Integrating P–E Fit & Demand Induced Strain Compensation Models of Work Stress

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Work stress has dire consequences both for the employee and the organization. "Person-environment" (P-E) fit models capture the specific effects of the transaction between the individual and the environment. On the contrary, match models of stress are universal in nature, and describe the relationship between various job characteristics. "Demand induced strain compensation" (DISC) is one such match model, which describes a triple match between job demands, job resources and strain. This paper, reviews both P-E fit and DISC models, and then integrates both the models to develop a comprehensive work stress model.

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Introduction

Stress is a frequently used term, especially at work. The individual consequences of work stress are extensive and range from psychological distress (Revicki & Gershon, 1996) to cancer (Dettenborn et al., as cited in Carston & Gardner, 2009: 26). On the organizational front, it leads to loss of productivity (Cooper, Liukkonen & Cartwright as cited in Cooper, Dewe & Michael, 2001: 1), wellbeing and increased health costs (Cooper et al., 2001). Consequently, in order to eliminate it or to mitigate its negative effects, organizational literature has extensively studied stress.

Person-environment fit models are widely discussed in stress literature. These models capture the specific effects of the fit between the characteristics of the individual and those of the environment (Edwards, 2008). Similarly, various match models, which describe the relationship between job characteristics (job demands, resources and strain), are also prevalent in stress literature (Daniel & de Jonge, 2008). These models are universal in nature as they describe the relationships between various job char-

acteristics and do not emphasize on the individual effects. This paper reviews both person-environment and match models and then develops an integrated model of person-environment and one of the match models viz. demand induced strain compensation.

Work Stress

Contemporary approach to stress, which is transactional in nature, endeavors to encapsulate the dynamic transactions between all variables of the stress process (Vollrath, 2001).The transactional view of the stress process focuses on the appraisal and coping mechanisms (Cooper et al., 2001). Primary appraisal involves the individual perceiving a stressful encounter as either challenging or as a threat to his/her well-being. Threat appraisals arise when the person evaluates the demands of the situation to exceed the available coping resources. Subsequently, secondary appraisal includes evaluation of the resources available for dealing with the identified situation and selection of a coping response. Coping involves the attempts made by the individual to manage stress.

Accordingly, stress is defined as the process where an individual constantly transacts with the environment, makes meaning out of it, and attempts to cope with the issues that arise. Strain arises when the individuals perceive that the demands of an encounter significantly exceed the available resources. This threatens wellbeing and necessitates a change in functioning of the individual to manage the encounter (Cooper et al., 2001).

Strain occurs when the demands from the environment are perceived to not match the resources available at the individual's disposal.

Several theoretical models have been proposed for investigating work related stress. Significant among these models are the stress cycle, the person-environment (P-E) fit, job demands-control, general systems, and cybernetics (see Cooper et al., 2001 for a review). According to Edwards (2008), P-E fit is common to most models of stress either implicitly or explicitly. In interaction models, the emphasis is on the interaction between the characteristics of the individual and those of the environment. The two sets of characteristics are considered as distinct entities for statistical analysis. In transactional models, person and environment entities combine to form a new relational meaning (Vollrath, 2001). Central to most transaction models are the evaluative processes through the individual perceives environmental demands as significant and exceeding the available resources. Strain occurs when the demands from the environment are perceived to not match the resources available at the individual's disposal. This mismatch is the central tenet of the P-E fit approach.

Person-Environment Fit Model

P-E fit stress model is the most widely discussed one in stress literature (Edwards, 2008). There are several variations of the P-E fit model, which can be categorized along two dichotomies.

One dichotomy is between supplementary versus complementary fit. Value congruence models, such as the theory of vocational choice proposed by Holland, which deal with the congruence between job characteristics and person's values, cognitive style and skills, belong to supplementary fit category. In supplementary fit, the individual has the same characteristics as the environment (most individuals in the environment). Some studies (Furnham & Schaeffer, 1984; Furnham & Walsh, 1991) found that incongruence as per Holland's model resulted in work stress. In another interesting study done on bus drivers, physical illness was reported higher for those drivers whose preferences were incongruent with work environment (Searle & Bright, 2003). The authors conclude that people might actually prefer to work in high strain jobs like bus driving. They experience less strain as their preferences match with the work environment. While a few researchers have discussed the supplementary fit, the complementary fit received wide attention from stress scholars.

The complementary fit models can broadly be classified into two types based on the nature of the fit; Demands-Abilities fit (D-A) and Supplies-Values fit (S-V) (Edwards, 1996). As per D-A model, strain arises as a result of a misfit between the demands from the environment and the abilities of the individual to cope with these demands. According to S-V fit models, a misfit between individual needs or values and the environment reinforcements (supplies) leads to strain.

There is also a debate on which model, D-A fit or S-V, best explains the strain process. Some researchers contend that D-A fit has an effect through the S-V fit (Harrison, 1978 as cited in Edwards & Cooper, 1990). According to this line of thinking, the consequences of not meeting the environment demands lead to strain. The individual recognizes that his/her needs will not be met by the organization, if he/she falls short of meeting the demands of the organization. Thus, a gap in D-A will result in a gap between individual values and organizational supplies. Therefore, S-V fit is considered to have a direct effect on stress while D-A fit is expected to have a mediating role through S-V fit. However, Edwards (1996) found that both S-V fit and the D-A fit are linked to strain, though S-V fit is primarily linked to satisfaction, while D-A fit is primarily linked to tension.

The transactional nature of stress is best captured by the notion of subjective fit rather than by objective fit.

Misfit between the characteristics of both the person and the environment can either be subjective or objective (Caplan, 1987). While the objective misfit can also result in stress, most stress models emphasize on the subjective misfit. As per transactional models, it is the evaluation or appraisal of the individual that the environment demands exceed his/her abilities, which is considered central to the stress process, rather than the actual misfit (Vollrath, 2001). The transactional

nature of stress is best captured by the notion of subjective fit rather than by objective fit. Further, it is difficult to assess the environment and person characteristics objectively. These constructs regarding the environment and person are mostly defined in a subjective manner. However, capturing both the subjective and objective misfits enables a better understanding of the role of the characteristics of the individual in stress.

Isomorphism

Each of the types of fits described above has a quantitative and a qualitative aspect to it. If a job requires that the person deals with aggressive customers, then it places emotional demands on the person. In this case, it is the ability of the person to remain emotionally calm, which is emotional strength, which can mitigate the effect of stress. Having superior cognitive abilities in this case may not help mitigate the effects of stress. This is an example of a qualitative fit, where emotional abilities can help in coping with emotional demands of the job. The other type of fit is in quantity. In the same example, if the emotional demands placed by the job exceed the emotional strength of the person then stress will result. This is a fit between the quantity of demands and quantity of abilities. Clearly, both the quality and quantity dimensions of a fit are related.

Isomorphism essentially deals with the qualitative fit, and is common to most models of P-E fit (Quick, Nelson, Quick & Orman, 2001). According to isomorphism, various dimensions of D-A and S-V exist. Therefore, only corresponding dimensions of abilities and demands can be compared (Edwards, 1996; Edwards & Cooper, 1990). Similarly, a dimension of supplies should be compared with the respective dimension of values. The idea is that global measure of demands cannot be compared with global measure of abilities (Edwards, 1996). Fit has to be calculated by matching the respective dimensions of D-A or S-V.

The various dimensions of this isomorphism principle are not clearly identified. Researchers have used different taxonomies for classifying these dimensions. Daniels and de Jonge (2010) classify both demands and abilities (resources) into cognitive, physical and emotional dimensions. Cognitive demands (information processing demands) of the job can only be met by the cognitive ability (information processing ability) of the person . Quick et al. (2001) suggest another way of classification. They propose a three-dimensional fit between the person and the environment, along the dimensions of control, uncertainty and interpersonal. Persons with internal locus of control are more likely to be strained when the job decision latitude is low. Similarly, persons with low tolerance for uncertainty are likely to face higher strain when faced with uncertain environments. Likewise, counter dependent individuals who deny social support are likely to face high strain in environments providing high social support.

Some researchers argue that a gap in one dimension of D-A fit can have an effect on the gap in another dimension of

D-A fit (Caplan, 1987), e.g. if a person has greater time resources in meeting his demands, he can use the excess time for pursuing a hobby. Thus, excess supplies on time can also result in excess supplies on another dimension. Similarly, a gap in one dimension of S-V can have an effect on another dimension of S-V fit.

Importance & Uncertainty

Strain is determined not only by the level of misfit, but also by the level of importance, a person attributes to the misfit. According to McGrath (1976 as cited in Edwards & Harrison, 1993) persons attribute different importance to different demands. The more a person perceives a demand as important the more is the chance that the gap between demands and abilities will lead to strain. Accordingly, the gap on different dimensions of demands and abilities can result in different levels of strain in accordance with the importance the concerned individual attributes to that demand. Similarly, different values also differ on the importance attributed by the persons. Therefore, strain is likely to be higher when an important need of the individual is not met by the environment supplies than when a need of lesser importance is unmet.

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Uncertainty is another construct central to the stress process. Uncertainty in achieving important outcomes can lead to strain. This is particularly relevant to D-A fit model. When there is a narrow gap between D-A, the person is faced with higher uncertainty than when the gap is wider. When this uncertainty is not taken into account a wider gap between D-A should result in higher strain. However, the uncertainty in achieving the outcomes in the case of a narrow gap, can actually result in higher strain than when the gap is wider (McGrath, 1976 as cited in Edwards, 2008).

In brief, P-E fit has been discussed along the dichotomies of supplementary and complementary (D-A fit and S-V fit) fit, and subjective and objective fit. The principle of isomorphism describes that demands, abilities, supplies and values have dimensions and that comparison is possible on isomorphic dimensions. Uncertainty regarding the fit and the importance a person attributes the misfit can have a role in the stress process.

However, though there has been a lot theoretical discussion over P-E fit, the model has not received much empirical support (Cooper et al., 2001), a major reason being the lack of clarity in defining the constructs of person and environment characteristics. Abilities and values (needs) of the individual are not clearly specified. Similarly, environment supplies and demands have also not been clearly defined. Researchers have framed different constructs for use in their empirical studies. As already discussed, it is essential to clearly define different dimensions of demands, abilities, supplies

and values and develop scales for each of them.

Match Models

P-E fit model talks about specific relation between individual and the environment. Other match models, like job demands-control model (DC), job demands-control-support model (DCS) are universal models as they leave out the role of individual. These models focus on the match between job demands and available resources. As per the DC model, job control as measured by job decision latitude, should be commensurate with the job demands (Karasek, 1979). When control available is incommensurate with the job demands, it results in strain. In the DCS model in addition to control, support is also treated as a strain buffer (Johnson & Hall, 1988), that is, social support, apart from job control, moderates the effects of job demands on strain. As per the DCS model, both job control and social support have a moderating effect on the demands-strain relationship. Both the models essentially emphasize the interactive effects between job demands and available resources on strain. Thus, they do not give importance to the role of the individual.

Demand induced strain compensation (DISC) proposed by de Jonge and Dormann (2006) is another match model. According to this model, individuals, when faced with job demands, activate functional, corresponding job resources. Correspondence deals with the match between the type of demand and resources. This is similar to the isomorphism principle discussed earlier. The resources are further classified into internal resources of the person and the external resources provided by the environment. The model proposes that individuals first use the corresponding internal resources to cope with the demand. When dealing with insolent customers individuals first use their emotional intelligence to cope with the resulting stress. If the demand exceeds these emotional resources, then the person is likely to use emotional support from the colleagues to cope with the emotional demands. If social support does not exist, the person is likely to use other non-matching resources like job decision latitude. According to this model, corresponding internal resources are most useful in dealing with external demands. Matching external resources are less powerful in dealing with demands. Non-matching resources are even less powerful.

DISC model also proposes a triple match principle (Daniels & de Jonge, 2010), which describes a match between job demands, job resources and strain. They propose that not only is there a match between demands vs. resources, and between resources vs. strain, but there is also a match between demands vs. strain. The notion of a match between job demands and available resources (double match of common kind) existed earlier in various models. The match between job resources, job demands, and strains (double match of extended kind) is a relatively newer principle. Daniels and de Jonge (2010) classify demands, resources and strains into physical, cognitive and emotional dimensions. Physi-

cal strain (Physical injury or pain) occurs when the physical demands placed by the job (lifting weights), exceed the physical resources (lifting aids) available. Similarly, when the emotion demands (dealing with insolent customers), exceed emotional resources (emotional support from colleagues), emotional strain (emotional exhaustion) occurs.

Specific interventions, rather than generic ones gave good stress buffering effects.

There has been enough support for this extended match, which also involves the dependent variables. Frese (1999) also argued for a match between support and strain. He argued that social support would serve as a buffer only in the case of social type of strain. Fenlason and Beehr (1994 as cited in Cooper et al., 2001: 147) found that specific interventions, rather than generic ones gave good stress buffering effects. In the case of social support, those interventions, which were specifically targeted towards strain, were more effective than overall emotional and instrumental support provided. Specific verbal support provided greater reductions in strain relative to global support measures. This implies a match between the type of support and the type of strain.

Summarily, DISC model, which is a match model, emphasizes on a triple match between job demands, resources and strain. It also focuses on the principle of isomorphism.

Integrating P-E fit & DISC Models

P-E fit plays a role in each of the matches mentioned in the triple match principle. The match models can be integrated with P-E fit models in order to develop a theoretical framework for gaining a comprehensive understanding of work stress. Tansey, Mizelle, Ferrin, Tschopp & Frain (2004) made such an attempt to integrate DCS model, which is a match model, with P-E fit model. They argue that incorporating DCS framework into P-E fit model can facilitate a better understanding of variation in individual's stress reaction to their work environment.

Likewise, there is potential to integrate P-E fit and DISC models. The environment can be divided on two aspects. Work environment not only places demands on the person but also provides the requisite resources to deal with these demands. The principles of isomorphism, subjective P-E misfit, objective P-E misfit, importance and uncertainty as discussed previously, can all be used to explain the central role of P-E fit in the match principle.

P-E Fit & the Double Match

The P-E fit, as it is generally understood, has a moderating effect on the demands-strain relationship. The D-A fit specifically deals with this relationship. According to objective misfit, only when the job demands exceed the abilities of the individual strain is experienced. However, as per the transactional model of stress, subjective misfit plays a greater

role relative to objective misfit. Strain results when perceived demands exceed perceived abilities, e.g. people high on hardiness have a good sense of control and are therefore less likely to perceive demands to exceed their abilities. Westman (1990) found hardiness and perceived ability to be positively correlated, implying that hardy individuals assess their abilities as being higher than less hardy ones. Consequently, hardy individuals experience less stress.

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The effect of P-E fit on the match between job demands and strain is through the primary appraisal process. During primary appraisal, a person perceives the job demands to exceed his/her abilities. Faced with same demands, some people can appraise the demands as a challenge, while others can appraise them as threatening. Rhodewalt and Zone (as cited in Cooper et al., 2001: 128) conclude from their findings that hardy and non-hardy individuals engage in different appraisal processes. Hardy persons are likely to perceive change as a challenge rather than a threat to wellbeing. This theoretical conclusion was validated empirically by Carston and Gardner (2009), who found a positive correlation between hardiness and challenge appraisal, but a negative correlation between hardiness and threat appraisal.

Further, for the misfit to result in strain, the person should attribute importance to it. Several researchers have contended that the effect of D-A misfit on strain is mediated by S-V fit(Edwards & Cooper, 1990). According to them, strain results only when a person perceives that not being able to meet the demands will result in withholding of certain important environmental supplies (promotion, performance pay). If the person perceives the inability to meet demands as not resulting in important outcomes and therefore unimportant then strain might not result.

Job demands do not themselves result in strain. These demands result in strain only when the person is sensitive to these demands and perceives them as threatening. While this is true in general, Quick et al. (2001) propose that certain individuals are more prone to strain due to role ambiguity and role conflict. They posit that intolerance for ambiguity, which is the tendency to perceive ambiguous situations as threatening, leads to higher strain. They further hypothesize that high intolerance for ambiguity when combined with high environmental uncertainty result in high strain. Similarly, low intolerance for ambiguity when combined with low environmental uncertainty will result in low strain.

As discussed previously, the uncertainty principle conveys that when the uncertainty of achieving the outcomes is higher, likelihood of strain is higher. Therefore, some studies have found strain to be higher when the mismatch between demands and abilities was low (implying higher uncertainty) rather than when the mismatch was higher (lower uncertainty).

Consequently, for persons with high intolerance for uncertainty, even a perception of small mismatch between demands and abilities can lead to strain.

Vollrath (2001) argues that personality of the individual plays a major role not only in selection, but also in shaping of stressful situations. He contends that dispositions like Type A behavior pattern, hostility, low agreeableness will increase the frequency of stressful situations. Further, dispositions like hardiness, sense of coherence and optimism will increase chances of challenge appraisals, while dispositions like neuroticism will increase chances of threat appraisals. Schallberger (1995, as cited in Vollrath, 2001) in a study on flight attendants found neuroticism to be related to negative descriptions of work environment. On the contrary, he found a positive bias for conscientiousness.

P-E Fit & the Match

According to DISC model, when is faced with demands, a person first tries to use corresponding inner resources to cope with them. The person relies on external resources only when the inner resources are depleted or are insufficient to deal with these external demands. According to Daniels and de Jonge (2010), inner resources are most powerful in dealing with demands. Therefore, the match between job demands and available resources is mediated by abilities of the person.

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According to Quick et al. (2001) a fit between type of support provided and the personality of the individual plays a major role in mitigating strain. In addition, the fit should be on isomorphic dimensions. Thus, on the dimension of self-reliance, if a person is counter dependent, that he/she denies social support, then providing him/her with social support does not serve any purpose in reducing strain. On the contrary, it might lead to increased strain. Similarly, on the dimension of locus of control, high job decision latitude, instead of mitigating strain, might actually result in strain, in the case of a person with external locus of control. Therefore, a person's ability to use external resources in order to cope with job demands depends on the isomorphic fit between the person and the type of resources.

The effect of P-E fit on the match between job resources and strain can be explained through secondary appraisal process and coping process. During secondary appraisal, a person evaluates the available options to cope with stress. People high on dispositions like hardiness, optimism and extraversion will tend to make a positive evaluation of available support. Extraverts are not only high on perceived social support, but they also seek more social support (Vollrath, 2001). Similarly, hardy individuals seek social support and are socially attractive (Eschleman et al., 2010). In addition, according to Wallace, Bisconti and Bergerman (2001), hardy individuals uti-

lize the available social support better. Thus, P-E fit has an effect on the match between job demands and job resources.

P-E Fit & the Match between Job Resources & Strain

Coping mechanisms can explain the effect of P-E fit on the match between job resources and strain. A person can make use of the available external resources either to deal with the conditions triggering stress or to manage the emotions arising out of the stressful situations. Accordingly, coping is classified into problem-centered and emotions centered (Vollrath, 2001). Several researchers have found empirical relationships between coping strategies and personality, and have called for redefining coping as a process dependent on personality (Vollrath, 2001). Therefore, individuals can make use of the available external resources in both ways, e.g. an employee with high job decision latitude can schedule his work in order to take breaks and avoid the problem or to schedule it in a different way, which solves the problem.

Gender differences have been noted in using coping ways. It is suggested that while women are more likely to use emotion-focused coping strategies, men are more likely to use problem-focused coping strategies (Benishek & Lopez, 1997). However, Tamres, Janicki, and Helgeson (2002) noted a difference in relative terms and not in absolute terms. Using meta-analysis, they found that though women use most coping strategies, men use problem focused coping in a greater proportion to emotion-focused strategies. Accordingly, to emphasize the gender differences, they coined the term relative coping, defined as the ratio of problem-focused coping efforts to all coping efforts.

Several studies (e.g. Maddi & Hightower, 1999; Soderstrom, Dolbierm, Leiferman & Steinhardt, 2000) including a very recent meta-analysis (Eschleman et al., 2010) have supported the finding that hardiness is positively related to adaptive coping and negatively related to avoidance coping. Further, Carston and Gardner (2009) found evidence for hardiness effect on linking threat appraisals to avoidance coping. The authors suggest that lack of hardiness may lead to work stress by leading to threat appraisals and avoidance coping.

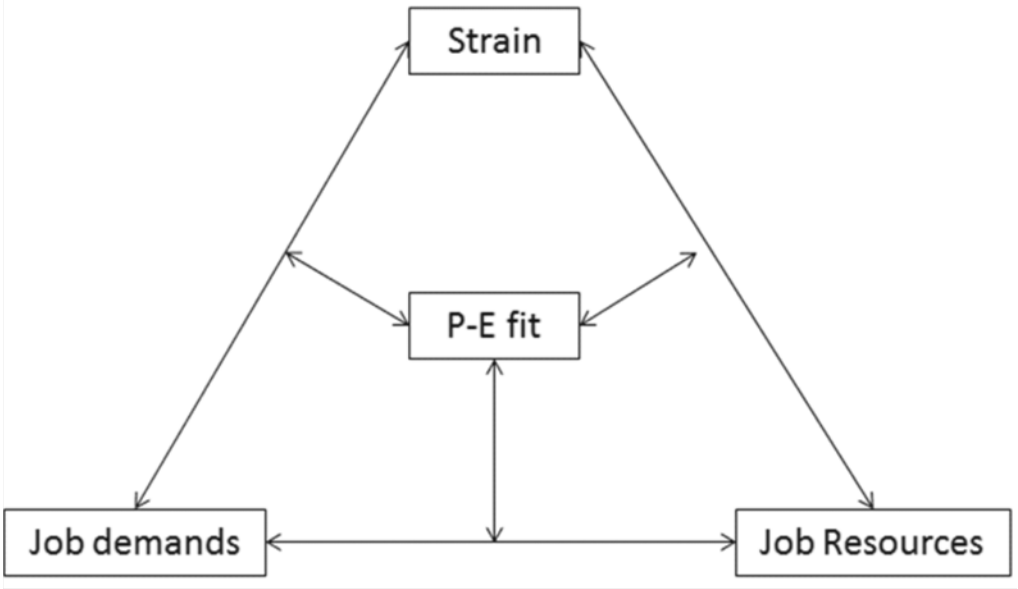
Hardiness is positively related to adaptive coping and negatively related to avoidance coping.

Vollrath (2001) notes that dispositions like optimism, conscientiousness and extraversion will lead to problem centered coping, while dispositions such as neuroticism will lead to emotion centered coping. Conscientious people resolve to active ways of problem solving and have high persistence, while extraverts have high energy which lead to problem centered coping. Neurotic people tend to avoid negative emotions resulting out of stress and therefore, resolve to emotion centered coping.

Therefore, the P-E fit comes into play in the match between job resources and strain, through the type of coping

mechanism used. In summary, P-E fit has effects on the triple match between job demands, available resources and strain. Therefore, both the models, P-E fit model and DISC model can be integrated together. The following figure pictorially depicts the integrated model.

Fig 1 P-E Fit Influence on all the Three Match Relationships between Job Demands, Job Resources and Strain



Implications for Future Research

Integrating P-E fit model with DISC model offers a comprehensive understanding of work stress. However, lot of progress needs to be made, with regard to empirically testing the integrated model. Clearly defining various dimensions of the demands, abilities, supplies and values is one of the major issues in P-E fit research and match research. Taxonomy of all these constructs needs to be developed in order to achieve consistency in research. Currently, researchers have used several different dimensions for each of these constructs. Similarly, measurement issues also need to be taken care. Scales for each of these dimensions need to be developed.

From the transactional perspective, stress is a dynamic process that evolves over time, especially secondary appraisal and coping mechanisms. Therefore, the effect of time on each of these match relationships and the effect of P-E fit over these match relationships need to be considered. An important step in that direction has been made by Yu (2009), who has developed a model which considers the effect of affect on P-E fit over time. As per the earlier models P-E fit is only considered to result in affect. The model proposed by Yu also considers affect as

antecedent of P-E fit. The model describes how affective consistency and hedonism influence P-E fit over time. Such models need to be integrated into the current model, which integrates P-E fit, and DISC model. In addition, the role of appraisal and coping mechanisms as per the transactional model of stress also need to be explored in relation to P-E fit and match models.

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