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## The Cognitive Appraisal of Stress: The influence of Organizational Climate, Perceptions of Control, and Feelings Associated with Stressful Work Events

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### ABSTRACT

The concept of work stress remains poorly understood despite the convergence of current thinking on the view that stress is a dynamic process rather than a static event. The present study explores the influence of organizational climate, perceptions of control, and the feelings associated with stressful work events in relation to primary and secondary appraisal. Results show organizational climate exerts both direct and moderating effects. Perceptions of control also appear to influence the selection of coping responses, while frustration and anger emerged as important factors in the appraisal process(es). Evidence of both individual and general aspects of stress are discussed and the implications for intervention are considered.

### INTRODUCTION

The concepts of 'stress' and 'coping' remain the subject of considerable debate, even after three decades of intensive research. However, despite the lack of consensus on definitions, most recent research recognises that coping is a major factor in the relation between the experience of stress and a variety of adaptational outcomes such as emotional disturbance, poor psychological functioning or ill health (Billings & Moos, 1981; Collins, Baum & Singer, 1983; Dewe, Cox & Ferguson, 1993; Folkman, Lazarus, Gruen & DeLongis, 1986; Parkes, 1984; Pearlin & Schooler, 1978).

The cost to industry from these outcomes which lead to stress-related illness has been estimated to exceed \$150 billion per year. The US National Institute for Occupational Safety and Health (NIOSH) rates stress as one of the top ten work-related diseases (Mintner, 1991; Sadri & Marcoulides, 1994). Recently, the use of stress reduction programmes has increased as organisations attempt to reduce the negative effects on employee well-being and company profit (Murphy, 1984; Dewe, 1985). The difficulty with stress 'management' though, is that while it may ameliorate the symptoms it does not address the cause of the problem. Neither does it improve the current lack of understanding about what occupational stress really is and what makes it better or worse for individual employees or for the companies that employ them.

It is accepted that the relationship between perceived stress and resultant coping behaviour involves elements of individual differences, stressor characteristics, cultural factors, and the availability or possibility of certain responses (Aldwin & Revenson, 1987). However, a further complicating factor in work-related stress is the impact of the organisation itself. Both the structure and climate of the work place environment will place limits on what people can do in response to stress and how much control they can exert over their own and others actions (Karasek, 1979). The complexity of this construct we label 'stress' suggests that linear conceptualisations will not suffice and there is a real need to adopt a combined person-situation approach to the conceptualisation and measurement of occupational stress.

The present study recognises that there is a need for more exploratory research to more fully explicate both the stress/coping process and the impact of organisational culture on the relationship between perceived stress and the behaviour which individuals generate in response. Our general aim is to review the development of the stress concept, to consider the utility of the transactional view of stress, and to explore, in a work setting, the moderating effects of organisational climate on the stress-coping relationship.

### DEVELOPMENT OF THE STRESS CONCEPT

Looking back into the stress literature, it becomes clear that the concept of stress has been around for quite a few centuries. Over time, the meanings associated with the term have changed. In 17th century English the term stress was used to signify 'hardship, straits, adversity or affliction' (Hinkle, 1973). During the 18th and 19th centuries 'stress' became associated with the ideas of 'force, pressure, strain or strong effort'. To some extent, both of these earlier notions of stress are incorporated in modern stress theories but in the development of job stress understandings, the

latter concept of demand has predominated.

To understand why this is the case, it is important to consider the adoption of 'stress' as a technical term within the sciences of physics and engineering during the late 19th and early 20th centuries. Adapting this technical use of the term 'stress' to the biological sciences, Selye directly incorporated the notion of stress into his classic formulation of the general adaptation syndrome (GAS). The stress manifest by the GAS is the physiological response of the body to any adaptive demand made on it. In this formulation, the nature of the demands and whether they are pleasant or unpleasant is immaterial; all that really counts is the intensity of the need for readjustment.

One consequence of this formulation was to place the focus on the intensity of demand and the events which generated stress. Particular events have been described as more or less demanding, and attempts have been made to class events as more or less 'stressful' (e.g. Holmes & Rahe, 1967). In the development of job stress research, there has been a huge emphasis on stressful stimulus conditions such as work overload, role conflict, role ambiguity, poor control over job decisions and the response variables which mitigate or exacerbate stress effects (Holt, 1982). The real problem with these kinds of approaches is that they fail to take account of meaning and context. Writers such as Wolff (1960) and Hinkle (1973) point out that studying events will only inform the stress concept up to a point, since the stress associated with any event has no independent existence without the perception and reactions of the individual experiencing the event.

It is the meaning of events, rather than the events themselves, which forms the basis of the transactional view of stress, where stress is located in the relationship between the person and the environment (Lazarus, 1966; Lazarus & Folkman, 1984, 1987). According to this view, the individual seeks to integrate personal goals and beliefs with the environmental realities posed by their situation. The impact of any particular event is, therefore, embedded in the context of its occurrence and the meaning given to the event by the individual involved. Furthermore, in the transactional model, the relationship between person and environment is a dynamic one in which stress and adaptation emerge, develop and devolve. People evaluate situations, assess demand, attribute meaning and make efforts to manage the demand.

## THE TRANSACTIONAL VIEW AND ITS UTILITY

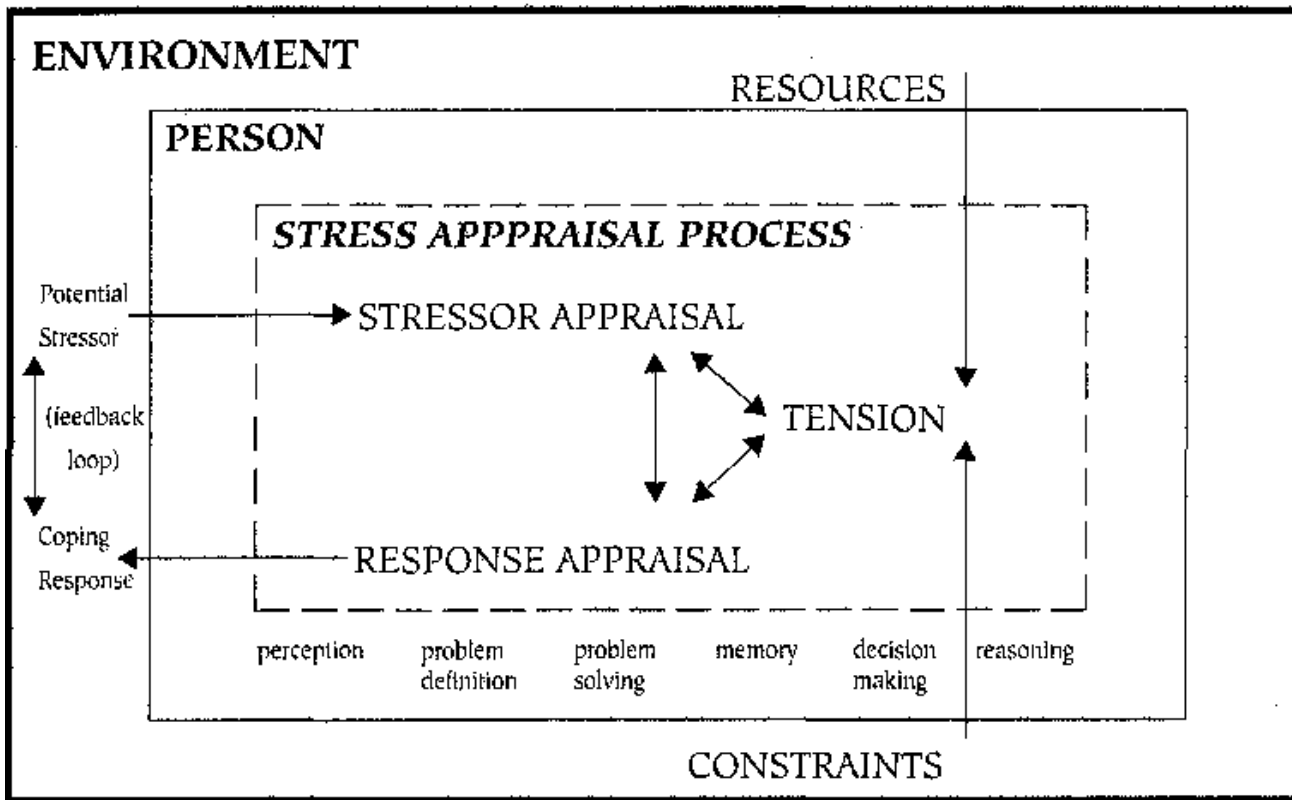
Lazarus (1991) used the term cognitive-motivational-relational theory to describe a way of understanding stress as an outcome, subject to the balance of power which exists between environmental demands, constraints, and resources, and the ability of the person to manage them. Within this theory, cognition is central to the process of "primary appraisal," in which events are evaluated in terms of impact and meaning with respect to the individual's goals and beliefs. Cognition is also involved in "secondary appraisal," which concerns evaluation of the available options for dealing with the perceived demands. Cognitive-motivational-relational theory does three important things: First, it highlights the complexity of the stress process; second, it locates the process within the individual rather than in the environment; and third, it explicitly incorporates mental activity as a driving force in the stress process.

As a complex, cognitive process, Stress cannot be viewed in simple stimulus response terms, nor can it be expressed in purely linear terms. Of course, the process has a start and an end; a demand that exists in the environment must clearly be recognised as such before the stress process can proceed, but there is no direct, clearly defined, uni-directional route through the process toward a resolution. Once a potential stressor is perceived, it is proposed that some kind of evaluation occurs about whether the event/demand is meaningful and/or important, whether it can be framed in terms of threat or challenge, and whether or not a response is necessary. This evaluation would extend to (include) some consideration of potential responses, available responses, and possible responses; the latter categories being conceptually sub-ordinate to those preceding them. For example, response A may be one of the potential actions but, to be enacted, the individual needs certain resources to make it available. Available responses become possible if there are no constraints preventing their use. At any point in this complex process, the individual may take action, perhaps a behavioural response, perhaps an emotional one, or perhaps even a cognitive response. The response or responses need not be seen as end products, but are more appropriately included as part of the stress process, which we can now structure in terms of recursive loops or links.

Figure 1 provides a pictorial representation of this expanded transactional view expressed in its simplest form. Tension or emotional discomfort is included as it is generally assumed to accompany the stress process, although its role has yet to be adequately determined. Possibilities include: tension acting as a contributory factor to the recognition of demand; tension occurring as a by-product of the stress process; and tension being an integral component associated with stressor recognition and appraisal, and also involved in the motivation for coping responses. The cognitive processes of stress are shown as drawing on and relating to other aspects of cognition, particularly perception, problem definition, memory, reasoning, problem solving, and decision making.

Figure 1

The stress experience as an active cognitive process involving a dynamic interaction between the individual and the environment



Folkman (1982) proposed that, in choosing a response to demand, individuals take into account the resources available to them. These resources may be intrapsychic or environmental and are brought into the situation in order to manage the problem or regulate the emotions aroused. Efforts can be directed toward changing the meaning of an event, and therefore changing its impact, or toward managing the source of the stress. In terms of cognitive-motivational-relational theory, coping responses are the cognitive, emotional, and behavioural efforts a person makes to manage the demands that tax or exceed their personal resources.

Constraints are also considered in respect of managing or responding to demand. Folkman (1982) suggested that in situations where people perceive that something can be done, they will be more likely to adopt problem-solving or behavioural strategies aimed at altering or managing the source of stress. In situations where people perceive nothing can be done or they feel it necessary to hold back from acting, they will direct cognitive and behavioural effort toward reducing or managing their own distress. The work environment, in particular, may impose more constraints and to a greater extent than other settings in which demand is encountered and this in turn may affect the availability or utility of resources.

### ORGANIZATIONAL CLIMATE AND THE APPRAISAL OF STRESS

Evidence already exists to suggest that psychosocial resources and vulnerabilities do moderate the stress process and can exert important stress-buffering or stress-exacerbating influences (e.g. Kahn, Wolfe, Quinn, Snoek & Rosenthal, 1964; Greenhaus & Parasuraman, 1986; Frone, Russell & Cooper, 1991). In work stress, the organisational climate can function to provide resources, including support, and can also impose constraints. In terms of the model proposed in figure 1, it is suggested that the resources and constraints arising from the organisational climate (i.e. environment) have the potential to influence the appraisal components of the stress process. There is clearly a need to investigate the moderating effects of organisational climate, but this needs to be done within a context of seeking greater understanding of the person-environment relationship and the cognitive processes in which events and coping responses are evaluated.

It should be noted here that the transactional model of stress, while conceptually appealing, remains the subject of ongoing debate, particularly about how best to apply it in a work setting. In terms of secondary appraisal, the concerns have centred on how best to measure coping strategies and how to categorise them (Edwards & Baglioni, 1993). Thus, the secondary appraisal debate has tended to focus on arguments about taxonomy rather than process. Primary appraisal has received rather less attention, with stress researchers concentrating rather more on the relationship between subjective report measures of stressors and subjective report measures of responses. In doing this they have largely ignored the possibility that other processes like appraisal may intervene (Dewe, 1991).

It is within the stress appraisal process that organisational climate is likely to have an effect in moderating the impact of a potential stressor and thus affecting the choice or expression of behaviour in response. For example Long (1993) notes that 76% of the stressful situations she studied were (a) unresolved, and (b) associated with greater use of disengagement coping (controlling emotions and distracting attention from the problem at hand). The suggestion is that many times there is nothing the individual can do about these stressful work situations, so he or she might as well conserve effort and direct attention elsewhere (Long, 1993; Shinn, Rosario, Morch & Chestnut, 1984).

From this background we have developed our specific research objectives. These are: First, to determine whether aspects of organisational climate can moderate the relationship between stressor appraisal and coping response, and if so

in what ways. Second, to evaluate the extent to which measures of organisational climate, as representations of the environment, can act as independent predictors of specific coping responses. Lastly, to investigate the impact of the psychological milieu by examining the relationships between both perceptions of control and the feelings aroused by the stress process; and by examining the various coping efforts which respondents report using. It is hoped the analysis will allow us to move beyond simple cause-effect thinking toward the development of more meaningful views of the complex experience we label as 'stress' and toward new directions in effective intervention.

## METHOD

### Sample

The 174 respondents were all employees of a local government organisation involved in civic administration. The organization incorporates several distinct divisions based on function; each having its own semi-autonomous management structure. The six divisions surveyed in the present study are: Corporate Services (n=18), Community Services (n=39), Human Resources (n=41), Planning and Development (n=22), Works and Services (n=35), and Utilities (n=20). The respondents had an average age of 37.4 years with most of them employed on a full time basis (93.6%), the majority were married or in a relationship (71.7%), and just over half were female (56.7%). Average tenure with the organization was 6.22 years and respondents had held their present jobs for an average of 2.96 years.

### Materials

The survey instrument was an eight leaf questionnaire booklet which first asked respondents to identify and briefly describe a stressful work event occurring within the past month. Keeping the event in mind, respondents were then asked to complete the following items: Primary Appraisal Checklist (Dewe, 1991); the Coping Checklist (Dewe & Guest, 1990); an organizational climate scale (adapted from Litwin & Stringer, 1968); an emotional discomfort scale consisting of 10 'feelings' associated with stressful events (Miles, 1975); and a global measure of the degree of control which respondents felt they had in respect of the events they described.

**Primary Appraisal:** The Primary Appraisal Checklist was developed by Dewe (1991) from qualitative data collected in a study which asked people to identify and describe a stressful work event and then discuss what single most important factor made the situation demanding (i.e. stressful). A total of 213 responses were content analysed into three major categories: lack of control, being made to feel bad, and lack of support. Each of these main categories contained several subcategories to capture the specific nature of the responses. Kaid and Wadsworth (1989) describe this type of analysis as substance-based as it is grounded in 'what is said'. The process allows for the richness of the data to be retained while enabling the grouping of items that possess similar connotations, thus can be said to have semantic validity (Weber, 1985). Intercoder reliability exceeded .80 across the 19 terminal categories.

Items such as 'feeling that you do not have control', 'being made to look silly', and 'feeling a sense of injustice', were generated from the content analysis to create 19 items of the Primary Appraisal Checklist. The remaining four items were adapted from the Folkman, Lazarus, Gruen, and DeLongis (1986) measure of primary appraisal and reflected items that were readily adapted to a work situation (see Dewe, 1991). Principal components analysis of the original data yielded a five-component solution which formed the basis of the five primary appraisal scales within the checklist. These are: losing credibility, being seen as difficult, feeling one may not achieve, being made to feel responsible, and having a sense of injustice. Scale stability was confirmed by the low stability coefficients for the five sub-scales which ranged from .08 to .07 (Ferguson & Cox, 1993; Guadagnoli & Verlicer, 1988).

In the present study respondents were asked to consider all 23 primary appraisal items and indicate the extent to which the situation they had described involved each of them. Responses for each item were made using a standard 5-point scale (1, did not involve it at all, to 5, involved it a great deal) and mean scores were established for each of the five sub-scales used by Dewe (1991). Table I shows the scale properties for the five primary appraisal measures used in the present study.

**Coping:** The Coping Checklist contains seven scales to measure the extent of use for seven kinds of coping responses. These are: put your own views and put the situation into perspective, let it go for a time, get advice and attempt to deal with the problem, distract yourself, get angry more, get support, and work harder. Dewe and Guest (1990) describe the development and testing of the Coping Checklist as part of their overall research strategy for developing a taxonomy of methods for coping with work-related stress. There were five basic steps: (1) Deriving a list of coping techniques through open-ended questions about incidents or experiences of coping with stress at work. (2) Extending the list into a checklist for questionnaire administration. (3) Administering a questionnaire containing both critical incident questions and the checklist. (4) Using content analysis and factor analysis without any a priori classification. (5) Repeating across a variety of populations. The final checklist instrument contained 63 items all of which had high face validity, strong semantic validity (Weber, 1975) and were considered by the participants to be clear and acceptable.

Principal component analysis of the Coping Checklist across a number of samples has yielded readily interpretable solutions. Five components of the seven-component solution can be fitted reasonably well to the Pearlin and Schooler (1978) classification, and reclassification of the categories into two higher order groups, problem-focused and emotion-focused, produces a good fit as does a regrouping into direct action and palliative (Folkman and Lazarus, 1980). As in previous studies, our respondents were asked to consider each of the 63 coping strategies and indicate on a 5-point scale (1, did not use, to 5, used a great deal) the extent to which they used each strategy in dealing with the situation they had described.

Mean scores were calculated for each of the seven coping scales and the respective scale properties are listed in table 1.

Table 1  
Scale properties for measures of stressor appraisal, coping response, and organizational climate variables.

Label	Component	alpha	mean	s.d.
Stressor Appraisal				
PRA1	losing credibility	.84	2.80	.80
PRA2	being seen as difficult	.81	2.06	.95
PRA3	feeling one may not achieve	.69	3.17	.86
PRA4	being made to feel responsible	.73	2.64	1.04
PRA5	having a sense of injustice	.60	2.95	1.51
Coping Responses				
ACT1	put your own views and put it into prespective	.78	2.67	.81
ACT2	let it go for a time	.82	1.76	.57
ACT3	get advice and attempt to deal with problem	.74	2.90	.83
ACT4	distract yourself	.73	1.66	.68
ACT5	get angry more	.60	1.60	.61
ACT6	get support	.75	2.27	.95
ACT7	work harder	.61	2.77	.84
Organizational climate				
CLM1	warm and supportive environment	.77	3.21	.71
CLM2	supportive management style	.74	2.40	.89
CLM3	emphasis on performance standards	.76	4.15	.81

**Organizational Climate:** As used by Litwin and Stringer (1968) the term organizational climate is defined in terms of the environmental and interpersonal factors that directly mould and shape behaviour (Litwin & Stringer, 1968, emphasis added). As already noted, the present study is concerned with six operating divisions within an overall organization; thus, the measures of organizational climate might better be termed measures of organizational micro-climate. People within each division can be considered as members of a particular sub-culture whose environment and interpersonal interactions will be largely influenced by the local conditions rather than by the organization as a whole. While factors such as structure, responsibility, reward, and risk are likely to be determined at an organisational level, issues such as warmth, support, emphasis on performance standards, and leadership style will be mediated locally within particular divisions. With this in mind, the present study used the last 22 items from the Litwin and Stringer Organization Climate Questionnaire (Form B) which includes the sub- scales for warmth, support, standards, conflict and identity.

Factor analysis failed to replicate the original Litwin and Stringer components, so the 22 items were subjected to exploratory principa] components analysis which yielded a three component solution. The three components were labelled: warm and supportive environment; supportive management style; and emphasis on performance standards. Mean scores were calculated for each of the three organizational climate components where higher scores indicate greater expression of the component as labelled (e.g. 1 = low levels of warmth and support in the environment, 5 = high levels of warmth and support). Scale properties are listed in table 1.

**Feelings:** The 10 items measuring aspects of emotional discomfort in the present study are based on Miles' (1975) original tension scale with the addition of two items from Grubb (1975) which were previously used by Guest, Williams and Dewe (1979). The combined scale has previously been used as an index of emotional discomfort (Dewe, 1991). Previous research using the expanded index reported an internal reliability of .82 (Dewe, 1993). In the present study the items were not used as a coniposite scale but were retained as individual facets of emotional discomfort associated with the stress experience.

**Control:** Respondents were asked to indicate how much control they felt they had over the events they experienced as stressful. The measure was a single item scored on a 5-point scale from no conrol at all (1) to a great deal of control (5).

## Procedure

The survey booklet was distributed to all members of staff with a request for participants to return the questionnaire by mail directly to the researchers. The 174 responses account for 39% of the total distribution, a fairly moderate response rate which may reflect the fact that a restructuring had just been initiated and individual energies may have been directed more toward that program than taking part in the research project. The relatively low response rate was an expected trade off in the decision to study work stress in a setting of organizational change. Parkes (1994) notes that in moderation studies of the stressor-outcome relations in work settings findings typically reveal small effect sizes and inconsistencies across different studies, She suggests that data collected at a time of organizational change would provide more fruitful results than studies conducted in a stable work environment. Her position makes strong intuitive sense when considered in terms of the high incidence of change which is characteristic of many organizations around the world at this time.

## Data Analysis



Organizational climate as a moderator of stressor appraisal and coping response:

As empirical approaches to the treatment of moderator variables have evolved, the procedure of multiple moderated regression (MMR) has become the preferred technique for evaluating moderating influences among continuous variables (Anderson, 1986; Cronbach & Snow, 1977; Morris, Sherman & Mansfield, 1986; Mossholder, Keniery & Bedian, 1990; Pond & Geyer, 1987). The advantages of MMR over other techniques include greater statistical power, preservation of original data, and retention of information from the full sample (Stone, 1990; Stone & Hollenbeck, 1989).

Morris et al. (1986) suggest that where multicollinearity is a problem, principal component regression (PCR) be used instead of MMR with resulting deletion of the third principal component if deemed small and irrelevant. However, Cronbach (1987) suggests that the analysis is more properly conducted using MMR with the product of deviation scores as the interaction term. Using the deviation cross-product means "the predictor set is almost certain not to be multicollinear" (Cronbach, 1987; p 414).

Cronbach (1987), further, maintains that the results for the reduced main effects equations will be identical for both raw scores and deviation scores. This supports the earlier report of Finney, Mitchell, Cronkite, & Moos (1984) who noted the similarity of main effects' betas across their additive analysis and their full, deviation score, product-term analysis. A further advantage to using deviation scores in the cross-product term is the reduced size of the resultant term in comparison to the raw score cross-product. Kim and Kohout (1975) discuss the problems of using raw score multiplicative terms and suggest dividing by a factor of 10 or even 100 before adding such terms into a multiple regression equation.

On the basis of the above information the present study adopted MMR as the procedure of analysis in determining the presence of moderator effects utilising a combination of raw scores with a deviation cross-product. Each measure of coping response, as the dependent variable, was regressed on every combination of the stressor appraisal measures and the moderator variables with the corresponding deviation cross-product entered last. The three step regression protocol for each specific combination can be represented as follows:

1.  $Y_q = b_0 + b_1 X_n$
2.  $Y_q = b_0 + b_1 X_n + b_2 M_p$
3.  $Y_q = b_0 + b_1 X_n + b_2 M_p + b_3 x_n m_p$

Where  $Y_q$  = coping response (1-7);  $X_n$  = stressor appraisal measure (1-5);  $M_p$  = climate moderator variable (1-3); and  $x_n m_p$  = deviation cross-product term.

Since the two models (raw score and deviation score) are effectively interchangeable in respect of main effects, the present study retains the raw score components for step one and two. For the third predictor term, entered at step three, the product of deviation scores recommended by Cronbach (1987) is used. The order of entry: first the independent variable, then the moderator, and the deviation cross-product term last. This insures that the impact of the interaction term will not be confounded with variance due to the main effects of the independent variable or moderator variable. The test for moderating effects is, in effect, the test for a moderator-predictor interaction which is evaluated by testing the significance of the regression weight associated with the cross-product term ( $b_2$ ) (Cronbach, 1987; Peters, O'Connor & Wise, 1984).

The most common method for performing this test is to compare  $R^2$  for the full regression model of step 3, with the  $R^2$  for the reduced regression model of step 2 (Lubinsky & Huniphreys, 1990). If the change in  $R^2$  with the addition of the cross-product term is significant then the independent variable and the potential moderator have an interactive effect and the potential moderator is confirmed as a moderator variable.

The role of environment in directly influencing coping response:

This analysis utilised ordinary least squares regression (OLS) to investigate the extent to which measures of organizational climate independently predict the use of particular coping responses.

Perceptions of control, feelings associated with stress, and coping response:

This exploratory analysis relied on the Pearson product-moment correlation coefficient to determine the extent of relationship between both the perceptions of control over events and the feelings associated with stressful events, and the kinds of coping efforts which the respondents reported using.

## RESULTS

Organizational climate as a moderator of stressor appraisal and coping response:

As noted in the description of the sample, the respondents to the present study were drawn from six different divisions within a single organisation. In order to check for the existence or otherwise of distinct divisional climates, we compared the climate responses across the six divisions using an ANOVA with Scheffe's post hoc test for specific differences. For 'warm and supportive environment' the divisional means ranged from 2.9 to 3.2 with equal variance across the groups. There were no groups significantly different at the 0.05 level. For 'supportive management style' the means ranged from 1.8 to 2.4 with no significant differences but in this case the variances were not homogeneous. In the case of 'emphasis on performance standards' the means ranged from 4.1 to 4.3 with no significant differences and equal variances for all six groups. With no substantial differences across the groups, the MMR analyses proceeded using

individual climate scores to retain the maximum of information direct from the source.

Table 2 shows the correlational matrix for the five measures of stressor appraisal, the three climate moderator variables and the seven coping response measures. There are clearly some significant inter-relationships highlighting the dangers of multicollinearity among the raw scores.

Table 2

Correlations between measures of stressor appraisal and coping response, and potentially moderating climate variables.

Correlations	PRA1	PRA2	PRA3	PRA4	PRA5	CLM1	CLM2	CLM3	ACT1	ACT2	ACT3	ACT4	ACT5	ACT6
PRA1														
PRA2	.4143**													
PRA3	.7221**	.1875												
PRA4	.6732**	.4616**	.4466**											
PRA5	.3755**	.2582*	.4236**	.4097**										
CLM1	-.2561*	-.2556*	-.2556*	-.1824	-.2397	-.2035								
CLM2	-.2427*	-.2388	-.2388	.2535**	-.2036	.3192**	.6316**							
CLM3	.0389	-.0338	-.0329	.0383	-.710	.2735*	.3087**							
ACT1	.2054	.1930	.1930	.1435	.2235	.1763	-.114	.0119	-.0318					
ACT2	.3478**	.1606	.1785	.1935	.1636	-.2139	-.0720	.1711	.2907*					
ACT3	.0641	.1478	.1478	.0156	.0760	.0495	.1070	.0561	-.1197	.3552**	.1566			
ACT4	.1213	-.0225	-.0225	.1203	.1589	.0691	.2613*	.0134	-.2035	.3863**	.3263**	.1692		
ACT5	.4682**	.3979**	.3950**	.3344**	.2868*	.2930*	-.1509	.0548	.2434*	.3062*	.0176	.2456*		
ACT6	.2079	-.0300	.2245	.2277	.2988*	-.0737	-.1075	.0579	.3317**	.2696*	.2615*	.2937*	.1647	
ACT7	.1389	-.0580	.4331**	.1316	-.0469	.0857	.0442	.0238	.1743	.0559	.2672*	.1415	.0471	.1126

2-tailed signif: \*.01; \*\*.001

Using multiple moderated regression (MMR), as outlined above, we found that organizational climate did moderate the primary-secondary stress appraisal process in a number of ways. There were 18 regression equations with a significant increase in R2 when the interaction term was added in stage three\*. For each of these combinations of stress, climate, and coping response, the results were further manipulated. The climate and stress scores were dichotomised into high and low levels creating four sub categories, then mean coping scores were calculated for each group. The resultant graphs revealed the interactions were of three distinct types which can be generally represented as shown on Figure 2.

Figure 2

Generalised representation of the observed moderator effects of organisational climate on the primary appraisal-secondary appraisal relationship

**Figure 2**  
**Generalised representation of the observed moderator effects of organisational climate on the primary appraisal-secondary appraisal relationship.**

**Table Key:**  
 X ——— X  
 High levels of the moderator  
 O ——— O  
 Low levels of the moderator

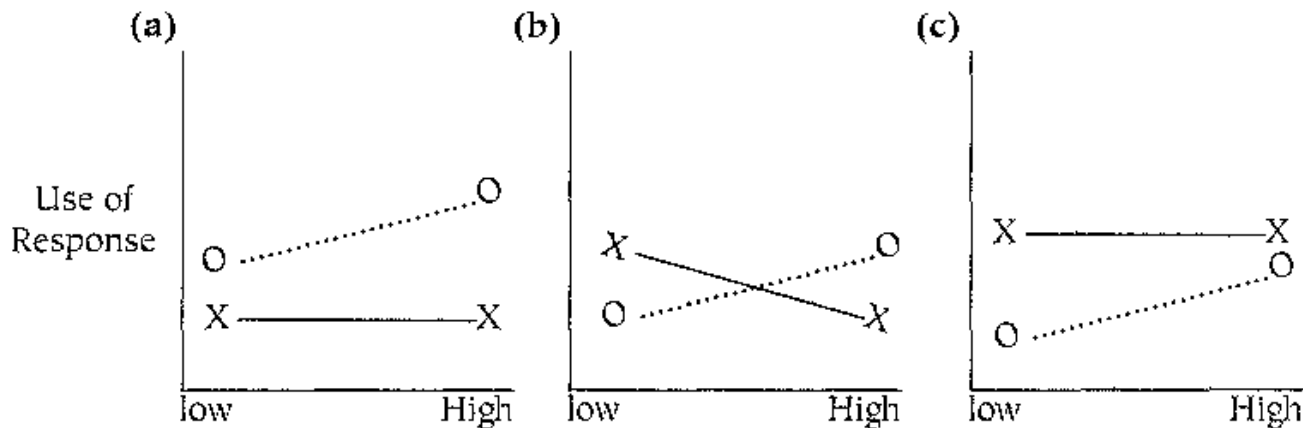


Figure 2a shows interaction type A which is characterized by an effect at low levels of the moderator variable, in which

increasing appraisal of threat or harm is associated with increased use of the coping response. At high levels of the moderator variable, use of the coping effort does not increase with increasing threat or harm.

Interaction type B, shown in figure 2b, is characterized by opposing effects for low and high levels of the moderator. At low levels of the moderator variable, increasing appraisal of threat or harm is associated with increased use of the coping response. By contrast, increasing appraisal of threat is associated with decreased use of coping effort at high levels of the moderator variable.

Figure 2c shows interaction type C, in which increasing appraisal of threat or harm is associated with increased use of coping response for both high and low levels of the moderator but the effect is greater for low levels of the moderator variable.

Table 3 shows the moderating interactions grouped according to the coping responses being predicted and notes the kind of interaction which occurred (interaction type A, B, or C as outlined above). Interaction type A predominates, occurring in 13 of the 18 instances (76%). There are three instances of type B interaction, and two instances of interaction type C.

Table 3

Multiple moderator regression. The moderating effect of organizational climate on the primary secondary appraisal relationship.

Response	Regression Equation	Interaction
Put your views and put into perspective	ACT1 = .17PRA1 -.06CLM1 -.28XPROD + C R <sup>2</sup> =.071 Adj R <sup>2</sup> =.052 p=.0147	losing credibility X warm and supportive environment (interaction type A)
	ACT1 = .15PRA3 -.07CLM1 -.23XPROD + C R <sup>2</sup> =.062 Adj R <sup>2</sup> =.042 p=.0270	feeling may not achieve X warm and supportive environment (Interaction type A)
Let it go for a time	ACT2 = .11PRA3 -.12CLM1 -.20XPROD + C R <sup>2</sup> =.095 Adj R <sup>2</sup> =.077 p=.0023	feeling may not achieve X warm and supportive environment (Interaction type A)
	ACT2 = .04PRA2 -.05CLM2 -.13XPROD + C R <sup>2</sup> =.064 Adj R <sup>2</sup> =.045 p=.0219	being seen as difficult X supportive management style (Interaction type A)
	ACT2 = .11PRA3 -.04CLM2 -.14XPROD + C R <sup>2</sup> =.065 Adj R <sup>2</sup> =.046 p=.0198	feeling may not achieve X supportive management style (Interaction type A)
	ACT2 = .08PRA2 -.06CLM3 -.23XPROD + C R <sup>2</sup> =.137 Adj R <sup>2</sup> =.119 p=.001	being seen as difficult X an emphasis on performance standards (Interaction type A)
	ACT2 = .8PRA4 -.07CLM3 -.11XPROD + C R <sup>2</sup> =.055 Adj R <sup>2</sup> =.036 p=.0385	made to feel responsible X an emphasis on performance standards (Interaction type A)
Get advice & deal with it	ACT3 = .10PRA1 +.19CLM1 -.34XPROD + C R <sup>2</sup> =.075 Adj R <sup>2</sup> =.056 p=.0077	losing credibility X warm and supportive environment (interaction type B)
	ACT3 = .12PRA3 +.20CLM1 -.31XPROD + C R <sup>2</sup> =.083 Adj R <sup>2</sup> =.066 p=.0038	feeling may not achieve X warm and supportive environment (Interaction type A)
Distract yourself	ACT4 = .05PRA1 -.20CLM1 -.22XPROD + C R <sup>2</sup> =.085 Adj R <sup>2</sup> =.066 p=.0038	losing credibility X warm and supportive environment (Interaction type A)
	ACT4 = .12PRA3 -.19CLM1 -.34XPROD + C R <sup>2</sup> =.152 Adj R <sup>2</sup> =.136 p=.0000	feeling may not achieve X supportive management style (Interaction type B)
	ACT4 = .12PRA3 +.02CLM2 -.15XPROD + C R <sup>2</sup> =.053 Adj R <sup>2</sup> =.034 p=.0396	feeling may not achieve X warm and supportive environment (Interaction type A)
Get angry more	ACT5 = .24PRA3 -.12CLM1 -.17XPROD + C R <sup>2</sup> =.168 Adj R <sup>2</sup> =.152 p=.0000	losing credibility X warm and supportive environment (Interaction type A)
	ACT7 = .18PRA1 +.10CLM1 -.28XPROD + C R <sup>2</sup> =.071 Adj R <sup>2</sup> =.050 p=.0188	feeling may not achieve X warm and supportive environment (Interaction type C)
	ACT7 = .43PRA3 +.14CLM1 -.25XPROD + C R <sup>2</sup> =.221 Adj R <sup>2</sup> =.203 p=.0000	feeling may not achieve X supportive management style (Interaction type C)
	ACT7 = .42PRA3 +.09CLM2 -	losing credibility X an emphasis on performance



Work harder	.20XPROD + C R <sup>2</sup> =.222 Adj R <sup>2</sup> =.204 p=.0000	standards (Interaction type A)
	ACT7 = .24PRA1 + .03CLM3 - .27XPROD + C R <sup>2</sup> =.081 Adj R <sup>2</sup> =.062 p=.0074	losing credibility X an emphasis on performance standards (Interaction type A)
	ACT7 = -.07PRA2 + .03CLM3 - .27XPROD + C R <sup>2</sup> =.062 Adj R <sup>2</sup> =.042 p=.0304	being seen as difficult X an emphasis on performance standards (Interaction type B)
Response	Regression Equation	Interaction

Leaving the interaction typology aside, there are three stress by climate Interactions which account for 67% (12) of the moderated relationships:

1. losing credibility X warm and supportive environment (4);
2. feeling may not achieve X warm and supportive environment (5); and
3. feeling may not achieve X supporti\le management style (3).

The amount of warmth and support within the work environment moderates the relationship between the stress of losing credibility and the coping responses of a) putting your views and putting the situation into perspective; b) getting advice and attempting to deal with the situation; c) seeking distraction; and d) getting angry. In three cases, the interaction is of the kind where high levels of warmth and support buffer the threat associated with losing credibility, and increased use of coping is only evidenced where this warmth and support is lacking. For the response of getting advice and attempting to deal with the problem, increased threat from losing credibility leads to a decrease in the behaviour where warmth and support are high.

The amount of warmth and support within the work environment also moderates the relationship between the stress of feeling you may not achieve and the coping responses of a) putting your views and putting the situation into perspective; b) letting go for a time; c) getting advice and attempting to deal with the situation; d) seeking distraction; and e) working harder. In four cases, the interaction is of the kind where high levels of warmth and support buffer the threat associated with feeling you may not achieve; and increased use of coping is only evidenced where this warmth and support is lacking. For the response of working harder, increased threat from feeling you may not achieve leads to an increase in the behaviour for both high and low levels of warmth and support, but the increase is greater where the level of warmth and support is low.

The amount of support offered by management moderates the relationship between the stress of feeling you may not achieve and the coping responses of a) letting go for a time; b) seeking distraction; and c) working harder. These three interactions are all of different kinds. In letting go for a time, high levels of warmth and support buffer the threat associated with feeling you may not achieve, and increased use of coping is only evidenced where the nlanagement style is not particularly supportive. For the response of seeking distraction, increased threat from feeling you may not achieve leads to a decrease in the behaviour when management support is high. Working harder is a way of coping with threat from feeling you may not achieve, whether support from management is high or low but the increase in attempts to work harder are greater where the level of support is low.

Table 4  
Significant regression models for organizational climate as predictor of coping behaviour.

Criterion	Predictor	Adj R <sup>2</sup>	Significance
Let go for a time	warm and supportive environment	.02	.0368
Distract yourself	warm and supportive environment	.05	.0028
	emphasis on performance standards	.04	.0079
Get angry more	warm and supportive environment	.04	.0067

The other interactions involve a variety of stress sources. Some are moderated by an emphasis on performance standards within the organisation; others (e.g. the impact of being seen as difficult) are moderated by supportive management style. These interactions are predominantly type A interactions where increasing threat leads to increased use of the coping behaviour but only for low levels of the moderator variables.

The last point to note is that there are two appraisal conditions in which moderation does not occur at all. Among the coping responses 'getting support' (ACT6) is completely independent of interactions between primary stress appraisal and organizational climate. In terms of the primary stress appraisal measures, 'sense of injustice' (PRA5) is not susceptible to the moderating effects of organizational climate as measured in this study.

The role of environment in directly influencing coping response:

Using ordinary least squares regression, it was possible to identify only four cases out of a possible 21 cases in which a significant regression model could be built using organizational climate to predict the use of particular coping responses. Despite being statistically significant, the equations were of little practical use, explaining at most 5% of the variance in the use of the respective coping responses. As table 4 shows, the measure of warmth and support in the environment

featured as a predictor for coping by letting go, distracting yourself, and getting angry. The measure of emphasis on performance standards also acted as a predictor for the response of distracting yourself.

**Control and coping response:**

Correlation coefficients were calculated to assess the direction and extent of linear association between respondent responses to the 5-point rating of perceived control in the situation described (1=no control - 5=a great deal of control) and their reported use of the seven coping responses. There were only four significant coefficients and these revealed three negative relationships and a single positive association. Perceptions of greater control were associated with greater use of a 'work harder;' response in dealing with the stressful event ( $r = .28, p < .01$ ). In contrast to this result, perceptions of lower control were associated with greater use of the 'get angry' response ( $r = -.28, p < .01$ ), the 'put views and put into perspective' response ( $r = -.16, p < .05$ ), and the response of 'get support' ( $r = -.19, p < .05$ ).

**Feelings and coping response:**

The tension scale comprised a set of 10 feelings that respondents may have experienced in relation to the stressful experience they described. Correlation coefficients were calculated to assess the extent of association between these feelings and the kinds of effort which respondents used in dealing with the experience. Table 5 shows the coefficients which indicate significant relationships at the .01 level.

Table 5

Significant relationships between responses to stress and the feelings associated with it.

RESPONSES FEELINGS	put views and put into perspective	let it go for a time	distract yourself	get angry	get support
(1) fidgety and nervous					
(2) tense				.3691	
(3) irritated and annoyed	.2640			.2705	.2866
(4) worried, unable to sleep				.4366	.2411
(5) wonder whether after making a decision you did the right thing					
(6) wonder whether it was all worthwhile		.2560		.3695	
(7) left breathing a sigh of relief					
(8) exhausted, worn out				.4554	
(9) restless-impatient-uneasy		.2706		.5184	
(10) frustrated with what goes on at work	.3738	.3286	.3132	.2825	.3337

Before discussing the significant associations that did occur, it is worthwhile noting the areas in which no relationships were evidenced between feelings and coping response. First, none of the feelings included in the tension scale were associated with the coping response of getting advice and attempting to deal with the problem, or with coping by working harder. Similarly, feelings of being fidgety and nervous, wondering if a decision is right, and feeling relief when it is over, are not related to any of the coping efforts studied in this context.

Considering the areas where associations did occur, two particular items stand out. Getting angry is an almost universal response to the feelings associated with a stressful event; and where this activity is not related as a coping response, no other activities are either. Getting angry appears to be a necessary but not sufficient response to the feelings of stress. Likewise, frustration is almost a universal activator and multiple responses are invoked in association with frustration at what goes on at work.

**DISCUSSION**

What we have shown in the present study is the complexity of interrelationships which exist as part of the evaluation, context, meaning, and response components of the stress process. Organizational climate, clearly, can moderate the relationship between evaluation of demand and the use of particular coping responses. The nature of the demand, the climate, and the response all appear to be important since some particular interactions between appraisal and climate exert a wider range of moderating influence than others. This suggests that the nature of the demand is relevant in determining the meaning of an event in reference to the individual's goals and beliefs. It also suggests that meaning and context are both considered in relation to the use of coping responses but that the relative impact of each varies across the range of responses studied here.

The results of the present study show that people do act in accordance with the transactional model; they do consider the event or situation in terms of what it means to them and make a response within the constraints that exist. The transactional model remains useful as a basis for unravelling the complexities of the stress process. However, in order to more fully understand stress in transactional terms, we need to further elaborate the concept. Clearly, the stress process cannot be represented in terms of simple relationships and, despite the present results indicating that buffering effects can occur, we still need to understand how and why this is so.

As Lazarus (1991) points out, stress occurs within a particular relationship between and individual and a specific environment. It is an individual process taking place within a particular context. Thus we have to consider the impact of many intrapsychic variables, interpersonal variables, and social context variables on the stress process, which is represented as a person-environment transaction. These variables all feed into the individual's "meaning-systems,"

which in turn form part of the stress appraisal process. However, they present real difficulties in terms of measurement. Clearly, as stress researchers we need to develop new methodologies for investigating these individual aspects of stress, and utilise more sophisticated ways of measuring the concepts. This is especially true for secondary stress appraisal, where the idea of people having general coping styles may well be valid in terms of what they might prefer to do in any given situation but which clearly fails to capture the dynamic reality of stress and coping in changing situations, changing times, and changing encounters.

Although we accept the individual nature of such a meaning-centred approach to stress, there is also an argument to be made for investigating the more general aspects of stress (Brief & George, 1991), particularly in terms of intervention. Brief and George (1991) suggest that an emphasis on job conditions is essential in order to discover those conditions which adversely affect the well-being of most workers and ultimately to alleviate them. However, as we have shown, the stress process is far too complex a phenomenon to be addressed only in terms of objective conditions, since it is the context and meaning attributed to those conditions which most determines their 'stressfulness'. Perceptions of control, warmth and support in the environment, and frustration with what is going on at work, all showed up in the present study as having an impact on the stress experienced and the way people respond to it. Future research needs to further explore these perceptual and affective aspects of work-related stress to explicate the ways they interact with one another and to investigate their relationship with the transactional model of the stress process.

From the present results, we suggest that the predominance of frustration and anger in relation to feelings and responses provides us with a key to bridging the gap between the individual and the general aspects of stress. Frustration and anger had almost universal relationships with other aspects of stress and, in that sense, seem to be key elements. Working from that premise, further theory can be built by investigating how general these elements are to different kinds of events or situations and also to different responses. Also, the more specific aspects can be investigated by studying the causes of frustration and anger in individual situations. The function of anger in terms of coping could also be addressed, though here again, the use of predominantly phenomenological methods may advance understanding where traditional quantitative research cannot.

Considering intervention to alleviate Stress, frustration and anger can be used to direct attention to the job conditions, relationship factors, and power structures which are related to stressful situations and which constrain people in their attempts to deal with particular transactions. The only way we can understand these things is by taking them down to the transactional level and discovering the specifics. Perhaps the best way to deal with them is by working back up to the organizational level and instigating procedural and cultural developments to legitimate the feelings and perceptions of individual workers. We need to progress at both a general and specific level to integrate the factors arising from the present study into the transactional model and 'develop better understanding of the process, not just of the components.

In many ways, the present study raises more questions than it answers but in the context of a phenomenon so poorly understood as 'stress' (Pollock, 1985; Lazarus, 1991; Dewe, Cox & Ferguson, 1993) questions are perhaps as important as answers in suggesting directions for future research. One clear outcome is the identification of a need for greater use of qualitative methods in the search for understanding of stress at both the level of individual appraisal and in terms of the social context. By explicating the cognitive processes of stress appraisal at an individual level, by exploring individual meanings and particular environments, and by investigating the functional aspects of coping at a personal level, researchers will provide the knowledge needed to construct ever more sensitive and appropriate transactional theory. Greater understanding of the social context which frames the person-environment transaction and more knowledge of social elements within the construction of meaning will help in the search for useful interventions to mitigate against adverse affects.

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