to achieve in life are very similar to what members of my profession hope to achieve.
4. My occupation's goals provide a good fit with my own goals.

Needs-Supplies PV Fit (adapted from Cable & DeRue's, 2002 needs-supplies PJ fit scale)

1. My occupation gives me just about everything that I want from an occupation.
2. My occupation fulfills what I need from a profession.⁶
3. The attributes that I look for in an occupation are fulfilled very well by my present occupation.
4. There is a good fit between what my occupation offers me and what I am looking for from an occupation.

Demands-Abilities PV Fit (adapted from Cable & DeRue's, 2002 demands-abilities PJ fit scale)

1. The match is good between the demands of my occupation and my abilities.
2. My abilities are a good fit with the requirements of my occupation.
3. My abilities provide a good match with the demands that my occupation places on me.
4. I am able to meet the demands of my occupation.⁷

⁵ Unless otherwise noted, response scale: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither disagree nor agree*, 4 = *agree*, 5 = *strongly agree*

⁶ New item

⁷ New item

Overall PO Fit (Piasentin & Chapman, 2007)⁸

1. I fit in well with other people who work for my organization.
2. This organization is a good fit for me in terms of what I look for in an employer.
3. I think other people would say that I fit into this organization.

Supplementary PO Fit (Badger & Behrend, 2013, April)

1. My values “match” or fit this organization.
2. My personality matches my organization’s culture.
3. The things that I hope to achieve in life are very similar to what my organization hopes to achieve.
4. My organization’s goals provide a good fit with my own goals.

Needs-Supplies PO Fit (Badger & Behrend, 2013, April, adapted from Cable & DeRue’s, 2002 needs-supplies PJ fit scale)

5. The organization that I currently work for gives me just about everything that I want from an organization.
6. My organization fulfills what I need from an employer.⁹
7. The attributes that I look for in an organization are fulfilled very well by my present organization.
8. There is a good fit between what my organization offers me and what I am looking for from an organization.

Demands-Abilities PO Fit (adapted from Cable & DeRue’s, 2002 demands-abilities PJ fit scale)

1. The match is good between the demands of my organization and my abilities.
2. My abilities are a good fit with the requirements of my organization.
3. My abilities provide a good match with the demands that my organization places on me.
4. I am able to meet the demands of my organization.¹⁰

Overall PG Fit (adapted from Piasentin & Chapman’s, 2007 overall PO fit scale)

1. I fit in well with other people who work in my team.
2. This team is a good fit for me in terms of what I look for in a team.
3. I think other people would say that I fit into this team.

Supplementary PG Fit (adapted from Badger & Behrend’s, 2013, April, supplementary PO fit scale)

1. My values “match” or fit my team members’ values.
2. My personality matches my team’s culture.
3. The things that I hope to achieve in life are very similar to my team members hope to achieve.
4. My team’s goals provide a good fit with my own goals.

⁸ One reverse-coded item was removed

⁹ New item

¹⁰ New item

Needs-Supplies PG Fit (adapted from Cable & DeRue's, 2002 needs-supplies PO fit scale)

1. The team that I currently work on gives me just about everything that I want from a team.
2. My team fulfills what I need from a workgroup.¹¹
3. The attributes that I look for in a team are fulfilled very well by my present team.
4. There is a good fit between what my team offers me and what I am looking for from a team.

Demands-Abilities PG Fit (adapted from Cable & DeRue's, 2002 demands-abilities PJ fit scale)

1. The match is good between the demands of my team and my abilities.
2. My abilities are a good fit with the requirements of my team.
3. My abilities provide a good match with the demands that my team places on me.
4. I am able to meet the demands of my team.¹²

Overall PJ Fit (adapted from Piasentin & Chapman's, 2007 overall PO fit scale)

1. I fit in well with other people who have the same job as me.
2. This job is a good fit for me in terms of what I look for in a job.
3. I think other people would say that I am a good fit for this job.

Supplementary PJ Fit (adapted from Badger & Behrend's, 2013, April, supplementary PO fit scale)

1. My values "match" or fit with other people who have my same job.
2. My personality matches the personalities of other people in my job.
3. The things that I hope to achieve in life are very similar to other people who have my job hope to achieve.
4. The goals of other employees who have my job provide a good fit with my own goals.

Needs-Supplies PJ Fit (adapted from Cable & DeRue, 2002)

1. There is a good fit between what my job offers me and what I am looking for in a job.
2. The attributes that I look for in a job are fulfilled very well by my present job.
3. The job that I currently hold gives me just about everything that I want from a job.
4. My job fulfills what I need from a job.¹³

Demands-Abilities PJ Fit (adapted from Cable & DeRue, 2002)

5. The match is good between the demands of my job and my abilities.¹⁴
6. My abilities are a good fit with the requirements of my job.¹⁵

¹¹ New item

¹² New item

¹³ New item

¹⁴ Adapted slightly

7. My abilities provide a good match with the demands that my job places on me.¹⁶
8. I am able to meet the demands of my job.¹⁷

Overall PS Fit (adapted from Piasentin & Chapman's, 2007 overall PO fit scale)

1. I fit well with my supervisor.
2. My supervisor is a good fit for me in terms of what I look for in a boss.
3. I think other people would say that I am a good fit with my supervisor.

Supplementary PS Fit (adapted from Badger & Behrend's, 2013, April, supplementary PO fit scale)

1. My values "match" or fit my supervisor's values.
2. My personality matches my supervisor's personality.
3. The things that I hope to achieve in life are very similar to what my supervisor hopes to achieve.
4. My supervisor's goals provide a good fit with my own goals.

Needs-Supplies PS Fit (adapted from Cable & DeRue's, 2002 need-supplies fit scale)

1. The supervisor that I currently work for gives me just about everything that I want from a supervisor.
2. My supervisor fulfills what I need from a supervisor.¹⁸
3. The attributes that I look for in a supervisor are fulfilled very well by my present supervisor.
4. There is a good fit between what my supervisor offers me and what I am looking for from a supervisor.

Demands-Abilities PS Fit (adapted from Cable & DeRue's, 2002 demands-abilities PJ scale)

1. The match is good between the demands of my supervisor and my abilities.
2. My abilities are a good fit with the requirements of my supervisor.
3. My abilities provide a good match with the demands that my supervisor places on me.
4. I am able to meet the demands of my supervisor.¹⁹

Outcomes

Overall Satisfaction (Dunham & Herman, 1975; Kunin, 1955)

Consider all aspects of your work environment. Select the face that best describes your feelings about your work environment in general.

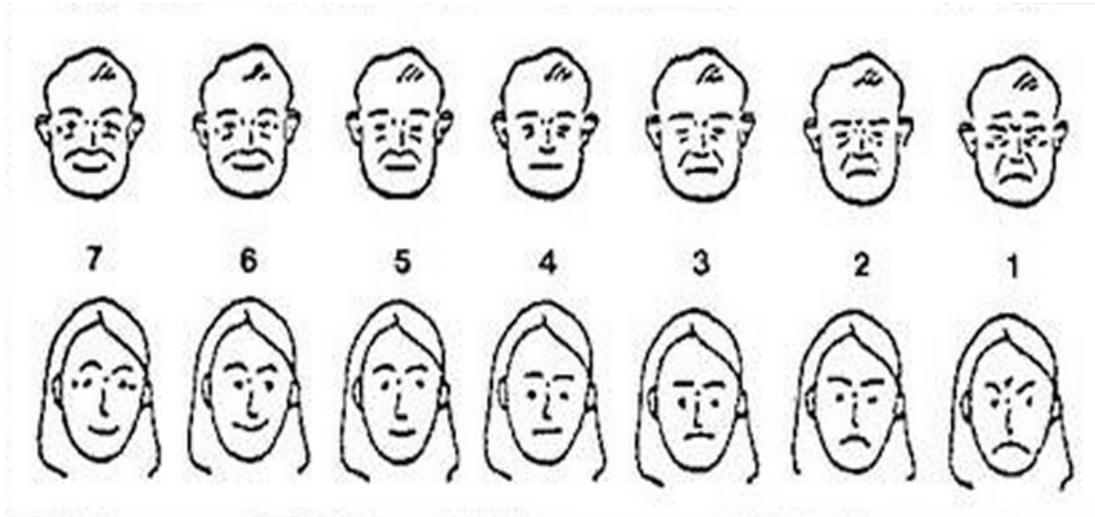
¹⁵ Adapted slightly

¹⁶ New item

¹⁷ New item

¹⁸ New item

¹⁹ New item



Turnover Intentions (Boroff & Lewin, 1997)

1. I am seriously considering quitting this organization for an alternative employer.
2. During this year, I will probably look for a job outside this organization.

Affective Occupational Commitment (Meyer et al., 1993)

1. This vocation is important to my self-image.
2. I regret having entered this vocation. (r)
3. I am proud to be in this vocation.
4. I dislike being a member of this vocation. (r)
5. I do not identify with my vocation. (r)
6. I am enthusiastic about my vocation.

Intentions to Leave the Vocation (Meyer et al., 1993)

1. How frequently have you thought about getting out of your profession?²⁰
2. How likely is it that you will explore other career opportunities?²¹
3. How likely is it that you will leave your profession within the next year?¹⁸

Organizational Identification (Mael & Ashforth, 1992)

1. When someone criticizes my organization, it feels like a personal insult.
2. I am very interested in what others think about my organization.
3. When I talk about my organization, I usually say “we” rather than “they.”
4. This organization’s successes are my successes.
5. When someone praises this organization, it feels like a personal compliment.
6. If a story in the media criticized this organization, I would feel embarrassed.

OCB-Organization (Williams & Anderson, 1991)

²⁰ Response scale: 1 = *never or almost never*, 2 = *seldom*, 3 = *sometimes*, 4 = *often*, 5 = *always or almost always*

²¹ Response scale: 1 = *not at all likely*, 2 = *slightly likely*, 3 = *moderately likely*, 4 = *very likely*, 5 = *extremely likely*

1. My attendance at work is above the norm.
2. I give advance notice when I am unable to come to work.
3. I take undeserved work breaks. (r)
4. I spend a great deal of time on personal phone conversations. (r)
5. I complain about insignificant things at work. (r)
6. I adhere to informal rules devised to maintain order.

Group Cohesion (Dobbins & Zaccaro, 1986)

1. If given the chance, I would choose to leave my group and join another. (r)
2. The members of my group get along well together.
3. The members of my group will readily defend each other from criticism by outsiders.
4. I feel that I am really a part of this group.
5. I look forward to being with the other members of my group each day.
6. I find that I generally do not get along with the other members of my group. (r)
7. I enjoy belonging to this group because I am friends with many group members.
8. The group which I belong to is a close one.

OCB-Group (Williams & Anderson, 1991)

1. I help others in my team when they have been absent.
2. I help others in my group who have heavy workloads.
3. I assist others in my group with their work (when not asked).
4. I take time to listen to teammates' problems and worries.
5. I go out of my way to help new teammates.
6. I take a personal interest in other members of my group.

Job Satisfaction (Cammann et al., 1979)

1. All in all I am satisfied with my job.
2. In general, I don't like my job. (r)
3. In general, I like working here.

Job Performance (Adapted from Van Dyne & LePine, 1998)²²

My supervisor would say that...

1. ...I fulfill the responsibilities specified in my job description.
2. ...I perform the tasks that are expected as part of the job.
3. ...I meet performance expectations.
4. ...I adequately complete responsibilities.

Leader-Member Exchange (Scandura & Graen, 1984)

1. I usually know how satisfied my supervisor is with what I do.
2. My supervisor understands my problems and needs.
3. My supervisor recognizes my potential.
4. My supervisor would be likely to use his/her power to help me solve problems in my work.

²² Original scale asked supervisors to rate subordinates

5. I can count on my supervisor to “bail me out” at his/her expense when I really need it.
6. I have enough confidence in my immediate supervisor that I would defend and justify his/her decisions if he/she were not present to do so.
7. I have an effective working relationship with my supervisor.

OCB-Supervisor (Williams & Anderson, 1991)

1. I help my supervisor when he/she has been absent.
2. I help my supervisor when he/she has a heavy workload.
3. I assist my supervisor with his/her work (when not asked).
4. I take time to listen my supervisor’s problems and worries.
5. I go out of my way to help my supervisor.
6. I take a personal interest in my supervisor.

Demographics

What was your age on your last birthday? (text box)

What is your gender? (male, female)

Are you of Hispanic, Latino, or Spanish origin?

- No, not of Hispanic, Latino, or Spanish origin
- Yes, Mexican, Mexican American, Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, another Hispanic, Latino, or Spanish origin

What is your race?

- White
- Black, African American
- American Indian or Alaska Native
- Asian
- Other

What is your country of residence? (text box)

Is English your native language? (yes, no); If no, what is your native language? (text box)

What is your occupation? (Bureau of Labor Statistics occupational groups)

- Management
- Business and Financial Operations
- Computer and Mathematical
- Architecture and Engineering
- Life, Physical and Social Sciences
- Community and Social Service

- Legal
- Education, Training, and Library
- Arts, Design, Entertainment, Sports, and Media
- Healthcare Practitioner and Technical
- Healthcare Support
- Protective Service
- Food Preparation and Serving
- Building and Grounds Cleaning and Maintenance
- Personal Care and Service
- Sales
- Office and Administrative Support
- Farming, Fishing, and Forestry
- Construction and Extraction
- Installation, Maintenance, and Repair
- Production
- Transportation and Material Moving

What industry do you work in? (text box)

How long have you been working at your current organization, in years? (text box)

How long have you been in your current job, in years? (text box)

What is the highest degree or level of school you have completed?

- Some high school
- High school diploma or the equivalent (for example: GED)
- Some college
- Associate degree (for example: AA, AS)
- Bachelor's degree (for example: BA, AB, BS)
- Master's degree (for example: MA, MS, MSW, MBA)
- Professional degree (for example: MD, DDS, LLB, JD)
- Doctorate degree (for example: PhD, EdD)

Appendix C: Item-Level Descriptive Statistics

Item	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
<i>Overall Person-Environment Fit</i>	3.75	.89	-.84	.63
Overall PE 1	3.80	.95	-1.02	.83
Overall PE 2	3.60	1.11	-.78	-.19
Overall PE 3	3.85	.94	-.96	.88
<i>Person-Vocation Fit</i>				
Overall PV Fit	3.83	.84	-.80	.65
Overall PV 1	3.84	.89	-1.13	1.35
Overall PV 2	3.75	1.04	-.88	.15
Overall PV 3	3.91	.91	-.84	.40
Supplementary PV Fit	3.65	.84	-.65	.13
Supp PV 1	3.80	.96	-.88	.55
Supp PV 2	3.78	.98	-.88	.39
Supp PV 3	3.46	1.08	-.58	-.42
Supp PV 4	3.56	1.07	-.70	-.24
Needs-Supplies PV Fit	3.39	1.06	-.49	-.59
NS PV 1	3.27	1.17	-.33	-.87
NS PV 2	3.36	1.17	-.43	-.82
NS PV 3	3.39	1.15	-.46	-.76
NS PV 4	3.54	1.11	-.68	-.39
Demands-Abilities PV Fit	4.04	.72	-.90	1.15
DA PV 1	3.87	.96	-1.02	.80
DA PV 2	4.01	.89	-1.23	1.76
DA PV 3	3.99	.88	-1.01	1.04
DA PV 4	4.29	.77	-1.31	2.43
<i>Person-Organization Fit</i>				
Overall PO Fit	3.73	.84	-.85	.74
Overall PO 1	3.75	.93	-1.03	.88
Overall PO 2	3.64	1.09	-.77	-.11
Overall PO 3	3.79	-.93	-.93	.70
Supplementary PO Fit	3.50	.95	-.56	-.21
Supp PO 1	3.61	1.03	-.69	-.06
Supp PO 2	3.59	1.05	-.66	-.19
Supp PO 3	3.41	1.13	-.47	-.64
Supp PO 4	3.41	1.12	-.47	-.67
Needs-Supplies PO Fit	3.41	1.05	-.52	-.47
NS PO 1	3.25	1.20	-.26	-.97
NS PO 2	3.51	1.11	-.58	-.48
NS PO 3	3.43	1.13	-.48	-.62
NS PO 4	3.46	1.13	-.54	-.55
Demands-Abilities PO Fit	4.00	.76	-.85	.97
DA PO 1	3.85	.93	-1.07	1.13
DA PO 2	3.95	.93	-1.10	1.28
DA PO 3	3.95	.91	-1.02	1.07

Item	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
DA PO 4	4.26	.80	-1.31	2.39
<i>Person-Group Fit</i>				
Overall PG Fit	3.79	.85	-.99	1.16
Overall PG 1	3.82	.95	-1.17	1.25
Overall PG 2	3.70	.98	-.83	.37
Overall PG 3	3.84	.91	-1.09	1.33
Supplementary PG Fit	3.51	.92	-.58	.08
Supp PG 1	3.62	1.01	-.77	.08
Supp PG 2	3.60	1.04	-.72	.04
Supp PG 3	3.35	1.11	-.43	-.65
Supp PG 4	3.47	1.10	-.66	-.26
Needs-Supplies PG Fit	3.54	.99	-.69	.01
NS PG 1	3.45	1.10	-.53	-.45
NS PG 2	3.57	1.05	-.72	-.55
NS PG 3	3.53	1.08	-.70	-.19
NS PG 4	3.59	1.04	-.72	-.11
Demands-Abilities PG Fit	3.98	.75	-.96	1.49
DA PG 1	3.83	.96	-.99	.81
DA PG 2	3.94	.86	-1.11	1.48
DA PG 3	3.92	.90	-1.13	1.50
DA PG 4	4.22	.78	-1.27	2.53
<i>Person-Job Fit</i>				
Overall PJ Fit	3.78	.82	-.90	.87
Overall PJ 1	3.81	.89	-1.09	1.29
Overall PJ 2	3.61	1.10	-.84	-.06
Overall PJ 3	3.92	.87	-1.02	1.37
Supplementary PJ Fit	3.46	.91	-.60	.05
Supp PJ 1	3.61	1.00	-.70	.06
Supp PJ 2	3.46	1.00	-.63	-.11
Supp PJ 3	3.37	1.11	-.57	-.50
Supp PJ 4	3.38	1.07	-.53	-.44
Needs-Supplies PJ Fit	3.43	1.05	-.54	-.50
NS PJ 1	3.50	1.10	-.68	-.35
NS PJ 2	3.41	1.15	-.54	-.63
NS PJ 3	3.29	1.21	-.37	-.93
NS PJ 4	3.51	1.11	-.64	-.43
Demands-Abilities PJ Fit	4.04	.72	-.89	1.53
DA PJ 1	3.92	.89	-1.09	1.35
DA PJ 2	3.99	.89	-1.08	1.35
DA PJ 3	4.00	.86	-1.05	1.40
DA PJ 4	4.27	.78	-1.34	2.77
<i>Person-Supervisor Fit</i>				
Overall PS Fit	3.66	.96	-.82	.37
Overall PS 1	3.70	.99	-.96	.60
Overall PS 2	3.60	1.12	-.76	-.18

Item	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Overall PS 3	3.69	.99	-.81	.37
Supplementary PS Fit	3.39	1.02	-.51	-.37
Supp PS 1	3.49	1.13	-.65	-.34
Supp PS 2	3.41	1.20	-.57	-.65
Supp PS 3	3.30	1.17	-.38	-.79
Supp PS 4	3.38	1.13	-.49	-.61
Needs-Supplies PS Fit	3.55	1.08	-.79	-.09
NS PS 1	3.51	1.17	-.67	-.45
NS PS 2 ^a	3.57	1.13	-.80	-.16
NS PS 3	3.54	1.15	-.72	-.32
NS PS 4	3.58	1.12	-.81	-.12
Demands-Abilities PS Fit	4.01	.78	-1.13	2.31
DA PS 1	3.91	.93	-1.13	1.54
DA PS 2	3.94	.92	-1.20	1.76
DA PS 3	4.00	.86	-1.24	2.28
DA PS 4	4.18	.83	-1.34	2.62
<i>Overall Satisfaction</i>	3.63	1.05	-.76	.09
<i>Turnover Intentions</i>	2.71	1.37	.24	-1.23
Turnover Intent 1	2.64	1.41	.33	-1.24
Turnover Intent 2	2.78	1.44	.16	-1.37
<i>Affective Occupational Commitment</i>	3.59	.92	-.59	-.05
Occ Commitment 1	3.25	1.15	-.42	-.76
Occ Commitment 2 (r)	3.75	1.14	-.74	-.30
Occ Commitment 3	3.63	1.04	-.70	.01
Occ Commitment 4 (r)	3.81	1.13	-.79	-.25
Occ Commitment 5 (r)	3.60	1.22	-.55	-.79
Occ Commitment 6	3.51	1.10	-.55	-.45
<i>Intentions to Leave the Vocation</i>	2.53	1.17	.60	-.63
Vocation Turnover 1	2.68	1.19	.29	-.73
Vocation Turnover 2	2.79	1.35	.28	-1.13
Vocation Turnover 3	2.11	1.36	.95	-.41
<i>Organizational Identification</i>	3.18	.95	-.39	-.27
Org Identification 1	2.86	1.20	.06	-1.10
Org Identification 2	3.23	1.16	-.43	-.77
Org Identification 3	3.30	1.24	-.43	-.91
Org Identification 4	3.26	1.17	-.41	-.76
Org Identification 5	3.23	1.18	-.32	-.88
Org Identification 6	3.17	1.22	-.32	-.97
<i>OCB-Organization</i>	4.12	.68	-.69	-.09
OCB-O 1	4.09	.92	-.97	.54
OCB-O 2	4.29	.79	-1.27	1.96
OCB-O 3 (r)	3.97	1.06	-.93	.06
OCB-O 4 (r)	4.27	1.00	-1.47	1.49
OCB-O 5 (r)	3.95	1.06	-.83	-.23
OCB-O 6 ^a	3.82	.88	-1.08	1.59

Item	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
<i>Group Cohesion</i>	3.51	.87	-.61	.18
Cohesion 1 (r)	3.40	1.20	-.41	-.80
Cohesion 2	3.84	.93	-1.10	1.30
Cohesion 3	3.54	1.03	-.70	-.01
Cohesion 4	3.60	1.09	-.75	-.09
Cohesion 5	3.40	1.11	-.58	-.38
Cohesion 6 (r) ^a	3.70	1.18	-.68	-.53
Cohesion 7	3.44	1.09	-.63	-.24
Cohesion 8	3.35	1.11	-.49	-.59
<i>OCB-Group</i>	3.93	.67	-.61	.89
OCB-G 1	4.03	.80	-1.16	2.44
OCB-G 2	4.05	.82	-1.10	1.87
OCB-G 3	3.83	.96	-.89	.52
OCB-G 4	3.97	.85	-.95	1.15
OCB-G 5	3.91	.88	-.83	.76
OCB-G 6	3.76	.98	-.77	.21
<i>Job Satisfaction</i>	3.56	1.10	-.69	-.36
Job Sat 1	3.53	1.20	-.70	-.51
Job Sat 2 (r)	3.55	1.31	-.54	-.93
Job Sat 3	3.61	1.13	-.87	.01
<i>Job Performance</i>	4.36	.63	-.73	.53
Job Performance 1	4.34	.69	-1.17	2.60
Job Performance 2 ^a	4.36	.67	-1.03	1.78
Job Performance 3	4.37	.65	-.77	.57
Job Performance 4	4.36	.69	-1.09	1.97
<i>Leader-Member Exchange</i>	3.68	.83	-.69	.44
LMX 1	3.91	.93	-1.13	1.54
LMX 2	3.57	1.07	-.71	-.11
LMX 3	3.73	1.09	-.74	-.20
LMX 4	3.73	1.02	-.83	.26
LMX 5	3.29	1.14	-.32	-.72
LMX 6	3.64	1.07	-.79	.08
LMX 7	3.89	.93	-1.02	1.07
<i>OCB-Supervisor</i>	3.68	.88	-.67	.38
OCB-S 1	3.81	1.00	-.86	.29
OCB-S 2	3.88	.99	-.91	.45
OCB-S 3	3.64	1.06	-.64	-.27
OCB-S 4	3.64	1.07	-.68	-.18
OCB-S 5	3.65	1.06	-.60	-.26
OCB-S 6	3.43	1.15	-.52	-.61

Note. ^aItem was removed from the final scale.