

Person-Environment Fit: A Critical Review of the Previous Studies and a Proposal for Future Research

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Abstract

This article proposes that in the future, P-E fit studies should use objective (as opposed to subjective) measures of the environment, such as the group size, in order to avoid numerous methodological problems. Several hypotheses were formulated in this article. Group size was hypothesised to moderate the following relationships: apprehension, sensitivity, social boldness and extroversion with co-worker satisfaction, sensitivity with pay satisfaction, liveliness with performance, intelligence (g) with pay satisfaction, and, intelligence (g), with overall job satisfaction. This article also proposes that the current supplementary fit model can be extended in the future, to measure superior-subordinate fit also. It was hypothesised that higher superior-subordinate congruence would lead to higher satisfaction and performance of the subordinate.

Keywords: Objective person-environment fit, Supplementary fit, Personality, Intelligence, Group size, Satisfaction

1. Introduction

The nature and importance of P-E Fit was summarised by Edwards (1996:292) as follows:

“In essence, P-E fit embodies the premise that attitudes, behaviour and other individual level outcomes result not from the person or environment separately, but rather from the relationship between the two (Lewin, 1951; Murray, 1938; Pervin, 1989)”. P-E fit is also of practical importance to managers. The environmental demands and person abilities fit underlies most models of personnel selection, in which the generally accepted paradigm is to analyse job demands, define abilities required to meet these demands and hire individuals with the requisite abilities (Schneider, 1987).

Muchinsky & Monahan (1987) identified two different forms of fit: Complementary fit and supplementary fit. The essential difference between the two is in the definition of the environment. The environment in the supplementary model is described according to the people who inhabit it. In the complementary model, the environment is defined apart from its inhabitants, for example according to the work demands and requirements. Kristof (1996) expanded Muchinsky & Monahan's (1987) definition of complementary fit to include S-V fit in addition to the Demand-Abilities fit (D-A fit). Kristof, Zimmerman and Johnson (2005) have given one of the most up-to-date and comprehensive review of the previous studies on P-E fit. So have Piasentin and Chapman (2006) when they conducted a meta-analytic review of 46 studies examining various conceptualisation of person-organisation fit and Verquer, Beehr and Wagner (2003) when they conducted a meta-analytic review of 21 studies of involving the relationship between person-organisation fit, job satisfaction, organisational commitment and turnover intent. Thus, P-E fit still remains a current area of research interest (Bardi, Guerra and Ramdeny, 2009; Lyons, and O'Brien, 2006; Edwards, Cable, Williamson, Lambert, and Shipp, 2006; Kristof et al., 2005; Caldwell, Herold, and Fedor, 2004). The concept of P-E fit has been described as, “so pervasive as to be one of, if not the dominant conceptual forces in the field” (Schneider, 2001: 142).

2. The Issue of Commensurability of Scales

Commensurate measurement is the measurement of both the person and organisation with the same content dimensions and graded on the same scales. Examples of studies employing commensurate measures of the person and the environment are Edwards (1996) and French, Rogers & Cobb (1974). In addition to these studies, Caplan (1987) stressed the importance of measuring the person and the environment along commensurate dimensions.

On the other hand, Kristof (1996:10) took a less fanatical view of the need for commensurability of measures. According to her:

“...it is difficult to achieve perfectly commensurate measures. Keeping this limitation in mind, the position taken in this paper is that for supplementary fit, all attempts should be made to maximize the measures of commensurability. This ensures that high levels of fit imply similarity between an individual and an organization on specific characteristics, such as honesty values or social welfare goals. For complementary fit, however, the level of commensurability should depend on the breadth of the construct under investigation.”

Therefore, commensurate measures of the person and the environment should be used in the supplementary fit analysis but not necessary in the complementary fit analyses involving group size.

“It is necessary, however, that researchers using non-commensurate measures precisely specify the constructs and dimensions they are investigating as well as why the individual and organizational constructs are conceptually linked.” (Kristof, 1996:10)

Future research should adopt the above recommendations. Group size (the measure of the work environment) and personalities (the measure of the person) are two incommensurate measures that can be used in the analysis of complementary fit.

According to Kristof (1996), indirect measures are more reliable than direct measures of fit because in the former, the respondent is asked to rate the individual separately from the environment without being asked to assess the degree of fit.

“Whether interactions, difference scores or polynomial regression equations are used, indirect measures of fit involve an explicit comparison between separately rated individual and organizational characteristics. This type of management is said to reflect actual fit because it allows a verifiable assessment of similarity or complementarity, without asking for implicit judgments of fit by those involved in the situation being analysed.” (Kristof, 1996:11)

However, the above statement is only true to a certain extent. Indirect measures are superior to direct measures of fit in so far as they require less dependence on the worker to assess the degree of fit. However, respondents are required to make some judgements of fit (but to a lesser extent compared to the direct measures of fit). Indirect measures used in many studies involved workers assessing their values on one scale and the availability of environmental supplies on another commensurate scale. Taking the example of Edwards (1996), environmental supplies and personal values (S-V fit) are measured by asking respondents how much of each task is involved in their job and how much of each task they prefer. Environmental demands and personal abilities (D-A fit) are measured by asking about the level of skill required for each task and then by asking the respondent to assess his or her own skill regarding that task. All responses are on commensurate scales ranging from 1 to 10. In this way, respondents are obviously being asked to make implicit judgements of fit. Livingstone et al (1997) also conducted a study that employed a similar measure of both D-A fit and S-V fit in their research. However, other studies have used a more independent and indirect way of measuring fit. Such studies have used separate incommensurate measures of the person and the work environment and used the statistical tests of hierarchical multiple regression. In fact, a few researchers have already done this. Kristof (1996) mentioned this in her article.

This method (hereinafter called “the moderator approach”) does not insist on commensurate measures. The person and the environment can be measured separately (as they should be), using entirely different instruments. The nature and ranges of the two scales can be entirely different. This does not require the respondent to assess fit either directly or indirectly. In fact, it makes it virtually impossible for the respondent to even attempt to assess fit. In this respect, the moderator approach is superior in that the consistency bias inherent in the direct measurement of fit approach can be totally eliminated. However, it can be argued that the biggest advantage with this method is that objective measures of the environment can be used. Objective measures are measures that do not require any conceptual transformation on the part of the respondent. Hence, it is entirely independent of the person. An example of an objective measure is the group size (i.e. number of members in the work group). Group size can be used as an objective measure of the work environment.

The main advantage of using the moderator approach is that objective measures of the environment can be used. Unfortunately, many studies that have used the moderator approach have failed to capitalise on this advantage. For instance Barrick & Mount (1993) used a subjective measure of the work environment (i.e. autonomy). Another study by Roberts & Foti (1998) initially tried to use objective measures of work structure using company records but had to abandon the idea because the records were incomplete. Instead, work structure was measured subjectively or perceptually. Work structure was treated as comprising job autonomy and supervisory structure. Job autonomy was measured with the autonomy subscale from the job diagnostic survey (JDS;

Hackman & Oldham, 1975). This dimension was measured using three items rated on seven-point scales. An example of the question is, "The job gives me considerable opportunity for independence and freedom in how I do the work" with answers ranging from "very accurate" to very inaccurate". In Lee, Ashford & Bobko (1990), the environmental measure was perceived control. They found that people with high levels of Type A behaviour who also have high perceived control perform better and have greater job satisfaction than those low in perceived control. In a longitudinal study, Blau (1987) also used a subjective measure of the work environment – the perceived job scope and found that perceived job scope significantly moderated the relationship between the Protestant work ethic and job involvement.

Our review of the literature has not revealed a single study that has investigated the moderating effect of group size (an objective measure of the work environment) on the relationship of personality with job satisfaction and performance. Future research should aim to fill this gap in the literature.

3. The Importance of Independence of Measures (of P & E) in Complementary Fit

Although Caplan (1987) was of the view that characteristics of the person and of the environment must be assessed along commensurate dimensions, he also stressed the need for these scales not to contaminate each other. Spokane (1987) also said that "most authors agree that commensurate systems for measuring people and environments are desirable, but that measurements of people and environments must be more independent than presently is the case". One way of achieving independence of measures is by using an objective measure of the work environment. Payne & Pugh (1983) pointed out the distinction between objective and subjective measures of the environment. Objective measurement was defined as the direct assessment without any conceptual transformation. An example of objective measure in an organisational context is the number of subordinates under one superior. Such measures are independent of the person being assessed. A person's personality or values can taint perceptions. Different individuals can perceive the same environment differently. For instance Hershberger, Lichtenstein & Knox (1994: 24) stated; "Managers within an organisation differ in their perceptions of autonomy, task structure, recognition and organisational support." Similarly, individuals in the same work group differ in their perceptions of the work environment". An individual's work values can have a significant impact on their interpretation of environmental stimuli (Ravlin & Meglino, 1987).

Another advantage of using objective measures is that often it enables the researcher to define the work environment in terms of absolute quantities as opposed to relative quantities. Caplan (1987) himself admitted that where response scales deal with relative quantities (e.g. "1= none", "5 = a lot"), "a lot" may refer to "a lot compared to what others have" or "a lot compared to my ability to handle the work". Therefore a contamination between the P and E variables will result. Caplan (1987) recommended a move away from the relative response if the independent contributions of P and E are to be assessed, perhaps by using absolute quantities e.g. number of hours spent working or number of jobs to do.

Kulik, Oldham & Hackman (1987) also pointed out the same problem. Self-report questionnaires that attempt to measure an individual's perception of workload would usually require the respondent to indicate whether the amount of responsibility is "moderate" or "quite low". A "moderate" amount of responsibility for others, in an absolute sense, may be perceived as quite high by a person with little ability to assume such responsibility. The same amount of objective responsibility may be perceived as quite low by a person with greater ability. (Kulik, Oldham & Hackman, 1987: 284). Thus there is a real danger that the judgements of person and environment characteristics may contaminate one another.

4. Group Size as an Objective measure of the Work Environment

There are many measures of the environment. Letts, Law, Rigby, Cooper, Stewart & Strong (1994) listed as many as 41 different environmental assessments. However, despite the apparent variety of methods to measure the environment, these methods usually involve perceptual or subjective measures. These include, the College & University Environment Scale (Witt & Handal, 1984), the Job Diagnostic Survey (JDS) (Hackman & Oldham; 1975), the KEYS questionnaire (Amabile, Conti, Coon, Lazenby & Herron; 1996) and the Work Environment Scale (WES), (Moos, 1986).

The group size, defined as the number of people in that group, can be an objective measure of the work environment. A possible research question is whether group size can have any direct or moderating effect on satisfaction and/or performance. Generally, groups are most cohesive and perform best when the group size is small. Research has shown that larger groups have less co-ordination and respondents from them reported lower satisfaction with their co-workers (Frank & Anderson, 1971). According to Shaw (1976: 171),

"Members of large groups are less attracted to the group, experience greater tension and are less satisfied than

are members of small groups. The lack of time for each member to participate ... and the increased difficulty of maintaining interpersonal relationships in larger groups obviously contribute to negative feelings about the group.”

5. Personality traits and Intelligence scores as independent measures of the person

Trait theorists, such as Cattell, see personality as comprising permanent traits and are nomothetic (establishing factors in terms of which everyone can be compared). Trait theories, having some semblance of stability, objectivity and comparability, are arguably superior to cognitive theories, in so far as they lend themselves more readily to measurement, comparison and subsequently, the development of predictive models. Standardised questionnaires that measure some stable comparable trait of the person such as the 16 Personality Factor Test (Cattell et al, 1992) can be used to measure personality traits. The P-E fit model would predict the extent to which a person with a certain personality trait, is suited to work in either large or small groups.

Although there may be little relationship between intelligence test scores and success at simple jobs (Otis, 1920; Blum & Candee, 1941), there may be a substantial negative relationship between intelligence on the one hand and job satisfaction and the probability of remaining in such jobs on the other. For example, in a study of one hundred and thirty three low-level clerical workers, Bills (1923) found that all of the clerks with IQs greater than 110 left within a thirty-month period. This can be contrasted to clerks with IQs of less than 80, only 27% of whom left within the same period. In a more recent study, Ganzach (1998) found that, as a general rule, intelligence tends to be associated with job satisfaction simply because more intelligent people get better jobs. However, when the job involved is not challenging or interesting enough, then the dissatisfaction that stems from this lack of interest can be stronger for more intelligent people. Future research should investigate whether, in simple jobs, the negative relationship between intelligence and job satisfaction can be further aggravated (or moderated) by certain work environments (for instance, by having to work in large groups).

6. Overlap between constructs of job satisfaction and P-E Fit as defined in previous research

According to Porter (1962), the larger the discrepancy between the amount of such characteristics that is present and the amount that is desired, the lower the reported job satisfaction. However it is important to note that his definition of job satisfaction is in fact no different from how P-E fit (or more precisely S-V fit) has been operationalised by other researchers. Since there seems to be little difference in the way the two supposedly different constructs (job satisfaction and P-E fit) have been operationalised, they will obviously be significantly correlated. The fact that researchers are looking at stress or strain rather than job satisfaction as an outcome does not excuse them, particularly if job satisfaction is one of the components of such stress or strain. Examples of studies guilty of this error are Livingstone et al (1997), Edwards (1996), Edwards & Harrison (1993), and Kaldenberg & Becker (1992). That researchers have operationalised P-E fit in this manner is arguably one of the most serious methodological problems of research relating to it. Having independent measures of the person and environment as mentioned above will solve this problem.

7. Superior-Subordinate Congruence as a Possible Extension of the Supplementary Fit Model

Previous research on supplementary fit only examined how the individual worker fits in with the other workers in the team or the entire organisation and how this affects satisfaction (or more precisely, satisfaction with the co-worker). As already mentioned, the personality of each worker is compared with that of the rest of the group members. However, the extent to which the superior fits with the subordinate worker and how this affects satisfaction with the superior as well as the subordinate's performance is to a large extent ignored in the supplementary fit literature. There appears to be no previous cited study that has compared the personality traits of the subordinate (as defined by Cattell) with that of his/her superior. However there have been studies that have looked at the extent to which an individual's values match those of his/her superior. For example, Hatfield & Huseman (1982) found that the perceptual congruence about communication between supervisor and subordinate was found to be significantly related to satisfaction with work, supervision and the job in general. Barret (1995) obtained two agreement scores by correlating subordinates' perception of the requirements of the job with the requirements of the superiors and the organisation. The agreement score (which was a measure of fit) was found to correlate significantly with performance ratings. Schein (1985) also argued that congruence between a superior and subordinate would have a positive association with the performance of the subordinate. Tsui & O'Reilly III (1989) also found in a field study of 272 superior-subordinate dyads that increasing demographic dissimilarity was associated with lower effectiveness as perceived by superiors and less personal attraction on the part of superiors for subordinates. The demographic characteristics used were age, gender, race, education, company tenure and job tenure. Wexley et al (1980) found that both actual and perceptual congruence were valid predictors of satisfaction and performance. In the above cited studies, the relationship between

superior-subordinate congruence and performance was found to be positive. On the other hand, Meglino, Ravlin & Adkins (1989) found a negative association between superior subordinate congruence and the rated quality and quantity of the performance of the subordinate. The results of Meglino et al (1989) clearly contradict findings in other studies. Further research ought to be conducted to resolve this apparent controversy. Ashkanasy & O'Connor (1997) found that when leaders and subordinates shared achievement and obedience values, the leaders were more inclined to trust their subordinates to develop their jobs to suit their personal interests.

It is important to note that the studies cited above have compared workers in relation to their superiors on criteria other than personality. As already mentioned, there appear to be no cited studies that have looked at the match or fit between the individual's personality and that of his/her superior. Future studies should examine 'personality differences' as a proxy for or as an alternative to 'value differences'. Furthermore, the supplementary fit model, previously only used to examine co-worker fit, should be used to analyse superior-subordinate fit also. There is no reason why the theory of people liking each other because they are similar (Newcomb, 1960) should not apply to subordinates and superiors. The possible outcomes of good superior-subordinate fit would be high satisfaction with supervision and also the high performance of the subordinate. It also seems that interactions between superiors and the subordinates must be frequent (perhaps on a daily basis) for the degree of fit to have an impact on performance.

8. Development of hypotheses

The development of the hypotheses must be preceded by the research objectives (Malhotra, 1996). There are two main objectives to this research:

1. To determine whether the relationship between the person (intelligence and selected personality traits) and job satisfaction and between the person (one selected personality trait) and performance will vary with different work environments.
2. To determine whether the similarity of a worker's personality with his/her superior, improves the worker's satisfaction and performance.

Objective 1 should be addressed using the moderator approach in the complementary fit model whereas objective 2 should be addressed using the supplementary fit model. When dealing with objective 1, the personality variables that should be examined are Cattell's secondary factor of extroversion and the primary factors of Factor A (warmth), H (social boldness), F (liveliness), E (dominance), O (apprehension) and I (sensitivity). The group size should be the objective measure of the work environment. Basically, the research question that should be addressed is whether workers having certain levels of personality traits are more satisfied or perform better if they work in small or large groups.

In dealing with Objective 2, the personalities of both the superior and subordinate are measured using Cattell's five secondary factors i.e. extroversion, anxiety, tough-mindedness, independence and self-control.

We begin by explaining Cattell's personality factors involved in this study. Extroversion, one of Cattell's five secondary-order factors, appears most relevant when investigating group processes. Extroversion is a broad temperament trait with appreciable hereditary contribution. It is related to the following primary factors: A (warmth), H (social boldness) and F (liveliness). All these primary factors should be included in the research along with two other factors: Factor O (apprehension) and Factor I (sensitivity). Factors O and I should be included in the study because the characteristics of these two factors are relevant to intra-group interaction.

Although the names given to these factors are fairly appropriate, their true nature is best understood from the more detailed descriptions given in the manual (Cattell et al, 1992).

9. Factor O (Apprehension) and Satisfaction with the Co-worker

Although this factor is not strongly loaded on the secondary factor of extroversion, it is nevertheless included because the characteristics involved in Factor O have great relevance to the issue of group size. Factor O is given the name apprehension because people whose traits are high on it are generally anxious, worriers and easily touched. They have a strong sense of obligation and are prone to guilt. However, more importantly, from the point of its relevance to groups, O (+) people are sensitive to people's approval and disapproval. They tend to be loners, often brooding, moody and emotionally sensitive. Questionnaire items in the 16PF measuring Factor O include questions relating to the demands of social intercourse. For example, one of the questions asks respondents whether they feel inadequate to meet the rough daily demands of life. Another question asks respondents whether they prefer books and quiet interests to people and noise. Such questions obviously relate to the persons liking for social company or isolation. Other questions are less direct in that they ask the respondents whether they feel overfatigue from exciting situations, are easily downhearted and remorseful and feel that other

people are not as moral as they should be. High Factor O is present in certain religious groups, artists, farmers and editorial workers. Low Factor O is present among professional athletes, nurses and managers.

O(+) people, by their nature, are not suited to group work. The effect of this factor in group interaction is best summarised by the following quote:

“In GROUP DYNAMICS, high O persons do not feel accepted or free to participate, are considered shy, ineffective speakers and hinderers, but remain religiously task-oriented in their remarks, select few peers as friends and try to get high standards of group conformity to rules (Cattell & Stice, 1953).” (Cattell et al, 1992: 102).

Consequently, it is reasonable to propose a theory that O (+) persons prefer to work in small groups whereas O(-) persons prefer to work in large groups. Accordingly our hypothesis is:

H1: The association between apprehension scores and co-worker satisfaction scores will be moderated by group size such that the association will be negative for large groups and positive for small groups.

For purposes of brevity, the theory relating to the hypotheses will not be mentioned in this short paper. However the underlying principles are somewhat similar. The remaining hypotheses are as follows:

H2: The association between sensitivity scores and co-worker satisfaction scores will be moderated by group size such that the association will be negative for large groups and positive for small groups.

H3: The association between social boldness scores and co-worker satisfaction scores will be moderated by group size such that the association will be negative for large groups and positive for small groups.

H4: The association between extroversion scores and co-worker satisfaction scores will be moderated by group size such that the association will be positive for large groups and negative for small groups.

H5: The association between sensitivity scores and pay satisfaction scores will be moderated by group size such that the association will be negative for large groups and positive for small groups.

H6: Liveliness scores will be negatively associated with performance scores. This relationship will be moderated by group size such that they will be stronger for respondents in large groups than for respondents in small groups.

H7: The association between “g” scores and pay satisfaction scores will be moderated by group size such that the association will be negative for large groups and positive for small groups.

H8: The association between “g” scores and overall job satisfaction scores will be moderated by group size such that the association will be negative for large groups and positive for small groups.

10. Superior-subordinate congruence

In relation to Objective 2, only one hypothesis is proposed. As mentioned earlier, we have extended the supplementary fit model to measure superior-subordinate fit also. The theory is that the more similar the respondents' personalities are to their supervisors, the more the respondents are satisfied with the supervision received. The hypothesis accordingly is:

H9: Superior-subordinate congruence is positively associated with supervision satisfaction scores and performance scores.

Personality is operationalised as a combination of all five of Cattell's secondary factors i.e. extroversion, anxiety, independence, toughness and self-control. Congruence is operationalised as the absolute difference between the personality scores of the respondent and the average of the rest of the group for all the five factors.

11. Conclusion

This research highlights the methodological problems that exist in most P-E fit research - the measures of the person and the environment both come from the same source i.e. the respondent, and are not independent of one another. One way of ensuring that the person variables are truly independent of the environment variables is to use objective measures of the work environment. Future research on complimentary fit should therefore use objective measures of the environment such as the group size. On the other hand, supplementary fit could be assessed as the fit between the personality and intelligence of the person/respondent compared with that of his/her co-workers and/or superior. Similarly, the measures of the co-workers and/or superior must come from a source other than the person/respondent.

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