The effects of interpersonal communication style on task performance and well being

A Thesis submitted for the degree of Doctor of Philosophy

By

Howard Taylor

School of Human Sciences and Law

Faculty of Society and Health

Buckinghamshire Chilterns University College

Brunel University

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Abstract

This thesis is based around five studies examining the psychology of interpersonal communication applied to organizational settings. The studies are designed to examine the question of how the way that people in positions of power in organizations communicate with subordinates, affects various measures of health, well-being and productivity. It is impossible to study modern organisational communication without recognising the importance of electronic communication. The use of e-mail and other forms of text messaging is now ubiquitous in all areas of communication. The studies in this thesis include the use of e-mail as a medium of communication and examine some of the potential effects of electronic versus face-to-face and verbal communication. The findings of the studies support the basic hypothesis that: it is not *what* is said that matters but *how* it is said. The results showed that an unsupportive, formal, authoritarian style of verbal or written communication is likely to have a negative effect on health, well-being and productivity compared with a supportive, informal and egalitarian style. There are also indications that the effects of damaging communications may not be confined to the initial recipient of the message. Organizational communication does not take place in a vacuum. Any negative consequences are likely to be transmitted by the recipient, either back to the sender or on to other colleagues with implications for the wider organisational climate. These findings are based on communications that would not necessarily be immediately recognised as obviously offensive or bullying, or even uncivil. The effects of these relatively mild but unsupportive communications may have implications for the selection and training of managers. In the final section of the thesis there is a discussion of how examples of various electronically recorded messages might be used as training material.

Author's declaration

I declare that the work in this thesis is my own. The jointly authored article published in the Journal of Managerial Psychology (see appendix), is based on Chapter 5, Study 2. The experiment was devised and conducted by myself.

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Chapter 1

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Introduction and overview

The art and science of human communication have been a source of fascination and interest from ancient times to the present day. Communication with others is such a fundamental aspect of human functioning that it is almost impossible to conceive of life without it. It is through communication and interaction with others that our lives are given meaning. Communication activities impinge in various ways on all aspects of our lives and we have a seemingly endless appetite for communication and interaction. Being a good communicator is recognised as an essential asset in getting along with other people and having a successful career. In the world of work, good communication is seen as an essential ingredient of a successful company. This includes both external communications (for example with customers, suppliers, and other agencies) and internal communication (for example between departments or between team members).

The costs of poor communication can be high, in both the personal sphere and the world of work. Maintaining relationships with family and friends is often fraught with difficulty. Having to deal with misunderstandings where someone has taken insult where none was intended, trying to maintain relations with someone who clearly holds political or religious views that are opposite to your own, require considerable effort and skill. It is not surprising then that personal relationships often break down when the effort of maintaining the relationship seems to outweigh the benefit.

Interpersonal communication at work may also suffer from similar difficulties to those listed above as belonging to the personal sphere. However, communication at work has an additional set of constraints and expectations that may result in further consequences when relations break down. For example, poor communication with a customer may result in loss of business. Poor communication with a supervisor may result in losing one's job. Abusive or discriminatory communication with a colleague may result in legal action.

On the positive side, improving organisational communication can result in considerable efficiency gains. For example, improving relations with customers may result in generating more business, a greater awareness of customer needs, and greater long-term stability. Better communication between departments and team members may result in fewer misunderstandings and greater productivity. Improved communication with supervisors and managers can result in greater job satisfaction, increased organisational citizenship behaviour, and decreased workplace deviance.

The question to be addressed here then is: how to improve workplace communication? In order to answer this question a number of subsidiary issues need to be addressed. First, it is important to have a full understanding of the communication process that shows how good and bad communication result in particular outcomes. Second, it will be necessary to identify the nature of good and bad communication. Most importantly it will be necessary to empirically demonstrate that the manipulation of particular communication variables can result in particular outcomes. Modelling the communication process and identifying the outcome variables associated with good and bad communication are the primary aims of this thesis.

A great deal of effort is invested in teaching 'communication skills' and there is a vast amount of literature devoted to helping people to become better communicators. However, much of the 'self-help' literature focuses exclusively on the communicator. For example, there are many texts dealing with the presentation of formal organisational documents such as minutes of meetings or sales presentations etc. This functional approach to organisational communication tends to view the communicator as disembodied and isolated. There is little recognition of the emotional and contextual aspects of communication.

Everyday experience of the reality of working life, however, demonstrates that emotion and context play a considerable role in the communication process. How we are feeling when we engage in interaction can have considerable bearing on how the interaction progresses. The utterances that we make or the words that we type may be influenced by events preceding the interaction itself. These events may be entirely unconnected with the communication but could, nevertheless, shape the pattern of our

interaction. For example, an argument with a loved one before coming to work may influence our response to a request to meet a deadline, or to someone who interrupts our work. This may lead to a hostile exchange with the other person, which may have far-reaching effects.

Alternatively, emotions may arise *during* an interaction. For example, we may feel that the person we are interacting with is behaving in an unreasonable or disrespectful way. Our reaction to what we perceive to be unfair communication may depend to some extent on the context: if the person you are interacting with is your boss or if you are in the company of a number of important clients, then your immediate response may mask an underlying emotional turmoil. However, it is likely that the insult will be paid back at some point in the future, perhaps in a withdrawal of good will or even absenteeism.

These fictitious examples serve to demonstrate the point that communication acts need to be viewed in their wider context. The aim of this thesis is not to provide another list of communication skills but to raise consciousness about the wider effects of the way in which we communicate with each other; to raise awareness that when we send or utter a communication, it is not an isolated act but becomes a part of the communication network that ultimately defines the organisation itself. This consciousness raising process involves a shift in emphasis from a focus on the communicator and their communication to a focus on the recipient and their reaction to the communication.

Much of the communication skills literature focuses on issues of self-presentation and the title of Erving Goffman's classic book 'The presentation of self in everyday life' encapsulates this perspective. Goffman uses the perspective of the theatrical performance to consider the ways that the individual in ordinary work situations presents themself and their activities to others. In Goffman's view, if the communicator considers the recipient's reaction at all, then it is only to ensure that the communication is designed to control the conduct of the recipient, especially in relation to their dealings with the communicator. A communicator projects a definition of the situation and will employ a number of presentational techniques to control the impression that others receive.

However, Goffman's emphasis tends to underplay the dynamic nature of communication and emphasises a rather abstract, decontextualised, and one-sided view of an ongoing dynamic process. More recent work by Gergen (1991, 2003) on the psychology of language and communication has argued that our understanding of individual selves needs to be redefined to incorporate a more socially connected sense of identity. In this view, our interactions with others are seen, not merely as something we as individuals engage in, but as the very core of our identity. There is no need to look for the deeper meanings we may assume to lie behind utterances and interactions. We are defined by the interactions and social networks that we are embedded in. Gergen contests the view that meaning originates within the individual mind. Instead, he proposes that the level of analysis should be the relationship as it generates both language and understanding. Gergen (2003) argues that it is not possible to discern whether meaningful communication has taken place or even to accurately discern what has been communicated between people because what may appear to be fixed in one instance may be later cast into ambiguity by further communications.

In the context of organisations, it is somewhat easier to accept the view that meaning is not to be found in the entity (the organisation) but in the relationships and interactions that take place within it. Karl Weich, a renowned critic of standard organization theory points out that:

> "Organizations are not monoliths. Instead, they are loosely coupled fragments…just as individuals are. This fragmentation means that the relevant unit of analysis is small in size though not in influence,……that macro perspectives are hollow unless linked with micro dynamics." (Weick,2001, p.28).

This view supports an emphasis on the relationships and interactions that take place within an organisation because the communications that take place within the organization *are* the organization. Thus, the empirical work in this thesis is underpinned by the notion that communication and interaction are at the very core of personal and organisational identity.

Advances in communication technology, such as the telephone, the internet, and the cell phone, have enhanced our ability to communicate rapidly over any distance and such technologies have quickly become regarded as essential human tools. We are bombarded with communications of all kinds on a daily basis and we are also involved in sending communications to others. These communicative interactions shape the person we are and the world we live in. However, a question mark remains as to whether these new technologies represent an improvement in communication. The use of electronic mail is now becoming the favoured form of organisational communication. This thesis will examine the ways that email can affect the quality of communication.

This thesis is based on five experimental studies carried out between 2001 and 2005. The order of presentation is approximately chronological and reflects the development of ideas throughout this time period. The studies investigate how aspects of the social environment (communication with other people) affect people's responses in relation to organizational functioning. There is a wide range of possible outcome measures that could be studied in this context. This thesis uses outcome measures that can be grouped under two broad headings: employee well-being and organizational effectiveness. The themes of employee well-being and organizational effectiveness are central to occupational psychology (see for example: Sparks, Faragher & Cooper, 2001; Kelloway & Day, 2005). Within the two broad themes there is good evidence for linkages between working conditions (including interpersonal relations) and both mental and physical health, and between working conditions and work performance.

The first three studies investigate stress outcomes and the last two studies focus on productivity. The studies in this thesis are concerned with how the interpersonal communication styles of those we interact with can affect our behaviour. Various outcomes are measured, such as the behavioural responses, thoughts, feelings, task performance, and most importantly the health and well being of people. The focus of attention is primarily, but not exclusively, on the implications of communication for organizations and the people that operate within their structures. One of the established ways of examining such effects is under the general heading of

workplace stress. Models of workplace stress are critically examined from the standpoint of interpersonal relationships at work and whether they can.adequately account for problems arising from communication in contemporary, information-based organisations.

The studies use aspects of interpersonal behaviour that have been shown by previous research to affect outcomes relating to stress and productivity. The studies examining stress outcomes look at the effects of organisational meetings and the effects of messages sent via e-mail. Attending organisational meetings and reading e-mail messages have both been classified as interruptions.

Recent research (Jett & George, 2003) suggests that any activity or event that disrupts goal-directed behaviour can be classified as an interruption. Most work roles have, at their core, a defining set of primary tasks and responsibilities. Effective work performance is measured by how well these primary tasks are carried out. In addition to these over-arching goals, individuals or groups will set subsidiary objectives that enable them to define their daily tasks. Any interruption of goal-related activity is likely to be experienced negatively. For example, Kirmeyer (1988) showed that the volume of work did not directly affect perceived work overload. However, perceived work overload was mediated by the number of interruptions.

Interruptions to goal-directed behaviour can be a result of a number of factors. These can be classified as technical or interpersonal in nature. Technical interruptions may be, for example, technology breaking down or having to wait for an important part to arrive. Common interpersonal interruptions include face-to-face interruptions and telephone calls. The first two studies in this thesis examine the effects of two different kinds of work-related activities that have recently been classified as (interpersonal) interruptions: attending organisational meetings and dealing with email messages.

Rogelberg, Leach, Warr, and Burnfield (2006) used the framework of interruptions to test a number of hypotheses concerning the relationship between the time demands of pre-scheduled organisational meetings and measures of job attitudes

and well being. They found that the effects of meetings were moderated by a number of factors including the degree of task interdependence (the extent to which a job requires employees to work through interaction with other colleagues), the perceived value of the meeting, and accomplishment striving (the extent of an individual's determination to accomplish a task).

Similarly, Jackson, Dawson and Wilson (2001) used a framework of 'interruptions as any activity that disrupts goal-directed behaviour' to examine the use of email by employees. They found that the interruption effect of dealing with email messages was much greater than had previously been assumed. The authors suggest that the interruption effect is largely due to the way that email users handle their incoming mail. They found that email users at work tend to deal with new email messages within six seconds (just as quickly as answering the telephone).

The measures used in the studies can be grouped under three general headings: physiological measures, questionnaire measures, and behavioural measures. Possible physiological measures might include blood pressure, cortisol levels, and galvanic skin response, for example. Attitudinal measures might include measures of job satisfaction, anxiety and emotion, whilst behavioural measures might include measurement of task performance or absenteeism. It was decided to use a selection of outcome measures including at least one from each of the general categories.

Careful consideration was given from the beginning about which physiological measure would be most appropriate. Galvanic skin response (GSR) was considered but rejected because although GSR can give a reliable measure of stress, there is no strong evidence of any long-term medical effects of increased GSR. The use of salivary cortisol to measure stress can produce meaningful and reliable results and the neuro-endocrine pathway by which threat can produce changes in cortisol levels is well understood (Edwards, Hucklebridge, Clow, & Evans, 2003). However, the measurement of salivary cortisol poses problems. The level of cortisol present changes throughout the day: there is a sharp peak on awakening (the waking response) followed by a rapid reduction. Then, cortisol levels slowly decline through the day and evening (Thorn, Hucklebridge, Esgate, Evans, & Clow, 2004). Therefore, absolute levels of cortisol are not useful for comparison purposes unless they are

taken at the same time of day. Cortisol samples are also difficult to analyse, requiring specialized, expensive equipment. Therefore, despite the strong evidence for cortisol levels being a good indicator of health problems, it was decided that cortisol measurement would be impractical.

One of the possible responses of particular interest was blood pressure. The potential medical implications and the relative ease of measurement (using modern electronic devices) make blood pressure an interesting variable. A review of the literature showed that much work had been done using changes in blood pressure as a measure of response to psychological stressors in laboratory studies (e.g. Hinz, Seibt, & Scheuch, 2001; Stark, Hamm, Schienle, Walter, & Vaitl, 1999). These studies used a variety of stressors such as mental arithmetic, Stroop test, mirror-tracing task, and the cold-pressor test, and measured the effects on various physiological measures such as heart rate, cortisol levels and systolic and diastolic blood pressure.

Blood pressure is normally measured by inflating a cuff around the upper arm. When a blood pressure reading is given it normally contains two numbers: the first number (usually the highest) is the systolic pressure. This is the amount of pressure (in millimetres of mercury) required to stop the flow of blood in the artery. The second number is the diastolic pressure: the pressure at which the blood starts flowing again. Other measures such as pulse pressure (the difference between the two numbers) or mean arterial pressure (the average of the two) can be calculated. Glynn, L'Italien, and Sesso, et al., (2002) examined the question of which measure of blood pressure is most useful. They examined the usefulness of different blood pressure measurements for determining the likelihood of a cardiovascular event (such as a heart attack, a stroke, sudden heart death, or the need for a coronary bypass or angioplasty) in a longitudinal study of 22,000 men and 40,000 women. Lower levels of blood pressure predicted lower rates of cardiovascular events. Systolic pressure was more important than the diastolic pressure for predicting cardiovascular problems in men and women but was more important for women. Further analysis showed that mean arterial pressure (MAP) was equivalent to systolic pressure in predicting risk and pulse pressure was about as useful as diastolic. This suggests that there is no

advantage to making these additional calculations. Consequently, the studies reported in support of this thesis use measures of systolic and diastolic blood pressures.

The medical literature containing studies examining the effect of mental stress on cardiovascular functioning tended to focus on individual differences in reactivity (known as cardiovascular reactivity or CVR) as a predictor of coronary heart disease (CHD) often in patients who already had symptoms (e.g. Manuck, 1994; Wood, Sheps, Elveback & Shirger, 1984; Menkes, Mathews, Krantz, Lundberg, Mead, Qaqish, Liang, Thomas & Pearson, 1989; Kasagi, Akahoshi, & Shimaoka, 1995). However, the focus of my interest was on the potential health effects of increases in blood pressure as a consequence of situations encountered at work by normal, healthy people. This raises two separate questions: what are the situations that are likely to cause an increase in blood pressure? And what are the consequences, if any, of these increases? The answers to these questions are uncertain but there is a growing interest in the relationship between cardiovascular reactivity and chronic disease. A number of large-scale longitudinal studies have shown that increased blood pressure is related to mortality due to coronary heart disease (e.g Van den Hoogen, Feskens, Nagelkerke, Menotti, Nissinen, & Kromhout, 2000; Pastor-Barriuso, Banegas, Damian, Appel, & Guallar (2003). Persistent high blood pressure (>140/90) is referred to as 'essential' hypertension and is now so commonplace that Belkic et al (2001) refer to it as an epidemic.

Attitude measures such as job satisfaction and perceptions of organizational justice tend to measure rather global, long-term attitudes to an organization. The empirical studies in this thesis were more likely to produce immediate changes in response to particular events. The measures developed in the studies in this thesis (such as the Arousal in Meetings Questionnaire and the Strength of Feeling questionnaire) reflect the focus of the studies on more immediate changes of feeling. That is not to say that the variables manipulated in these studies would not produce changes in longer-term measures such as job satisfaction. However, such measures would require different kinds of studies to the ones conducted in this thesis.

Changes in organizational productivity represent the ultimate 'bottom-line' indicator of the effectiveness or otherwise of organizational functioning. However, the

use of such an all-encompassing criterion may not be helpful in highlighting specific areas of concern. The overall effectiveness of an organization is just as likely to be effected by areas outside the control of the organization, such as the external environment as it is to anything within the control of the organization. Behaviours relating to employee job performance provide a good focus in assessing productivity. The outcome measure of task performance is used in studies four and five.

In relation to the question of what kinds of situations might cause increases in blood pressure, the traditional focus of work stress models has been the job itself. However, the recent and rapid developments in the organization of work indicate that a reexamination of this focus may be appropriate. There are a number of reasons for this. First, there has been a huge change in the nature of work in the UK and other Western countries over the last twenty years, from a manufacturing-based economy to a service-based economy and more recently to what is known as a knowledge-based economy. Alongside this has been a huge increase in the use of computers at work, not least for communication via e-mail. The consequence of these changes is that many people are no longer engaged in the actual production of goods. Many more people are now more likely to be involved in networking and innovation. Communication and the 'political' aspects of work therefore assume a greater importance for modern workers than ever before. There has also been a change in recent years in the numbers of people educated to degree level and a consequent increase in the expectations of well-educated workers. Relationships with others at work can be major sources of either stress or social support (Makin et al, 1996) especially when dealing with bosses, peers, customers or subordinates.

Until recently the work stress literature only recognized the importance of the social environment to a limited degree. For example, Karasek's (1979) demands supports constraints model in which stress is seen as a function not just of the demand made on a worker but also of the amount of control (decision latitude) exercised by the worker has been very influential on research on workplace stress. According to this model, a worker with a very demanding job but considerable control over how the work is carried out, will experience less stress than a worker with high demand and no decision-making power. The social environment was recognized under the heading of social support and added to the model (Johnson and Hall, 1988). Social factors in the

form of social support were seen as mediating the relationship between stressors and response. For example, people with good social support would experience fewer negative effects as a consequence of stressful life events than those without social support (Uchino, Cacioppo, & Kieclt-Glaser, 1996). However, the changing nature of work from manufacturing industry to service sector and information- or knowledge-based work means that social relationships at work are an integral part of the job and can be stressful or rewarding in their own right.

Selye (1974) makes clear that learning to live with other people is one of the most stressful aspects of life. Despite the potential stress of human relationships most people spend a great deal of time developing and maintaining social contact. The Health and Safety Executive have included interpersonal relationships in their list of causes of stress and a number of researchers (e.g. Sutherland & Cooper, 2000; Portello & Long, 2001) have included interpersonal relationships in their models of workplace stress. However, as Arnold et al (2005) have pointed out, surprisingly little research has been done in this area. When relationships with superiors, peers and subordinates at work are supportive, they will reduce interpersonal pressure and reduce perceived levels of stress (Lazarus, 1966). The emphasis in this thesis is on communication between superiors and their subordinates. The relationship with someone who has the power to formally discipline you in some way or even terminate your employment contract can be fraught with difficulty.

Interpersonal communication

1.1 Communication style

Communication is fundamental to social interaction. As such, the study of communication is a huge area of research incorporating a wide range of disciplines. An individual's communication style can be understood in several different ways. Some researchers, in attempting to clarify what is meant by communication have proposed a tight but rather narrow definition. For example, Hartley (1993) defines interpersonal communication as a face-to-face meeting between two people. However, much of modern-day communication, especially organisational communication, is neither face-to-face nor confined to two people.

Hartley also claims that interpersonal communication does not simply mean the exchange of messages between two people. Instead, he focuses on the exchange and creation of meaning. This highlights a potential problem arising from the structural properties of e-mail communication. Section 1.3e examines the question of whether e-mail communication can ever be classed as conversation (in Hartley's sense of creating shared meaning) or whether it is limited to the mere exchange of messages. However, it may be that Hartley's emphasis on the joint creation of meaning, even in face-to-face meetings is a rather idealised notion of a conversation. It must be recognised that the exchange and creation of meaning may be entirely one-sided, especially when there are differences in status and power between the communicators. In order to fully understand interpersonal communication it is necessary to first take a much broader view. Psychological approaches to communication tend to start with the distinction between verbal and non-verbal communication (e.g. Cappella and Palmer, 1993).

1.1a Verbal communication

A full understanding of verbal communication needs to incorporate both language and paralanguage:

Language

Language is a collection of sounds governed by shared rules in order to convey meaning. The basic components of language are phonemes (meaningless

sounds), which can structured using rules, into morphemes (basic units of meaning), which in turn can be structured into words using morphological rules. Using rules of syntax words can then be structured into sentences and longer utterances. Cognitive psychology has tended to focus on speech production and a number of models (e.g. Dell and O'Seaghdha, 1991, Bock and Levelt, 1994) have been suggested. These models have a number of features in common (Eysenck and Keane, 1995) e.g. they tend to use speech errors as evidence. More importantly they tend to view the process of speech production as progressing in a series of stages. According to this approach speech production starts at the level of meaning and progresses to the sounds to be uttered. Understanding how speech is comprehended involves the same process but in reverse i.e. starting with the sounds uttered and progressing to an understanding of the meaning of the message.

The standard cognitive explanation of language production as an explanation of communication has been challenged by an increasing emphasis on the social nature of communication. Researchers in sociolinguistics (e.g. Fishman 1972, Forgas, 1985a) have argued that a full understanding of language requires an understanding of the cultural rules governing what to say and when. Vygotsky (1962) first proposed the notion that inner speech was the medium of thought and that we tend to view the world in terms of linguistic categories. This questions the cognitive view that thought determines language and poses the question of whether social communication in the form of language, determines thought.

More recently discursive psychologists (Edwards & Potter, 1992) in a damning criticism of the cognitive approach to language have pointed out the dangers in viewing 'speech as a window on the mind'. They argue that much of experimental psychology falls into this trap. They argue that the responses of participants in psychology experiments are mostly determined by the constraints of the situation. For example, Antaki (1994) examined the area of social psychology known as attribution. The basic explanation of attribution is that humans are driven to understand the world around them because understanding events is essential in order to exert control over our environment. In our attempt to understand the world around us we construct explanation of events including explanations of why people behave the way they do. Heider (1958) suggested that we look for explanations of the cause of a person's

behaviour in either their personality or the situation they are in. This distinction between attributing the cause of behaviour to internal (personality) variables and external (situational) variables led to the development of the attributional research paradigm. The standard attribution experiment consisted of giving participants a brief, fictitious, written account of a person's reaction to an event.

Edwards and Potter (1992) propose a model for understanding communication called the discursive action model (DAM). In fact, as they point out, this is not a model in the traditional sense but rather a list of characteristics describing the actions that are accomplished by discourse. In an important departure from the cognitive approach, the authors do not attempt to interpret speech and writing as representing underlying cognitive states. Instead, they show how speech and text should be understood in terms of the social actions that they perform. So, for example, remembering is viewed as the production of a version of events. They further propose that these versions of events will have certain characteristics. They argue against the interpretation of description as an objective account of events and propose that descriptions necessarily involve a dilemma of stake or interest. This dilemma stems from the fact that the communicator will want to establish their version as credible and factual whilst at the same time wanting to underplay their self-interest in this version. Thus, the speaker may assert that they are 'just telling it like it is'. Furthermore, a speaker will structure an account in such a way as to undermine or reject an alternative account. For discursive psychologists then, there is no such thing as 'mere description'. This type of analysis may be particularly useful in understanding how people behave in situations of conflict where people are concerned with apportioning blame or attributing cause whilst wanting to appear to be giving a purely factual account.

Although the methodology of discourse analysis is not used in the studies in this thesis, it is recognised that the discursive approach to viewing language as situated action and the more general social constructionist approach to the creation of truth and meaning make valuable contributions to understanding interpersonal communication.

Paralanguage

Paralanguage refers not to *what* is said but to *how* it is said. A great deal of information can be conveyed in the non-linguistic accompaniment to speech. Knapp (1978) and Trager (1958) have identified volume, stress, pitch, speed, tone of voice, pauses, throat-clearing, grunts and sighs as components of paralanguage. Whilst Argyle (1975) has noted that timing, pitch and loudness (the prosodic features of language) can have a dramatic effect on the meaning of utterances. For example, a rising intonation at the end of a statement turns it into a question or transmits uncertainty, requiring confirmation or denial. Ng and Bradac (1993) found that speaking quickly communicates power and control. The accent of the speaker and variations of the language they speak can also be added to the list. Hogg and Vaughan (1998) refer to these aspects of speech as speech style.

Speech style is often seen as something that is modified according to the situation rather than an aspect of individual differences. Speech style is adjusted for example depending on whether the situation is formal or informal. We tend to use longer or more complex constructions, or more formalized language varieties or standard accents in a formal setting (Hogg and Vaughan, 1998). Furnham (1986) turns this around slightly by claiming that we will seek out situations that are more appropriate for our preferred speech style. Much research has been carried out on the effects of regional accent and standard versus non-standard language varieties on a number of evaluative dimensions. These evaluative dimensions tend to be divided into two kinds: status variables, for example, intelligence, competence, power, and solidarity (or socio-emotional) variables such as friendliness, warmth and closeness. Giles and Powesland (1975) found that standard language speakers (received pronunciation in Britain) are rated higher on status variables such as intelligence, confidence and ambition, whilst non-standard speakers tend to be rated higher on solidarity variables (Hogg et al, 1984).

1.1b Non-verbal communication

Birdwhistell (1970) suggested that the words we speak convey only about one third of the social meaning of a conversation. The other two thirds is carried by how people behave when they communicate. Non-verbal signals are conveyed using four channels: visual, auditory, olfactory and tactile. The most commonly used channels in

a work environment are the visual and the auditory. Tactile communication at work is usually limited to hand shaking and the occasional slap on the back and comments regarding smell are generally regarded as too personal for a work situation.

Non-verbal behaviour has been classified into seven basic types (Reid and Hammersley, 2000): Proximity relates to how close or far apart people stay during a conversation. There are cultural differences in preferred proximity. Britons prefer a greater distance than Hispanic and Arab cultures. There are also status differences in proximity. People of higher status are allowed to approach closer to people of lower status more than the other way around (Gifford, 1982). The concept of personal space has been the focus of much research in environmental psychology. Early work by Sommer (1969) established the general principal that having one's personal space invaded by a stranger is an unpleasant experience. Summer actually carried out a number of studies looking at how quickly a person moved away when their space was invaded. A number of studies have shown that the response to invasion of one's personal space is affected by a number of factors including closeness (the closer the invader sat, the quicker the person moved away), gender: male strangers evoke more negative feelings (Rustemli, 1988), and status: Barash (1973) showed that students fled more quickly when the invader was dressed as a member of the faculty staff than when dressed as a fellow student. Several of the studies in this thesis examine the effects of the status of the communicator on the responses of the message recipient.

A great deal of information can be gained from a persons posture. This refers to how a person sits or stands, whether they are open and relaxed or closed and tense. An interesting study by Gardin, Kaplan, Firestone and Gowan (1973) examined the effect of orientation (face-to-face or side-to-side) on competition and cooperation. Previous work by Sommer (1969) found that questionnaire respondents would prefer a face-to-face arrangement for competition. In the experiment by Gardin et al (1973) the participants in a discussion were sat either face-to-face or side on and could either see each other or not (a visual barrier was used). They then engaged in the prisoners dilemma game, in which either cooperation or competition can lead to a successful outcome. Contrary to what might be expected, the participants cooperated more in the face-to-face, visual access condition. Gifford (1996) suggests that the questionnaire respondents in the Summer study underestimated the powerful effect of visual

presence. The face-to-face arrangement makes the other person very salient and tends to focus our attention on them. This may reduce our willingness to engage in behaviour that is likely to produce conflict and negative emotions. This view is supported by Seta, Paulus and Schkade (1976) who instructed group participants to either compete or cooperate at either a small or large interpersonal distance. They found that performance was better when participants competed at the larger interpersonal distance and cooperation produced better performance at the smaller interpersonal distance.

Reid and Hammersley's (2000) third classification of non-verbal behaviour is body behaviours. This refers to what people are doing. Tapping their pencil on the desk may illustrate impatience, fiddling with things or doodling may suggest boredom or nervousness. However, doodling may also be used as an aid to concentration and this illustrates that there is no universally agreed interpretation of all non-verbal signals. There are individual, contextual and cultural factors to be considered in the interpretation of behaviours.

Facial expressions and gestures may be used alongside speech to complement and emphasise what is being said. According to Reid and Hammersley they may also be used to indicate turn taking in a discussion or conversation and may also indicate contradiction e.g. frowning whilst agreeing. Many facial gestures have been found to have universal, cross-cultural meaning. Facial expressions of anger, disgust, happiness, sadness and fear/anxiety can be recognised all over the world. However, gestures such as head nodding may have very different meaning in different cultures.

Eye contact is recognised as an important interpersonal behaviour. Too much or too little eye contact can be very disturbing. Lack of eye contact when answering a question may be interpreted as an indication of lying. A person's appearance, in terms of the clothes they wear, their hairstyle etc. also conveys meaning. Studies have shown that people form impressions of others in the first few seconds of meeting them. Once the initial impression is formed people will seek out evidence of behaviour that confirms the initial impression, rather than form a balanced view by weighing all the evidence (Stevenage and Mackay, 1999; Vonk, 1999). Reid and

Hammersley (2000) also included 'quality of speech' as the final category of non-verbal behaviour. However, this is covered above under the heading of paralanguage.

Much of the function of non-verbal communication is to accompany, augment and facilitate verbal communication. However, non-verbal communication can also convey important emotional information. The general impressions we form about how a person is feeling, what sort of person they are and how they feel about us, is based to a large extent on non-verbal information. Whilst we may not remember the exact words that were spoken and we may not even have consciously registered the non-verbal signals, nevertheless they will have contributed to the lasting general impression that we take away of an encounter (Reid and Hammersley, 2000).

There is also evidence that some non-verbal channels are more controllable than others (Ekman and Friesen, 1969; Rosenthal & DePaulo, 1979). Ekman and Friesen (1969) proposed that the face was a more controllable channel and therefore expresses information that we choose to volunteer. Information transmitted via the face is more subject to impression management and more likely to be consistent with the verbal message (Brown, 1986). By contrast, the messages from the voice and body are less controllable and more likely to provide a truer picture of a person's feelings. Swann, Stein-Seroussi, and McNulty (1992) found, in their participants, that much of the interpersonal information that leaked out through the less-controllable, non-verbal channel of vocal tone, tended to be negative. This was in contrast to the veneer of kindness expressed in their verbal channel.

Given the arguments in favour of the importance of non-verbal communication there are clearly implications for any loss of this type of information. This may have important consequences for how communications are interpreted, especially in relation to areas such as cooperation and competition and dispute escalation. The way in which electronically mediated communication is affected by the lack of non-verbal cues is examined further in section 1.3.

1.2 Organizational communication

In this section a number of aspects of organizational communication are considered. These areas (cooperation-competition, formality, leadership, and emotions at work)

underpin the empirical studies carried out in this thesis. Each of the areas contain important dimensions for understanding the antecedents and consequences of different ways of communicating.

1.2a Cooperation and competition

Argyle (1991) identified five characteristics of cooperative groups: mutual help, division of labour, interpersonal attraction, commitment to the group, and internalised motivation. Argyle claimed that studies of high and low output industries showed that the amount of help was an important factor. Working together and a high motivation to help, occur when the rewards of each member are, at least in part, dependent on the performance of others. Division of labour occurs naturally when a group is given a cooperative incentive and group members make different contributions to the work.

Cooperative groups generate greater interpersonal liking because relations are more friendly and less aggressive. Cooperative groups have lower absenteeism and labour turnover. The experience of cooperative interaction is a source of satisfaction. Commitment to the group is an important predictor of staying with the group. The feeling of commitment is partly due to the balance of the rewards and costs of staying with the group but is also partly a consequence of an emotional commitment.

Johnson et al., (1981) in a meta-analysis of 122 studies comparing cooperation with competition, found that cooperative groups performed significantly better than competitive groups or competitive individuals. The advantages of cooperation are however, dependent to some degree, on the type of task and on the behaviour of others. For example, Adler and Towne (1993) suggest that competition is an appropriate strategy when the issue is important and other parties will take advantage of a non-competetive approach .

1.2b Formality

The formality of a setting may exert considerable influence on people's behaviour. Chatting with friends and family typically represents the least formal type of social context whilst the courtroom situation with clearly defined roles and rules of

participation represents one of the most formal social contexts. Reid and Hammersley (2000) have identified the characteristic speech styles associated with formal and informal settings:

Informal	*Formal*
Addressing people informally: by first names or nicknames	Addressing people by title and surname, or position e.g. 'Madam President'
Use of slang dialect and swearwords	Avoidance of slang and swearwords, minimisation of dialect
Casual use of grammar, not speaking in whole sentences	Careful use of grammatical sentences
Relaxed rules of turn-taking: interruptions, changes in conversation and several people talking at once	Strict rules of turn-taking, addressing comments through the chair. Interruptions and multiple conversations not allowed
All topics of conversation allowed, even personal topics	Only specified topics allowed, personal topics usually excluded
Expression of feeling and emotion permitted	Expression of feeling and emotion generally discouraged

Table 1-1 Formal and informal speech (Reid and Hammersley, 2000)

The usual emphasis on this topic in business and management texts is on developing the appropriate social skills to be able to communicate effectively according to the formality of the situation (e.g. Evans, 1990). This approach tends to focus on developing skills to overcome lack of assertiveness and lack of confidence. Speaking out in a formal organizational meeting can be a daunting task, especially for someone new to the situation. In fact, the situation can be so anxiety provoking that many will avoid it altogether. The anxiety resulting from a formal encounter can lead to excessive self-monitoring. This may cause an individual to over-evaluate what they want to say to such an extent that it never gets said.

Deliberate manipulation of the formality of a situation can be used to achieve certain objectives. For example, making a formal situation more informal (a common sales technique) may serve to relax the participants and encourage them to disclose more personal information than they otherwise would. On the other hand, deliberately enhancing the formality of a situation may serve to intimidate participants into agreement or silence. This may be used where the people conducting the meeting are trying to get agreement on a particular issue. Disagreement with the strategy or solution presented by high-status individuals, keen to get their plan accepted and ratified, may be highly anxiety provoking. In such a situation it may be tempting to publicly agree with the suggestion, in order to reduce anxiety, even if you do not agree with the suggestion, especially in a situation where you have no personal stake in the outcome. Given the consensus-seeking nature of group decision making (Janis, 1982), it would appear that the formal organizational meeting is particularly susceptible to the deliberate misuse of formality.

1.2c Leadership and communication

One of the key components of most definitions of leadership is influence. Shakleton and Wale (2000) suggest that all definitions of leadership involve three important components: group, influence and goal. The context of leadership takes place within a work-group, which may range in size from a small sub-group of a large organization or a small business to a large-scale corporate organization. Modern organizational theory puts great emphasis on organizations having goals to aim for. Part of the job of the leader is to influence people in the group to achieve the goals. Leadership may also include defining the goals of the organization or group.

Communication is clearly central to the process of influence and a number of studies have examined leadership communication. Early studies concentrated on the effects of leader behaviour. Lippit and White's (1943) classic study examined the effectiveness of different styles of leadership using groups of schoolboys working on a project. They compared three styles of leadership: democratic, autocratic and laissez-faire. In the democratic style the leader acted as chairperson and asked the group of boys for their ideas on how they should proceed, offering help and guidance

to complete the task. The autocratic leader assigned tasks to the group members and gave them instructions on how to carry out the tasks and did not seek contributions from the group members. In the laissez-faire condition the leader simply handed out the basic instructions and let them get on with the task. The interesting aspect of this study is that the people acting as leaders were trained in all three leadership styles and used the different styles depending on the needs of the experiment. This was a deliberate strategy by the experimenters in order to show that any differences in the groups were due to the leadership style and not to the individual personality of the leader.

The results of the above study showed that task performance was marginally better in the autocratic leadership condition than the democratic leadership condition with the laissez-faire condition coming some way behind. At first glance this may be appear to be evidence of the supremacy of the autocratic style. However, the marginally better performance in the autocratic condition was only maintained as long as the leader was present in the room. In situations where the leader was not present in the room task performance was better in the democratic condition. This was due to the tendency of the boys in the democratic condition to carry on working at the same rate whether the leader was present or not whilst the boys in the autocratic condition tended to stop working when the leader left the room.

More detailed investigations into leadership style were carried out in the 1960's in major research programmes at the universities of Michigan and Ohio State (Shakleton and Wale, 2000). The Michigan studies focused on the differences between employee-centred and job-centred leaders. They found that employee-centred leaders were more effective than job-centred leaders. The Ohio studies revealed several dimensions of leadership but most could be grouped under the two headings of initiating structure and consideration. This important distinction between two kinds of behaviour is a central theme of leadership theory and research, from early studies to the present day.

Bales (1951) showed that initiating structure or task-orientated leadership mostly involved communications that related directly to the completion of the task at hand, whilst socio-emotional or employee-centred leadership involved

communications relating to the emotional aspects of working with other people, such as creating a sense of belonging, and giving emotional and social support. Bales claimed that the two leadership roles were best carried out by two separate individuals. However, Blake and McCanse (1991) claimed that the best leaders are those who score high in both task and socio-emotional leadership.

Other studies, however, have shown that this may be an over-simplification of leadership. Greene (1975), for example, suggested that rather than leadership style influencing output, the opposite is true and output influences leadership style. The contingency approach to leadership (e.g. Hersey and Blanchard, 1988) suggests that the situation (favourable/unfavourable) determines which style of leadership (autocratic or democratic) will be most effective.

The most important leadership theory in recent times makes a distinction between transformational and transactional leadership (Bass, 1985). According to Bass, transformational leadership is an essential element of motivating workers to do more than simply fulfil the minimum requirements of their job. Transactional leadership, on the other hand, is about maintaining the status quo and ensuring that workers are doing what they are supposed to be doing. Bennis and Nanus (1985) make a similar distinction between managers and leaders. In their view leadership is about innovation and challenging the organizational status quo. They discuss the importance of creating a vision and developing commitment to that vision as central elements of leadership. In this regard they emphasise a number of key skills in how good leaders relate to other people. Bass developed a measure of transformational leadership that included measures of individual consideration and intellectual stimulation. According to this 'New Leadership' approach, good leadership is about winning hearts and minds

1.2d Emotional intelligence at work

An interesting and popular approach to communication and interpersonal relations has developed in recent years. Emotional intelligence (Goleman, 1998), emotional competence (Salovey & Sluyter, 1997) or emotional knowledge and rapport (Levenson & Ruef, 1997), refers to the ability to manage emotions in order to produce positive outcomes. The writers claim that the objective is not to deny or

suppress emotions but to develop awareness of the role of emotions in relations with others and to promote effective communication skills. Interactions in the workplace often become emotionally charged and these emotionally charged situations are difficult to handle, especially with poor communication skills. Most individuals have difficulty in handling volatile situations when emotions of anger and anxiety are aroused.

The approach is an interesting take on one of the fundamental aspects of psychology: the relationship between emotions and cognitions. For example, Weisinger (1998) applies emotional intelligence to the workplace and discusses the causes and consequences of destructive communication. He identifies destructive criticism as a particular cause of emotional fallout and suggests that destructive communication often occurs due to lack of awareness. He suggests, for example, that the boss may not be aware of either the effect they are having on the other person or, their real reason for communicating harshly. The first step in developing emotional intelligence is to manage emotions by developing self-awareness. Thus, the boss may be communicating harshly because of his or her own frustration at not having communicated properly what was required.

In developing self-awareness, there is an emphasis on developing an inner dialogue and examining the various appraisals (impressions, interpretations, evaluations, and expectancies) that we make about ourselves, other people, and situations. There is an emphasis on how thoughts or appraisals such as "I can't handle this", lead to particular emotions and behaviours. Following the development of self-awareness, there is a focus on developing the practical skills necessary to change the way that we think and feel in order to achieve more effective outcomes.

Goleman (1995, 1998) has suggested that emotional intelligence may be as important as traditional intelligence in predicting workplace success. Understandably, such claims have given rise to considerable enthusiasm about emotional intelligence in workplace settings. Empirical research, whilst generally supportive of the beneficial effects, has led to a closer examination of the construct and its measurement. Davis, Stankov, and Roberts (1998) conducted a large-scale psychometric investigation of emotional intelligence and found that most measures

suffered from low reliability and low validity. They did, however, find evidence for the existence of a separate factor of emotional perception.

Emotional recognition appears to be the most reliably validated component of emotional intelligence. Elfenbein and Ambady (2002) investigated the consequences of being able to recognise non-verbal emotional cues. They found evidence that outcomes (ratings of workplace performance by supervisors and colleagues) were dependent on whether participants were skilled at recognising positive or negative emotions. Recognition of positive emotions led to more positive outcomes, whereas recognition of negative emotions corresponded with more negative outcomes. Emotional intelligence may play a part in the sending and receiving of threatening messages. It is likely to influence both the likelihood of an emotionally disturbing message being sent as well as the extent to which the recipient is emotionally affected by the message. It follows that emotional intelligence should be included in the personality characteristics that may moderate the effect of hostile or threatening messages.

Jain and Sinha (2005) examined the relationship between emotional intelligence and aspects of general health (sense of accomplishment and contribution, and a botheration-free existence) in an organisational setting. They found evidence of the predictive ability of the dimension of emotional intelligence known as positive attitude about life. They showed that a positive attitude about life predicted both factors of general health. Law, Wong and Song (2004) examined the question of whether emotional intelligence is an aspect of personality already covered by the Big Five personality dimensions (extroversion, emotionality, agreeableness, conscientiousness, and openness). They found evidence that emotional intelligence is distinct from personality as measured by the Big Five and that it had incremental predictive power on life satisfaction.

Emotions resulting from hostile communication are examined in the present project. Weisinger's (1998) point about destructive criticism arising from a lack of self-awareness may have an important bearing on the question of how and why destructive messages arise in the first place. The emphasis on developing self-

awareness in the emotional intelligence literature may also be an important starting point for any attempt to develop a more constructive feedback environment.

1.3 Mediated communication

Advances in communications technology always bring with them the possibility that communication will somehow be affected by the medium itself. The recent explosion of electronic communication via the internet and e-mail and text messaging on mobile phones has led to concerns being voiced about how such technologies may be changing the very nature of communication (e.g. McKenna & Bargh, 2000). However, other writers have argued that the effects of these new technologies are no more dramatic than the effect that, what are now considered to be 'old' technologies, had when they were introduced. Gackenbach and Ellerman (1998), for example, argue that many scholars are reinventing the wheel when discussing the implications of the Internet. Joinson (2003) examines the impact that a number of technologies had when they were first introduced, including writing, the telephone and mobile text messaging. As the following paragraphs will show, each of these technologies had an impact on human communication that was no less dramatic than the current electronic revolution.

1.3a Writing

Ong (1986) reminds us that writing, as opposed to oral communication, is a technology. In terms of human development writing is a relatively recent technology. Oral communication has been dated at about 50,000 years ago whilst writing has only been around for about 5,000 years. In fact, reading and writing only became available to the masses following the invention of the printing press around 1450. Until this point writing was a minority pursuit involving the time-consuming production of hand-written parchments.

Ong (1986) discusses the implications of writing, claiming that it 'restructures consciousness', even claiming that writing has a neuropsychological effect by encouraging left hemisphere activity. The specific technology used for writing also contributes to the effects that writing has on communication. The printing press led directly to new uses of the written word, such as the newspaper and also guaranteed the legibility of the text. In recent years the development of computer technology, in

particular the word processing package has had the most dramatic effect on the process of writing. The ability to edit text quickly and easily using a computer and word processor has meant that it is no longer necessary to construct whole sentences before typing. Yates (1996) has argued that this feature of word processing has brought writing closer to the oral tradition. The upsurge in synchronous instant messaging using the internet may also be making this form of written communication more like oral communication (Collot and Belmore, 1996), thus countering, at least to some degree, Plato's claim that writing is always a facsimile of the mind. Another effect of the easy availability of word processing technology and computer communication is that many more people who would have had no reason to engage in writing are now much more likely to write. As Joinson (2003) points out, this may have a large-scale impact on people's psychological processes.

1.3b The telephone

There are many parallels between the development of the telephone and the development of the use of personal computers for communication. For example, Joinson (2003) points out that the early marketing of the telephone emphasised its business uses and that where it was advertised to residential customers, the emphasis was placed on the practical advantages such as ordering goods and emergency calls. Fischer (1992) also reports that telephone executives bemoaned the frivolous use of the telephone and actively discouraged social uses of the telephone until the 1920's. According to Fischer early users of the telephone complained of profanity, yelling and abuse. The telephone company made considerable effort to stamp out such misuse and introduced guidelines to improve telephone courtesy.

The use of the telephone to develop and maintain interpersonal relationships came many years after the initial implementation of telephone networks. This pattern is very similar to the way that the use of personal computers has developed. In the early years the marketing of the personal computer encouraged the use of the computer for practical purposes such as doing the accounts, budget planning or stock control. Similarly, the early development of the internet focused exclusively on its use for academic purposes. It wasn't until some years later that the personal computer and the internet were used for purely social purposes.

It should also be recognized that there was concern about the effect that the telephone would have on interpersonal communication. Fischer (1992) summarizes this concern by asserting that the telephone cannot capture the intimacies conveyed by eye contact and body language. He also points out that telephone contact cannot capture the depth of interpersonal contact during shared experiences such as having a meal or going for a walk. However, despite these concerns, it seems to be the case that the telephone has become an important tool in maintaining and developing relationships. People feel close to those friends and relations that they talk to on the telephone and the vast majority of interpersonal calls are directed to a relatively small number of people (typically five or six). British Telecom recognized this when they introduced the 'Friends and Family' discount on calls to selected numbers.

The introduction of the mobile telephone using satellite technology has made telephone communication possible whilst people are on the move and without the need to be connected via a telephone wire. The 1990's saw rapid advances in technology that made the mobile phone smaller and lighter. The introduction of the pre-pay tariff or 'pay-as-you-go' system and the availability of cheap reliable phones allowed young people to have access to mobile phone technology. However, the cost of calls tended to inhibit the use of the mobile phone for casual chatting and calls were generally limited to making arrangements for face-to-face meetings. It wasn't until around 1999/2000 that a hitherto little used facility of mobile phones suddenly became extremely popular:

1.3c Text messaging

The ability of mobile phones to transmit text messages using SMS (Short Messaging System) was first introduced in the early 1990's. The system allows text to be written using the keypads on the mobile phone. The completed message can then be transmitted to another mobile phone. Messages can also be sent to a mobile phone from a computer. Writing a message using a mobile phone is quite difficult and time-consuming and the facility was not well publicised by the mobile telephone companies. In fact, the use of text messaging was initially free and when the phone companies did work out how to charge for the service, it was considerably cheaper than the cost of a call. For teenagers and young people with little spare money, text messaging became an extremely popular means of communicating with friends and

acquaintances. According to the GSM (Global System for Mobile communication) the number of text message sent between 1999 and 2000 in the UK increased tenfold.

An important feature of SMS is that the number of characters allowed in a message is limited to 160 (for the Latin alphabet). This has led to the development of shorthand replacements for common phrases (e.g. 'see you later' is commonly written as 'CU L8er'). It also led to phrases that are common practice in written communication but not strictly part of the message, being omitted altogether. Salutations such as 'Dear _____' or 'yours sincerely' and 'niceties' such as 'how are you?' or 'hope all is well with you and your family', are left out of messages because they use up too many characters.

The potential problems associated with text messaging are mostly related to its overuse. Concern has been expressed about young people spending too much time text messaging and even about the possibility of repetitive strain injury from the activity. However, Joinson, (2005, p.17) suggests a rather different kind of problem associated with the style of communication commonly used in text messaging. Joinson reports that text messaging keeps intimacy at bay and promotes terseness. This comment may have particular resonance if the style of communication used in text messaging is carried over into other forms of communication. Text messaging became popular with young people for communicating with their friends i.e. between people who were familiar with the language of text messages and were likely to have regular face-to-face contact. Under these circumstance misunderstandings are less likely to occur and when they do occur are likely to have relatively minor consequences and be easily rectified. However, text messaging language and style of communication is likely to be completely alien to those who have never used it (such as older people). It is also likely to be inappropriate in the wider context (e.g. at work). It is not surprising therefore, that concern has been expressed about the social skills development of young people using this type of communication.

1.3d Internet communication

Use of the Internet is predominantly seen as being for gathering information. The majority of tools available are aimed at enhancing the ability to provide and gather information. Enhancing the usability of websites, making it

possible to purchase goods on line and increasing the links between websites are all seen as happening in a social vacuum. The vision of the Internet as an 'information superhighway' has dominated government policy, the advertising of Internet service providers (ISP's) and most discussions of internet use. The installation of Internet computers in libraries enhances the view of the Internet user as a processor of information. However, as seen with previous technologies, the human desire for social contact is a very powerful force and to understand the current and future potential of the internet it is necessary to view the user of the Internet, not as an information processor, but as a social being (Joinson, 2003). Rheingold (2000) concurred with this view when calling for a more 'social web' and for the development of tools to increase social connections.

The increased use of the Internet is related to the increased likelihood that everyone, at least in this country and most of the developed world will have access to the technology. Most families in the UK have a personal computer and access to the Internet either via 'dial-up' or increasingly via a broadband connection. There is also increased provision in educational establishments, the workplace and the high street (Internet cafes). The increased availability of access to the technology will serve to hasten the development of the use of the Internet for social contact.

1.3e E-mail

E-mail has become the primary source of communication in the workplace (APS, 2003). It is also becoming the primary source of personal communication (Rosenberg, 2003). North Americans sent an average of 6.1 billion e-mails a day in 2003 and the signs are that e-mail use will continue to increase in the coming years (that number will rise to 18 billion e-mails a day in 2005 (Levitt & Mahowald, 2003)). It seems that human communication is now dominated by electronic mail. Furthermore, this shift in the medium of communication has taken place over a relatively short time: in 1998 only 9% of households in the UK (2.3 million) could access the internet from home. By 2003 that figure had risen to 48% or 11.9 million (National Statistics, 2003).

E-mail is revolutionising business practice in a wide range of occupations. For example in the legal profession, Horton Flaherty (2001) has shown that attorneys are

now negotiating, advising, exchanging documents and responding to clients via e-mail. In the medical profession (Katz, 2003) has examined the impact of e-mail on doctor-patient relations. E-mail is even being used in areas such as psychotherapy (McDaniel, 2003) and counselling (Nakada & Masayuki, 2000), traditionally regarded as being firmly in the domain of face-to-face interaction. Customer service (Matila & Mount, 2003) and government (Riquelme & Buranasantikul, 2004) are also becoming established areas for e-mail communication.

In all areas of organisational communication there are major practical advantages of using e-mail as a medium of communication. The advanced technology of computer-mediated communication makes it an easy and tempting form of communication. The rapid growth in the use of e-mail for both personal and business use is a remarkable phenomenon. It has not been forced upon us. We have embraced the new technology as a liberating force. In order for a technology to be so readily embraced, there must clearly be some major advantages over the alternatives. The contribution of electronic mail to the ease and efficiency of worldwide communication is readily acknowledged.

However, it is only now that e-mail use has become so ubiquitous that we are beginning to ask questions about the possible negative consequences of this form of communication. This thesis will address areas of concern that are beginning to emerge and assess the impact that e-mail is having on people at work, especially in the areas of well-being, health and productivity. The rapid development of e-mail has led to a lag in the development of a body of research examining its impact.

What are the characteristics of email?

It is easy to see why some of the characteristics of e-mail have led to the enormous growth in its use. Speed of information transfer, convenience, increased accessibility of coworkers and increased accessibility of information have all contributed to the rapid growth in electronic communication. But, what is e-mail? Is it speech or writing? What qualities does it have that are unlike speech or writing? Baron (1998) suggests that the linguistic properties of e-mail are analogous to the pidginization and creolization process in spoken language.

When comparing electronic messages with other forms of communication it is often claimed that e-mail is a less rich form of communication. This is because social cues such as facial expression, tone of voice, posture, and dress are not available to e-mail communicators. Electronic communication has been variously described as having limited bandwidth (Sproull & Kiesler, 1986), being socially constrained (Guadagno & Cialdini, 2002), and having reduced social cues.

Friedman and Currall (2003) discuss the properties of e-mail in some detail. They point out that e-mail communication is asynchronous. By asynchronous they mean that the communicators are not co-present and that there is a delay in reading and responding to messages. The result is that the communication is not a conversation. Friedman and Currall examine e-mail communication in the light of Clark and Brennan's (1991) detailed description of differences across different communication media. Clark and Brannan use the term 'grounding' to mean the process by which two parties achieve a shared sense of understanding in a conversation. They argue there are six tools or features that lead to grounding:

1) *Co-presence*. Allows each party to be in the same environment as the other and see what they are doing and looking at (e.g. face-to-face)

2) *Visibility*. The parties can see each other but not their surroundings (e.g. face-to-face, video link).

3) *Audibility*. Each party can hear timing of speech and intonation (e.g. face-to-face, telephone, video link).

4) *Co-temporality*. Where each party receives an utterance just as it is produced (e.g. face-to-face, telephone, video link).

5) *Simultaneity*. Both parties can send and receive messages at the same time (e.g. face-to-face, telephone, video link).

6) *Sequentiality*. Where turn-taking cannot get out of sequence (e.g. face-to-face, telephone and video link).

Frieman and Currall (2003) point out that e-mail communication has none of the features necessary for grounding. Letter-writing also lacks the above features but involves extra effort and cost to produce. Letters and other written forms of communication are used to fulfil a particular function. In a work setting, a letter is usually used in more formal circumstances and would not be used where telephone or

face-to-face was easier. The point about e-mails is that they are so easy to send. They are in effect written communications masquerading as conversation.

Communicating by e-mail may feel like taking part in a conversation and yet the medium of e-mail lacks most of the essential characteristics to enable a real conversation to take place. Most of the essential properties of a conversation relate to the immediacy of the situation: the ability to interrupt the speaker, the opportunity to challenge what the speaker says, and the opportunity for the speaker to adjust their message according to the response. It is possible to retain some of these properties whilst communicating via e-mail. However, due to the difficulty of maintaining an ongoing interaction via e-mail, it is highly unlikely that e-mail interaction could ever achieve the most important characteristics of a good conversation. The outcome of a good conversation is when the participants achieve a shared understanding of the subject of the conversation that neither of the participants had started with. This involves a genuine sharing and acceptance of ideas until some shared meaning is achieved.

Productivity

Despite the advantages of communicating by e-mail, there is very little real evidence supporting an increase in productivity or efficiency. The evidence that does exist suggests that electronic communication impairs efficiency. A number of studies have shown that groups that interact via electronic media take longer to complete tasks than groups interacting face-to-face (e.g. Kiesler, Zubrow, Moses, & Geller, 1985; Weisband, 1992). Straus and McGrath (1994) showed that differences in productivity between computer mediated and face-to-face groups were dependent on the type of task. They found some advantages of the computer-mediated groups over face-to-face groups in an idea generation task. The authors suggest that computer-mediated communication is better suited to this kind of task because group members can type messages simultaneously, whereas members of face-to-face groups have to wait (and perhaps struggle) to get their idea heard. Straus and McGrath (1994) found that computer-mediated communication was particularly inappropriate for a judgement task where participants had to determine the appropriate disciplinary action for a breach of organizational rules.

A considerable amount of research has compared decision-making in face-to-face (FTF) groups with decision-making in computer-mediated groups (e.g. Sproull & Kiesler, 1986; McGuire, Kiesler, & Siegal, 1987). These studies have found that computer-mediated interaction reduces paralinguistic and social context cues and prevents the full exchange of views and feedback possible in face-to-face interaction. The number, length, complexity and novelty of arguments is reduced in computer-mediated groups compared with face-to-face groups. Computer-mediated (CM) discussions tend to consist of simple statements of position rather than real argumentation. The limitations associated with computer-mediated interaction (restricted ability to exchange verbal and paralinguistic information, or provide dynamic feedback, convey social context cues, or co-ordinate turn-taking) tend to discourage the exchange of arguments. Work on group decision-making has shown that some of the worst aspects of groups, such as groupthink and group polarization occur when argumentation is absent. Due to the speed and ease of electronic mail, there is a temptation to use e-mail for all organizational communication. However, when the characteristics of computer-mediated communication are combined with the additional characteristics of electronic mail, there would appear to be a strong case for arguing that important decisions should not be made via e-mail.

Closely related to work in the area of group dynamics is research on team performance and electronic communication. One of the advantages of computer-mediated communication is that it is a more egalitarian environment than face-to-face communication. Research has shown that computer-mediation reduces the hierarchy and communication is more even (Kiesler & Sproull, 1992; Strauss, 1996). However, team members communicating electronically lack awareness of the social context in which they are operating (Bordia, 1997). The term 'mutual knowledge' (Crampton, 2001) describes a team-members understanding, not only of the information that they have, but also an awareness of the shared knowledge. CM team members lack direct knowledge and shared experience of other team-members habits and environments. Extra effort is needed in computer-mediated communication to convey mutual knowledge normally conveyed through non-verbal and paraverbal nuances. According to Thompson and Coovert (2003) a team-member in a CM team loses the mental image of their audience that is normally present in a FTF collaboration. Lack of mutual knowledge leads to confusion

E-mail is increasingly replacing face-to-face and telephone communication in the area of negotiation. This dramatic change in negotiating contracts with strangers and disputes between co-workers has led some writers to question the use of the new medium (e.g. Seaberry, 2000). However, very little empirical research has been done on how e-mail and face-to-face negotiations differ. Research looking at the medium of negotiation has traditionally evaluated the effect of the media on negotiated outcomes of high mutual benefit (Poole, Shannon, & DeSanctis, 1992). In a review of the empirical research Morris, Nadler, Kurtzberg, & Thompson (2002) showed that the evidence is mixed. One study (Purdy, Nye, & Balakrishnan, 1997) found an advantage of e-mail. One study found a disadvantage of e-mail (Arunachalam & Dilla, 1995). And three studies found no significant difference between e-mail and face-to-face negotiation (Barsness & Tenbrunsel, 1998; Croson, 1999: Rangswamy & Shell, 1997).

These mixed findings suggest that all e-mail negotiations differ from each other and that the problems of e-mail negotiation may arise in some negotiations more than others. Morris et al (2002) claimed that e-mail negotiations suffered from low levels of rapport. They showed that by lubricating the interaction with a brief telephone call prior to the e-mail interaction, outcomes could be improved.

Early studies of the effect of the communication medium on the persuasiveness of a message showed that the medium of communication influences the character and effectiveness of the communication process (Chaiken & Eagly, 1983). One of the dimensions along which communication modes can be said to differ is the extent to which the message medium makes available various personal and social factors not related to the message. Text-based modes such as essays and newspaper articles are described as socially constrained whilst voice-based modes such as the telephone through visually based modes such as videotape to face-to-face meetings are increasingly socially unconstrained.(Guadagno & Cialdini, 2002). E-mail communication in this classification is a highly constrained medium and persuasive messages delivered by e-mail would be expected to produce response patterns similar to those produced by other socially constrained media.

These studies have shown that in less socially constrained media, personal cues about the communicator were more salient. Chaiken and Eagly (1983) compared the effect of media when the communicator was either likable or unlikable. Participants in the more socially unconstrained media condition showed greater attitude change when the speaker was likable. When the speaker was not likable, attitude change was greatest for those in the socially constrained condition. A series of studies by Morley and Stephenson (1977) compared the effect of making a strong case compared with making a weak case across different modalities. The results showed that a stronger case was necessary for persuasion in the socially constrained medium (telephone) whilst a weak case was more successful in the socially unconstrained, face-to-face condition. With fewer social cues available, a greater number of high quality arguments was necessary to achieve attitude change.

Later studies using computer-mediated-communication compared with face-to-face communication, showed participants were more likely to violate social norms of politeness and be focused on the task (Siegal, Dubrovsky, Kiesler, & McGuire, 1986). Additionally, a number of studies have shown that participants interacting face-to-face, like their discussion partners more than those interacting via computer (Kiesler, Zubrow, Moses, & Geller, 1985; Weisband & Atwater, 1999). Guadagno &Cialdini (2002) also showed gender differences in the effectiveness of messages in different modalities. Women in the face-to-face condition reported more agreement with the message than women in the e-mail condition. There was no significant difference in agreement for men in the face-to-face and e-mail conditions. The authors suggest that this is because women's roles focus them more on relationship formation and cooperation.

One of the advantages of e-mail communication is that it allows messages to be sent without interrupting the recipient. The ability to contact people without interrupting them is a feature of e-mail that may have an empowering effect on people who have some anxiety about the contact. The anxiety may be a consequence of the communicator having lower status than the recipient or it may be that the communicator is intimidated by the recipient or simply that the communicator is more generally anxious about social contact. Research has shown that interruptions are very disruptive to people working on a task. However, broadband technology now allows

computers to be on-line as long as the computer is switched on and many e-mail recipients now have their computers set to sound an alert when a new message arrives. Thus, the recipient is distracted from performing a task in order to read the new message. In fact, e-mail can be very disruptive to task performance if users continually break off their work to check for messages.

The following characteristics of electronic mail have been identified as having implications for productivity, stress and well being in organisations:

Speed and convenience

Messages can be sent and received almost instantaneously from one side of the world to the other. It may be impossible to tell whether a message has been sent from the office next door or some remote part of the globe. The recipient has no idea of the environmental conditions of the sender or of how long the sender spent constructing the message. This allows the sender to construct messages in private, at a time of their choosing, and to send the message at the click of a mouse. Communication by e-mail is almost too easy. The temptation to send e-mails has implications for both senders and recipients. Spending time constructing and sending unsolicited e-mails may become a satisfying distraction but may not be related to an individual's job description. One of the common sources of stress is now the sheer volume of messages in ones 'inbox'.

Lack of synchronicity

Synchronicity refers to the time period between a message being received and a response being given. Face-to-face and telephone communication are described as synchronous because the discussion takes place in 'real time'. Letter writing and e-mail are described as asynchronous. As Joinson (2003) points out, asynchronicity is an important feature of e-mail communication because valuable cognitive resources are no longer taken up by having to focus on the correspondent and formulate an immediate response. This allows the message sender to spend more time focussing on constructing the message. Considerable effort may be expended in constructing an apparently casual message.

Multiple addressability

This characteristic of e-mail refers to the ability to send a message to any number of recipients at the same time. In e-mail communication there is a choice between one-to-one communication or one-to-many. In e-mail communication within organisations there are often groups of people (such as departments or even the whole organisation) that can easily be sent a message. An e-mail group can be created by putting as many e-mail addresses as you want, under one generic name. The sender then only has to send the message to the group name. Another related feature is the 'reply to all' feature. In order to reply to an e-mail message you can choose to click the 'reply' button on the screen and this will send your reply to the sender. However, by clicking the 'reply to all' button your reply will go to the sender and all of the other people who received the original message. Romm and Pliskin (1999) discuss this feature of e-mail in relation to the power politics within organisations. They showed how the combination of addressing a large number of people and giving tight deadlines for compliance to instructions delivered by e-mail endowed the sender with enormous power.

Recordability

A considerable amount of information about an e-mail message is recorded automatically by the computer. The message itself is recorded and stored for posterity. This means that messages received that may have had no significance at the time may later become important, perhaps as part of a body of evidence regarding the senders pattern of behaviour. Details of the date and time that messages are sent are also recorded, allowing checks to be made on, for example, an employees response time.

Processing and routing

These features, identified by Romm and Pliskin (1997a) refer to the capacity to make changes to messages received by e-mail. Processing refers to how a message can be changed by the recipient before passing it on to people who were not listed as recipients of the original message (routing). The changes made maybe subtle (adding emphasis) or may involve no change to the message itself but include an attachment with comments about the message. Such altered messages may be sent to people who the original sender did not want share the message with, without the original senders knowledge.

1.4 Models of mediated communication

1.4a Social presence

Short, Williams, and Christie (1976) published the first major psychological account of the processes involved in mediated communication. The researchers involved were part of The Communications Studies Group based at University College London. The group compared communication over the telephone with face-to-face communication. The principle difference between these forms of communication is that communicators cannot see each other when communicating by telephone. Given that much of the literature on communication focuses on non-verbal cues, such as posture, appearance, and facial expression, it is not surprising that the studies tended to focus on what was lost when communicating by telephone.

Many experiments were carried out by The Communications Studies Group and some of the findings, especially those relating to conflict resolution, person perception and group discussion may have relevance to other forms of mediated communication. Short examined the different outcomes of telephone and face-to-face communication in situations of disagreement. Reid (1981) summarized the findings by stating that telephone discussions tended to produce more opinion change than face-to-face discussions. Williams (1975) studied the differences in person perception during group discussion in face-to-face and telephone conditions. Williams found that there was more agreement between group members who were face-to-face than between group members communicating by telephone. He also found that group members communicating by telephone were rated lower in both sincerity and intelligence.

In order to explain these findings Short el al (1976) argued that interpersonal attitudes are conveyed primarily by non-verbal, visual cues. When these cues are not present, as in telephone communication (and electronic communication), only task-orientated and not social, interpersonal material will be conveyed. Thus, where there is no visual channel of communication, the capacity to transmit social, interpersonal information is reduced. What remains is the capacity to transmit task-orientated information. Short et al go on to define social presence in an interaction as the

'salience of the other person and the consequent salience of the interpersonal relationships'. They further argue that social presence is an objective quality of the medium of communication. A communication medium in which visual cues cannot be transmitted will be low in social presence. Studies conducted by Short et al supported the view that face-to-face communication scores high on social presence (warm, personal and sociable) whilst telephone communication scores low. According to Short et al, communication via a medium that is low in social presence will be less intimate than face-to-face. Such media are best reserved for the transmission of task-orientated information.

1.4b Reduced social cues

Sproull and Kiesler (1986) discuss the transmission of social cues in more detail. They suggested that the social context of an interaction has three elements: geographic (e.g. location, distance, time), status (e.g. job title), and situational (e.g. age, gender, norms). The cues that convey information about social context can be either static (e.g. appearance) or dynamic (e.g. non-verbal behaviour). Sproull and Kiesler argue that all communications media reduce the social context cues available in face-to-face communication. The use of communications media (such as the telephone or e-mail) reduces the communicator's ability to interpret the social context. This attenuated understanding of the social context leads to certain communicative behaviours becoming more likely. In normal face-to-face contact communicators can adjust the tone and content of their speech according to their interpretation of the social context. However, where social context cues are weak (e.g. e-mail) communicative behaviour is likely to be weakly regulated and less inhibited. The implication of more uninhibited behaviour in e-mail communication has an important bearing on the hypothesis that e-mail communication may be contributing to stress in organisations.

Other studies based on the reduced social cues hypothesis introduce a phenomenon known in social psychology known as group polarization (see Kaplan, 1987). This term refers to the tendency of a group to make more extreme decisions following a group discussion than the average of their individual decisions before the discussion would indicate. Thus, where the average of the individual decisions indicates a slight tendency for the individuals to be in favour of a particular policy

(e.g. capital punishment), the consensus of group discussion on the topic is likely to produce a decision that strongly favours the policy. The results of the studies comparing face-to-face and computer mediated discussions found that computer mediated discussions tended to produce even more extreme polarisation of opinion. Kiesler, Siegal, and McGuire (1984) explain these findings using the reduced social context cues hypothesis. The uninhibited nature of computer-mediated communication (CMC) will lead to more extreme opinions being expressed by individuals during the discussion. Kiesler et al propose that social influence occurs as a consequence of the number and strength of the opinions expressed. This finding may have implications for the effectiveness of group decisions at work where decisions are made as a result of mediated communication by e-mail and telephone.

1.4c Social information processing

Both the social presence approach and the social context cues approach propose that mediated communication will necessarily suffer a loss of 'socialness' and interpersonal intimacy. According to the social information processing approach this is not necessarily the case. Walther (1992) suggests that CMC is capable of transferring social information such as status, likes and dislikes, and even attraction. However, because the rate of exchange of information is much slower in electronic mail than in face-to-face, social information will take longer to exchange. Walther (1995) suggests that the disadvantage of the loss of visual cues in CMC can be overcome over time and by using various text-based techniques to indicate emotion and relational information. Walther et al (1994) conducted a meta-analysis of studies of CMC and showed that in studies where time was not restricted there were higher levels of socio-emotional communication.

Text-based communication has also seen the development of linguistic and textual symbols to convey social information. These take the form of acronyms and 'emoticons' or 'smileys' (see table 1.4). These paralinguistic aids are now a common feature of electronic communication and most computer programmes automatically convert them to images.

Emoticon	Meaning	Acronym	Meaning
☺	Smile	LOL	Laugh out loud
;-)	Wink	ROFL	Roll on floor laughing
:-P	Stick tongue out	LOL@	Laughs out loud at
☹	Sad	A/s/l	Age/sex/location
:-O	Shocked	ty	Thank you
		G (and BG)	Grin and Big Grin

Table 1-2. Some common emoticons and acronyms used to convey social information (from Joinson, 2003)

The assumption of the social information processing approach is that the loss of social information inherent in mediated communication can be compensated for, either over time or by the use of linguistic techniques. The assumption that mediated communication is inherently less socio-emotional is a common feature of the social presence approach, the social context cues approach and the social information processing approach. However, a study carried out by Walther (1995) challenged this underlying assumption. The study compared the amount of social behaviour in CMC groups with the groups communicating face-to-face. The groups discussed three separate issues on three different occasions, allowing a comparison over time. In line with social information processing theory, Walther predicted that social behaviour would be greater in the face-to-face groups but that the difference would reduce over time. However, the findings showed that the CMC discussions were judged to be less task-orientated and more socio-emotional than the face-to-face groups across all the time slots. This finding refutes the theoretical prediction of not only the social information processing approach but also of the social presence and the social context cues approaches.

1.4d De-individuation and social identity

The term de-individuation was first used to explain aggressive behaviour in groups and crowds. Zimbardo (1970) is credited with the first full exploration of the concept. He believed that the underlying mechanism was the anonymity provided by being part of a large group. This anonymity diffuses personal responsibility for the

consequences of one's actions. This leads to a loss of identity and a reduction in self-awareness. This in turn leads to a reduction in self-regulation and reduced concern for social evaluation. This state of de-individuation causes behaviour to become impulsive, irrational, regressive and disinhibited (Hogg and Vaughan, 1998). Kiesler, Siegal and McGuire (1984) recognised the potential of CMC to provide some of the antecedent conditions important for de-individuation. According to Kiesler the characteristics of anonymity, reduced self-regulation and reduced self-awareness are present to some degree in CMC.

However, a number of studies have shown that aggression and antisocial behaviour are not automatic and inevitable consequences of anonymity. For example, Zimbardo (1970) found that when participants were wearing cloaks and hoods (to provide anonymity) they gave fewer electric shocks than without the cloaks and hoods. Johnson and Downing (1979) also had participants wearing special clothing intended to produce de-individuation. However, one group also wore a large badge displaying their name (to reduce de-individuation). The result of the study showed no increase in aggression in the de-individuated condition. It seems that normative expectations can still influence behaviour even in situations of de-individuation.

Diener (1980) focused on a lack of self-awareness as an explanation of the process of de-individuation. According to Diener's model (see Fig. 1.4d) the antecedent environmental conditions (anonymity, high level of arousal etc.) lead to reduced self-awareness, which in turn leads to de-individuation and its potential consequences. Prentice-Dunn and Rogers (1982) provided empirical support for Diener's model by showing that participants who were prevented from becoming self-aware were more likely to administer intense electric shocks to 'learners'
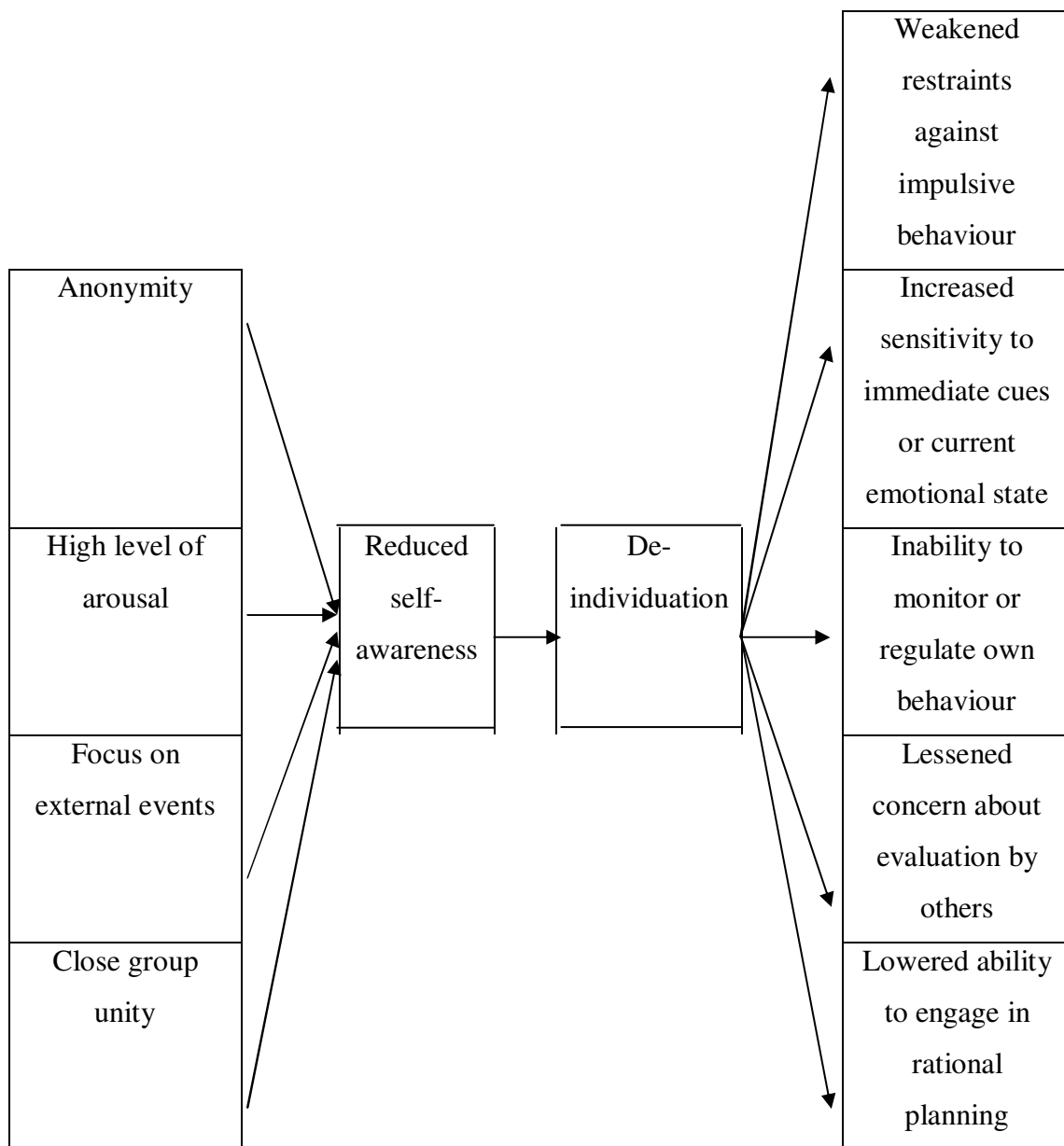
Fig. 1-1 Self-awareness and de-individuation (from Diener, 1980)

The approaches to de-individuation generally focus on the loss of personal identity and the loss of self-awareness. However, Reicher (1984) developed an alternative explanation of de-individuation effects using social identity theory. According to social identity theory (Tajfel and Turner, 1979) there are two aspects to identity: the personal and the social. Social identity is made up of the groups that we belong to. These groups can consist either of people that we have actual contact with (e.g. social groups and family) or more abstract groups such as males or teenagers. Reicher states that in a situation where personal identity is reduced, there will be an increase in social identity. This shift in identity from the personal to the social is likely to take place when individuals are immersed in a group. Where social or group identity is salient we would expect to see greater adherence to group norms. Reicher also argued that where members of a group are visually anonymous and immersed in a group, the adherence to group norms will be even stronger. This is because in a situation of visual anonymity, the differences between members of the same group will be less salient whilst intergroup differences will become more salient.

Spears, Lea and Lee (1990) provided strong empirical support for the social identity approach to de-individuation by independently manipulating both group membership and visual anonymity. The studies also used CMC and Spears and Lea (1992) argue that visual anonymity is an inherent characteristic of most CMC. The results of the studies confirmed the predictions based on the social identity explanation. When the participants were visually anonymous and the salience of the group was increased, there was increased adherence to group norms. Whereas, where participants were visually anonymous and personal identity was increased, there was less adherence to group norms.

1.4e Self-awareness

The implication of the de-individuation hypothesis is that attention is focused away from the self. Kiesler et al. (1984), who is primarily responsible for developing the social context cues approach, also invokes de-individuation as an explanation of the change in focus away from the self, leading to the disinhibited behaviour evident in CMC. However, Carver and Scheier (1987) have proposed that a distinction can be made between public self-awareness and private self-awareness. Public self-awareness is salient in situations where we are aware that other people can make

judgements about our behaviour. When public self-awareness is salient we are likely to engage in impression management and in monitoring feedback relating to the effects of our behaviours on others. Private self-awareness, on the other hand, is where we monitor our behaviour and check it against our own, personal expectations of how we should behave.

Matheson and Zanna (1988) proposed an alternative explanation for the evidence that lack of self-awareness is an explanation for disinhibited behaviour in CMC. They proposed that the evidence could be interpreted as showing heightened private and reduced public self-awareness. In particular, the high levels of self-disclosure and reduced levels of socially desirable behaviour (Sproull and Kiesler, 1986) are more consistent with heightened private self-awareness and reduced public self-awareness. Joinson (2001) found that participants in a CMC condition disclosed four times as much information about themselves as participants in the face-to-face condition.

Chapter 2: Well being and stress in the workplace

2.1 The contemporary nature and meaning of work

The importance and centrality of work in the lives of people in developed countries seems to have increased rather than decreased in the last decade, contrary to predictions of a leisure society made in the 1980's. Marmot, Siegrist, Theorell and Feeney (1999) propose four important reasons for the centrality of work in modern industrialized societies. First, having a job, for most people, is necessary for a reliable, continuous income and income is important in determining a wide range of life chances. Second, occupational success is a major focus of socialisation and education. Having a job is the main provider of social identity outside of the family. Thirdly, having a job is important for self-esteem and social approval. They point out that type of job and level of occupational achievement, especially the amount of self-direction at work, are important determinants of attitudes and behaviour outside of work. Finally, they argue that time spent at work represents the most pervasive and continuous demands over a lifetime and these demands absorb the largest amount of time in adult life. Exposure to adverse conditions at work carries the risk of ill health by virtue of the enormous amount of time spent in the work environment.

Work is much more than the means of providing the basic needs such as food and shelter. Working and having a job are seen as important determinants of social status and social identity. Work also fulfils personal ego and personal esteem needs by providing feelings of self-worth and responsibility. But many authors have argued that the nature and meaning of work have changed dramatically as we move into the 21st century.

One of the most clearly identified trends is a decrease in the number of people employed in manufacturing and a corresponding increase in the number of people employed in jobs in the service sector. The most recent Labour Force Survey by the Office for National Statistics (2001), shows that there was a fall of 4 percentage points in the number of men employed in the craft and related occupations between 1991 and 2000. There was a corresponding increase, in the same period, of 3 percentage points in the proportion employed in managerial and administration positions.

Robbins (1998) identifies some of the major challenges facing organisations stating that one of the most important developments that has affected companies has been the creation of a 'global village'. Organisations are no longer bound by national boundaries. Tariffs and barriers to trade have been significantly reduced over the last thirty years. As a result, multi-national corporations have developed, involving joint ventures between organisations and between parts of organisations from different cultures located in geographically distant places. This global development has many potential benefits in terms of the increased likelihood of interaction between people from different countries. Managers and administrators are increasingly likely to find themselves working with people from different cultural backgrounds to their own. In order to make such collaborations successful, it will be necessary for managers to understand other people's culture and how it has shaped them and also to understand their own culture and how it has shaped their own behaviour.

Over the last few decades changes in work practices have taken place that have led to increasingly leaner and more flexible production and employment practices in industry. Furthermore, these changes have led to an increase in the psychological demands of work and thus to an increase in the risk of job stress (Sauter & Keita, 1999).

Sutherland and Cooper (2000) discuss the implications of a shift in the nature of work from long-term employment contracts to short-term contracts and part-time working. They also claim that the trend towards people selling their services to organisations on a freelance or short-term basis is growing faster in the UK than in any other industrialised country. The trend towards short-term contracts and freelance working has a number of implications. The first is an increased tendency to work from home. Advances in information technology have meant that a great deal of work can now be done in the home. This in turn has implications for the work-home balance. The authors claim that the current trend is towards stable insecurity, freelance working and virtual organisational life.

One of the consequences of the increase in temporary and short-term contracts is the phenomenon known as underemployment. This involves working part-time

involuntarily or being underpaid below the poverty level (Theorell, 1999). Prause and Dooley (1997) have shown that this is particularly relevant to younger generations of workers.

The continuing advances in information technology have had a much deeper impact than merely allowing more work to be done from home. Work itself can be increasingly characterised or summarised by the term information. Much of work output is information and most of the tools we work with are both dependent on information (computers) and induce us to work with more information. Many jobs are knowledge-based and the context in which work takes place 'is' information (e.g. the internet). Houtman (1999) has referred to this process as 'informatization'. Issues relating to communication at work, especially electronic communication, need to be understood in the broader context of the progressive trend towards 'informatization'. The research in this thesis will explore some of the implications of information technology relating to aspects of communication.

The shift in emphasis from a labour-based economy to a knowledge-based economy has brought about a change in relationships at work. Bunting (2004) has coined the term 'relationship economy' to describe how individuals working in more fluid organisations, whose lines of authority are less clear, must engage in negotiation, influence and persuasion. The skills required for such activities include empathy, intuition and manipulation. Many service industry jobs are now characterised by an emphasis on customer relations. Hochschild (1983) first used the term 'emotional labour' to refer to how flight attendants were trained to give passengers a particular emotional experience. Research in this area has tended to focus on emotional labour as a source of stress in workers dealing directly with customers (e.g. Hochschild, 1983). However, the focus of attention is now shifting from the relationship with customers to the relationships between people in organisations (e.g. Hoel, Raynor, & Cooper, 1999).

The term 'emotional intelligence' has been used to explain the skills necessary for successful interpersonal relations. The advantages of emotional intelligence have been demonstrated in a number of ways. Wolff, Pescosolido and Druskat (2002) showed that empathy was an important element of leadership. Jordan and Troth

(2002) showed that individuals with high emotional intelligence preferred to seek collaborative solutions when confronted by conflict.

2.2 Occupational health

There is evidence that in general, occupational health is steadily improving. According to the European conference of the European Network for Workplace Health Promotion held in Lisbon during June 2001, there has been a downward trend in occupational sickness absence in recent years and almost all countries report that accidents at work have decreased. However, it seems that any claims of optimism about occupational health must be contrasted with data relating to stress at work. Many studies have shown that stress is now endemic in organisational life. The costs of stress that were highlighted in the 1990's are now legend. Cartwright and Cooper (1997) claimed that mental illness is responsible for 80 million lost working days each year at an estimated cost to industry of £3.7 billion, that 35 million working days are lost annually through coronary heart disease and that 8 million working days each year are lost through alcohol and drink related disease at a cost of over £1.3 billion.

Also, the general picture of health behaviours shows no signs of improvement. According to figures published in a recent Department of Health survey (Health Survey for England, 2001), the proportion of people who were either obese or overweight increased between 1994 and 1999 – men from 58% to 63% and women from 49% to 54%. Smoking prevalence and alcohol consumption showed no significant change over the same period and the proportion of people with at least one longstanding illness increased from 40% in 1993 to 44% in 1999.

In a recent study, funded by the Health and Safety Executive (HSE) of 8,000 respondents, Smith, Johal and Wadsworth (2000) reported that about one in five workers felt either very or extremely stressed by their work. The authors estimate that this is equivalent to about 5 million workers in the UK. In another HSE funded study, concentrating on how the design of work affected people's mental well-being and related health outcomes, Stansfield, Head and Marmot (2000) found that not having much say in how the work is done is associated with poor mental health in men and a higher risk of alcohol dependence in women. Work that involves a fast pace and having to resolve conflicting priorities is associated with a higher risk of psychiatric

disorder in men and women and poor physical fitness or illness in men. The combination of high effort and poor recognition is associated with increased risk of alcohol dependence in men, poor mental health in both sexes, and poor physical fitness or illness in women. A lack of understanding and support from managers and colleagues was associated with higher risk of psychiatric disorder. Good social support at work, particularly from managers, had a protective effect.

There is also evidence that certain diseases may be directly associated with working conditions. Coronary heart disease (CHD) is one of the major causes of death in developed countries. However, cardiovascular mortality has been on the decline in North America and the countries of 'western' Europe in recent years but on the increase in the countries of Central and Eastern Europe (Marmot and Wilkinson, 1999). There are many possible explanations for this difference (e.g. better health care in western countries, poor diet and exposure to pollution in eastern Europe). However, consistent with research findings in Western populations, Bobak, Hertzman, Skodova, and Marmot (1998) showed in a sample of Czech workers that low control at work and low work demand were strongly related to risk of heart disease independent of other risk factors.

2.3 Definitions of stress

Stress is not easily defined and research on stress can only be understood in the context of an overall framework. The original meaning of stress derives from engineering where some physical structure such as a load-bearing metal girder could be described as being under pressure and this pressure could be described as stress. In Kahn and Byosiere's (1992) definition, stress, by analogy with physical force, refers to external pressure exerted on a person. This external pressure results in tension or 'strain'. However, in the scientific literature and in everyday language, the term stress may be used to describe the pressure on a person but it may also be used to describe the effect on the person i.e. the accompanying state of tension. It may also be used to describe the negative consequences of this state of tension. Consequently, definitions of stress can come under three headings: stress as a stimulus, stress as a response and stress as a mediational process (Le Blanc, de Jonge and Schaufeli, 2000).

2.3a Stress as a stimulus

This approach to stress most closely resembles the original, engineering use of the term. It encompasses the approach to stress of experimental psychology and the field of ergonomics. The focus of attention is on the external negative or noxious stimuli. Le Blanc et al (2000) categorize work-related stressors under four headings: job content, working conditions, employment conditions and social relations at work.

Much of the research in this area assumed a linear relationship between the amount of exposure to a stressor and the amount of negative effect. For example, research was conducted into the effects on productivity of working under stressful conditions such as a noisy environment. Whilst the engineering approach is attractive because of its simplicity, most researchers agree that the approach is too simple to fully explain the complex nature of stress.

However, despite these criticisms, Cassidy (1999) has argued that research adopting the stimulus approach to stress has made a significant contribution to our appreciation of the relationship between external events and health. He points out that the identification and classification of potential stressors is the first step in understanding the process by which stressful events impact on health.

Another important step in linking external events with internal reactions and particularly long term health was the *life events* approach of Holmes and Rahe (1967). They identified stressful events that a person might experience such as divorce or losing ones job. A measure consisting of forty-three life events of varying seriousness was constructed with the events in rank order of how much change to a person's life the event would require (judged empirically by independent judges). Studies have shown that people who experience a number of significant life change events are more susceptible to illness than those with relatively low scores on the scale. Life events have been linked to a wide range of physical and psychological disorders such as cancer, heart disease, depression and neurotic disorders (Dohrenwend, & Dohrenwend, 1981). However, as Cohen and Edwards (1989) point out, the correlation between life events and measures of health and well-being do not usually

rise above .30. This implies that life events account for only about 9% of the variance in illness.

A further interesting feature of the life events research is the claim by some researchers that there is socially structured variation in exposure to major stressors (Brown and Harris, 1978: Dohrenwend, 1970; Eckenrode and Gore, 1981). These studies have found that lower status individuals have a greater risk of exposure to major stressful life events compared with those in higher status groups. These findings support the more general finding by that occupational status is related to physical and psychological health. People in lower status jobs are more prone to stress and disease, and have a higher mortality rate than people in higher status occupations (e.g. Marmot, Shipley, & Rose, 1987).

However, not all research supports the finding of a socially structured variation in exposure to life events (Dekker and Webb, 1974; Myers, Lindenthal and Pepper, 1974; Uhlenhuth and Paykel, 1973). It has been suggested that this inconsistency in the findings is due to the emphasis on discrete, major life events. Turner, Wheaton and Lloyd (1995) and Weinberger, Hiner, and Tierney (1987) suggest that the greater risk associated with those in lower status employment is more likely to be due to the effects of relatively minor but continuous, irritations and daily hassles.

There is empirical support for this claim. For example, Twisk, Snel, Kemper, and van Mechelen (1999) investigated the relationship between changes in subjective appraisals of daily hassles and variations in risk factors for Coronary Heart Disease (CHD) (e.g. blood pressure, lipoprotein and body fat) in a two-year longitudinal study. They found that changes in risk factors for CHD showed a stronger relationship with changes in daily hassles than with major life events, especially with participants who had a rigid coping style. Turner, Wheaton and Lloyd (1995) also demonstrated that lower status workers were more prone to daily hassles and were consequently more prone to depressive illness. Problems relating to ongoing interpersonal communication fit well with the concept of daily hassles.

It has been argued that whilst there may be an immediate stress response to the hassles of daily life, in the longer term individuals will habituate to these frequent minor irritations. However, there is some evidence to suggest that, at least in the case of problems relating to interpersonal conflict, habituation is far from universal (Bolger, De Longis, Kessler, & Schilling, 1989). Continuing relational problems seem to be of a different order to hassles such as the late arrival of goods, or equipment failure, for example. Unresolved relational problems can have an important and long-lasting affect on mood states (Treharne, Lyons and Tupling, 2001) and psychophysiological reactivity (Cacioppo, 1994) with a consequent threat to somatic wellbeing (Cohen et al, 1998).

2.3b Stress as a response

In this approach the focus is on the individual's reaction to a stressor. Much of the work in this area focused on the physiological response of the body in terms of a disruption of the normal homeostatic regulatory functioning. It is widely acknowledged that the work of Hans Selye is largely responsible for bringing the topic of stress into the research arena. Selye's (1936) definition of stress introduced the idea that the condition of an organism is the result of the organism's internal responses to external agents (stressors).

Selye (1946) outlined the physiology of stress in his General Adaptation Syndrome (GAS) model. The model divides the stress reaction into three stages. The first is the *alarm* reaction and involves physiological changes relating to emotional arousal, such as increased heart-rate, increased blood sugar, increased blood pressure and increased flow of blood to muscles and pupil dilation. Catecholamines (adrenaline and noradrenaline) are released which serve to prolong the initial alarm reaction. If the stressor is not removed, the body begins to recover from the initial alarm reaction and move into the *resistance* stage. Following the resistance stage is the *exhaustion* stage where the body's resources are now becoming depleted. It is at this stage that serious psychophysiological disorders such as high blood pressure, heart disease and ulcers may develop.

Another way of looking at the body's response to a stressor is to take an evolutionary perspective. In this approach the physiological response to threat is seen

as having evolved over a very long period and to have its roots our animal ancestry. This response, developed and preserved by the process of natural selection, is known as the fight or flight syndrome. Organisms that respond to a threat by either fleeing or fighting successfully, will be more likely to survive and reproduce. The response involves the adrenomedullary system, which mobilizes the body's resources and prepares the organism for action. Glucose is released and cardiac output is increased. This results in increased heat rate, vasoconstriction of blood vessels to the skin and viscera, vasodilation of blood vessels to the muscles and brain, and alteration of the blood-clotting mechanism. Other features of this state of autonomic arousal include an increase in rate and depth of breathing, bronchodilation, and pupil dilation. The work of Walter Cannon (1929) on the fight or flight syndrome paved the way for Hans Selye to propose the General Adaptation Syndrome.

The bodily changes associated with the fight or flight response would confer considerable advantage on any creature under threat from a predator or in an emergency situation. However, the types of threat we face in the modern world are very different from those faced by our ancestors. We do not have to face regular physical threats to our survival. The pressures of modern living are much more psychological in nature. Stressors such as time pressure and managing the work-home interface are much more ongoing. The state of arousal produced by our fight or flight response to threat is not appropriate for dealing with a general state of affairs resulting from our way of life. It is the perpetuation of this aroused state, resulting from the ongoing nature of modern stressors that can cause damage to the system in the form of atherosclerosis and thromboses.

2.3c Stress as an interactional process

This approach to stress incorporates both the stimulus approach and the response approach. However, in order to account for the shortcomings of viewing stress as being either a stimulus or a response, this approach attempts to encapsulate the whole process, from harmful environmental stimuli, through the perception and processing of the stimuli, to the resulting consequences. One model that illustrates this approach is the 'person-environment fit' (P-E) model in which strain is a consequence of a mismatch between the person and the environment. The model also incorporates the phenomenological experience of the person in the form of their perception of the

environment and their perception of themselves and their ability to deal with the environment.

A considerable amount of work has focused on individual differences in response to environmental stressors. In trying to assess the role of factors such as personality a distinction has been made between factors that moderate the degree of impact a stressful event will have on health and other outcomes, and factors that mediate this relationship. According to Folkman and Lazarus (1988) moderator variables consist of pre-existing conditions such as gender, socio-economic status, and personality variables that interact with the stressor to affect stress outcomes such as health. Mediating variables, on the other hand, are not separate antecedent entities but are generated during the stress encounter. Cognitive appraisal, for example, is not a pre-existing condition but is generated as part of the stress experience. Although moderators and mediators both affect how much impact a stressful event will have, the distinction may be particularly useful in relation to dealing with or coping with stress, since mediating variables such as cognitive appraisal may be easier to change than personality or social status.

A further distinction has been made in the stress literature between the interactional approach and the transactional approach. The person-environment fit model is an interactionist approach that defines stress in terms of the degree of mismatch between the person and the environment. In this model the person and environmental factors that make up this mismatch are viewed as structural and static. According to the transactional approach (Lazarus and Folkman, 1984; Cox, 1978; Bartlett, 1998), the relationship between the demands being made on a person and their ability to cope with those demands is much more dynamic.

According to Coyne and Lazarus (1980) the person-environment interactional models of stress assume that the person and environment exist as separate entities and that the key person and environmental variables can be described prior to the interaction. In addition, Lazarus and Folkman (1984) explain that the interactional model is also limited by assuming a linear, sequential pattern of causation between stimulus, organism and response. This is clearly a limitation on our understanding of the reality of our relationship with the environment (especially the social

environment), which is ongoing and dynamic. A stimulus may be interpreted and responded to but the response may alter the person's view of the stimulus, following feedback and re-appraisal of the situation.

However, it is important to consider personality variables in the stress process in order to account for the individual differences that have been found in response to stress. Personality is thought to play a part in the relationship between stress and disease. Personality variables are not the only source of individual differences that may moderate the relationship between aspects of the environment and stress-related outcomes. Factors such as genetic and biological differences, skills level (including social skills), cognitive ability, and differences in motivation to achieve specific goals, all arise from within the individual and may all play a part in the stress-disease relationship. The following personality variables have been shown to play a part in the stress process and are of particular relevance for this project:

Type A behaviour

Friedman and Rosenman (1974) identified the Type A personality as a, typically, middle-class American male with a strong sense of time urgency, a rather aggressive/hostile manner and a tendency to be competitive. Their study found that Type A men were twice as likely to suffer heart attacks or other cardiovascular illness as Type B personalities (less aggressive and time urgent).

A great deal of research has been conducted into the Type A behaviour pattern and its role in coronary heart disease (CHD). Despite the strong evidence in support of Type A behaviour being a significant risk factor, a number of problems have been identified which led Cohen and Edwards (1989) to conclude that the evidence for a link between Type A behaviour and CHD was at best suggestive. One of the problems highlighted by Bartlett (1998) is the type of methodology used to measure Type A behaviour. In the Friedman and Rosenman study a special type of structured interview was used. The interview was designed to measure not only what the respondent said in response to the questions but also how the respondent behaved (e.g. interrupting the question, tapping fingers on the table). More recently Type A behaviour has been measured using the Jenkins activity survey (JAS). This questionnaire is much easier

to administer than the structured interview. However, Bartlett (1998) claims that the degree of correspondence between the two measures is surprisingly low.

A further question surrounds the issue of which characteristics of the type A behaviour pattern are actually linked with CHD. A re-analysis of the Friedman and Rosenman data by McCann and Mathews (1988) showed that only some aspects (particularly hostility) are important. This finding is relevant to the present project, which examines the role of hostile communication in causing stress in the message recipient.

Locus of control (LOC)

It has long been recognised that having a sense of control over ones environment is an important dimension of a healthy psychological outlook. Early work in this area began with studies of a psychological state known as learned helplessness. Glass and Singer (1972) conducted a series of experiments using noise as a stressor. They found that unpredictable noise was particularly stressful. Further research revealed that a perception of control was a crucial element in reducing the negative aftereffects of noise. They concluded that uncontrollable noise results in a state of helplessness. Seligman (1975) conducted experiments using dogs to demonstrate that once a state of helplessness had been induced in one situation, it could be transferred to other similar situations. Seligman termed this phenomenon, learned helplessness and observed that the symptoms were similar to what we would call depression in human beings. Hiroto (1974) used uncontrollable noise to demonstrate that learned helplessness could be produced in humans. Seligman concluded that the central element of learned helplessness was that the organism had learned that outcomes are independent of its behaviour.

However, Seligman also noted that not all the dogs in his experiments demonstrated learned helplessness even though they had all experienced the same uncontrollable situation. Seligman suggested that these dogs had probably had experience of controllable trauma in their development and that a single experience of uncontrollable events was not sufficient to induce helplessness. This observation paved the way for a move away from the experimental approach of systematically manipulating variables such as the controllability of a stressor and recording the

effects, whilst ignoring individual differences. It was clear that the effects of a stressor depend on how the person interprets what has occurred.

The original concept of locus of control was developed by Rotter (1966) and was conceived of as a single dimension ranging from internal (a belief in one's ability to control events) to external (a belief that external events are a consequence of luck, chance, or fate). This expectancy concerning the determinants of reward and punishment was also thought to be an aspect of personality that generalized across all situations. Cohen and Edwards (1989) examined the role of personality in stress buffering. Their review looked at personal resources such as hardiness, locus of control, self-esteem, private self-consciousness and type A behaviour pattern and their role in buffering stress-induced disorder. Although they found evidence to suggest person resources may have an impact on stress appraisal, they found that only internal locus of control acted as a buffer between stress and symptoms. The finding that an internal locus of control acts as a buffer against the effects of stress on health has been replicated across a variety of stressors including everyday hassles and irritations (e.g. Zika and Chamberlain, 1987; Kanner and Feldman, 1991).

A considerable amount of research has been carried out in trying to define and develop the concept of locus of control. Abramson, Seligman and Teasdale (1978) expanded the definition of LOC by adding the dimensions of generality and stability. Thus, people may experience a sense of control in certain specific domains and not in others or they may have a general tendency towards an internal locus of control. Similarly, a sense of control may fluctuate between internal and external or it may be consistent over time. Other studies have attempted to identify the specific areas over which we may experience control. For example, personal goals, socio-political systems and one's own behaviour (Cox and Ferguson, 1991). The volume of research into LOC appears to have clouded rather than clarified our understanding of the nature of the topic, and its measurement. Wong (1992) noted more than a dozen notions of control, such as locus of control over beliefs, locus of causality, and desired control.

There has also been some debate about whether an external locus of control is always harmful. Taylor and Cooper (1989) have suggested that it is extremes of either

internal or external locus of control that are problematic. Folkman (1984) has discussed LOC from a transactional standpoint and suggests that control should be treated as a cognitive mediator of stressful transactions. This suggests that internal and external LOC may be much more dynamic and should not be treated as structural personality variables.

Self-efficacy (S-E)

Self-efficacy is most often related to areas such as motivation and task performance and will be discussed further in relation to these topics in chapter 3. However, S-E has recently been examined as a resource that can reduce the impact of stress upon health. Jerusalem and Schwarzer (1992) also showed that low self-efficacy is a vulnerability factor. The concept of self-efficacy was proposed by Bandura (1977) and defined as a belief in one's ability to successfully carry out the behaviours necessary to produce a desired outcome.

There have been several suggestions regarding the mechanism by which S-E might influence health. O'Leary (1992) showed that S-E can be seen as exerting a direct effect on health through its effect on motivation to carry out health behaviours, or it can act as a buffer to other stressors by enhancing coping behaviours. Bartlett (1998) suggests that S-E can also act as a cognitive mediator of the relationship between stress and health. The cognitions associated with S-E (such as belief in one's ability to use a particular coping strategy to deal with a specific stressor) will impact upon the decision of how best to cope with a stressor and how much time and effort to invest in the coping process.

2.4 Models of stress in the workplace

Stress at work has been studied from a number of different perspectives. A great deal of work has been done on examining how environmental factors at work impact upon the health of workers. Much of this work comes under the headings of ergonomics and human factors. One avenue of research has been to look at aspects of the physical environment such as temperature, noise, lighting levels, and exposure to risks and hazards. It is interesting, however, that one of the earliest studies to demonstrate the importance of social and interpersonal factors at work and more widely, began as a study of environmental effects on productivity.

This famous research was carried out at the Western Electric Company in the 1920's, and includes a series of studies now known as the Hawthorne studies (see Roethlisberger & Dickson, 1939). In the *relay assembly room study* the working conditions of a group of workers were systematically varied over the course of a year. Various aspects of the working environment were manipulated such as lighting levels and break times. However, productivity levels increased every time a change was made, even when conditions were returned to normal, resulting in a continual steady increase in productivity regardless of the nature of the changes. The explanation for this result was an improved sense of well-being in the work group as a consequence of the attention being paid to them.

In another of the Hawthorne studies (the *bank wiring room*), a researcher simply observed a group of workers. The researcher observed that individual behaviour was largely governed by group norms. Most important of these was the norm about what constituted an acceptable level of production – enough to keep the management happy but not enough to change their expectations. This norm of productivity was strictly enforced with sanctions taken against 'rate busters'. These studies show the important of social relations at work. These relationships are often more important than either company policy or monetary reward.

Another area of research has concentrated on aspects of the tasks that people at work perform. Many of the problems stem from the changes in work practice brought about by the industrial revolution. Increasing mechanisation and large-volume production methods gave rise to the need for a division of labour into simple, repetitive tasks. The assembly line method of car production is a typical example but most manufacturing industry was associated with boring, monotonous work. Despite the relative simplicity of the work and lack of physical exertion, this type of work is often associated with fatigue and depression. The demands of this type of work are in opposition to our biological and psychological needs.

More recent investigations of workplace stress have focused on a rather different set of issues reflecting the changes in the nature of work. The shift away from large scale manufacturing in this country has led stress research to focus on such topics as the nature of work roles, social influences at work, career development

issues, and organizational structure and climate (Sutherland and Cooper, 1988). This recent shift includes an examination of the effects of leadership and management style on stress and well being. For example, Landerweerd and Boumans (1994) studied the effects of job characteristics and leadership style on job satisfaction, health complaints and absence frequency, in nurses. The study showed that nurses scored higher on job satisfaction and had fewer health complaints if the head nurse showed socio-emotional leadership.

Many theoretical models of job-related stress are based on an interactional framework (Cooper, Drewe and O'Driscoll (2001). Tetrick and LaRocco (1987) summarize the general model of stress that best characterizes the interactional framework as follows: the perceived presence of certain working conditions may be associated with a number of stress responses and this stimulus-response relationship can be influenced by a number of organizational, situational, and personal characteristics. Within this general framework interpersonal relationships are viewed as situational characteristics that may influence the effect of stressful stimuli.

2.5 Sources of stress at work

Early approaches to general job stress models (often referred to as 'Michigan models' after research carried out at the University of Michigan) tended to focus on four main categories of variables arranged in a causal sequence. The process of workplace stress begins with the characteristics of the organization (the hierarchical structure, job descriptions, the size of the company). These characteristics may lead to certain job stressors, such as role ambiguity, role conflict and lack of control. These job stressors will then lead to certain stress reactions, such as job dissatisfaction, high blood pressure and absenteeism. If the situation is not rectified then these reactions may result in physical and mental illness.

The relationships between the four groups of variables are assumed to be moderated by two further factors: characteristics of the worker and interpersonal relationships. The positioning of interpersonal relationships as a factor that *moderates* the effects of stressful stimuli became an enduring feature of models of job stress, as the following descriptions will show. However, more recently an important change has taken place. Research (Cooper, Cooper and Eaker, 1988; Sutherland and Cooper,

2000) has identified seven major sources of job stress. These seven sources of stress are common to all jobs regardless of status and, importantly for this thesis, 'relationships at work' are now recognised as one of the direct sources of job stress. The work by Cooper and others has been adopted by the Health and Safety Executive (HSE) and published as a guide for employers to help reduce stress in the workplace (HSE, 2001).

2.6 The person-environment fit model

Cooper, Dewe and O'Driscoll (2001) suggest that the notion of person-environment (P-E) fit underpins, either implicitly or explicitly, most models of work stress and is one that has been most widely discussed in the literature. In this model the characteristics of the individual (their abilities and values, for example) are compared with the characteristics of the environment (e.g. demands, constraints). Strain occurs when there is a lack of equilibrium between the person and the environment (Edwards, Caplan and Van Harrison, 1998).

A second element of the P-E fit model refers to the distintion between objective and subjective assessments of the person and the environment. Objective misfit refers to the degree of discrepancy between the actual characteristics of the work situation and the actual characteristics of the individual. In practice, however, it is usually subjective assessments of the work situation and the person that are assessed (Le Blanc, De Jonge & Schaufeli, 2000).

2.7 The demand-control model

The development of this model marked a significant step forward in our understanding of workplace stress. The model draws on two previous avenues of research: the finding that job conditions in the form of work demands and working hours were linked with CHD (e.g. Hinkle, Whitney & Lehman et al., 1968) and the findings related to the Job Characteristics model, developed by Hackman and Lawler (1971), that skill development and autonomy have a positive effect on mental health. Karasek's model considered how the effects of job demand are moderated by the amount of decision latitude (skill utilization and decision authority). The essential message of this model is that jobs can be demanding without necessarily being stressful. Skill utilization refers to the extent to which a worker is allowed to articulate

their creativity and utilise a wide range of skills. Decision authority refers to the extent that a worker can make autonomous decisions regarding how the work should be done.

The model is divided into four quadrants determined by a high/low dichotomy of the two key variables: job discretion and job demand. Jobs with the combination of high job demand and high decision latitude are classified as active jobs. Jobs in this category promote active rather than passive behaviour and are associated with higher job satisfaction and a lower prevalence of depression (Tattersall and Farmer, 1995). Jobs with high job demand but low decision latitude have the greatest potential to be linked to negative health outcomes. They are labelled as high strain jobs and workers in jobs in this category have been shown to exhibit higher levels of burnout, depression and psychosomatic symptoms, and lower levels of job satisfaction (Lansbergis (1988). Jobs with low demand and high job discretion are described as low strain jobs. These jobs may be rather relaxing and consequently produce little in the way of strain. Jobs where low job demand is combined with low decision latitude are classified as passive jobs. This type of job may produce strain due to the de-motivating nature of the work.

Karasek (1979) exposed the myth that all job characteristics could be treated as demands and that job strain increases when more job elements are added. This was demonstrated particularly in the case of decision authority. Responsibility for decisions relating to the work being undertaken, which had often been treated as an additional demand (and hence an additional stressor), was shown to have a very different psychological effect. In fact, the power to make decisions has a moderating effect on the relationship between work demands and job strain. Karasek suggested that job demands may be a consequence of the output level of the organisation, whilst decision latitude is a consequence of the management style or the authority structure of the organisation and the extent to which the work is technologically controlled.

Karasek (1979) provided empirical support for the demand-control model on a stratified sample of U.S. and Swedish working males. A number of strain measures including depression, exhaustion, dissatisfaction, sleeping pill consumption, and sick days were measured by self-report survey. The findings showed differences in these

measures across the four categories of jobs, mostly in the direction predicted by the model. Support for the proposed interaction between job demands and job discretion was provided by a comparison of jobs with the same level of job demand but varying levels of job discretion. This showed that decreasing discretion is associated with greater strain.

Karasek, Russell and Theorell (1982) reviewed the physiological evidence relating to the demand-control model. They suggest that in high demand/low control (high strain) jobs, adrenal-cortical and adrenal-medullary activity will be high, leading to increases in cortisol and adrenalin. Catecholamine activity is increased in high demand situations and cortisol secretion is elevated in situations of low control. High levels of serum catacholamines have been linked with increased blood clotting (Arlie, Glew & Schwartz, 1966), hypertension (DeChamplain, 1977), myocardial degeneration (Bassett, Strand & Carincross, 1978), and atherosclerosis (Carruthers, 1969; Haft, 1974). Karasek et al go on to explain that in the high demand/high control combination, adrenalin would rapidly return to baseline level following exposure to a stressor. This would lower heart rate and blood pressure and increase the HDL/LDL ratio.

Alfredson, Karasek and Theorell (1982) applied the demand-control model to the prevalence and incidence rates of CHD. An analysis of the job characteristics that distinguished jobs with a high risk of CHD from those with a low risk of CHD, revealed that the high demand/low control combination was a significant discriminant. Alfredson et al claimed that the excess risk predicted by the high demand/low control interaction was greater than the risks from demand and control considered separately. There is also evidence that high blood pressure (a risk factor for stroke and heart disease) is more prevalent in high strain jobs than in active or low strain jobs (Ceana et al., 1995). In a longitudinal study of ambulatory blood pressure, Schnall, Schwartz, Lansbergis, Warren, and Pickiering (1998) found evidence of the link between job strain and hypertension. They found that participants who were in high strain jobs at the beginning of the study and were still in high strain jobs after three years, had significantly higher ambulatory blood pressure than those who had been in low strain jobs. They also found that those who had changed from a high strain job to a low strain job showed a significant decrease in ambulatory blood

pressure. Furthermore, those who had been in high strain jobs for the whole period, showed a significant increase in blood pressure from the first assessment period to the assessment after three years. This indicates the cumulative effect of high strain work on blood pressure.

A considerable amount of research has investigated the effects of job control independent of job demand. Hackman and Oldham (1976) investigated the relationship between autonomy (or control) and a number of outcome variables. They found that autonomy was significantly and positively linked to general satisfaction, internal work motivation, and performance, and negatively associated with absenteeism. In a longitudinal study conducted in a manufacturing setting, Wall and Clegg (1981) changed the way that the work was organised by developing semi-autonomous teams, giving the workers greater control over setting the pace of production and distributing tasks. They also gave the workers some control over the work layout, the organisation of breaks and handovers, and the allocation of overtime. These changes produced significant improvements in job satisfaction, levels of strain, and labour retention.

Studies of the relationship between feelings of control in the workplace and health outcomes, such as CHD have also shown a strong link. Marmot, Siegrist, Theorell, & Feeney (1999) carried out a large-scale, longitudinal study of civil servants. They reported that the lowest grade administrators were much more likely to develop CHD than the highest grade administrators, and that low control at work was the greatest contributor to this difference. Bosma et al. (1997) also reported that employees who experienced consistent low control over a three-year period were almost twice as likely to have a coronary event as those who experienced consistent high control over the same period.

According to Sutherland and Cooper (2000) the evidence to support the demand-control model has been inconsistent. A number of reasons have been put forward for this including the multitude of mathematical formulations used to determine job strain and the interactive effects of control and strain (Landsbergis, Schnall, Schwartz, Warren, & Pickering, 1995), and the disparity between subjective and objective measures of the work situation (De Jonge and Kompier, 1997). It has

also been suggested that the relationship between demand and control may be mediated by other factors such as social support (Johnson and Hall, 1988) and individual coping style (de Rijk, Le Blanc, Schaufeli, & de Jonge, 1998).

It has further been suggested that the concept of decision latitude has been modified from a broad concept that included the exercise of creativity, the use of a variety of skills, and having opportunities to learn and experience new things, to a much narrower, and mostly unrelated concept of control (Wall et al., 1996). However, Smith, Tisak, Hahn, & Schmieder (1997) found a strong positive correlation between Karasek's scale of decision authority and items from Dwyer and Ganster's (1991) measure of perceived control. It would appear that there is sufficient evidence to support the view that greater control has beneficial effects on job satisfaction (Dwyer and Ganster, 1991), psychological well being (Perrewe and Ganster, 1989), and indicators of cardiovascular disease (Karasek, et al., 1988). However, research on Karasek's demand-control model has shown that positive effects of control are more likely to be found when a more focused measure of control is used as opposed to a more general measure (Wall, Jackson, Mullarkey, & Parker, 1996).

Social support
The recognition of the impact of interpersonal factors on health outcomes was incorporated into the demand-control model in the form of social support (Johnson and Hall, 1988). This served the purpose of bringing social factors to the attention of researchers and practitioners working with the demand-control framework. Prior to the inclusion of social support, there was a strong emphasis on focusing on aspects of the job itself. This emphasis stemmed from work on motivation. Herzberg (1966) was the first to distinguish between factors that are intrinsic to the job, such as responsibility, and factors that he classified as extrinsic to the job, such as working conditions and pay. Herzberg argued that it was necessary to concentrate on factors intrinsic to the job in order to improve motivation. Hackman and Oldham's (1976) Job Characteristics model added greater detail and identified the specific job elements (e.g. skill variety, autonomy) deemed important to motivation. In the light of the influence of job characteristics on the demand-control model, the addition of social

support is a significant step in incorporating social factors that were not previously seen as intrinsic to the job.

However, classifying interpersonal factors as social support has also served to constrain examination of the full range of interpersonal influences. The potential impact of a range of interpersonal relations and behaviours is reduced to a single construct. Thus, social support covers a range of resources that assist a person in their work, such as task-relevant information or praise (Searle, Bright, and Brochner, 2001). House (1981) proposed four interrelated forms of social support: emotional, appraisal, informational and instrumental. Hirsch (1981) focused on the practical resources of social support: assistance in problem solving, reassurance of self-worth, the promotion of a favourable self-concept, and the enhancement of self-esteem.

There is some discrepancy about where social support comes from. Most occupational stress research concentrates on the social support available in the workplace (e.g. Karasek, Triantis and Chaudhry, 1982). However, the changing nature of work, including more people working from home, has focused attention on the home-work interface (e.g. Daniels, 1995). In a meta-analysis of twenty-one studies of non-workplace social support, Uchino, Cacioppo and Kiecolt-Glaser (1996) found a reliable and significant beneficial effect on blood pressure.

Social support is a measure of the number and quality of social relationships that a person enjoys. The structural aspects of social support include such things as membership of clubs and associations, partnership status, and number of social networks. The functional aspect refers to the nature and quality of social support and may include instrumental support, informational support, and the closeness and intimacy of relationships (Bartlett, 1998). Social support may take a number of different forms and may have an effect at more than one level. For example, social support may interact with the perception of demands, thus reducing the amount of strain. It may also act as a coping mechanism to reduce the impact of strain on health. There are also individual differences in the amount of social support that is needed. For example, what may be viewed by one person as social support, may be seen by another as unnecessary interference.

There has been considerable controversy over what constitutes social support and how it is involved in the stress process. Lansbergis et al. (1995) showed that many studies have revealed a moderating effect of social support on job strain. Cohen and Willis (1985) found that social support had a buffering effect, reducing strain only in difficult working conditions. Munro, Rodwell and Harding (1998) looked at the effects of both work and non-work social support. They found that both work and non-work social support had significant effects on psychological health and job satisfaction. They also found that workplace social support was positively related to control. This may indicate that greater workplace social support leads to increased perceptions of control. The Munro et al. study supports the notion that social support may have multiple effects and they conclude that the full demand-control-support model is a significant predictor of both health and job satisfaction. They further conclude that social support is the most significant predictor of both outcomes.

However, the common feature of social support research within the demand-control-support model is the emphasis on the beneficial effects of the various kinds of support. Whilst there is ample research to show that interpersonal relationships may have a detrimental effect as well as a beneficial effect, the demand-control-support model only takes into account the beneficial effects. One of the aims of this project is to take a broader view of interpersonal relations and to show how the full range of their effects can be taken into account in attempting to model the stress process.

2.8 The demands-supports-constraints model

This model is similar to Karasek's model in suggesting that high levels of job demand do not necessarily lead to strain if the job also provides good levels of support and minimal constraints. The model was originally proposed by Payne (1979) and tested on a wide range of occupational groups e.g. managers, teachers, lorry drivers, students and health visitors (Fletcher and MacPherson, 1989; Fletcher and Morris, 1990; Payne and Fletcher, 1983).

In this model, demands are conceptualised much more broadly than in Karasek's model and include any stimulus that requires attention and response. The stimuli might be technical, social, financial or intellectual. Job demands are all the things that have to be done, as opposed to the much narrower, role overload definition

employed by Karasek. Job supports include anything that can be classed as a resource to help deal with the demands. These may also be technical, social, intellectual or financial. Again, covering a much broader range than Karasek's focus on the single dimension of social support. 'Job constraints' refers to the lack of available resources that prevent the worker or group from coping with the demands. For operational purposes, supports and constraints are treated as a single bipolar dimension i.e. physical working conditions, for example, can be either a support or a constraint depending on whether they help or hinder attempts to deal with the demands (Fletcher, 1991).

With regard to modelling the role of interpersonal relations at work in the stress process, this model is an improvement on Karasek's model because of the recognition that such relationships can act as either a support or a constraint. The model also defines more specifically that it is the quality of relationships with bosses, colleagues, and subordinates that act as supports or constraints (Fletcher, 1991). However, given that the definition of a demand is anything that requires attention, then interpersonal interactions at work are also a demand. Thus, in this model interpersonal relations may be classed as a demand, a support, or a constraint. The role of relationships in the stress process is, therefore, still unclear.

2.9 The Cooper-Cummings framework

The Cooper-Cummings cybernetic framework for the study of occupational stress (Cummings & Cooper, 1979) is a development of the person-environment fit approach. The principle behind this framework is that individuals will generally try to keep their thoughts, emotions and relationships with the world in a steady state. Within each of these areas each individual will have a range of stability, within which the individual will feel comfortable. External events that fall within the individuals' range of stability will not cause stress. When forces act to disrupt one of the elements beyond the range of stability, the individual must take action to cope with the threat. The adjustment process or coping strategy is an attempt to return to the steady state. When the strategy is successful the steady state is resumed. If the individual fails to cope then the individual will experience continued stress and may become vulnerable to a number of physical and behavioural symptoms.

2.10 Interpersonal relations at work

Recent work has begun to recognise that the quality of relationships at work is a central factor in individual and organizational health (Sutherland and Cooper, 2000). Ross (1994) distinguished between relationships with bosses, peers and subordinates as potential sources of stress but note that little research has been done in this area. Instead, most research has focused on the positive effects of supportive social relations. This is probably due, in part, to the pervasive influence of early models of the stress process on stress research and the emphasis on job characteristics and organizational characteristics as sources of stress . There is also an emphasis in stress and leadership research on interventions that demonstrate the positive effect of social relations on health and well-being. As has already been noted there is still a lack of a coherent framework for conceptualising the full range of effects of interpersonal relations

An examination of worker's relations with their bosses can cover a broad range of issues. The relationship between an individual and their boss may be examined in isolation. At this level it may be pertinent to focus on such areas as a clash of personalities, how misunderstandings can arise, and how to deal with problems at the individual level (e.g. individual coping strategies). However, in recent years there has been an increasing emphasis by psychologists working in the field of work stress, on encouraging organisations to take a more strategic view of stress management (e.g. Sutherland and Cooper, 2000). In this broad ranging view, the behaviour of individual managers and supervisors would be much more related to the overall structure and climate of the organisation. In a good organisation with a well-defined approach to employee relations there should, of course, be a close link between the organisational strategy and the behaviour of individual managers.

The focus on job characteristics as the source of stress was developed from work on motivation (Hackman and Lawler, 1971; Wall and Clegg, 1981) and evidence from intervention studies in this area has served to inform work on productivity, job satisfaction, and employee well being (Wall, 1982). Improving motivation through job redesign can have far-reaching implications for the structure

of an organisation, especially in relation to the role of supervisor. In order to achieve the desired outcomes, it is necessary to focus on job characteristics such as task variety and autonomy. Changes in job characteristics can be achieved in a number of ways including vertical job enlargement (Campion & McClelland, 1993), the development of semi-autonomous work groups (DeBoard, 1988), and the development of self-managing teams (Cohen & Ledford, 1994).

Vertical job enlargement involves giving workers greater decision-making power, and including higher-level tasks in their job. The term *empowerment* is increasingly being used to describe this kind of freedom. Empowerment has been used extensively as a management technique to attempt to improve individual and organisational outcomes (Wilkinson, 1998). The effects of attempts to transfer responsibility and decision-making to people at lower levels in the organisation have been mixed. For example, Warr et al. (2002) found evidence for increases in job control, performance monitoring, cognitive demands, and possibly role conflict and social contact. There has also been some scepticism about the genuineness of attempts to empower lower level workers. It can be interpreted as exploitation, if increased responsibility is not met with an increase in pay.

The use of semi-autonomous work groups developed from early work into the effects of technology on job performance (De Board, 1988). It was found that, in situations where new technology had been introduced in order to improve productivity, the expected gains did not always materialise. According to work in the *socio-technical systems* tradition (Cherns, 1976, 1987; Davis, 1982; Heller, 1989), the problems were a result of the disruption of the social structure in the workplace, caused by the introduction of new technology. The solution was to re-create opportunities for social interaction by having groups of workers take responsibility for the overall organisation of the job and for task allocation. The principles of semi-autonomous work groups are similar to vertical job enlargement, but at the level of the group rather than the individual. The essential element being that the role of the supervisor is either substantially diminished or lost altogether. Self-managing teams are based on the same principles as semi-autonomous groups but the term usually refers to groups composed of managers or professionals. Such teams are usually given

considerable freedom to make decisions about how best to accomplish tasks, and even to define the tasks that need to be done.

There has been a considerable amount of research, within the job strain framework, into the particular benefits of social support from supervisors. Working within the job strain framework has the benefit of allowing for an examination of the possible mechanisms by which supervisor social support may operate. Support is viewed as acting as a protective buffer against work stress (Quinn and Staines, 1979). The two principle mechanisms are, perceptions of greater job control (Cassidy, 1999; Moyle, 1998), and the moderation of job demands (Jones, Janman, Payne, & Rick, 1987; Morrison, Cordery, & Giradi, 1996). Much of the work on social support concentrates on generic measures of support which include both co-worker and supervisor support. Several studies, however, have shown that supervisor support has the greatest influence on employee well being (Cohen and Willis, 1985; Donovan, Drasgow, and Munson, 1998; Ganster, Fusilier and Mayes, 1986).

Beneficial effects of supervisor social support have been found in relation to physical illness (Kobasa, Maddi, Puccetti, & Zola, 1985), depression (Callan, 1993; Dormann and Zapf, 1999), and coronary heart disease (Haynes, Feinleib and Kannel, 1980). Supervisor social support is a particular influence on workers' stress outcomes because supervisors exercise power in important areas such as resource allocation, task allocation, degree of task monitoring, and provision of evaluative feedback. Studies of leadership have focussed on the beneficial effects of leaders being sensitive to subordinate's need for autonomy, support and role clarification (Bass, 1990). However, a survey by Hogan, Raskin and Fazzini (1990) found that between 60 and 75% of employees identified their supervisor as the principle source of stress. In line with these findings, it is proposed that, in the present project, interactions with supervisors will have the greatest impact on subordinates' stress reactions.

Although there is evidence for the role of social support in moderating the relationship between job strain and stress-related outcomes, there is also evidence that social relations in the workplace can operate as a direct source of stress (Cooper,

1987). Fiore, Becker and Coppel (1983) suggested that social interaction can create and exacerbate distress in situations of betrayal of trust, disrespect, or failure to meet expectations. There is a growing body of evidence to show that interpersonal conflict (defined as interactions based on competing goals or attitudes of two individuals (Portello & Long, 2001)) and negative interpersonal relationships are a prevalent source of workplace stress (Dewe, 1993; Israel, House, Schurman, Heaney, & Mero, 1989; Long, 1989; Long, Kahn, & Schutz, 1992; Ratsoy, Sarros, & Aidoo-Taylor, 1986). Research has also shown that interpersonal conflict and negative interpersonal relationships are associated with negative mood, depression and symptoms of ill health (Israel et al., 1989; Karasek, Gardell, & Lindell, 1987; Repetti, 1993a, 1993b; Snapp, 1992)

Portello and Long (2001) focused specifically on interpersonal stressors using an integrative model of workplace stress, based on Lazarus's (1991) transactional model of stress and coping. Portello and Long developed two scales that measured threats to fundamental needs relating to interpersonal relationships. The first related to the need to maintain relationships with others and the second to self-interest needs, such as the needs for achievemnt, power or influence. The authors argue that these scales may be of particular interest for workplace interpersonal stress because conflicts reduce connections with others and may affect one's ability to exert influence over others.

Part of the methodology for Portello and Long's (2001) study involved a content analysis of the stressful interpersonal conflicts of 157 female managers over a two-month period. The analysis produced a number of examples of the kinds of things that cause interpersonal conflict: verbal criticism, uncooperative behaviour, ethical concerns, physical threats, differences in communication style, organizational philosophies, departmental procedures, and decision-making processes.

Portello and Long found support for their model showing that women managers with lower income, who perceived the work environment as being less supportive and more demanding, appraised interpersonal conflict as a threat to their competence (self-interest needs). Women who were more resilient to interpersonal conflict at work had greater financial resources and tended to appraise interpersonal

conflict as a threat to social relationship needs. These differential appraisals of interpersonal conflict led, in turn, to the use of different coping strategies. Women who appraised interpersonal conflict as a threat to their competence tended to use disengagement coping (including avoidance and wishful thinking) whereas women who appraised interpersonal conflict as a threat to social relationship needs tended to use more engagement coping (including finding solutions through compromise, reason, and negotiation).

One of the aims of this thesis is to develop a model of the ways in which particular kinds of communication can lead to interpersonal conflict. The circumstance in which these conflict-producing communications might arise will also be examined (in particular the hierarchical relationships and the communication medium). The focus of attention in this thesis is not on extreme examples of communication such physical threats but on the antecedents and consequences of mildly hostile, threatening, or uncivil communication.

Chapter 3

Job performance

3.1 Defining and measuring performance

Obtaining an accurate measure of work performance is no easy matter. Borman (2000) discussed some of the issues surrounding performance measurement and outlined the importance of good criterion measures in assessing the value of interventions such as training, job redesign, and performance feedback. Evaluating the effectiveness of such interventions is dependent on the measure of performance used. Borman identified relevance and reliability as the two most important elements of a good measure. Relevance refers to the correspondence between the criteria being measured and the actual performance requirements of the job. In order to accurately reflect work performance, measurement should cover all aspects of the job. A measure can be described as *deficient* to the extent that it is only relevant to a part of the job domain. A further problem in this area is that the overall effectiveness of a worker's efforts may depend on factors beyond the control of the worker. For example, a salesperson's total sales may depend, to some degree, on the territory they are given. Thus, performance measures may be *contaminated* by variance in performance beyond the control of the worker. Reliability refers to the consistency of a measure. If all other factors are held constant, a measure should give the same results when used at different points in time.

A distinction has been made between behaviour, performance and effectiveness (Campbell, Dunnette, Lawler, and Weick, 1970). Behaviour refers to what the employee actually does e.g. drives a truck, assembles components. The behavioural description has no evaluative component. However, in describing a worker's performance, the evaluative component is added (e.g. drives a truck well, assembles components sloppily). In evaluating performance, the worker's behaviour is assessed in relation to the goals of the organisation. A worker's performance is the extent to which their behaviour might contribute to the overall effectiveness of the organisation. However, effectiveness includes both the individual's performance and factors beyond their control. Borman (2000) contends that a focus on "bottom-line", results-orientated criteria, is inappropriate for measuring performance in terms of effectiveness.

3.2 Attitudes and performance at work

This broader view of performance has led to the inclusion of a range of measures that may contribute, in a wider sense, to the overall effectiveness of an organisation. These measures include job satisfaction (Judge, Thoreson, Bono, & Patton, 2001), knowledge management (Bassi, 1997), goal setting (Locke, 2000), financial incentives (Locke and Latham, 1990), organisational commitment (Goffin and Gellatly, 2001), and citizenship behaviour (Borman and Penner, 2001). Many of these alternative measures (especially job satisfaction and organisational commitment) are actually measures of worker's attitudes towards their job and towards the organisation they work for. The extent to which organisational attitudes translate to behaviour that is likely to improve organisational effectiveness relates to the age-old problem in social psychology of the relationship between attitudes and behaviour.

The degree of correspondence between a person's stated attitude towards their job, and their work performance, is a matter of some importance. A great deal of research has been carried out on the general relationship between attitudes and behaviour. Wicker (1969) reviewed the work up to that point and declared that there was little evidence to support such a link. If this was true, then it would mean that feeling good about one's job would not necessarily translate into working harder or longer or relating better to clients. Understanding the relationship between attitudes and behaviour is so important to social scientists that following Wicker's findings, far from abandoning work in this area, more effort was focused on determining the factors that might influence the correspondence between attitudes and behaviour.

One of the first problems identified was that the measurement of attitudes tended to focus on general attitudes (e.g. attitudes towards the environment), whilst measurement of behaviour is focused on a specific behaviour (e.g. buying lead-free petrol). In a major step forward, Ajzen and Fischbein (1980) developed the 'theory of reasoned action' in an attempt to encapsulate the factors that influenced behaviour. The important contributions of this model were firstly, that behaviour is largely a consequence of a person's intention to behave in that way. Secondly, that the intention to behave is determined in part by the individual's attitude and in part by their perception of the how other people will view their behaviour. This model was

later changed to the 'theory of planned behaviour' (Ajzen and Madden, 1986). The new model (see fig. 3.1) included the concept of perceived behavioural control. This additional factor is similar to self-efficacy and affects both the intention to behave and the actual behaviour.

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│ value of those  │          │  Attitude    │
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                          │ subjective norm  │    └─────▲─────┘   └───────────┘
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│ Beliefs about how│                │           │ Perceived   │
│ favourably or    │                │           │ behavioural │
│ unfavourably     │   ┌────────────┴────┐      │ control     │
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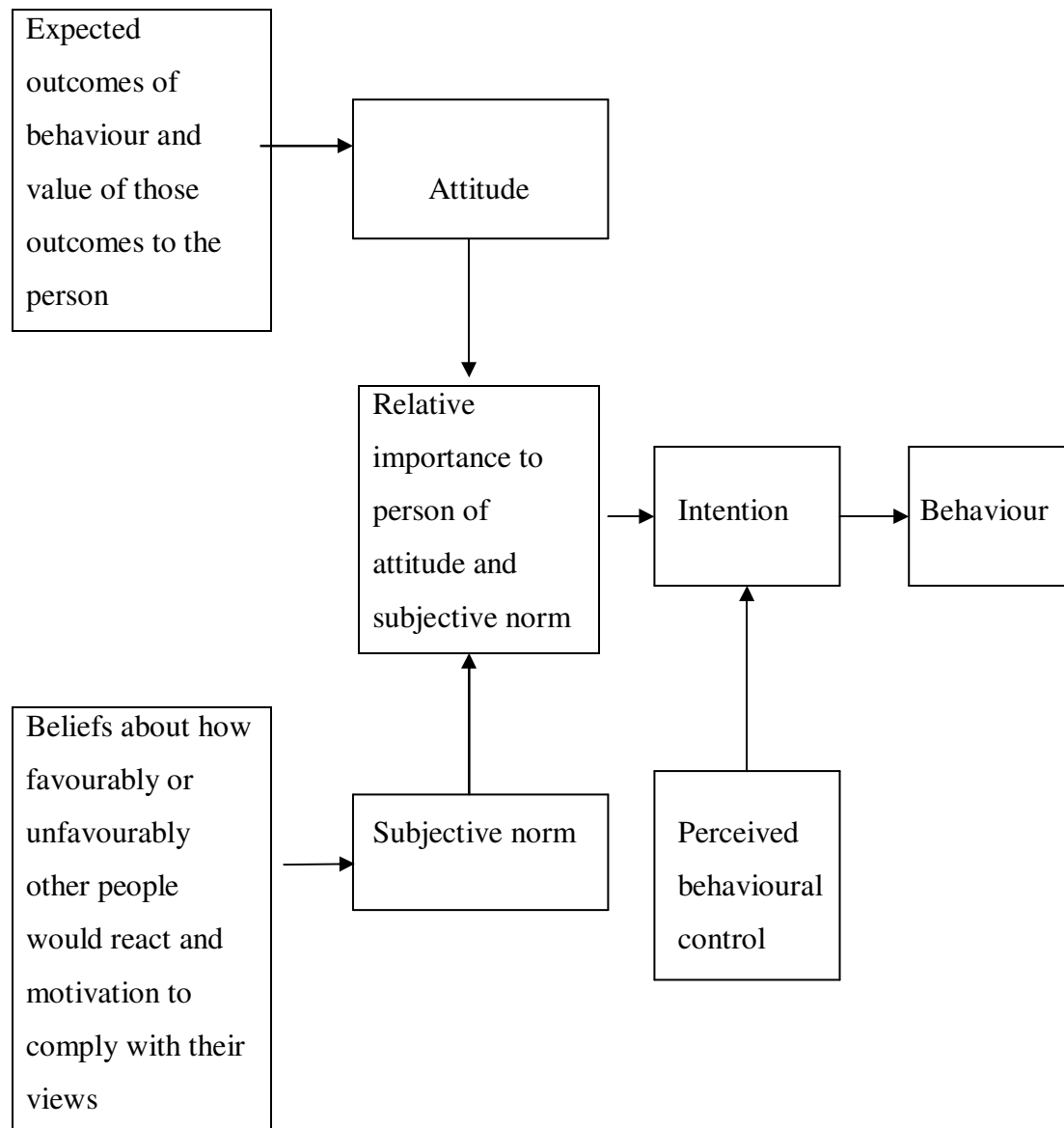
Fig. 3-1 Theory of planned behaviour (from Ajzen and Madden, 1986)

There has been good support for the theory of planned behaviour (Ajzen, 2001; Armitage and Conner, 2001). However, despite these advances in understanding the relationship between attitudes and behaviour, Arnold et al (2005) bemoan the fact that very little research in work psychology has used the theory of planned behaviour. It could be used, for example, to explain how a person develops their attitude to work. According to this model, attitudes develop as a consequence of weighing the costs and benefits of performing particular behaviours. A positive attitude to work will develop if the rewards (pay, promotion, recognition), outweigh the costs (longer hours, more work). Intention to behave is a consequence of attitude, subjective norm, and perceived behavioural control. An intention to behave in a positive way towards organisational goals will develop where a positive attitude is matched with the attitudes of others deemed important by the individual (co-workers, supervisor, family). The intention to behave positively will also depend on the individual's belief that they have the resources necessary to carry out the behaviours. Finally, effective behaviours (behaviours that help to achieve the goals of the organisation) will develop as a consequence of the intention to perform those behaviours, and perceived behavioural control (self-efficacy).

3.2a Job satisfaction

Job satisfaction is one of the most researched variables in work psychology (Spector, 1997). Job satisfaction is important to work psychologists because it is thought to relate to two important outcomes. First, it is taken to be an indicator of an individual's well-being or mental health. Second, it is generally assumed that there is a connection between job satisfaction and performance. However, the link between satisfaction and performance is based on the assumed relationship between attitudes and behaviour, discussed above. Another important issue in the area of job satisfaction is the extent to which job satisfaction can be considered a stable disposition (e.g. Davis-Blake and Pfeffer, 1989; Staw, Bell, and Clausen, 1986). It has been argued that job satisfaction can be considered more like an aspect of personality that is either learned through early experience or is based on genetic inheritance. However, if this were the case, then attempts to boost job satisfaction would be doomed to failure, and Steel and Rentsch (1997) showed that not everyone is consistent (either across time or across situations) in their levels of job satisfaction, indicating the potential influence of environmental factors.

The link between job satisfaction and job performance has been reviewed many times (e.g. Locke, 1970; Petty, McGee, and Cavender, 1984; Iaffaldano and Muchinsky, 1985 see Judge et al). Most studies have found rather modest correlations. For instance, Vroom (1964) observed a median correlation of .14 and Iaffaldano and Muchinsky (1985) reported an average correlation of .17. The most recent large-scale review (Judge, Thoresen, Bono, and Patten, 2001) was conducted on 312 samples with a combined N of 54,417. In this detailed analysis of the literature the true correlation between job satisfaction and performance was estimated to be .30. Judge et al. examined a number of models of the satisfaction-performance relationship including the view that job performance causes job satisfaction or there is a reciprocal relationship between the two. An examination of the models and studies resulted in the identification of a large number of moderators and mediators thought to influence the relationship between satisfaction and performance.

Following on from the review and recommendations of Judge et al. (2001), Schleicher, Watt and Greguras (2004) examined the issue of the nature of job satisfaction as a moderator of the satisfaction-performance relationship. The problem of defining and measuring job satisfaction is related to the broader difficulty of trying to capture the complexity of how a person really feels about any attitude object. This brings into question the extent to which an attitude score can fully represent the underlying attitude. Fazio and Zanna (1978) suggested that the variability in predicting behaviour from attitudes stemmed from the discrepancy between the underlying attitude and the measured attitude. Schleicher et al. were particularly concerned with the relationship between the affective component and the cognitive component of the job satisfaction attitude. A number of theorists have made a distinction between the cognitive appraisal of an attitude object and an emotional reaction to an attitude object (e.g. Bem, 1970; Eagly and Chaiken, 1993, Weiss, 2002).

Studies have shown that the degree of consistency between the cognitive and the affective components has implications for the predictive validity of attitude scales. Norman (1975) found that the greater the correspondence between the affective and the cognitive components, the more likely participants were to act in accordance with

their attitudes. Kraus (1995) conducted a meta-analysis supporting this finding in a wide range of attitude behaviour situations. Schleicher, Watt and Greguras (2004) found empirical support for the moderating effect of affective-cognitive consistency (ACC) in the relationship between job satisfaction and performance. For employees with high ACC there was a large positive relationship between job satisfaction and performance (r = .57). The relationship between job satisfaction and performance for employees with low ACC was non-existent (r = -.03)

3.2b Well being and performance

The study of well being focuses solely on the affective component of attitudes. It is about how people feel. According to the happy-productive worker hypothesis, happy workers exhibit higher levels of job-related performance behaviours than unhappy workers (Spector, 1997; Brief, 1998). Until recently the happy-productive worker hypothesis was operationalized as the relationship between job satisfaction and performance. Though the size of the correlation between satisfaction and performance is still contested (see above), there has been a tendency to treat the relationship between well-being (measured by job satisfaction) and performance with some scepticism (Staw, 1986; Judge, Hanisch and Drandowski, 1995).

Wright and Cropanzano (2000) argued that the ambiguous findings in this area are a consequence of the way in which happiness has been defined and operationalized. They discuss the three related concepts of happiness, well being and satisfaction. According to Wright and Cropanzano, well being differs from job satisfaction in two important ways. First, job satisfaction is considered to be an attitude and is therefore comprised of an affective and a cognitive component. Indeed, measures such as the Minnesota Satisfaction Questionnaire contain hardly any affective items. Happiness and well being, on the other hand, are primarily affective. They are descriptions of positive emotional experience. The second difference is that well being is a much broader construct than job satisfaction. Well being is not constrained to attitudes to work but covers all areas of a person's life (Diener, 1984).

Evidence for a positive relationship between well being and performance comes from two sources. First, there is evidence of the detrimental effects of negative affect. It has long been recognised that negative affect, or depression, leads to low

self-esteem, pessimism, reduced motivation, and slowed thought processes (Holmes, 1991; Wright and Bonett, 1997). The cost, in both human and financial terms, of work-related dysfunctional psychological well being has been demonstrated by Quick, Quick, Nelson and Hurrell (1997). The second source of evidence is from studies demonstrating the beneficial effect on work performance of psychological well being. Wright, Bonett, and Sweeney (1993) found that psychological well-being was positively related to supervisor ratings of performance and Wright and Bonett (1997) also found a significant relationship between well-being and performance. Wright and Cropanzano (2000) found that well being, but not job satisfaction, was predictive of job performance.

Whilst the work of Wright and his colleagues is useful in establishing the importance of employee well being in relation to job performance, there is very little discussion in this work of where well being comes from. The assumption of Wright et al. and others (see Diener, 1984) is that well being is more a dispositional personality trait than an attitude. However, Argyle (2001) discusses many ways in which a positive mood can be induced experimentally, including reading aloud a list of 'feel-good' statements (Westerman, Spies, Stahl, & Hesse, 1996; Gerrards-Hesse, Spies, & Hesse, 1994), watching a humorous film clip (Gerrards-Hesse et al., 1994), and listening to music (Carter, Wilson, Lawson, & Bulik, 1995).

However, experimentally induced positive affect does not last very long and does not enhance mood by very much. Another area of study has been to look at the occurrence of positive life events. There has been much emphasis on stressful life events, which are normally assumed to be uncontrollable but in fact, are due partly to features of the person and partly to situational factors such as lifestyle and social class (Argyle, 2001). It has been found that aspects of personality are implicated in the frequency with which people experience both positive and negative life events. Headey, Holmstrom, and Wearing (1985) and Magnus, Diener, Fujita, & Payot (1995) found that extraverts were more likely to experience positive life events. Both studies also found that neuroticism predisposed people to negative life events. However, Headey et al. (1985) found that not only did extraversion predict positive life event but also that positive life events led to higher levels of extraversion. Headey et al. modelled this relationship in a 'chain of well-being'.

In the work context, positive affect experiences are most often associated with success and recognition. Work on job satisfaction shows that social satisfaction comes from relations with workmates (Argyle, 2001). However, more recent work (Lyubomirsky, King, and Diener, 2005) suggests that the causal direction may also be in the opposite direction i.e. happiness leads to success. The present project is based on the premise that good relations (evidenced by communications that are non-threatening, supportive and encouraging) with fellow workers (especially supervisors) will be experienced as positive life events. These positive events will be accompanied by positive emotions and will lead to an improved sense of well being. There will be an accompanying increase in self-efficacy and motivation, leading to improvements in efficiency and performance. On the other hand, poor relations (evidenced by communications that are manipulative, threatening, and destructive) will be experienced as negative life events, accompanied by emotions such as anger and anxiety. Such events will increase the experience of stress and have a negative effect on self-efficacy and attitudes leading to a decline in overall performance.

3.3 Organisational citizenship behaviour (OCB)

This element of work performance, known as organisational citizenship behaviour (Bateman and Organ, 1983), citizenship performance (Borman and Penner), prosocial organisational behaviour (Brief and Motowidlo, 1986), has received a great deal of attention in recent years. The traditional emphasis of work performance has been on task performance. Job analysis (the basis of job descriptions and reward structures) usually results in the identification of particular tasks or groups of tasks. However, Katz (1964) suggested that employers who focused entirely on job descriptions for employee behaviours would experience poor performance. Citizenship behaviour includes such activities as helping others with their jobs, supporting the organisation, and volunteering for additional work or responsibility (Borman and Motowidlo, 1993).

Some attempts to uncover the antecedents of citizenship behaviour have focused on aspects of personality. For example, Midili and Penner (1995) developed a measure of the prosocial personality. This consisted of two dimensions: empathy towards others and helping others. Midili (1996) found strong correlations between

these dimensions and OCB. A considerable amount of research has also examined the relationship between attitudinal variables (e.g. organisational commitment, job satisfaction, and procedural justice) and OCB.

The link between the kinds of extra-role behaviours associated with organisational citizenship and overall organisational effectiveness, was first examined by Podsakoff and Mackenzie (1997). They reviewed a number of studies and found a substantial link between the performance of citizenship behaviours by members of the organisation and the effectiveness of those organisations. More recently, there has been more detailed investigation into the contribution of specific elements of citizenship behaviour. The most important element, in relation to the present project, is known as interpersonal citizenship behaviour (Settoon and Mossholder, 2002), altruism (Moorman, 1993), helping (Lepine and Van Dyne, 2001), or OCB-1 (Williams and Anderson, 1991). Interpersonal citizenship behaviour occurs when employees help each other out in such a way that is beyond the basic requirements of the job. Interpersonal citizenship behaviours have been shown to enhance individual and group productivity, and help maintain a favourable work climate even more than non-interpersonal OCB (Podsakoff, MacKenzie, Paine, & Bachrach, 2000).

In a novel approach to OCB, Bowler and Brass (2006) argued that the attitudinal approach and the personality approach fail to account for the interpersonal nature of interpersonal citizenship behaviour. They proposed a shift from a focus on individual variables to a focus on interpersonal relationships. They used a form of social network analysis to test the strength of relationships. Their findings suggest that relationships within organisations are an important factor in the performance of interpersonal citizenship behaviour. The shift in emphasis from individual attitudes and personality to relationship variables is strongly supported by the present project.

Another area of investigation related to the present project is research examining subordinates' perceptions of abusive supervisors and the effect of those perceptions on the performance of citizenship behaviours. Tepper (2000) explained that abusive supervision refers to subordinates' perceptions of the extent to which supervisors engage in hostile verbal and non-verbal behaviour short of physical contact. A small but growing body of research has linked perceptions of abusive

supervision to greater job and life dissatisfaction, intentions to quit the job, role conflict, and psychological distress (Ashforth, 1997; Duffy, Ganster, and Pagon, 2002; Keashly, Trott, & MacLean, 1994). There is also evidence (Ashforth, 1997) to suggest that employees who feel threatened will react against the perceived source of the threat in order to attempt to restore the situation and regain some control (study 3 in the present project examines this hypothesis). Zellars, Tepper, and Duffy (2002) investigated the possibility that one way that employees might attempt to restore the situation might be to withhold extra-role actions that benefit the organisation (organisational citizenship behaviours). They found evidence that subordinates of abusive supervisors perform fewer OCBs than their non-abused counterparts.

Another area of research that links relationships at work with behaviours affecting organisational effectiveness is the study of counterproductive work behaviour (CWB). Sackett (2002) defines CWB as behaviour that runs counter to an organisations' legitimate interests. This definition of CWB, in terms of the harm done to the organisation as an entity, has recently been extended to include more specific areas of organisational functioning including harm to employees, customers, and other stakeholders (Spector and Fox, 2005). The focus of CWB on people rather than objects is known as personal CWB. Spector and Fox discuss a number of concepts relating to negative interpersonal behaviour at work. The mildest of these is incivility. Andersson and Pearson (1999) include insensitive and rude behaviour, and mild forms of aggressive behaviour in their definition of incivility. The intent to cause harm is ambiguous and both the actor and the recipient may deny any intent. Comments or actions without any intention of causing harm may be misinterpreted.

More serious forms of damaging interpersonal behaviour are emotional abuse (Keashley, 1998), bullying (Hoel, Rayner, and Cooper, 1999) and mobbing (Zapf, Knorz, and Kulla, 1996). Whilst these concepts overlap with each other and with the concept of CWB, there are subtle differences. For example, mobbing involves multiple perpetrators whilst emotional abuse and bullying are usually, but not always, perpetrated by individuals.

The stressor-emotion model of counterproductive work behaviour (see fig.3.3) proposed by Spector and Fox (2005) explicitly places stressful work

conditions at the beginning of the causal flow of antecedents to CWB. Although personality plays a role in perceptions, emotional responsiveness, and behaviour, the heart of the model is the connection from the environment to perceptions, to emotions, and then to CWB. Studies 2 and 3 in the present project have a similar theoretical base to the stressor-emotion model of counterproductive behaviour. However, the emphasis in the present project is based more specifically on interpersonal stressors and interpersonal outcomes

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│   Stressor   │   │   stressor   │   │   emotion    │   │        │
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│              │                      │ Trait anger  │
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│              │                      │Locus of control│
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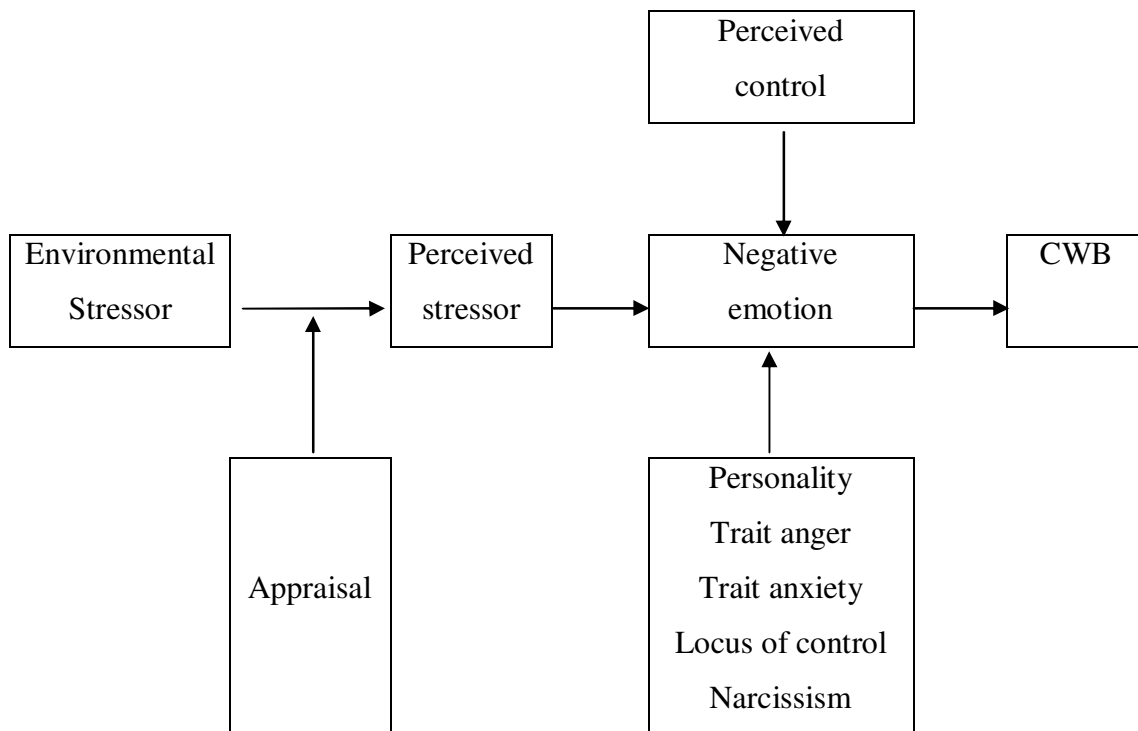
Figure 3-2. Stressor-emotion model of counterproductive work behaviour (from Spector and Fox, 2005)

Although the above model acknowledges the subjective nature of stress perceptions by including the element of individual appraisal, there is evidence to suggest that there is considerable agreement between subjective perceptions of stressors and between subjective and objective assessments of stressors. Frese (1985) found correlations ranging from .30 to .61 between job incumbents and observers reports of work stressors. Kirmeyer (1988) found a correlation of .59 between objective and incumbent measures of workload. These findings suggest that there is considerable agreement about what constitutes a stressful situation.

There is good evidence to support the idea that interpersonal conflict at work leads to personal CWB. Both Fox and Miles (2001) and Goh, Bruursema, Fox, and Spector (2003) found that interpersonal conflict correlated more strongly with personal CWB than with organisational CWB. This suggests that when an employee perceives another person to be the cause of their stress, they will be motivated to retaliate by inflicting personal harm. However, it is also likely that interpersonal conflict also leads to other forms of CWB. For example, if the cause of the employees stress is perceived to be their supervisor, then retaliation may lead to further negative consequences. The employee may seek other avenues to vent their frustration on the organisation.

Judge, Scott, and Ilies (2006) examined the dynamic nature of emotions at work, work attitudes, and workplace deviance. The usual emphasis in the workplace deviance literature is on individual differences in behaviour (Bennett and Robinson, 2003). Judge et al examined both inter- and intra-individual variation in deviant behaviour. Their results revealed that over half of the variance in workplace deviance was within-individual. They further demonstrated that within individuals, state hostility was positively related to workplace deviance. State hostility, in turn, is negatively related to perceptions of interpersonal justice.

The link between perceptions of interpersonal justice and counterproductive or deviant workplace behaviour is important for the present project. Perceptions of interpersonal justice are based on communications between employees and particularly between supervisors and subordinates. It is important to establish that the

consequences of hostile communication go beyond the immediate emotional impact on the individual.

3.4 Organisational justice

Research into the antecedents and consequences of employees' perceptions of organisational justice or fairness has proliferated over the last two decades (Colquitt, Conlon, Wesson, Porter, & Ng, 2001). Research in this area has originally focused on two types of subjective perceptions: procedural justice (Leventhal, 1980; Leventhal, Karuza, and Fry, 1980) and distributive justice (Deutsch, 1975; Leventhal, 1976). Distributive justice is concerned with the fairness of the outcomes that an employee receives from the organisation, whilst procedural justice is concerned with the fairness of the procedures used to determine the distribution or allocation of outcomes. Bies and Moag (1986) introduced a further dimension of organisational justice: interactional justice. Greenberg (1993) further proposed that interactional justice should be separated into two components: informational justice and interpersonal justice. Interpersonal justice is about being treated with respect and is concerned with the fairness of interpersonal treatment that individuals receive.

Colquitt et al., (2001) reviewed 183 justice studies and found that although the four dimensions (distributive, procedural, interpersonal, informational) of justice correlate well with each other, the individual dimensions contribute incremental variance to justice perceptions. They also showed that interpersonal justice was most strongly related to deviant behaviours. Studies focussing on the relationship between perceptions of organisational justice and stress have also found that the dimensions of procedural and interactional justice were more important than distributive justice (Schminke, Ambrose, & Noel, 1997)

Reactions to organisational injustice are similar to those investigated under the heading of counterproductive work behaviour. Skarlicki and Folger (1997) explained that behaviours such as aggression, theft, and sabotage are committed in retaliation against perceived organisational injustice. These volitional acts are intended to cause harm and their motivation is to restore equity and justice. Folger and Baron (1996) argued that aversive or unpleasant emotional states lead to aggression. Situations that

are perceived as unfair will lead to negative emotions and consequently to aggression. They also argued that intention is an important variable and that situations perceived as intentionally unfair will lead to greater emotionality and aggression. Spector and Fox (2005) noted that research in this area showed that most aggressive behaviours are directed towards other people.

Perceptions of fairness (or justice) are an important part of the background to the present project. The investigations undertaken here are mostly concerned with the effects of communication from someone further up in the organisational hierarchy, and as Molm, Quist, and Wiseley (1994) noted, incidents of interpersonal justice are most prevalent in relationships characterised by structural inequality. The imbalance of power between supervisor and subordinate undoubtedly contributes to feelings of powerlessness and distress when an employee perceives they are being unfairly treated.

The outcomes associated with perceptions of inequality are similar to those associated with stress. Cropranzano Goldman, and Benson (2005) found evidence linking perceptions of organisational justice to burnout at the individual level, and Moliner, Martinez-Tur, Peiro, Ramos, and Cropanzano (2005) found a similar relationship between justice and burnout at the work-group level. Moliner et al's findings also showed the predominance of interactional justice over distributive justice. Heaney and Joarder (1999) found that perceived unfairness was related to a number of factors related to increased vulnerability for depression. These included feelings of powerlessness when confronted with workplace stressors, and an increased tendency to use withdrawal and avoidant coping strategies. Escamilla-Cejudo, Trabajo, Karkashian, Gershon, & Murphy (1999) found that those who reported unfair treatment had levels of depression and anxiety three times higher than those who reported fair treatment.

3.5 Performance feedback

The relationship between the type of feedback given to a worker and the effect of that feedback on the worker's subsequent task performance has been the subject of much interest over the last 100 years (Kluger and DeNisi, 1996). In a large-scale review and meta-analysis, Kluger and DeNisi found a great deal of inconsistency and

contradiction in the effects of feedback on motivation and performance. They proposed a framework (feedback intervention theory or FIT) for explaining the effects of feedback on performance. This theory integrates a number of other theories including goal setting theory. Latham and Locke (1991) suggested that the simplest explanation of why some people perform better than others is that they have different performance goals. They also concluded that goals and feedback (in the form of knowledge of results) together are more effective in motivating high performance than either one separately.

This positive view of the relationship between feedback and performance was continued by Kluger and DeNisi (1996). They suggested that negative performance feedback can be interpreted as not having met one's goals and this should lead to increased effort. However, increasing effort is not the only response to not meeting one's goals. The alternative response is to make a downward adjustment of goals. The more negative the feedback, the more likely the recipient is to lower their goals and, according to goal theory, setting lower goals will lead to lower performance.

A number of variables have been proposed that may moderate the relationship between feedback and goal setting/performance. According to social-cognitive theory, self-efficacy beliefs are likely to moderate the effect of negative feedback on lowering goals, such that those with higher self-efficacy will be less likely to lower their goals (Bandura, 1997; Bandura and Cervone, 1983). According to social-cognitive theory, self-efficacy beliefs will also moderate the effect of positive feedback on goal setting and performance. Positive feedback indicates that goals have been met or exceeded. Individuals with a strong sense of efficacy, who receive information that goals have been met, will tend to revise their goals upwards (Bandura and Locke, 2003; Wood and Bandura, 1989). This should lead to greater improvements in performance for those who receive positive feedback and who have a strong sense of task self-efficacy.

Judge and Ilies (2002) examined the relationship between personality and goal setting. They presented meta-analytic estimates for the relationships between the traits comprising the Five-Factor model of personality and goal setting motivation. They found that neuroticism was negatively related to goal setting (-.29) and extraversion was positively related (.15). Ilies and Judge (2005) argued that this relationship was

due, at least in part, to the link between personality and emotion. Ilies and Judge based their proposal on Gray's (1981, 1990) behavioural motivation theory. According to this theory, there are two distinct systems regulating behavioural motivation. The behavioural activation system (BAS) is activated by reward or relief from punishment, and is believed to regulate the experience of positive moods and emotions. The behavioural inhibition system (BIS) is activated by punishment and regulates negative emotions or moods. Thus, favourable or constructive feedback leads to positive affect or mood, which is associated with BAS activation leading to approach behaviour and higher goals being set. Conversely, negative or destructive criticism will lead to negative emotions and activation of the BIS. This will lead to avoidance behaviour and to lower goals being set.

The personality traits of extraversion and neuroticism are thought to control the experience of positive and negative affect. Diener and Lucas (1999) claimed that one of the most consistent findings in the personality and emotion literature is that extraversion is moderately correlated with pleasant affect. Costa and McCrae (1980) and Headey and Wearing (1992) found correlations ranging from .11 to .26 between extraversion and pleasant affect. Lucas and Fujita (2000) examined the relation between extraversion and pleasant affect using multiple methods of assessment. The use of different extraversion and affect scales resulted in moderate to strong correlations. Watson (2000) discussed the link between mood and temperament and argued that the trait of neuroticism plays a role in controlling the experience of negative affect.

Thus, the personality traits of extraversion and neuroticism should also moderate the relationship between feedback and performance. Extraverts should be more inclined to set higher goals and therefore improve their performance more, following positive feedback, than introverts or those scoring high on neuroticism. Those scoring high on neuroticism should react with greater negative affect to destructive negative criticism, set lower performance targets, and therefore perform less well than either those low in neuroticism or high in extraversion. Study 4 also examines the potential moderating effects of extraversion and neuroticism on the relationship between feedback and performance.

Delivering positive feedback poses few problems, since it is likely to be well received. However, providing effective negative feedback about an individual's work performance presents more difficulties. Ilgen, Mitchell, and Fredrickson (1981) argued that it is essential for managers to give negative feedback when appropriate. Studies have established some guidelines about how best to deliver feedback. Ilgen, Mitchell, and Fredrickson (1981) and Liden and Mitchell (1985) found that recipients prefer feedback that is specific, delivered promptly, and is considerate in nature. Unfortunately research (e.g. Larson, 1984) has also confirmed what many people have experienced to be the case: that feedback (particularly criticism) is not delivered in this way. As Baron (1988) explained, in many cases persons in authority tend to criticise subordinates when in a state of anger. Because of the manager's strong emotions, negative feedback is often delivered in a sarcastic, biting tone. It is neither specific nor considerate.

Baron (1988) conducted an experiment where students were given a task to complete and then given false negative feedback, which was neither specific nor considerate (e.g. "didn't even try, can't seem to do anything right"). Compared with participants who received constructive criticism, participants in the destructive criticism condition reported greater anger and tension, and stated that they would be more likely to avoid the person giving the feedback. They also set lower task goals and reported lower self-efficacy. Baron (1988) also reported a study in which employees were asked to rate the importance of 14 potential causes of conflict in their organisation. Participants rated poor use of criticism as more important than competition over resources or disputes over jurisdiction.

Most work on feedback has tended to have a relatively narrow focus: the individual or the work group. However, recent work in this area has attempted to broaden the scope of investigation to the organizational level. London (2003) suggested that organizations can create a feedback orientated culture in which feedback is easily accessible, salient, and likely to influence employee beliefs and behaviours on a day-to-day basis. Steelman, Levy, and Snell (2004) developed an extensive measure of the feedback environment consisting of seven facets of feedback, including frequency of unfavourable feedback and frequency of favourable

feedback. Empirical research demonstrates that a high score for feedback environment is associated with increased affective commitment, job satisfaction, and OCBs, as well as decreased absenteeism (Norris-Watts & Levy, 2004; Steelman & Levy, 2001)

Rosen, Levy, and Hall (2006) proposed a model linking high quality feedback environments with lower employee perceptions of organizational politics. The definition of organizational politics centres on aspects of political behaviour that are self-serving, not officially sanctioned by the organization, and are often detrimental. When employees perceive high levels of organizational politics they will tend to perceive organizational decisions as politically driven and thus, as potentially uncontrollable, threatening and unfair. A number of studies have shown that perceptions of organizational politics are linked to a number of negative outcomes such as low levels of job satisfaction, organizational commitment, task performance and OCB (Cropanzano, Howes, Grandey & Toth, 1997; Ferris et al., 1996).

Rosen et al., (2006) confirmed the link between a high quality feedback environment and lower perceptions of organizational politics. They also showed that employee morale mediated the relationship between organizational politics and various outcome measures including OCB and job performance. These recent findings demonstrate the importance of feedback, not only for individual task performance, but for overall organizational effectiveness.

3.6 The purpose of the study

The overall aim of this thesis is to raise awareness of the effects of inconsiderate and threatening communication within the context of organizations. Threatening communication is considered within a framework of workplace stress and its effects are examined under two broad headings: individual well being and work productivity. Whilst these two areas may be considered as separate outcomes, especially from an employer's standpoint, the background literature on the antecedents and consequences of stress in the workplace provides sufficient evidence that the two outcomes are closely linked.

This project focuses on the role of interpersonal communication and interpersonal relations on well being and productivity. Much previous research on the

role of interpersonal relationships has focused the moderating effect of social support. The studies in this project examine the effects of threatening communication as a cause of stress. This approach supports the model adopted by the Health and Safety Executive where interpersonal relations at work are seen as an important potential cause of stress.

The studies in this thesis address the question of how certain types of communication can impact on the recipient's well being and productivity. The influence of antecedent conditions such as the message recipient's personality and the relative position in the organizational hierarchy of sender and recipient will be examined. The influence of the medium of communication will also be examined. The outcome measures of interest include the physiological, emotional, and behavioural response of the message recipient.

The precise research questions addressed by this study can be summarized as follows: What are the message characteristics that lead to perceptions of threat and what are the consequences of such perceptions for the individual and the organization? What are the effects of supportive versus non-supportive messages on job performance and attitudes? What effect do antecedent conditions such as aspects of personality and relative position in the hierarchy have on sending and receiving threatening communication? How does the medium of communication impact on sending and receiving threatening and unsupportive messages? Does the message medium affect the recipient's response to the message? The studies presented in this thesis are designed to answer these questions.

Introduction

In order to address the research questions highlighted at the end of the previous section the studies in this thesis will use a range of methodology. The first study was largely exploratory and consequently it was judged appropriate to include a degree of qualitative analysis. The advantage of using qualitative data collection methods is that they can yield data that is rich and meaningful. The data collection process is not constrained by having to control the situational variables. Indeed, it is the situational factors, normally excluded from experimental studies that are of particular interest in qualitative methodology. Observation techniques such as participant observation are a unique opportunity to collect data in a real, ongoing situation with no interference from the experimenter. This allows the participants to behave in a way that is unconstrained by the experimenter's expectations. Qualitative methodology can be an invaluable source of uncontaminated data and can be particularly useful as an exploratory tool. The data collected using qualitative methods can be used to develop experimental hypotheses, which can then be tested using quantitative methodology.

The differences between qualitative and quantitative methodologies stem from fundamental differences in the underlying philosophies. Quantitative methods are underpinned by what is known as the hypothetico-deductive method advocated by the philosopher Karl Popper. In this approach science starts with a theory (or hypothesis), which the scientist then seeks to test. Popper emphasised that it was the falsifiability of the theory that was important. In other words, scientific endeavour is not just about finding evidence to support theories but also about being able to refute them with evidence. Qulitative methods by contrast are underpinned by a more inductivist approach. This means that qualitative research will seek to avoid imposing a theoretical perspective when trying to answer questions.

An even greater difference between the two methodological approaches stems from differences in epistemology. This is a branch of philosophy concerned with the validity of knowledge. The traditional scientific approach assumes that scientific research enables us to discover the truth about a real, knowable world. Whereas, the

qualitative approach assumes that it is only possible to identify a subjective understanding that is contingent upon the social and historical context in which research takes place. The traditional scientific approach has dominated modern psychology in the UK and USA. However, there has been a huge shift, in the last 20 years, towards incorporating both types of methodology.

There has been considerable growth in the use of qualitative methodology, especially in the United Kingdom, in recent years. In 1995, Smith noted that there were few books written for psychologists on qualitative methods. However, by 2004 Langdridge, in a standard introductory text on psychology methods, had devoted equal space to quantitative and qualitative methodology.

The first study in this thesis uses a mix of qualitative and quantitative methods in an attempt to explore the influence of a senior colleague on subordinate's blood pressure and their perceptions of stress, using the setting of formal organizational meetings. Permission to carry out the study was sought from a senior manager in the organization. Assurances were given that the procedure would not interfere with the meetings and that confidentiality, of individual participants and the organization, would be respected. Assurances were also given that participants could withdraw form the procedure at any time and that information would be provided to participants about blood pressure and what to do if they were concerned about high blood pressure (see appendix).

Four meetings were studied using a variety of measures ranging from the very concrete (blood pressure measurements) to questionnaire responses and qualitative data from participant observation. Data from the first two meetings was used to develop a questionnaire, with the intention of identifying psychosocial aspects of meetings likely to be related to stress. It soon became apparent, however, that in order to properly develop and validate the questionnaire, data would have to be collected from many more meetings. As this study was intended to be exploratory and to identify areas for further study, full validation of the questionnaire was beyond the scope of the present study.

Given that the aim of the study was primarily exploratory, observations from two further meetings were included. These observations were included because they seemed to exemplify how the behavioural style of the chair of a meeting can influence participant's perceptions of stress. A number of findings from this study helped to develop and shape the rest of the studies in the thesis. One question of particular interest was whether the discussion of contentious issues in a meeting would necessarily result in the participants experiencing the meeting as stressful or whether psychosocial factors would play a moderating role. Although it is difficult to draw any firm conclusions and general principles from studying only four meetings using observational methods, the findings nevertheless indicate that psychosocial elements played an important role in perceptions of stress.

One of the problems of measuring blood pressure by the traditional method of using an inflatable cuff attached to the upper arm is the time delay between the start of the cuff-inflation process and the actual measurement. In addition, in the first study, blood pressure could only be measured before and after a meeting. This results in a rather blunt measure that does not allow the effects of any particular stimuli to be assessed. For example, it is quite possible that an individual's blood pressure may have increased quite dramatically at points during a meeting. However, by the end of the meeting it may have returned to normal. It became clear that some method of recording an individual's immediate physiological response was needed.

Having rejected the use of cortisol measurement on the grounds that it did not give a suffiently accurate measure of an individual's immediate response to a stimulus, it seemed that blood pressure measurement technique was giving rise to the same problem. Other physiological measures were considered, including heart rate and galvanic skin response. Whilst both of these measures would give a measure of an individual's immediate reactivity, neither of these methods has quite the same implications for health outcomes as a measure of blood pressure.

The solution was found in a sophisticated (and expensive) piece of equipment called the Portapres. This equipment can be used to measure blood pressure at every heart-beat. The Portapres uses a non-invasive measurement technique and does not require the inflation of a cuff around the upper arm. Instead, two small finger cuffs are

used on the first and middle fingers of the non-preferred hand. The equipment consists of a neoprene belt containing the Main unit, with electronics and memory card, the Pump unit, and batteries for ambulatory use. Connected to the Main unit and Pump unit is a Wrist unit. This acts as an interface between the signals from the main electronics and air supply to the finger cuffs. The Wrist unit connects to the finger cuffs, which consist of an inflatable air bladder and an infrared photoplethysmograph. The plethysmograph measures the finger arterial volume, which varies with blood pressure. The wrist unit controls the pressure in the cuff bladder so as to keep the arterial volume constant at a level (the setpoint) determined during startup. The wrist unit contains a pressure transducer that measures the cuff pressure, as an indirect measure of blood pressure.

Data from the Main unit is then analysed using the 'Beatscope' software. Detailed graphical representations of a number of physiological measurements can be presented on screen. The software allows for detailed analysis of all, or parts of, the data. This provides the opportunity to capture, with great precision, the immediate physiological response to a stimulus. With a cuff inflation blood pressure monitor there is an inevitable delay between starting the measurement procedure and the actual measurement. In the time it takes to inflate the cuff the Portapres may have taken 30 or more measurements. The equipment belongs to the Laboratory of Design for Cognition (LDC) at the research and development department of Electricite de France (EDF) in Paris, France. The head of department at LDC was interested in the current project and a fruitful collaboration developed which led to being able to use the Portapres for the second study.

The second empirical study explored the effects of different styles of communication in a much more controlled way. The study used electronic communication in the form of e-mail and the participants were students at a UK institute of higher education. The messages were designed to be as convincing as possible: they were from real people in the organisation, the topics were relevant, and they were sent to the student's 'inbox'. The controlled experimental nature of this study allowed for the manipulation of a number of variables. First, the general tone of the message was designed to be either hostile or conciliatory, whilst keeping the essential content of the message constant. Second, the message sender was either a

high-ranking administrator, or a fellow student. Finally, for those participants in the administrator condition, the message was from either an administrator in another department or an administrator from their own department (representing distal and proximal influence). The effects of these manipulations were tested on systolic and diastolic blood pressure.

E-mail was used in this study because of the opportunity afforded by this medium to control characteristics of the message such as tone, wording, font etc. E-mail and text are also popular means of communication with students. They are familiar with the conventions and techniques of this type of communication. The choice of e-mail as the message medium was therefore largely practical. However, following the completion and reporting of the experiment there was considerable interest in the fact that e-mail had been used to manipulate factors that led to an increase in blood pressure. Following a presentation at the British Psychological Society's Occupational Psychology Conference (see appendix), there was considerable media attention. Reports of the study appeared in many daily and local newspapers as well as national and local radio.

The conference presentation also led to an invitation to submit a report of the study to the Journal of Managerial Psychology. The study was published in 2005 (see appendix). The publication of this article, coupled with the rapid expansion in the use of e-mail for private and organizational communication, led to further interest in the potential problems of e-mail communication.

The third study is based on study two where participants received threateningly worded and non-threatening worded messages. In study two, the outcome variable of interest was the physiological response of the message recipient using blood pressure measurement. Whilst this response may have important consequences for the recipient, there may be wider implications of receiving threateningly worded messages. This study examines how the recipient feels when they receive such a message and, as importantly, how they are likely to respond to the message (for example, by replying to the message in an aggressive way or telling others about the message). This study explores the potential ramifications of hostile

communication for interpersonal relations, organizational citizenship behaviour and organizational climate.

The fourth study concentrates on the effect of communication style on productivity. Organizations may or may not be interested in the well being of individual employees but all organizations should be interested in factors that affect the productivity of their workers. The study examines the effect of different types of performance feedback on future task performance. Regular performance feedback has been shown to contribute to overall organisational productivity (Norris-Watts and Levy, 2004). However, negative feedback, delivered without sensitivity, may have a destructive effect on performance.

The tasks used to measure performance in studies four and five were part of a computer software package called the Defined Intensity Stressor Simulation (DISS). This computerized multitasking battery was developed by Dr. Mark Wetherell and is designed to elicit acute psychological stress (rather than continuous, long-term stress). Dr. Wetherell is based at the MRC Health Services Research Collaboration in the Department of Social Medicine at Bristol University. The software was demonstrated at a one-day workshop that I attended, on the Psychophysiology of Stress and its Measurement, organised by the Psychophysiology and Stress Research Group at the University of Westminster, London. The DISS software has since been used in published research (e.g. Wetherell & Sidgreaves, 2005).

The fifth study further examines the issue of mediated communication. It is a replication of study four using electronic messages instead of verbal communication to deliver the feedback. Much has been written about the effects of different communications media and this study explores the possible effects of electronic feedback. By comparing the results of this study with the results from study 4, the question of whether there is a difference in the effects of different types of feedback given verbally or electronically can be explored.

Study 1:

A case study of stress in organisational meetings, using blood pressure measurement, questionnaire responses, and qualitative data

4.1 Introduction

This study examined aspects of stress in four pre-scheduled organizational meetings. The study was designed to address the question of what aspects of the psychosocial environment are likely to cause stress? This study focuses particularly on the effects of the behaviour of those in a supervisory role in the hierarchy, in a face-to-face situation. As this study involved group meetings, elements of communication in groups and group dynamics will also be examined. The first part of the study used blood pressure measurements to compare two meetings: a Faculty Board meeting (meeting 1) and a Departmental meeting (meeting 2). A questionnaire was developed in order to identify the stress-related elements of meetings. The second part of the study uses qualitative methodology to examine two further meetings (meetings 3 and 4). This part of the study made use of a training intervention, designed to prepare participants for a potentially stressful meeting (meeting 4). The training intervention was based on the quantitative findings and was designed to alert participants to the potential stress-producing elements in meetings, and thereby prevent the meeting from becoming stressful. This study is concerned with the question of whether organisational meetings can cause people to be stressed and if so, what aspects of meetings cause stress and how does stress affect people in the meeting?

The term 'meeting' can be used to describe a wide range of situations where people come together. Meetings differ on a number of dimensions and Evans (1990) provides an overview of some of the ways that meetings differ. Some meetings are a formal organisational requirement whilst others are an ad hoc gathering. Meetings required by company rules may occur at regular timetabled intervals, whilst others may arise spontaneously or in response to a specific issue. The focus of this investigation is meetings that are a part of the formal organisational structure.

Foy (1994) in attempting to distinguish useful meetings from less useful meetings suggests that the term 'team briefing' is often used in connection with long

and boring meetings. Foy suggests that this style of meeting is borrowed from the military model where a supervisor would tell his people what he wanted and why. In an organisational structure, Foy claims that this approach to meetings leads to supervisors becoming disempowered; the supervisor being placed in a position of telling subordinates what someone else wants, often without explanation. The cascade of information from the top of an organisation to the bottom is (without input from subordinate staff) inevitably made up of information that is intended to benefit the top.

Although, as Schwartzman (1986) pointed out, relatively few studies have been published on the psychology of business meetings, a great deal of work has been done on trying to understand group dynamics more generally. Much of this work has looked at the decision-making processes, and productivity of groups. Studies of the process of decision-making revealed the potential for important psychological phenomena to affect group decisions. One of the most important contributions in this area was Irving Janis' research into the phenomenon of 'groupthink'. Janis' work showed how cohesiveness in a group could lead to poor decisions with disastrous consequences (Janis, 1982). This was particularly true when a group was led by a high-ranking, authoritarian-style, leader. In situations where such leaders put forward a solution and discouraged disagreement, the potential for disastrous decisions to be ratified by the group was greatly increased.

However, even this important contribution has been shown to be more complex than first thought and some researchers have shown that group cohesiveness can aid rather than inhibit good decision-making (Mullen & Copper. 1994).

In an early study of interaction episodes at work, Lawler, Porter, & Tenenbaum (1968) attempted to classify meetings into a number of categories such as giving, receiving or creating information. They also asked participants to assess their attitude to the meeting. They found that those who initiate a meeting will tend to evaluate it more positively and that subordinates will tend to evaluate an interaction with a superior more positively than the superior will evaluate a meeting with a subordinate.

In a study of multidisciplinary team meetings Conner (1999) found that satisfaction with a meeting was related to level of participation in the meeting and to level of expectation of the meeting. Bluedorn, Turban, and Love (1999) looked at differences between sit-down and stand-up meetings and found that stand-up meetings tended to be about one-third shorter in length than sit-down meetings. Participants were also more satisfied with stand-up meetings and synergy and commitment to the decision were about the same.

Despite the possibility of stand-up meetings reducing the amount of time spent in meetings, research findings suggest that time in meetings has increased over the last few decades and will continue to increase in the future. Mosvick and Nelson (1987) reported that executives were attending twice as many meetings in the 1980's than in the 1960's. Tobia and Becker (1990) surveyed business leaders and found that 72% reported spending more time in meetings than they did 5 years ago.

Meetings as interruptions

Rogelberg, Leach, Warr, and Burnfield (2006) examined the effects of meetings as interruptions to goal-directed activity. Individuals engaged in work activities are motivated and guided by task-related goals. The achievement of these goals is central to successful work performance. Jett and George (2003) suggest that any activity (positive or negative) that disrupts the achievement of these goals may be regarded as an interruption. A number of researchers have argued that such interruptions are usually interpreted negatively. Zijlstra, Roe, Leonora, and Krediet (1999) pointed out that the regulation of activity and the associated cognitive processes are disrupted, causing the individual to modify their plans in order to incorporate the interruption. Further effort and resources are also needed to deal with the demands of the interruption (Zohar, 1999).

In some cases attendance at a meeting may contribute to the achievement of an employees goals. For example, there may be important information relating to the availability of resources. However, the length of time spent in meetings and away from goal-related activity is likely to outweigh any potential benefit. Useful, goal-related information can also be obtained in many other, less time-consuming ways. In this way organizational meetings are different from other kinds of interruptions that

are usually of much shorter duration (e.g. telephone calls, brief encounters). Gillie and Broadbent (1989) suggested that what makes an interruption demanding is not just the change of activity, but the fact that other tasks have to be kept in memory in order to resume work when the interruption has ended.

Rogelberg et al. (2006) also examined the role of task-interdependence on meeting outcomes. Jobs that require employees to interact with others in order to carry out their work are described as high task-interdependent. Jobs where employees are relatively autonomous and do not require interaction with others are described as low task-interdependent. Rogelberg et al. found that meetings resulted in lower job attitudes and well being in the long-term for those with low task-interdependence.

This finding is relevant because the present study was conducted on academics in a University College in the Higher Education sector in the UK. Recent work in the area of organizational culture offers a useful framework for understanding the different ways in which organizations function. Goffee and Jones (2001) have proposed four organizational archetypes: networked, communal, fragmented and mercenary. These archetypes differ on two dimensions: sociability, refers to friendships, where relationships are equal and valued for their own sake. Solidarity refers to more task focused co-operation between dissimilar individuals and groups that does not rely on close friendship. 'Networked' organizations are described as high on sociability but low on solidarity. A family firm would be typical of a networked organization: strong social and emotional ties between workers, frequent social rituals, loyalty and friendship. However, these relationships do not always translate into good co-operative working relationships. Indeed, quite the opposite might be true and relationships descend into the 'gossipy' and the 'political'.

The 'mercenary' organization, according to Goffee and Jones, is one in which there is a heightened sense of competition. Individualism and personal achievement are stressed but this does not preclude co-operation where it would be demonstrably advantageous. In other words, the mercenary organization is high on solidarity, which is not dependent on friendships or emotional ties. The 'communal' organization is one where sociability and solidarity are high. Many innovative and high performance organizations are described in this way. However, many firms find it difficult to

sustain this kind of organization. Explanations for this difficulty may be that these types of firms often develop around particular founders or leaders whose departure may weaken the company, or the communal form may be difficult to sustain in the light of rapid growth and development.

The 'fragmented' organizational form is low in both sociability and solidarity. Although this seems like an unlikely recipe for success, there are circumstances where such organizations can survive and grow. For example, organizations that use outsourcing or homeworking or rely on the work of non-interdependent experts can be described as fragmented. In fact, Goffee and Jones (2001) use Universities as typical examples of fragmented organizations. The autonomy and freedom granted to university academics can lead to substantial benefits for the organization. Individual creativity may flourish and greater resources will flow to those with proven track records. However, one of the downsides of fragmentation is that attempts at co-operation, such as meetings, may be met with disruptive behaviour or even absenteeism.

According to the Goffee and Jones model, the organisation in the current study fits the characteristics of a fragmented organization. In such organizations, meetings are: "resisted (what's the point?), difficult to arrange, hard to manage for any length of time without boredom, acrimony or people simply walking out." (Goffee & Jones, 2001, p.12).

It is hoped that examination of the results from the four meetings in this study may help to answer the question of the relative importance of structural and dynamic elements of meetings relating to stress-outcomes.

Methodology
Four departmental meetings were studied. The meetings were part of the structured procedure of the organisation, timetabled in advance, and chaired by a supervisor. The events were naturally occurring in a workplace field setting. This study uses a mixture of qualitative and quantitative methods. Janesick (1994) uses the term methodological triangulation to mean the use of multiple methods to study a single problem. Sackman (2001) suggests that a combination of qualitative and

quantitative methods is essential to further the knowledge base relating to the cultural complexity of organisations. Quantitative methodology has the advantage that findings can be compared with other studies and that generalisations beyond the specific research setting can be made. The advantage of qualitative research is that it can provide a rich, detailed, and meaningful description of aspects of organisational culture.

The first part of the investigation compares perceptions of stress and blood pressure measurements from two meetings (a Faculty Board and a Departmental meeting). The meetings represent different levels of the organizational structure. All members of a department are expected to attend a departmental meeting, whereas the Faculty Board meeting has representatives from several departments. A number of structural factors suggest that a Faculty Board meeting may be perceived as more stressful than a Departmental meeting. First, according to the 'meetings as interruptions' hypothesis, it might be expected that the discussions of a Faculty Board would be less goal-relevant to ordinary members of staff than discussions at the Departmental meeting. It might also be expected that the Faculty Board would be conducted in a more formal manner. More anxiety may also result from the fact that members of a Faculty Board are likely to be less familiar with each other than members of a Departmental group; the Faculty Board is also chaired by a more senior member of staff: the Dean of Faculty.

However, despite the structural differences present in the meetings, it is hypothesised that the more dynamic aspects of the meetings, such as the contentiousness of the issues discussed, the length of the meeting, and the style of leadership adopted by the Chair, will be an important determinant of perceptions of stress.

The second part of the investigation was undertaken as a qualitative follow-up. The findings reported are based on the personal observations by the author acting as participant observer, and on the comments of participants, following two further departmental meetings. Despite the absence of any systematic data collection technique, the observations are included because of their relevance to the overall theme of the thesis – the importance of psychosocial factors (communication style) on

the outcome effects of interpersonal interaction between employees of different organizational status.

4.2 Part one: Quantitative analysis

Hypotheses:

Hypothesis 1.

Blood pressure readings taken after a Faculty Board meeting will be significantly higher than blood pressure readings taken before the meeting.

Hypothesis 2.

Scores on a questionnaire designed to measure arousal in meetings will be significantly higher following the Faculty Board meeting than questionnaire scores following the Departmental meeting.

Hypothesis 3

There will be a significant relationship between changes in blood pressure and questionnaire scores in the meetings.

4.2a Method

In order to test the hypotheses a questionnaire was administered to, and blood pressure readings taken from, participants in two organisational meetings.

Participants

A total of nineteen blood pressure and questionnaire scores were used from two staff meetings at a University College (twelve in a Faculty Board meeting and seven in a Departmental meeting). Sixteen different people took part in the study with three people taking part in both meetings. Participants in the Faculty Board meeting were a mixture of academic staff, administrators, a research student, and a librarian. There were seven males and five females. Participants in the Departmental meeting were all academics and there were three males and four females.

Design

For each of the two meetings a repeated measures design was used where blood pressure before the meeting was compared with blood pressure after the meeting. This is a quasi-experimental design since the independent variable (the meeting) is naturally occurring and not manipulated.

An independent groups design was used to compare questionnaire scores in the two meetings. The scores for each questionnaire item were also compared across the two meetings.

A correlation design was used to examine the relationship between questionnaire scores and blood pressure measurements.

The measures

Questionnaire development. The initial development of the items for the questionnaire was largely based on the procedures set out by Rust and Golombok (1989). According to Rust and Golombok, the first stage is to develop a test specification or blueprint for the questionnaire. To help develop the blueprint an in-depth interview was carried out on a middle manager, from a different organization to the one used in the study, who regularly participated in meetings at work. The interview was recorded and a transcript was produced (see Appendix). From this transcript a test specification was produced with 6 content areas. Rust and Golombok suggest a grid structure with content areas on the horizontal axis and manifestations (the ways in which the areas may become manifest on the vertical axis (see Figure 3.1).

CONTENT AREAS	MANIFESTATIONS
Effects on the individual	Physical, Psychological (e.g. Control, Equity)
Formality of the meeting	Leadership style, hierarchical structure
Self-expression	Inhibition, intimidation
Outcomes of meeting	Usefulness, creativity, implications
Content of meeting	Relevance, understanding, preparation
Feelings towards others	Familiarity, interpersonaltension
Conduct of meeting	Timekeeping, leadership style

Figure 4-1. Grid of the content areas and manifestations of the Arousal in Meetings (AIM) questionnaire

From this specification, 33 statements were written relating to stress in meetings. The full 33-item questionnaire was administered to participants after each meeting. A five-point scale was used with response categories of 'Strongly Agree' to 'Strongly Disagree'.Eleven items were selected (see Figure 4.2) using 3 criteria: item-total correlations, ability to distinguish between the stressful and the non-stressful meeting, and positive correlation with changes in blood pressure in the meetings.

1. The meeting was very informal ®

2. Everybody said what they wanted to say in the meeting

3. I could have contributed more to the meeting ®

4. I had not really prepared for the meeting ®

5. The meeting focused on matters of immediate concern to me

6. I was mainly there to receive information ®

7. The structure of this organization is very hierarchical

8. The meeting made me feel more tired than usual

9. I tended to sweat during the meeting

10. I feel I had some control over the outcome of the meeting

11. My mind wandered at times during the meeting ®

® Scores reversed

Figure 4-2 The 11 questionnaire items

The 11-item Arousal in Meetings questionnaire was used for all further analysis of the data. Reliability and validity were assessed using data from the meetings. Internal reliability of the 11 items (using Cronbach's Alpha) in the Faculty Board (meeting 1) was .784 and in the Departmental meeting (meeting 2) .820. The validity of the 11-item scale was assessed using changes in diastolic blood pressure (between before and after the meetings). This gave a correlation of r = .545 (p = .008, one-tailed).

Blood pressure. Blood pressure was measured using the TM-2430 ambulatory blood pressure monitor manufactured by A&D Co., Ltd., Japan. The device complies with European directive 93/42 EEC for Medical Products and is fully validated by the British Hypertension Society (BHS) achieving grade A (the highest) for correlation of systolic and diastolic blood pressures with mercury devices (Palatini, Frigo, & Bertolo, 1998).

Procedure

A list of those attending the meetings was obtained. Each participant was sent a letter (see Appendix), explaining the procedure, and asking them to take part in the study. Those who agreed to take part were asked to turn up ten minutes early for the meeting and go first to a nearby room where the measurement would be taken.

Blood pressure measures of participants were taken before and after the meetings. Blood pressure was measured twice before the meeting with the mean of the two readings used for analysis. Two measures of blood pressure were taken from each participant after the meeting and the mean of the two measures used in the analysis. For the blood pressure measurements, participants were seated in a chair, asked to sit back in the chair and relax. They were asked to roll up the sleeve on their left arm and the cuff of the measurement device was attached around the upper arm. The cuff is attached to the measurement device by an air tube. In order to take a reading, the start button is depressed and the cuff inflates automatically applying pressure to the upper arm. When the measure is complete, the systolic and diastolic pressures are displayed on the screen of the device and the data were manually recorded on the data sheet.

All participants were given a leaflet about the study (see Appendix), which contained information about blood pressure based on literature from the British Hypertension Society. Any participants with a diastolic pressure of 95 millimetres of mercury or more were advised to see their GP. When the meeting had finished, participants had their blood pressure measurement procedure repeated and completed the SIM questionnaire.

4.2b Results

Blood pressure measurements

Diastolic blood pressures were determined by calculating the mean of the two diastolic pressure readings before the meetings and the mean of the two diastolic pressure readings after the meetings for each participant. Systolic pressures were calculated in the same way. Table 4-1. Shows the mean and standard deviation in each condition:

	Systolic BP		Diastolic BP	
	Before meeting	After meeting	Before meeting	After meeting
Meeting 1 (Faculty Board, n = 12)				
	127.13	129.08	78.17	85.67
	(10.79)	(14.38)	(9.45)	(11.44)
Meeting 2 (Departmental, n = 7)				
	131.50	130.93	81.71	76.7
	(13.70)	(8.40)	(4.33)	(5.25)

Table 4-1. Means and Standard Deviations of blood pressure before and after the meetings

Hypothesis 1 states that blood pressure readings taken after the Faculty Board meeting will be significantly higher than blood pressure readings taken before the meeting. For Meeting 1, both systolic and diastolic pressures are higher after the meeting than before the meeting. For Meeting 2, systolic and diastolic blood pressures are lower after the meeting than before the meeting. A repeated measures t-test was used to test the statistical significance of the differences. Diastolic pressure was found to be significantly higher after the Faculty Board meeting than before the meeting, t = 2.1, (p<0.05). Hypothesis 1 is accepted

Questionnaire scores

Hypothesis 2 states that scores on a questionnaire designed to measure arousal in meetings will be significantly higher following the Faculty Board meeting than questionnaire scores following the Departmental meeting. Participant's scores on the

11-item Arousal in Meetings questionnaire in the Faculty Board and Departmental Meeting were compared. Table 4-2 shows the mean scores for each of the individual items plus the means of the total questionnaire scores for both meetings. The table also shows the calculated values of t and the probability values.

Item	Faculty Board Mean (n = 12)	Departmental Mean (n = 7)	Value of t	One-tailed Probability value
1. Formality	3.50	2.29	2.60	.01
2. Everybody spoke	3.58	2.86	1.70	.05
3. Contribution	3.50	2.57	1.86	.04
4. Preparation	3.33	2.00	2.83	.01
5. Matters of concern	3.42	3.71	-0.55	.30
6. To receive information	3.50	3.71	-0.43	.33
7. Hierarchical structure	3.83	3.29	1.57	.06
.8 More tired	3.08	2.43	1.32	.10
9. Sweating	2.58	1.57	2.29	.02
10. Control	3.42	3.43	-0.02	.50
11. Mind wandered	2.58	3.00	-0.72	.24
Scale total	36.33	30.86	1.80	.05

Table 4-2 Comparison of item means and scale totals in Faculty Board and Departmental Meeting.

The differences between the mean scores of the scale items in Table 4.2 show that participant's perceptions of stress-related aspects of the meetings differed significantly between the two meetings. The direction of the differences confirms the findings from the blood pressure measurements: participants in the Faculty Board meeting (Meeting 1) experienced more stress than participants in the Departmental meeting (Meeting 2; $t = 1.80$, $p = .05$). Hypothesis 2 is accepted.

Relationship between blood pressure and questionnaire scores

Table 4.3 shows the correlations between each of the 11 items of the AIM scale, the total AIM scale score, and changes in diastolic blood pressure

	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Total	BP
1	.452*	.389*	.765**	.065	.214	.541**	.284	.372	.318	.258	.722**	.358
2		.423*	.551**	.358	.088	.248	.492*	.156	.258	.176	.650**	.139
3			.488*	.416*	.306	.203	.115	.258	.182	.199	.629**	.439*
4				.194	.222	.431*	.335	.398*	.199	.327	.771**	.534**
5					.642**	-.085	.073	-.053	.427*	.233	.523*	.142
6						.076	.038	-.017	.771**	-.051	.511*	.258*
7							.130	.104	-.004	.376	.443*	.308
8								.687**	.320	.270	.582**	.382
9									.123	.318	.529**	.629**
10										-.041	.551**	.135
11											.490*	.167
Total												.545**

* p<0.05, ** p<0.01

Table 4-3 Correlations between questionnaire items, questionnaire total, and changes in diastolic blood pressure (n = 19)

Hypothesis 3 states that there will be a significant relationship between changes in blood pressure and questionnaire scores. The correlation between total scores on the 11-item Arousal in Meetings questionnaire and changes in diastolic blood pressure was r = 0.545 (p = .008). Hypothesis 3 is accepted.

Participants' comments

The participant's comments after the meetings confirmed the finding that the participants experienced the first meeting (Faculty Board) as more stressful than the second (Departmental) meeting. After the Faculty Board (Meeting 1), participants reported that there had been some disagreement in the meeting, particularly towards the end. Some contentious issues were discussed and at one point a vote had to be taken on an issue that could not be resolved by discussion. The meeting finished ninety minutes late. After the Departmental meeting (Meeting 2), participants commented that there were no particularly contentious issues discussed in this meeting. There were no significant disagreements and the meeting finished on time.

4.2c Discussion

The results of this investigation show that the experience of participants in two organizational meetings differed in a number of quantitative and qualitative ways (blood pressure changes, questionnaire scores, and subjective observations). The results suggest that the Faculty Board meeting (Meeting 1) was experienced as more stressful than the Departmental meeting (Meeting 2). Only participants in Meeting 1 experienced a significant rise in blood pressure (measured before and after the meeting). They also scored significantly higher than participants in Meeting 2 on a questionnaire designed to measure potentially stressful aspects of organizational meetings, and they reported that disagreements had arisen during the meeting.

The psychosocial aspects of communication relating to stress are of particular interest in this discussion. The formality of organizational meetings was identified as a cause of anxiety by the interviewee at the questionnaire development stage. The interviewee stated that formality had been particularly intimidating in a situation where he had been a low-ranking participant and a new member of the group. The results of the present investigation support the view that formality in a meeting is generally experienced negatively. The stressful meeting was perceived to be significantly more formal than the non-stressful meeting.

Perceptions of formality in an organizational meeting may result from a number of variables. For example, participant variables such as level of experience in meetings, status in the organizational hierarchy, and personality may influence their perceptions. Structural variables such as the organizational level of the meeting (e.g. Board Room v Departmental), and the hierarchical nature of the organization (flat hierarchy v steep hierarchy), will also contribute to the formality of a meeting.

Table 4.3 shows that perceptions of formality in the meetings correlated positively with changes in blood pressure. This indicates that as the participant's perception of formality increases, their physiological response to the meeting also tends to increase. Perceptions of formality are likely to arise prior to the meeting, as a consequence of individual characteristics and structural aspects of the organization. This is supported by the highly significant correlation between perceptions of formality and the extent to which participants had prepared for the meeting.

However, it is also likely that perceptions of formality will also be influenced by events that take place during the meeting. The principle influence on formality during the meeting will be the behaviour of the chairperson. The chair's actions will confirm or contradict prior expectations about the level of formality in the meeting. Reid and Hammersly (2001; see literature review section 2.1a) have identified specific behaviours that convey messages about formality. For example, relaxed rules of turn-taking and use of first names and nick names convey informality.

However, as discussed in the literature review, deliberate manipulation of the formality of a meeting by the chair can be used to achieve certain objectives. Making a formal situation more informal, for example, may cause participants to be more relaxed and to disclose more information than they otherwise would have done. Disingenuous attempts to reduce formality are likely to be met with distrust. On the other hand, deliberately increasing the formality of a meeting, especially by a high status chairperson may serve to inhibit discussion and criticism and help push through a controversial plan. This kind of manipulation can lay the groundwork for the antecedents of 'groupthink' – the tendency of groups to reach consensus without adequate discussion of alternatives – a feature of groups that can lead to decisions with disastrous consequences (Janis, 1982).

Perceptions of the hierarchical nature of the organization were also higher in the stressful meeting and were also positively related to changes in blood pressure. Whilst differences in perception may be a consequence of individual differences, it is also possible that the behaviour of the chair could influence perceptions of the rigidity of the organizational structure. For example, if the chair adopts a position of implementing decisions taken further up the organizational hierarchy, this is likely to reinforce and increase perceptions of a rigid hierarchy. On the other hand, if the chair adopts a position as spokesperson for the meeting in terms of communicating its views to senior managers, then perceptions of the rigidity or 'steepness' of the organizational hierarchy may be reduced.

It may be that a more formal, authoritarian style is related to an increase in stress, not just in meetings but in organisational behaviour in general. It may be that the stressful impact of formality and authoritarianism increase when they come from further up the organisational hierarchy, and that this effect is increased in organisations with a rigid and steep hierarchy.

A number of items on the AIM scale appear to relate to the degree of involvement in, or commitment to, the meeting. The more participants contributed to a meeting, prepared for a meeting, and remained focused on the meeting, the more likely they were to experience an increase in blood pressure. These relationships raise the question of what exactly does increased blood pressure or 'stress' actually mean? For example, some of the questionnaire items that correlated with raised blood pressure seem to relate to the degree of participation and involvement in the discussion, even in a meeting that was not described as stressful (meeting 2). Participating in the discussion is likely to lead to more physical and mental activity. The participant will be more animated and more mentally alert when they are actively participating in the discussion. This increased activity alone may be sufficient to account for increases in blood pressure.

It would seem foolish to suggest that people should not participate in the discussion because it might be stressful. The problem of interpreting increases in blood pressure and stress relates to Selye's (1974) distinction between stress and

eustress. Selye proposed that eustress is associated with positive emotions and healthy states, whereas distress is associated with negative emotions and unhealthy states. The problem for researchers is, when does eustress become stress?

4.3 Part 2: Qualitative data

This part of the study reports the events surrounding two further Departmental meetings (meeting 3 and meeting 4). The methodology used in the investigation was entirely qualitative in nature. No blood pressure readings were taken and no questionnaires were administered. The events were naturally occurring in a workplace field setting and the events were recorded by the author acting as participant observer.

4.3a Meeting 3

The meeting began with a presentation by the chair of a change to working practice. The proposed change was challenged by a number of group members and a number of emotional exchanges took place. The discussion of this single issue took up most of the meeting and some group members expressed exasperation at the lack of progress. Some of the participants left the meeting early. It was clear from the participants' comments and the tone of the comments that there was considerable anger about the meeting. When asked what they had been expecting to happen in the meeting, participants revealed that they had expected a rather up-beat meeting, as the financial outlook for the department was much better than had been expected.

4.3b The training seminar

A presentation was given by the author (see Appendix), prior to meeting 4, on the results and findings from the quantitative analysis of the first two meetings. The seminar focused particularly on the role of the chair in a meeting. The potential of the chair to adopt different roles and to influence participant's perceptions of a meeting were discussed. Issues relating to perceptions of formality and hierarchical structure were also discussed.

4.3c Meeting 4

The fourth meeting was a Departmental meeting, attended by ten members of the academic staff, including the Head Of Department (HOD), acting as chair. Most

of the participants (including the HOD) had also attended the training seminar immediately prior to the meeting, given by the author and based on the findings from the first two meetings. This fourth meeting is particularly interesting because similar to meetings 1 and 3, contentious issues were discussed. In fact, the issues discussed were those that had been raised in meeting 3 relating to proposed changes in working practice, such as increased working hours and increased management control. However, considering the potential of these issues to create an atmosphere of hostility and mistrust, the meeting continued in a work-like, routine manner. The issues were discussed in a calm and rational manner with hardly any emotional outbursts. Reasonable suggestions were made as to how the department should respond to the management proposals.

The comments of those participants interviewed after the meeting confirmed the unusual nature of the meeting. When asked what they had expected before the meeting, all of those interviewed answered that they had expected a really fiery and stressful meeting. They also expressed that they had been pleasantly surprised by the way that the discussion had progressed without serious discord. When asked why they thought the meeting had progressed in such an unexpectedly cordial manner, one of the reasons given was the way in which the issues were presented and handled by the HOD. Rather than present the issues as a pronouncement of directives, the HOD had acted more as a facilitator of communication. The proposed changes to working practice were presented as suggestions in response to an increasingly difficult economic reality for the organisation. Presented in such a way, the participants in the meeting were able to engage with the process of trying to solve a difficult problem. That is not to say that they agreed with the management's proposals but that they could see how the management had come to make the proposals. They were then able to put forward suggestions for solutions from their own perspective and the HOD acted as facilitator once more, in promising to pass on the suggestions.

This fourth meeting was almost an idealised version of how a meeting should proceed. In this meeting people in an organisation came together to discuss difficult and contentious issues. During the meeting the issues were debated in a rational and democratic fashion. The participants left the meeting feeling that, not only had they been able to fully express their concerns but also that they had reached a considered

and collective view that would be taken forward for consideration in the higher levels of the organizational hierarchy. In this situation authoritarianism and the misuse of power to impose directives had no place.

4.4 General Discussion

This study has investigated aspects of stress in organizational meetings. The first part of the investigation demonstrated that subjective impressions of the stressfulness of a meeting were related to measures of blood pressure and to scores on a questionnaire designed to measure arousal in meetings (AIM). The strong correlation between changes in blood pressure and scores on the AIM questionnaire indicate the potential usefulness of the questionnaire for future research.

Measuring participant's blood pressure before and after a meeting presents more complications than having them complete a questionnaire after the meeting. Some of the participants in the present study were not keen on having their blood pressure taken and some refused. A number of others did not return for the second blood pressure measurement after the meeting and had to be discounted from the analysis. Measuring blood pressure is also very time consuming because, without large numbers of experimenters and measurement equipment, measurements cannot be taken simultaneously.

The results of this study give an indication of the importance of interpersonal dynamics in relation to the outcomes of a meeting. The most dramatic illustration of the effect of interpersonal dynamics on stress in meetings comes from the more qualitative and descriptive data from meetings 3 and 4. In meeting 4, contentious issues were discussed and following the findings from the first investigation, the participants would have been expected to experience the meeting as stressful. However, due at least in part, to the facilitating role taken by the chairperson, meeting 4 was much less stressful than expected.

Meeting 3 further illustrates this point by showing how a meeting that was expected to be relatively stress free, generated considerable bad feeling and stress. In fact, the issue and the consequent bad feeling was only resolved following a further meeting with all the participants and a senior manager. The stress in meeting 3 was

due at least in part to the chairperson's attempt to rigidly impose a change to working practice. This proposed change was the result of a decision taken further up in the organisational hierarchy.

The findings from meetings 3 and 4 support the ideas expressed by Foy (1994). Foy's analysis of the usefulness of meetings suggested that when meetings were used for passing on information or decisions from further up in the organizational hierarchy, they would be judged as unsatisfactory. The present study demonstrated that when the chair of a meeting acted as the mouthpiece for a decision taken further up the hierarchy, the meeting became dysfunctional and stressful.

On the other hand, when the chair of the meeting acted as a facilitator to the group, even proposed organizational changes of a threatening nature were dealt with without antagonism. The chairperson's role in allowing ideas to be expressed, acting as a representative of the group, and placing the proposed changes in a wider context, was crucial to the success of the meeting. Not only were the participants satisfied with the meeting, but they also accepted (with reasonable amendments) the proposed changes.

It seems that the authoritarian style adopted in meeting 3 triggered exactly the kind of behaviour predicted by Goffee and Jones (2001) as being typical of members of fragmented organisational cultures. However, the present study has also shown that disruption and antagonism in meetings are not an essential part of a fragmented organizational culture. Rather, they are moderated to a considerable degree by the immediate social context. Meetings that are managed well do not lead to the kinds of problems predicted by Goffee and Jones in fragmented organisational cultures.

This study suggests that the sources of interpersonal stress in meetings can be grouped under two headings: the issues under discussion and the interpersonal dynamics. Of these two sources of stress, the study suggests that the most powerful influence on stress in meetings is interpersonal dynamics and the most important of these is the leadership style adopted by the chairperson. An authoritarian stance by the chairperson, in which they attempt to impose, without amendment, decisions taken

elsewhere, is likely to create stress and discord. Adopting a facilitative role can, alternatively, significantly reduce the impact of potentially stressful issues.

This study also reveals the potential to influence the conduct of meetings by training. The training seminar prior to meeting 4 proved to be very effective in reducing the potential difficulties arising from a discussion of contentious and threatening issues. It would also be interesting to test the theory that formal/authoritarian communication style is more stressful, not just for the recipient but also for the communicator (the chair of the stressful, Faculty Board, meeting had one of the highest increases in diastolic blood pressure).

Criticisms of the study

This study was useful in highlighting a number of ways in which the personal style of someone in a position of authority over a group may influence certain stress-related outcomes. However, the findings suggested by this study can only be taken as an indication of areas for further research. One of the advantages of the study is that real meetings in the ongoing life of an organization were examined. The disadvantage of this approach is that there were many variables that could not be controlled.

For example, it is difficult to know which characteristic(s) of meeting 1 gave rise to the increase in blood pressure of the participants. It could have been any one of a number of variables, such as, the length of the meeting, the fact that the meeting over-ran, the organizational level of the meeting, the topics discussed, characteristics of the participants or of the environment, or indeed any combination of these variables. Such characteristics are difficult to control in real meetings and would require many meetings to be studied.

Changes in blood pressure are notoriously transient and using a comparison of blood pressure readings taken before and after a meeting may not be the best measure of stress. The time lag between the end of the meeting and the blood pressure measurement is likely to have been a critical factor. A comparison of blood pressure measurements taken before and after a meeting is rather a blunt instrument in a number of ways. First, it does not give a measure of an immediate physiological response. Blood pressure can vary quite markedly within a few seconds. It may be

that there is a much greater physiological response to specific interaction episodes within a meeting that the measurement technique is unable to detect. It is possible to measure blood pressure continually with a portable measuring device. If the data from such a device could be linked and synchronised with a video recording of a meeting, it would then be possible to see whether certain events in the meeting corresponded with changes in blood pressure.

The second investigation revealed some potentially interesting observations regarding the effects of how the chair of a meeting behaves. However, it would not be wise to attempt to generalize the findings from a single observation. For example, this study cannot demonstrate that the behaviour of the chair in meeting 4 is related to attendance at a training seminar. Many other factors could easily account for the conciliatory approach adopted by the chair of this meeting. In short, the limited scope and qualitative nature of the observations in this investigation mean that any suggestions would need to be tested in a much more rigorous way.

Reflection

The reporting and interpretation of events in the qualitative section of this study have been written from an interpretative phenomenological position. Acting as participant observer, I have been concerned to emphasise the accounts of the participants in their psycho-social world. However, my access to those accounts depends on my own conceptual framework as well as the interpretative work I bring to the project. It also depends on factors that may have influenced my interaction with the participants.

By being present in meeting 3 and meeting 4 and giving a seminar to participants on the subject of communication in meetings, there is clearly a pervasive influence of the researcher. However, a number of writers (e.g. Reason, 1994; Olesen, 1994) have recognized the importance of cooperation in research. Terms such as *Cooperative inquiry* (Reason and Heron, 1995) and *Participative action research* (Fals-Borda and Rahman, 1991) have been used to describe the type of research where the distinction between experimenter and subject are broken down. A distinctive element of cooperative inquiry is that it invites people to join in the co-creation of knowledge about themselves.

The blurring of the distinction between the roles of researcher and subject is part of the methodology of cooperative inquiry. Indeed, it has been argued that a fully participatory process is an essential element of experiential learning and action research (Torbert, 1981, 1987, 1991). Involving the participants in the research process was a necessary part of raising the consciousness of the participants in order to address a real problem.

Chapter 5: Study 2

The impact of a threatening e-mail reprimand on the recipient's blood pressure

5.1 Introduction

This experiment follows the results of the previous study, which showed that the communication style of the supervisor could have a dramatic effect on the feelings and behaviour of a group of subordinates. However, whilst the previous study made use of more qualitative methodology in order to explore the potential effects of supervisor communication, in this experiment the variables are manipulated in a much more controlled way. The design of this experiment addresses some of the criticisms of the previous study by allowing for a more precise manipulation of both the message characteristics and the relative hierarchical positions of the message sender and recipient. This experiment also differs from the previous experiment by examining the effects of message characteristics and relative hierarchical position in a one-to-one situation rather than a group situation. Further control was also added by sending the messages electronically.

The study takes place within an organisational context in an educational setting. In recent years there has been a rapid growth in the use of electronic communication. In 2003, 48% of households in the UK (11.9 million) could access the internet from home, compared with just 9% (2.3 million) in 1998. Sixty four percent of adults in Britain have used the internet and 84% of those using the internet had used it for e-mail (National Statistics, 2003). Similar trends can be seen in many countries throughout the world. The exponential growth in the number of people using personal computers with the capacity for electronic communication has led to questions being asked about the lag between the technological advancements and our understanding of the way that these technologies affect our behaviour (e.g. Fisher & Wright, 2001; Gackenbach, 1998). The popularity of computer-mediated communication (CMC) may have a number of, as yet unknown, effects on interpersonal relations.

The use of electronic mail for communication in the workplace has now become the norm for most routine, internal mail. There are, however, questions about

the suitability of electronic communication for certain types of messages, especially where the subject matter breaks company rules (e.g. non-work related personal communications), or the criminal law (e.g. pornographic material). Hostile and aggressive behaviours in electronic communication, often referred to as 'flaming', have also been reported (Lea, M., O'shea, T., Fung, P., & Spears, R., 1992) and a number of companies are now developing guidelines for the use of electronic mail in the workplace

Media richness theory emerged as the main theoretical framework for examining communication in different media (Rasters, Vissers & Dankbaar, 2002). Media richness theory (Daft & Lengel, 1984, 1986; Daft, Lengel & Trevino, 1987) sometimes referred to as information richness theory (Ngwenyama & Lee, 1997) or channel richness theory (Blecherman, 1999) originally addressed traditional media such as face to face and telephone communication has now been extended to include e-mail (El-Shinnawy & Markus, 1997). According to this theory a rich medium enables quick communication and offers better understanding of ambiguous or equivocal messages. Meeting face to face is considered the richest medium as it enables verbal, paralinguistic and non-verbal cues to be exchanged easily and rapidly. E-mail is considered to be a lean medium as it does not offer many cues. Furthermore, communication media with high information richness are considered to be more personal and warm whereas low information richness is considered impersonal or cold (Dennis, Kinney & Hung, 1999).

However, Rasters, Vissers & Dankbaar (2002) have shown that communication through the supposed lean medium of e-mail does not necessarily lead to low information richness. They showed that it is possible to have rich communication through a lean medium, and argue that we should focus on the richness of the message rather than the medium.

Electronic communication and status dynamics
Research comparing face-to-face communication with CMC has shown that CMC results in reduced bandwidth (the total amount of information that a medium can simultaneously relay (Owens, Neale & Sutton (2000)). Under the heading of bandwidth, Owens et al discuss informality, claiming that this feature of the media

represents a potentially equalizing force in status dynamics. They also claim that a large majority of e-mail messages use informal messaging conventions.

A number of contradictory claims have been made about the effects of computer-mediated communications (CMC) on status differences in groups. Connell (2001) hypothesised that people would ingratiate less and act more like themselves in less rich media, and proposed that hierarchies will be reduced in CMC. However, in a combined laboratory study and field survey at work, no evidence of a hierarchical levelling effect of CMC was found.

Sproull and Kiesler (1986, 1991) suggested that computer mediated communication may decrease status differences in groups. Their explanation is based on the reduced social cue hypothesis: in face-to-face communication, status is conveyed through a rich variety of social cues. A reduction in this type of content (as in CMC) could lead to status equalization. Whilst the logic of this argument is appealing, the empirical findings have been equivocal. A number of studies (e.g. Dubrovsky, Kiesler & Sethna, 1991) have shown a movement towards status equalization. However, other studies (e.g. Weisband, Shneider & Connolly, 1995) have shown evidence in CMC mediated groups that status differentiation remains present and pronounced. They also showed that status differentiation can emerge in CMC groups where the members have had no previous interaction.

Indeed, far from CMC having a levelling effect on hierarchies and leading to more equal interactions, it is possible that some of the unique features of CMC may exacerbate the differences between managers and employees. In a powerful demonstration of this, Romm and Pliskin (1999) showed how e-mail could be used to manipulate, control and coerce employees. It seems that, as with other media, it is not the medium itself that is either good or bad, but the way that it is used.

For the present study, the unique features of e-mail enable message characteristics (such as capital letters, font size, style and the identity of the 'sender') to be manipulated, recorded and delivered consistently to recipients. The decision to use electronic mail as the medium of communication was primarily because of these characteristics. However, the experiment was carried out using students at a university

where all students are given a university e-mail address and provides a realistic simulation of communication in such an environment. The experimental procedure was designed with the intention that the messages would be interpreted as 'real' messages from real people in the organisation.

Blood pressure

Blood pressure is measured in millimetres of mercury (mm Hg) and is usually given as two numbers e.g. 120/80. The higher number is the systolic pressure, and reflects the pressure of the heart when it is contracting. The lower number, diastolic pressure, is when the heart is relaxing between contractions. High blood pressure is a sign that the heart is working extra hard to pump blood through the body. Too much pressure makes the heart overwork and makes it more prone to arrhythmias and heart failure. It also damages arteries leading to heart disease, vascular diseases and kidney disease. A blood pressure of 140/90 mm Hg or above is considered to be elevated.

There has been considerable interest in recent years into work-related hypertension, especially the phenomenon known as masked hypertension (Pickering, Davidson, Gerin, and Schwartz, 2002) or occult workplace hypertension (Belkic et al., 2001). This refers to a tendency for blood pressure to be higher during the working day than at other times. Pickering et al. refer to this tendency as hidden hypertension because it is often not picked up by the conventional method of taking a single blood pressure reading in a clinical setting. Thus, single blood pressure readings taken in a clinical setting, may give rise to an underestimate of the extent of hypertension at work. Estimates of the prevalence of hidden workplace hypertension range from 10.2% (Imai, Tsuji, Nagai, Sakuma, Ohkubo, Watanabe, Ito, Satoh, Hisamichi, Abe, 1996) to 23% (Selenta, Hogan, and Linden, 2000).

Stress

Increased psychophysiological stress is thought to account, at least partially, for the link found by Karasek, Barker, Marxer, Ahlbom, and Theorell (1981) between job strain and worker health (Carrere, Evans, Palsane, & Rivas, 1991). Many studies have found increased physiological functioning in workers in various work situations. These studies have used a variety of physiological measures, for example, heart-rate and saliva cortisol (Evans & Steptoe, 2001), urinary catacholamines (Lundberg &

Frankenhaeuser, 1980; Carrere et al, 1991) and blood pressure (Steptoe, 2000). The current study focuses on the immediate physiological response to a social stimulus using a blood pressure monitor that records blood pressure continuously. Mancia (2000) claims that intermittent blood pressure elevations cause greater blood pressure variability, which has been shown to result in organ damage, both in animals (Sasaki, Yoneda, & Fujita , 1994) and humans (Parati, Pomidossi, Albini, Malaspina & Mancia, 1987; Frattola, Parati, Cuspidi, Albini & Mancia, 1993). There has been some recognition that communication variables have a direct impact on health. Kasermann, Altorfer and Hirsbrunner (1998) showed that cooperative interactions lead to a reduction in arousal, whilst competitive interactions lead to an increase in arousal.

Locus of control

There are individual differences in susceptibility for, and resistance against stress-related cardiovascular disease. Cardiovascular reactivity has been hypothesised as the intervening mechanism in the link between stress and risk for coronary heart disease (Manuck and Kantz, 1986). Physiological reactivity is defined as a dispositional tendency to exhibit exaggerated heart rate and blood pressure responses when encountering behavioural stimuli experienced as aversive or threatening (Rozanski et al., 1999). Prolonged increases in cardiovascular reactivity are believed to be an important factor in the development of cardiovascular disorders such as essential hypertension and arteriosclerosis (Manuck, 1994). Laboratory studies of cardiovascular reactivity employ two types of stressors (Obrist, 1976). Passive stressors such as the cold pressor test, require an inhibition of an automated response (removing one's hand from cold water). Active stressors require active engagement and the demonstration of some skill e.g. public speaking, mental arithmetic and the Stroop colour-word task. Fredrikson and Mathews (1990) compared the reactivity of hypertensives and normotensives on a range of stressors. They found that the hypertensives consistently displayed exaggerated elevations in systolic and diastolic blood pressure. However, the difference between the two groups was most marked for active stressors, suggesting that perceived control may be the factor determining the level of cardiovascular reactivity. In the present study Rotter's Locus of control scale is used to examine the possible moderating role of locus of control on physiological reactions to threat

Need for affiliation

It is further proposed that an individual's need for affiliation (Naff) will also influence the effects of threat on the recipient's reactions. McClelland (1987) proposed that need for affiliation is one of three types of motivational need (the others being need for achievement and need for power). Individuals with high need for affiliation cherish positive relationships whilst worrying about the shortcomings of relationships. They seek the companionship of others and take steps to be liked by them, as well as wanting to project a favourable image. They tend to smooth out disagreements and choose to work and make decisions collectively.

Status

The present study also examines the effect of the organisational status of the communicator on the immediate physiological response of the message recipient. Latane (1981) proposed a theory of social impact in which it was suggested that the communicator's status will have an impact on the physiological response of the recipient such that the higher status communicator should produce a greater physiological response in the recipient. In the present study the effect of status is examined in more detail. It is hypothesised that the communication network will affect the impact of status. Message senders in the same department as the recipient will be more central in their communication network, whereas, where the message sender and message recipient are from different departments, the sender will be more peripheral in the communication network. Centrality in the communication network is related to power (Van den Brink and Gilles, 2000). It is therefore expected that a threatening message from a higher status communicator in the same department will have a greater physiological impact than a threatening message from a higher status communicator in a different department.

The research question

The aim of this study was to examine the effects of threatening versus non-threatening e-mail messages on the recipient's blood pressure. It was hypothesised that a number of factors (relative organizational status of sender and recipient, the recipient's need for affiliation, and the recipient's locus of control) would influence

the relationship between the level of threat in the message and the recipient's physiological response.

5.2 Method

Design

The experiment was a 3 (within subjects) x 2 (between subjects) x 2 (between subjects) design. The within subject's factor compared the participant's blood pressure prior to receiving any e-mail correspondence with blood pressure readings taken while each of the two e-mails were being read. Blood pressure was thus assessed under three conditions: answering a questionnaire (no reprimand), reading a non-threateningly worded e-mail reprimand, and reading a threateningly worded e-mail reprimand.

In order to demonstrate that differences in response to the e-mail reprimands were due to the wording and presentation of the messages and not the topic of the message, the e-mail messages were counterbalanced. Reprimanding messages about two topics were prepared: attendance and breaches of regulations. A threateningly worded and a non-threateningly worded e-mail were prepared for each of the two topics. Half of the participants received a non-threateningly worded e-mail about their poor attendance and a threateningly worded e-mail about a breach of regulations and the other half received a threateningly worded e-mail about their attendance and a non-threateningly worded e-mail about a breach of regulations. A comparison for the effect of the message topic showed there was no significant difference in systolic or diastolic blood pressure between subjects who received the threatening reprimand about attendance and those received a threatening reprimand about a breach of the regulations (systolic $t = -.76$, $p = .45$; diastolic $t = -.51$, $p = .61$)

The independent variable for the first between subjects factor was the status of the 'sender' of the e-mail reprimands. There were two conditions: half of the recipients received e-mails from the Senior Faculty Registrar and half received e-mails from a fellow student. The e-mail messages were counterbalanced (as above) within each of these two conditions. The second between subjects factor measured the effect of the relationship between the e-mail sender and recipient by comparing blood

pressures of recipients from within the same department as the sender with blood pressures of recipients from outside the department.

Participants

The sample consisted of 48 volunteers. A sample size of 48 was calculated using the method described by Clarke-Carter (1997). The participants were all students of a University College in the higher education sector in the UK. There were 8 Males and 36 females (4 participants were found to be unsuitable for the procedure). One participant was excluded because she had been diagnosed hypertensive but was not yet receiving treatment. A further three participants were excluded from the analysis due to unreliable measurement (low plethysmograph, sometimes caused by cold fingers). Ages ranged from 18 to 48.

Apparatus

The computers. Two computers with e-mail facilities were used (one for the students to receive e-mails and the other for the experimenter to send the e-mail messages). The second computer, for use by the experimenter, was loaded with the appropriate e-mail profiles and draft messages.

The messages. For the between subjects factor, two separate e-mail profiles were created (with informed consent), one in the name of the Senior Faculty Registrar and one in the name of a final year student who served as an elected student representative to various committees. For the within subjects factor, the four draft e-mail messages were prepared (see Design section). The level of threat was manipulated by changing both the wording and the presentation of the message. The non-threatening messages were written in the usual 12 point Times New Roman font. They included salutations such as 'Dear fellow student' and 'Best wishes'. They accused the student of either poor attendance or of breaching other regulations, pointing out the inconvenience caused to lecturing and administrative staff and advising them where to go for advice if they were unclear about the regulations. The following extract illustrates the non-threatening style:

"I have been asked to point out that there seems to be a problem of poor attendance with a number of students. However, it is also clear that some of the lists

are wrong and contain names of people who are no longer students. May I remind all students that it is part of your obligation as a student to attend timetabled classes and that sanctions may be taken against persistent non-attenders."

The threateningly worded e-mails began with the word 'WARNING' in upper case and proceeded to accuse the student in a more threatening style. They were written in 14 point, red coloured font. Important phrases were double-line spaced from the preceding and following text, in upper case lettering and centred. They also listed the specific sanctions that can be taken against students for poor attendance or breach of regulations. The following extract illustrates the threatening style:

"WARNING

ATTENDANCE LEVELS AT LECTURES AND SEMINARS HAS BEEN EXTREMELY POOR. Attendance has been monitored over the last year and it is clear that a number of students have continually REFUSED TO PARTICIPATE in timetabled sessions. The University takes attendance very seriously and it is within the power of the University to enforce a range of SANCTIONS AGAINST STUDENTS WHOSE ATTENDANCE FALLS BELOW 80%."

The Portapres blood pressure monitor. The Portapres blood pressure device is manufactured by TNO-TPD-Biomedical Instrumentation and allows continuous beat to beat measurement of peripheral blood pressure via finger cuffs. The device has been shown to produce valid and reliable blood pressure measurements (Imholz, Langewouters, Van Montfrans, Parati, Van Goudoever, Wesseling, Wieling, and Mancia, 1993 and Mills, Spratt, Padfield, and Webb, 1998). A recent study (Hinz, Seibt & Scheuch, 2001) compared peripheral blood pressure measurements with brachial blood pressure responses and concluded that whilst the technique was not suited to assessing absolute blood pressure, it did provide an accurate measure of cardiovascular reactivity (changes in blood pressure). The Beatscope analysis software allows the recorded data to be viewed on a personal computer, giving blood pressure measurements for each heart beat for further analysis.

Locus of Control questionnaire. Rotter (1966) developed the Locus of Control (LOC) questionnaire in order to measure a person's general expectancies of control.

Rotter (1990) labelled people who see the reinforcements they get as being a consequence of their own behaviour as internals. Those who see reinforcers controlled by something outside of themselves and not related to their own actions, he labelled externals. The dimension of internal and external locus of control is referred to as the I-E dimension We might expect that participants whose score shows them to be internal on the I-E dimension and therefore believe that what happens to them is a consequence of their own actions, would react more strongly to the reprimand than those with an external locus of control. Studies have shown that workers with an external locus of control are more susceptible to stress (e.g. Revicki & May, 1985). Lengua & Stormshak (2000) found internal reliability of the LOC scale was .76. In the current study Cronbach alpha coefficient was .73

Need for Affiliation questionnaire. Need for affiliation is used to describe a motive to be with other people or to want to spend time in the company of others (see Boyatzis, 1973, for a review). People with a high need for affiliation need social relationships, not for any other rewards such as status, responsibility or dominance that might come from belonging to a group, but simply for the reward of being with other people. People with a high need for affiliation are concerned with being liked and accepted by others. In the present study we might expect that those participants with high need for affiliation will react more strongly to the reprimands. Van Tilburg (1988) developed the 6 item, Need for Affiliation scale used in the present study and found a reliability coefficient of .77. In the current study Cronbach alpha coefficient was .76.

Procedure

Participants were seated in front of the computer monitor and told that their blood pressure would be measured and recorded while they completed a number of tasks. Participants were asked if they had any medical problems relating to blood pressure or if they were taking medication for high blood pressure. The Portapres blood pressure monitor was attached to the participant and the measurement recording procedure started. Participants were then asked to complete the Locus of Control questionnaire. The Portapres has an 'event marker' which marks the data when a button is depressed. The event marker was pressed when the participant started the

LOC questionnaire and again when they completed the questionnaire. Before the participants began the LOC questionnaire, they were asked for their e-mail address.

While the participant was completing the LOC, three e-mails (the Naff questionnaire, and the threatening and non-threatening e-mails) were sent to the participant from a second computer (located in the control room, adjacent to the lab). Following completion of the LOC questionnaire the participant was told that the next questionnaire had been sent to them via e-mail. They were asked to access their e-mail inbox and to open the e-mails they had received today, starting with the most recent. The experimental e-mails were sent in a particular order depending on the counterbalancing procedure. All participants first completed the Need for Affiliation questionnaire then, half of the participants opened the nicely worded e-mail, followed by the threateningly worded e-mail. The other half opened the threateningly worded e-mail, followed by the non-threateningly worded e-mail. The two messages referred to different topics (see Design section). The procedure was designed so that the participants would treat the e-mails as genuine messages. They were not told that the e-mail messages were part of the experimental procedure.

The event marker was pressed as the participant began reading each e-mail, and again when they had finished reading each e-mail. The participant was then asked to close their e-mail. Following this the participant was debriefed and the purpose of the experiment explained. Participants with a resting diastolic blood pressure of over 95 mm hg were advised to get their blood pressure checked by their GP. Any queries were answered, the participant was thanked and paid £5 for participating.

Data analysis

The Beatscope software allows calculation of the mean blood pressure of any section of the data. Where the event marker was pressed during recording, a line appears on the data making it possible to calculate the mean blood pressure between two event marks. Mean blood pressure was calculated during completion of the LOC questionnaire, when the participant was reading the non-threateningly worded e-mail and when the participant was reading the threateningly worded e-mail. All statistical calculations were carried out using SPSS.

5.3 Results

Table 1 shows the mean blood pressures (as calculated above) of participants during all experimental conditions. Blood pressure whilst answering the LOC questionnaire gives a baseline measure of blood pressure during relatively light, routine work.

Condition	Sender	Department	Systolic mean BP	Systolic SD	Diastolic mean BP	Diastolic SD	N
Completing LOC questionnaire	Faculty registrar	Same	133.11	17.84	74.24	13.74	12
		Different	125.88	14.76	68.83	10.10	9
		Total	130.01	16.60	71.92	12.33	21
	Student representative	Same	131.87	18.94	71.35	12.90	17
		Different	136.96	19.35	71.55	17.89	6
		Total	133.20	18.74	71.41	13.92	23
	Total	Same	132.39	18.18	72.55	13.09	29
		Different	130.31	17.02	69.92	13.21	15
		Total	131.68	17.62	71.65	13.04	44
Reading a non-threatening e-mail reprimand	Faculty registrar	Same	145.87	21.61	81.14	15.92	12
		Different	134.20	16.80	71.63	8.98	9
		Total	140.87	20.12	77.06	13.96	21
	Student representative	Same	140.06	24.07	74.62	13.45	17
		Different	142.74	20.01	74.51	17.17	6
		Total	140.76	22.67	74.59	14.09	23
	Total	Same	142.46	22.87	77.32	14.61	29
		Different	137.62	17.97	72.78	12.39	15
		Total	140.81	21.24	75.77	13.92	44
Reading a threatening e-mail reprimand	Faculty registrar	Same	149.67	21.61	84.36	17.57	12
		Different	133.14	15.45	73.13	9.67	9
		Total	142.59	20.56	79.54	15.48	21
	Student representative	Same	141.74	22.30	77.06	12.95	17
		Different	143.05	20.93	75.04	16.16	6
		Total	142.08	21.49	76.54	13.50	23
	Total	Same	145.02	22.00	80.08	15.18	29
		Different	137.10	17.84	73.90	`12.15	15
		Total	142.32	20.81	77.97	14.38	44

Table 5-1. Blood pressures (mm Hg) in all experimental conditions

Threat

Table 1 shows that systolic and diastolic blood pressures tend to increase progressively through the three conditions of the within subjects factor. Repeated measures ANOVA's were conducted to ascertain whether blood pressure was significantly different under the three conditions (no reprimand, non-threatening reprimand, and threatening reprimand). The results for diastolic blood pressure showed a significant main effect ($F_{2,43}$ = 43.75, p < 0.01, partial eta squared = 0.50). Paired samples t-tests showed a significant difference between baseline diastolic blood pressure and diastolic blood pressure whilst reading the non-threatening e-mail (t_{43} = 5.93, p < 0.01) and also between diastolic blood pressure whilst reading the non-threatening e-mail and diastolic blood pressure whilst reading the threatening e-mail (t_{43} = 3.83, p < 0.01).

The results for systolic blood pressure also showed a significant effect ($F_{2,43}$ = 38.35, p< .01, partial eta squared = .47). Paired samples t-tests showed a significant difference between baseline systolic blood pressure and blood pressure whilst reading the non-threatening e-mail reprimand (t = 6.52, p< 0.01) but not between the non-threatening and threatening e-mail reprimand conditions (t = -.14, p = .17).

Status and power relationship between sender and recipient

ANCOVA showed there was a significant effect of status (Faculty registrar v fellow student) on blood pressure whilst reading the threatening e-mail (F(1,26) = 4.80, p = .038, eta squared = .156.

Table 1 shows that recipients in the same department as the higher status message sender had much higher mean blood pressure (systolic = 149.67, diastolic = 84.36) than recipients based in a different department to the sender (systolic = 133.14, diastolic = 73.13) whilst reading the threatening e-mail reprimand. A test of means showed that the differences are significant (systolic, t = 1.95, df 19, p = .03), (diastolic, t = 1.72, df 19, p = 0.05). This shows the significant effect of the power relationship between sender and recipient on the effect of a threatening message from a higher status sender on the blood pressure of the recipient.

Variables	1	2	3	4	5	6	7	8
1. Diastolic during LOC	1.00							
2. Diastolic whilst reading non-threatening e-mail	.944**	1.00						
3. Diastolic whilst reading threatening e-mail	.935**	.964**	1.00					
4. Systolic during LOC	.852**	.852**	.815**	1.00				
5. Systolic whilst reading non-threatening e-mail	.764**	.855**	.795**	.902**	1.00			
6. Systolic whilst reading threatening e-mail	.791**	.867**	.877**	.889**	.943**	1.00		
7. Naff	.074	.022	.009	.037	-.023	-.015	1.00	
8. LOC	-.171	-.140	-.158	-.129	-.149	-.192	-.139	1.00

Significance: * $p < 0.05$, ** $p < 0.01$

Table 5-2. Correlation matrix

Personality measures

Table 2 shows that there was a small, non-significant negative correlation between LOC scores and blood pressure indicating a slight tendency for blood pressure to be greater when participants are more internal. Naff correlations were all very close to zero. Partial correlation was used to explore the relationship between blood pressure at baseline and blood pressure whilst reading the threatening reprimand, whilst controlling for LOC and Naff. There was a strong, positive, partial correlation between baseline blood pressure and blood pressure under threat (diastolic $r = .933$, $n = 42$, $p = 0.000$; systolic $r = .901$, $n = 42$, $p = 0.000$). An inspection of the zero order correlations (diastolic LOC, $r = .935$, diastolic Naff, $r = .935$; systolic LOC, $r = .900$, Naff, $r = .895$) suggested that controlling for LOC and Naff had little effect on the strength of the relationship between blood pressure before and during reading a threatening reprimand.

5.4 Discussion

The results show that communication style had a significant effect on blood pressure. Diastolic blood pressure increased significantly in response to the threateningly worded e-mail reprimand.

The significance of the increase in diastolic blood pressure from the non-threatening to the threatening e-mail condition can be evaluated, not just in terms of statistical significance but also in terms of the potential health implications. The link between high blood pressure and increased risk for coronary heart disease and stroke is well established. Hart (1993) states that the predictive power of a measure of arterial blood pressure for future cardiovascular risk has been known since 1910. However, there is some debate about what actually constitutes high blood pressure, and particularly at what level to initiate anti-hypertensive treatment. Nevertheless, it has been established that a difference of 5 mmHg diastolic blood pressure is associated with a 38% change in risk of CHD and stroke (Collins & MacMahon, 1994).

In the present experiment the average increase in diastolic blood pressure from the baseline measure to the non-threatening e-mail reprimand condition was less than 5mmHg, but the extra increase caused by the threatening wording of the e-mail pushed the increase to 6.32 mm Hg. This indicates that wording a reprimand in a threatening way pushes the physiological response into the clinically significant area.

The relationship of the message sender to the recipient is clearly important. This is demonstrated in the present study by the finding that the status of the sender only had a significant effect for participants in the same department as the sender. For participants in the same department as the communicator, the difference in diastolic blood pressure between the low workload, low stress condition and reading a threatening reprimand from a higher status communicator was 10.11 mmHg. It appears from the present study that status has a greater physiological impact on a subordinate if it means that the status-holders power can be exerted in a direct rather than a diffuse way.

The experimental procedure in the present study produced relatively transitory changes in blood pressure. The question of whether brief periods of increased blood

pressure have any implications for long-term health has been addressed by studies looking at the clinical relevance of blood pressure variability. Research has shown that organ damage associated with high blood pressure is more closely related to ambulatory blood pressure over a 24 hour period than to sphygmomanometric values (White, 1991). This finding indicates that isolated blood pressure measurements taken during clinic visits do not reflect blood pressure during normal daily conditions. Furthermore, it has been shown that fluctuations in blood pressure contribute to organ damage. Mancia, Parati, Di Rienzo and Zanchetti (1997) showed that organ damage correlates with the number of daily peaks in blood pressure associated with environmental and stressful stimuli.

The increased pressure on business organizations to be leaner and use more flexible production and employment practices is increasing the psychological demands of work and thus the risk of job stress (Houtman, 1999). Many of the factors that influence staff health are psychosocial, relating to style of management (Health and Safety Executive, 2001), and Hogan, Curphy and Hogan (1994) reported that up to 75% of all employees report that the worst and most stressful aspect of their job is their immediate boss. Receiving the kind of messages that were used in the present study to produce increases in blood pressure may be a common daily occurrence for a significant number of workers, and further work is needed to quantify the prevalence of stressful communications in work settings.

In a work organization the relative positions in the organizational hierarchy of the communicators is an essential element of the communication. Messages from senior managers to subordinates may contain all kinds of clues about the management style of individuals and of the organization. Whilst some senior managers may be reluctant to have internal messages scrutinized for their effects on subordinates, organizations that wish to grow and develop and treat their workers as the most important resource, will want to develop a policy of openness in relation to e-mail and other text messages.

There is now strong evidence that supervisory style has an effect on the physiology and well being of subordinates. Electronic mail is now the predominant form of communication at work. The technology exists to monitor communication

between workers. Whilst there may be some resistance to monitoring the internal communications of an organization, if it is done sensitively and sensibly, then the long-term benefits will outweigh the arguments of individuals who may claim an infringement of privacy. After all, similar concerns were expressed about the use CCTV cameras. Now the use of cameras in the workplace, and in public places is widely accepted.

The lack of any significant relationships between the measures of personality and any of the other variables may, at first, seem a surprise finding, especially as there is solid evidence that dispositional factors play a major role in moderating work stress processes (Parkes, 1994). Furthermore, there is clearly a wide variation in individuals' responses to the e-mails. However, it may be that the dispositional factors measured do not have an effect at this early stage of the stress process. Baker and Stephenson (2000) found that control beliefs had no effect on heart rate responses. There is evidence that LOC does not mediate the initial effect of a stressor but that it has its effect further down the line in the stress process. Cohen and Edwards (1989) for example, have demonstrated that LOC mediates between the initial response and the longer-term effects.

Individual differences in response to the messages may be due to personality factors not measured in the present study such as extraversion or neuroticism. However, identifying the personality factors involved in mediating the initial response may be confounded by the finding that the degree of physiological reactivity itself has been shown to be a dispositional variable (Jain, Schmidt, Johnston, Brabant and von zur Mühlen, 1998). Factors other than dispositional variables may also have affected the participants' perception of the message. For example, participants' comments revealed that some participants were not familiar with the identity or status of the sender of the messages they received. The finding that the status of the message sender only made a significant difference to blood pressure for participants in the department where the senders were based also shows that the recipients' perception of the message sender influences their reaction. Some participants were more easily able to dismiss the content of the message as not applicable to them, and some participants suspected that the messages were part of the experiment. Despite these possible shortcomings, significant effects of threat and status on blood pressure were found.

Much more work is needed on identifying the particular linguistic and textual characteristics of the messages that led to the stress reactions. In the present study a number of message characteristics were changed simultaneously, including the wording, font, and layout of the whole message. However, it would be useful in future research to examine the effects of particular changes (e.g. words and phrases) in much more detail. With the technology to measure changes in blood pressure with every heartbeat, it would be possible to measure the effect of changing individual words in a sentence. It could be argued that much more work is needed in this area to test the effect on physiological, affective and behavioural responses, of changing specific words, fonts, and layouts.

Conclusions

Diastolic blood pressure was higher when recipients were reading the threateningly worded e-mail reprimand than when they were reading the non-threateningly worded reprimand. Status only had a significant effect on blood pressure when the sender and recipient were from the same department. The combination of threatening reprimand and higher status (in the same department) produced the greatest increase in blood pressure. The personality variables of locus of control and need for affiliation had very little effect on the relationship between baseline blood pressure and blood pressure in the threatening reprimand condition. The results add to the evidence that communication style and communicator status can have a direct impact on the recipient's physiological response. The present study has provided evidence that the wording and style of a message can have a powerful physiological effect on the recipient. High status communicators in a direct power relationship with the recipient have a greater physiological impact than either communicators of equal status to the recipient or higher status communicators with no direct relationship to the recipient. The findings of the present study have potential implications for the effect of managers' communication style on the health of their subordinates. However, caution must be exercised over any inferences drawn from such a small sample.

This study has examined the immediate physiological response of the message recipient, which may be a tranisient effect. The increase in blood pressure may last

only a few minutes or even a few seconds before returning to normal. Whilst this may have important implications for the recipient, there are also likely to be other effects of receiving messages that are perceived as threatening. These effects are likely to be related to how the recipient feels about the perceived threatening message and the message sender, and to the way in which the recipient responds to the message. The next study will examine how the recipient of a threatening message feels and how they are likely to react to the message.

Chapter 6: Study 3

Affective and behavioural reactions to a written threatening message

6.1 Introduction

This study is based on the previous experiment (The effect of an e-mail reprimand on blood pressure). In the previous experiment participants were sent either a threateningly worded e-mail reprimand or a non-threateningly worded e-mail reprimand. The study showed that participants who received the threateningly worded message showed elevated blood pressure, especially if the threatening message was from somebody above them in the organisational hierarchy. The present study seeks to further examine the effects of threatening versus non-threatening e-mail messages on the reactions of the recipient; specifically, their affective and behavioural responses.

The previous experiment focused on the effects on the recipient of receiving a threatening message. The affective and behavioural responses of the message recipient may also have implications for the message recipient. However, the actions taken by the message recipient may trigger a chain of events that may have much wider consequences, for example on other people such as the message sender or co-workers, which may in turn impact on the organization itself.

The way that a message is expressed may lead to very different reactions. The task of identifying the precise effects caused by particular characteristics of the message is a daunting one. The first task is to identify the message characteristics. The first and most obvious message characteristic is the words used to construct the message; the words that convey the essential elements of what is being communicated. This is the content of the message. Both the previous experiment and the present experiment examine reactions to threatening and non-threatening messages. The degree of threat in the message was manipulated by changing particular words and phrases. For example, the non-threatening phrase 'there seems to

be a problem of poor attendance' is replaced in the threatening version with 'a number of students have refused to participate in timetabled sessions'.

A second set of message characteristics that may lead the recipient to a particular response involves the presentation of the message. This includes the style of writing, the type of font, the use of space, and the colours used. It also includes the salutations used to begin and end the message. In the previous study (The impact of a threatening e-mail reprimand on the recipient's blood pressure), the threatening message was presented in a red font with certain particularly threatening words highlighted in bold capitals. The message also began with the word 'WARNING' in red, bold and aligned centrally on the page. Adding emphasis by the use of italics, bold, font colour, and positioning on the page is a way of adding paralinguistic expression to a text. Although there is little empirical research on the effects of such paralinguistic techniques, in practice, the meaning of some of the techniques is well understood between communicators. For example, the use of capital letters in e-mails is interpreted as shouting.

Closely related to the presentation of the message and to the wording, is a rather more abstract property. A third characteristic of the message is the overall tone of the communication. This is likely to be a consequence of all the properties discussed so far. But it may be something more than the sum of the individual parts. The tone of the message, although a somewhat illusive property, is likely to be the most important element. It may convey some important information to the recipient about how to respond to the message. This aspect of the message is likely to be the most difficult to measure empirically and there may always be some subtle element of tone that cannot be measured.

The context in which the communication is taking place will also affect the message recipient's interpretation and reaction to a message. For example, in a situation where both sender and recipient are in frequent communication whilst trying to solve a specific problem, the use of short, terse messages may be perfectly acceptable. A fourth characteristic of the message is therefore concerned, not with the message itself, but with the relationship between the sender and the recipient of the message. The previous study showed just how important this element can be for

understanding the response of the recipient. In the present study this characteristic is not manipulated but the participants are told that the messages are from the senior registrar i.e. somebody more senior than themselves and with considerable power over them.

Studies have shown that interpersonal conflict at work can lead to negative emotions. For example, Fox, Spector, and Miles (2001) investigated the effects of job stressors and found that interpersonal conflict was related to a composite measure of negative emotions. The previous study showed that the wording of a message can affect the physiological response of the recipient. The physiological response is an important component of the emotional response but there are other equally important elements that need to be examined. Physiological changes that take place during emotional arousal result from the activation of the autonomic nervous system. Increased blood pressure is just one of many consequences of such activation, which may include increased heart rate, increased blood sugar, increased perspiration etc. This arousal system is triggered when a person perceives a threat. The body is prepared for action (the fight or flight response). Hans Selye (1956) termed the body's response to stress as the *General Adaptation Syndrome* and proposed that the changes that take place in a person when they are face with the threat of say an illness, are non-specific. Selye observed that people who are ill, appear and behave in very similar ways regardless of the illness. This general malaise is characterized by loss of appetite, loss of ambition, and a typical facial expression associated with illness.

If the physiological response to an emotional stimulus is always the same, then how do we differentiate between different emotional experiences, such as love and hate, fear and joy etc.? Schachter and Singer (1962) demonstrated, in a classic experiment, how cognitive factors are of primary importance in the differentiation of emotions. In the experiment Schachter and Singer showed that when participants were given adrenaline to cause arousal, they would label the arousal according to the social situation they were in. The experimenters had confederates behave in a 'happy' way for half of the participants and in an 'angry' way for the other half. The participants tended to express the same emotions as the confederates i.e. they were happy in the 'happy' condition and 'angry' in the angry condition.

This cognitive labelling theory of emotion established the importance of cognition in emotion. Despite some criticism of Schachter and Singer's experimental method and some dispute as to which comes first, physiological arousal or cognition, the role of cognitive processes in emotional experience is widely accepted. The implications of this, particularly for understanding the negative effects of emotions (i.e. stress), are considerable. Lazarus (1982) developed Schachter's cognitive labelling theory and proposed that some kind of cognitive appraisal was an essential element of an emotional reaction to a stimulus. This presented the possibility expressed by Parkinson (1987) that physiological stress reactions can be affected by manipulating an individual's cognitive appraisal of the stimulus. This led to the development of an approach to treating stress that involves getting the stressed individual to think differently about the situation causing stress. For example, the reaction to a difficult work situation will differ depending on whether it is viewed as an impossible task creating unbearable pressure or as a challenge creating a potential growth opportunity. Langer, Janis, and Wolfer (1975) demonstrated that cognitive control over a stressful situation such as hospitalisation could be very beneficial in reducing anxiety and reducing the need for sedative medication.

An alternative formulation of the recipient's cognitive appraisal of a message is that a number of characteristics of the message will lead to particular cognitions. One way of understanding the effects of message characteristics is the concept of 'affordance'. Gibson (1979) proposed that objects or environments have certain properties that lead people to behave in particular ways. For example, a chair 'affords' us the possibility of sitting, a pen 'affords' the possibility of writing. Gibson was working in the area of perception and his theory of direct perception, i.e. that objects and environments create certain perceptions, can be classed as a bottom-up approach to perception. Information about how to behave towards an object is contained in the object and sensory perception of the object gives sufficient processing to form a reaction.

This approach is similar to the stimulus approach to stress, which emphasises the properties of the environmental stimulus rather than the characteristics of the person. The more popular view of stress is that stress reactions are dependent on the

perception of the individual. However, the emphasis in the current study is on how the manipulation of social or environmental stimuli can generally affect reactions.

An individual's behavioural response to a threateningly worded message may have considerable consequences for ongoing interpersonal relations. Their immediate verbal response is likely to reflect elements of their affective response to the message. In other words, a person receiving a threateningly worded message is likely to signal their anger and frustration by the wording of their response. This, in turn, may lead to further angry exchanges. This pattern of communication has been described as conflict escalation.

Rubin, Pruitt, and Kim (1994) described escalation as an increase in the intensity of a conflict as a whole. Escalation develops because, when aggressive tactics are used by one side in a dispute, they are often mirrored by the other side. Rubin et al also suggest that when conflict escalates, it is often intensified in ways that are difficult to undo. Several studies have shown that unpleasant behaviour tends to be reciprocated in social interactions (e.g. Burgoon, Le-Poire, & Rosenthal, 1995). Brett, Shapiro, and Lytle (1998) showed that negotiations can get stuck in 'reciprocated contentious communications'. Rubin, Pruitt, and Kim (1994) suggest that as each party is exposed to aggressive communication, they change their perception and attitude towards the other party. The other side may be seen as immoral or untrustworthy and becomes disliked.

Friedman and Currall (2003) argued that this kind of dispute escalation is more likely during electronic communication than either face-to-face or telephone communication. They showed how the structural properties of e-mail (such as lack of physical presence, lack of contextual cues, and no possibility of interruption) lead to diminished feedback and understanding. In the present study the stimulus message was presented on a computer screen and participants were asked to select, from seven options, which message they would send in reply.

Hypotheses

Hypothesis 1

Participants viewing a threatening message will score higher on a measure of affective response than participants receiving a non-threatening message.

Hypothesis 2

Participants receiving a threatening message will score higher on a measure of the severity of their likely behavioural response than participants receiving a non-threatening message.

6.2 Method

Design

The study used an independent groups design. The independent variable was the degree of threat in the message. There were two conditions of the independent variable: threatening and non-threatening.

The dependent variables were the reactions to the messages. Two kinds of reaction were measured. The first was the affective response to the message. A 5-item questionnaire was developed using a 7-point Likert scale for each item. A measure of the severity of the message recipient's likely behavioural response was also developed.

Participants

33 undergraduate students on psychology courses at a UK university.

Materials

The messages. The stimulus materials were two messages used in the previous experiment. The messages were presented written on paper.

The non-threatening message was:

> "I have been asked to point out that there seems to be a problem of poor
> attendance with a number of students. However, it is also clear that some of
> the lists are wrong and contain names of people who are no longer students.
> May I remind all students that it is part of your obligation as a student to

attend timetabled classes and that sanctions may be taken against persistent non-attenders."

The threatening message was:

"WARNING

ATTENDANCE LEVELS AT LECTURES AND SEMINARS HAS BEEN EXTREMELY POOR. Attendance has been monitored over the last year and it is clear that a number of students have continually REFUSED TO PARTICIPATE in timetabled sessions. The University takes attendance very seriously and it is within the power of the University to enforce a range of SANCTIONS AGAINST STUDENTS WHOSE ATTENDANCE FALLS BELOW 80%."

Adjective checklist. The use of adjective check lists and rating scales is well established in the assessment of transient emotional states. The Multiple Affect Adjective Check List (MAACL: Zuckerman & Lubin, 1965) is one of the most widely used instruments. It is commonly used to measure the effects of some form of mood alteration procedure (Gotlieb & Meyer, 1986). The MAACL is used to assess mood states by a simple summation of the adjectives checked, resulting in scores on three measures of negative affect: anxiety, depression, and hostility.

McNair, Lorr, and Droppleman (1971) developed an alternative measure of fluctuating affective states: the Profile of Mood States (POMS). This scale made use of a five-point Likert type scale to assess six different mood dimensions. However, Spielberger (1972) questioned whether the POMS is suitable for measuring short-term fluctuations in mood. The Strength of Feeling Scale (SOFS) was developed for the present study, to compare the strength of the respondent's emotional reaction to a message. The scale consists of five adjectives with a seven-point rating scale for each one. The strength of feeling is assessed by summing the scores for each adjective.

Strength of Feeling Scale

How has the message you have just read from the Faculty Registrar made you feel?

Below is a list of adjectives. Please indicate the strength of feeling for each one on a seven-point scale (one being not really affected and seven being very strongly affected). Please circle one number for each word.

Angry	1	2	3	4	5	6	7
Resentful	1	2	3	4	5	6	7
Shocked	1	2	3	4	5	6	7
Threatened	1	2	3	4	5	6	7
Outraged	1	2	3	4	5	6	7

Figure 6-1 The 5-item Strength of Feeling Scale

The 5-item Strength of Feeling scale showed good internal consistency in the present study, with a Cronbach Alpha coefficient of .89.

Behavioural response. The participant's behavioural response was measured by asking the participant to select one from a list of seven possible messages that they would be most likely to send in reply:

1. Dear Shazia,

   Thank you for your message about attendance. I fully appreciate the importance of attending timetabled sessions but I think I have attended all or almost all of the timetabled sessions.

Kind regards

(Mean = 1)

2   Dear Shazia,

Could you please double-check your records. I am sure I have attended all or almost all of the sessions.

Kind regards

(Mean = 2)

3   Shazia,

I think you have made a mistake. I have attended all or almost all of the timetabled sessions.

Regards

(Mean = 3)

4   This is absolute nonsense, I have attended all or almost all of the timetabled sessions.

(Mean = 4.6)

5   This message is complete nonsense. There is no justification for sending such a message and I expect a full apology. I am prepared to take this further under the grievance procedure. I will also consider taking legal action against the University College if this matter is not dealt with promptly and in a satisfactory way.

(Mean = 4.87)

6.   How dare you accuse me of not attending. Have you nothing better to do than make false accusations. You should get your facts straight before accusing people.

(Mean = 5.8)

7.   I am extremely annoyed at having been sent this message. Your records are

        wrong. I have attended all or nearly all of the timetabled sessions.

        (Mean = 6.67)

        The statements were graded using the Thurstone method (see below). Fifteen
independent judges were asked to put the statements in order of severity from the
mildest to the strongest. The ordered statements were then given a score of 1 (mildest)
to 7 (strongest). The mean score for each statement was then calculated and appears in
brackets after each statement.

Procedure

        The procedure for evaluating the relative strength of a range of responses
followed closely the procedure devised by Thurstone (1931) for evaluating the
strength of attitudes. The experimenter first produced seven statements in response to
the message. The responses covered a range from mild and polite to strong and
defensive. Each response was written on a separate piece of paper and numbered on
the back for identification purposes. Fifteen judges were given the seven pieces of
paper containing the responses and asked to place them in order of severity. The
judges were then asked to turn over each piece of paper revealing the number of the
statement. They were then asked to write the numbers of the statements, in order, on a
separate sheet of paper. The sheets were then collected by the experimenter, and the
mean score for each statement was calculated. This method allows the statements to
be placed on an interval scale of measurement.

        In the experimental procedure the participants were divided into two groups.
Half of the participants were shown the threatening version of the message on a
computer screen and asked to imagine how they would feel if they had been sent the
message. They were given the list of seven possible responses and asked to tick the
one they would be most likely to send in response. They were also asked to complete
the 'Strength of Feeling' questionnaire.

6.3 Results

	Response	Angry	Resentful	Shocked	Threatened	Outraged
Response		.161	.169	.365(*)	.296	.148
Angry			.764(**)	.558(**)	.686(**)	.770(**)
Resentful				.520(**)	.734(**)	.714(**)
Shocked				.	.675(**)	.466(**)
Threatened						.633(**)

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 6-1 Correlations amongst the dependent variables

Table 6.1 shows the correlations amongst all of the dependent measures including each of the 5 items of the Strength of Feeling questionnaire. The internal consistency of the Strength of Feeling questionnaire is high (Cronbach's Alpha = .89). The relationship between total scores on the Strength of Feeling questionnaire and scores on the Behavioural Response questionnaire is not strong but almost reached statistical significance (r = .283, p = .055).

Item	Threat (n = 14)	Non-threat (n = 19)
Angry	2.71 (1.38)	1.90 (1.93)
Resentful	2.71 (1.38)	2.05 (1.31)
Shocked	3.64 (1.95)	2.63 (1.74)
Threatened	4.21 (1.93)	2.16 (1.71)
Outraged	2.71 (1.49)	2.05 (1.58)
Total Strength of Feeling	16.00 (6.65)	10.79 (6.72)
Behavioural Response	1.93 (1.21)	1.37 (0.76)

Table 6.2. Means and standard deviations for items on the strength of feeling questionnaire and behavioural response score in the threatening and non-threatening conditions.

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Table 6.2 shows that participants, on average, responded more strongly to the threateningly worded message on all five dimensions of the Strength of Feeling questionnaire. The wording of the message had a significant effect on the overall Strength of Feeling score (t = 2.251, p (one-tailed) = .016). This shows that the wording of a message has a significant effect on the affective response of the message recipient.

In order to examine the effect of level of threat on the five individual items of the strength of feeling questionnaire a multivariate ANOVA was performed (F(1, 31) = 2.343, p = 0.069). When the dependent variables were considered separately, perception of threat was very significant: F(1, 31) = 10.47, p = .003, partial eta squared = .25 and anger was almost significant: F (1, 31) = 2.96, p = .095, partial eta squared = .087. The difference, in the respondent's feelings of being threatened, in the two conditions confirms that the difference in the wording of the two stimulus messages was principally a manipulation of the degree of threat in the message.

In order to measure the potential of the wording of a single message to trigger the escalation of poor interpersonal relations, recipients were asked to choose one of seven messages to send in response. The messages had been previously rated for their severity by independent judges. The difference in the severity of the response was measured by the rank order of the message selected. The difference between the severity of the responses selected by recipients of threatening and non-threateningly worded messages was almost statistically significant (t = 1.63, p = .056).

6.4 Discussion

The results of this study show that the wording of the message has an effect on the response of the recipient. The threateningly worded message produced higher response scores than the non-threateningly worded message. The threateningly worded message produced a stronger emotional reaction and a stronger behavioural response than the non-threateningly worded message.

The stronger emotional reaction produced by the more threatening message may have important consequences for the recipient. The most statistically significant difference between the effects of the two messages was in the amount of threat

experienced by the participants followed by the amount of anger they felt. The emotions of threat and anger are closely linked with stress. Cummings and Cooper (1979) proposed the Cooper-Cummings framework as an explanation of stress in which threat is directly related to stress. According to the framework, the consequences of stress are dependent on whether the individual manages to successfully cope with the situation. Successful coping may depend on a number of factors either within the individual or in the environment. An example of a factor within the individual would be whether they had a tendency to view pressure as a threat or a challenge. An example of an environmental factor would be whether the threat is an isolated incident or a recurring problem. The consequences of emotional arousal from a single message are unlikely to be beyond the control of the recipient. However, communications in the work place tend to be ongoing, with messages continually being sent and responded to.

Anger

Siegal (1992) examined the relationship between anger and cardiovascular health. The first point raised by Siegal is the relationship between anger and elevated blood pressure. A number of studies have shown that conflicts with anger are characteristic of the hypertensive (e.g. Goldstein, Edelberg, Meier, & Davis, 1988; Dimsdale et al., 1986). Research by the Israeli Ischaemic Heart Disease study (Kahn, Medalie, Neufeld, Riss, & Goldbourt, 1972) showed that workers who reported brooding and restraining retaliation in response to being hurt by their supervisor had a greater incidence of hypertension.

Much of the research on anger has focused attention on individual differences in the anger response. Research has shown that the Type A individual, characterized by extreme competitiveness, aggression and impatience, has an elevated risk of coronary heart disease (CHD) (Rosenman et al, 1975). Further examination of the characteristics of the type A individual has shown that anger and hostility are the most important elements in risk for CHD (Chesney & Rosenman, 1985). There is also evidence that anger is related to CHD independently of Type A behaviour. Haynes, Feinleib, and Kannel (1980) showed that *anger-in* (not discussing or showing anger) was related to incidence of CHD independent of the association between Type A behaviour and CHD.

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Anger is overwhelmingly an interpersonal emotion. Averill (1980) conducted a survey on anger and found that the target of anger was human in 89% of cases. Our understanding of the interpersonal aspects of anger and much of the research in this area suffers from the same assumptions as research on the interpersonal aspects of stress. In stress research interpersonal relations tend to be seen as a mediator of the stress response rather than a direct cause. This follows the model proposed by Johnson and Hall (1988) where social support was shown to moderate the effects of stress. Siegal (1992) similarly considers anger to be a consequence of individual differences that can be modified by social support. Studies by Smith and Frohm (1985) and Cottington (1984) showing that anger scores were related to the amount of support from other people are interpreted in the prevailing social support framework. The focus of this theorizing is that because social support is a positive emotional experience, it can reduce the negative affect associated with anger. This is in fact the opposite of the present argument, which suggests that the initial threat leading to the anger response is more likely to come from within the respondent's social network. This is not to deny that other people can be a source of social support or that there are individual differences in the anger response but it must also be recognised that other people are often the source of the initial anger arousal.

Anger in the workplace

The findings of the present study have implications for the ongoing nature of work place communication. The results show that not only do recipients of a threateningly worded message experience emotional arousal, they are also more likely to reply to the message with a threateningly worded reply. This threateningly worded reply would then cause an emotional response in the recipient and it is easy to see how interpersonal relations could deteriorate rapidly. Banyard and al'Absi (2005) examined anger expression in an occupational setting and found that high job stress was associated with greater anger-in and greater anger-out. Greater anger-out was also associated with higher blood pressure.

Kiewitz (2002) has proposed a model of workplace anger. In this model anger is seen as a mediator between perceived work events such as injustice, psychological contract breach and interpersonal transgressions, and work-related outcomes such as

organizational commitment and expression/suppression of workplace anger. This is a useful framework for examining the causes and effects of anger-arousing communication. Fitness (2000) examined the role of power in relation to the experience and expression of anger in the workplace. By examining a number of workplace anger episodes Fitness compared the perceptions and reactions of superiors, co-workers and subordinates. There were some differences in the types of episodes discussed by workers at different levels. For example, superiors were more angered by morally reprehensible behaviour whilst subordinates were more angered by being humiliated. The findings were discussed in relation to the effect of power and status in the organization.

In the present study the participants were told that the messages were from someone of higher status than themselves and in a position to exert power over them. Problems that arise from organizational communication may well be linked to the different expectations and perceptions of individuals occupying different positions in the organizational hierarchy.

One of the limitations of the present study is the 'snapshot' view provided by the experimental nature of the methodology. With regard to the process of conflict escalation, the study has shown that the recipient of a threateningly worded message is likely to reciprocate with a more severely worded reply than the recipient of a non-threateningly worded message. This may well trigger the sorts of processes that lead to conflict escalation. It would be interesting to track the emotional reactions, along with any changes in perception and attitude, of a series of communications between two individuals.

The present study used the framework of the medium of electronic communication to examine the effects of threat in the wording of a message. In order to reduce the likelihood of conflict developing and escalating, it is necessary to examine how threatening messages are likely to arise. It may be, of course, that the message sender deliberately words a message in a threatening way. This may be a consequence of the purpose of the message or a consequence of the message sender's personality or attitude towards the recipient. However, it may also be that researchers such as Friedman and Currell (2003) and Romm and Pliskin (1997) are correct in their

assertions that the structural properties of e-mail are likely to exacerbate the likelihood of sending and perceiving threatening communications

The proposition that e-mail, by its very nature, increases the likelihood of sending a threatening message has serious implications for interpersonal relations. However, several researchers have found that the relationship between the communicators moderates the potential for disputes to develop and escalate. Where strong social bonds exist (Rubin, Pruitt, & Kim, 1994), or in-group ties predominate (Lea & Spears, 1991; Davidson & Friedman, 1998) or there is expectation of future interaction (Walther, 1996), communicators are likely to be given the benefit of the doubt in communications that may otherwise lead to conflict. Whilst this may safeguard most friendships from the problems of communicating by e-mail, there remains a potentially serious problem for interpersonal relations in the context of work.

Conclusions

This study has demonstrated the effects of reading a threateningly worded message on the feelings and behavioural response of the message recipient. The findings highlight the potential repercussions of sending threateningly worded messages: not only is the recipient likely to react in an emotional way but their negative feelings are likely to trigger a behavioural response that is likely to be more aggressive or damaging in some way. These reactions have the potential to spread negative feelings and attitudes in the workforce with further implications for the interpersonal relationships between managers and workers. The findings of this study demonstrate the potential of a threateningly worded message to trigger a chain of events with negative consequences for interpersonal relationships and ultimately for the organization.

However, the study has not specifically demonstrated that the wording of a message can effect how well a person performs a task. Task performance, productivity, and efficiency are central to organizational success. The next experiment will address the effects of the wording of a message on the task performance and attitude of the message recipient.

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Chapter 7: Study 4

The effects of supportive and unsupportive verbal feedback on task performance and satisfaction

7.1 Introduction

This experiment addresses the research question: what are the effects of supportive versus non-supportive messages on job performance and attitudes? The two previous experiments have shown that the content and style of a message can impact upon the physiological, affective, and behavioural response of the recipient. This experiment addresses more directly the effect of the wording of a message on the task performance and attitude of the message recipient. These effects can, in turn, be assessed in the wider organizational context.

One of the most important aspects of communication in work-related settings is performance feedback. Studies have shown that helpful, constructive feedback affects many areas of work behaviour such as satisfaction, perceptions of fairness, and motivation to improve job performance (Burke et al, 1978). The focus of this study is the effect of feedback on variables related to work performance.

One of the earliest theories to explain the effect of feedback on behaviour is reinforcement theory. The central tenet of reinforcement theory is that behaviour is a function of its consequences (Komaki, Coombs & Schepman, 1996). Behaviour that is reinforced by reward will tend to be repeated. A review of over 50 studies of positive reinforcement showed that 47 (92.2 percent) resulted in substantial improvements in performance (Komaki, Coombs & Schepman, 1990). In this framework positive feedback would be seen as reinforcing behaviour and would be expected to lead to a greater improvement in performance than unfavourable feedback.

Ilgen, Fisher, and Taylor (1979) describe the recipient of performance feedback as a processor of performance information. This process model presumes that characteristics of the recipient interact with source and message characteristics to produce a reaction by the recipient. The four stages of processing are: perception of feedback, acceptance of feedback, desire to respond and intended response.

According to the model, a number of factors affect each of these stages. These factors can be categorized as belonging to either the source of the feedback, the message, or the recipient. For example, characteristics of the source such as psychological closeness, credibility and power may affect how accurately the recipient perceives the message. Three factors relating to the message are thought to affect perceptions of accuracy. These are the temporal interval between the behaviour and the feedback, the positive or negative tone of the feedback and the frequency of the feedback.

According to this process model, the design of the present study should contribute to the accurate perception of the message. The task participants were students (the message recipients) and the feedback (the message) was delivered by a tutor (the message sender). Thus, elements of psychological closeness, credibility, and power were present, and should ensure that the feedback was perceived accurately. Furthermore, the feedback was given immediately after completing the task and the supportive/unsupportive nature of the feedback was carefully manipulated to be as clear as possible.

According to Ilgen, Fisher, and Taylor (1979), the most important message characteristic, in terms of its impact on acceptance, is the sign of the feedback (whether it is positive or negative). Positive feedback is more readily accepted than negative or unfavourable feedback. Ilgen et al interpret this in a self-esteem or self-image framework. Favourable feedback is consistent with most people's self-image and is therefore more easily accepted.

However, there are contradictory claims for the effects of feedback on performance. Whilst reinforcement theory predicts an improvement in performance following positive feedback, Landy & Farr (1983) summarized the recipient's behavioural response to feedback as maintaining behaviour for which positive feedback was received and improving performance for which negative feedback was received. Much of the literature on staff appraisal supports this notion. However, staff appraisal interviews represent only one particular kind of feedback, usually involving a general review of several aspects of performance, at a time and place removed from the actual behaviour.

A number of studies have examined the effect of negative feedback on various outcome measures. Negative feedback, indicating that performance is not meeting expectations is considered to be of value to individuals and motivate a change in behaviour. Studies using 360 degree feedback generally assert the beneficial effects of receiving low ratings. For example, Atwater et al (1995) and Reilly et al (1996) found that individuals receiving negative feedback improved their performance more than those receiving positive feedback. However, in a meta-analysis of the effects of negative feedback, Kluger and DeNisi (1996) found that the effects of feedback were variable and in one-third of cases feedback had a negative result. Steelman and Rutkowsky (2004) showed that the negative effect of unfavourable feedback was moderated by factors such as the credibility of the source and whether the feedback was delivered in a considerate manner.

The present study does not examine the effect of the sign of the feedback (positive or negative) on the recipient but seeks to support the findings of Steelman and Rutkowsky (2004) relating to the manner in which the feedback is delivered. Thus, the present study examines the effect of how negative feedback is communicated. All participants in the study received negative feedback, in the sense that they were told that their performance was below average. However, half of the participants were given the information in a way that was supportive and encouraged them to try harder. The other half were given feedback suggesting they just weren't up to the task.

A number of studies have examined the effect of different kinds of support on task performance. Some have suggested that informational support is most useful for improving performance (e.g. Caplan, 1974) whilst others (e.g. Cobb, 1976) have argued that emotional support in the form of respect, appreciation and love are more important.

Tardy (1992) gave participants one of three types of support before beginning an anagram task: instrumental support (encouraging them to seek practical assistance), emotional support (designed to improve self-worth) and a message with no supportive content. Tardy (1992) found that those who received instrumental support improved their performance. This suggests that practical, task-related advice

is most beneficial. However, not all studies support the beneficial effects of social support on task performance. Some studies have found that social support does not lead to improved performance (e.g. Searle, Bright, and Bochner, 1999, 2001).

Tardy (1992) and Searle, Bright and Bochner (2001) found that higher levels of informational support led to stronger perceptions of emotional support. It seems therefore, that both informational and emotional support will be perceived as emotional support. In order to examine the effects of support the present study therefore uses a mixture of informational and emotional elements in the supportive feedback given to participants. It is expected that negative feedback given in a supportive way will lead to greater improvement in performance than negative feedback given without support.

Task difficulty

Previous studies suggest that task difficulty affects a number of outcomes. Cohen and Willis (1985) suggested that social support acts as a buffer, reducing strain only in difficult working conditions. Parkes, Styles, and Broadbent (1990) found that participants worked best under self-paced conditions than under either fast or slow machine-paced conditions and Jimmieson and Terry (1998) found that participants whose task demands were high gave more negative ratings of their performance.

In the present study task demand was manipulated by increasing the rate at which participants had to deal with the tasks and by increasing the memory load in the high task difficulty condition. Following Cohen and Willis' (1985) suggestion that support acts as a buffer only in difficult working conditions, in this study it is expected that there will be an interaction between task difficulty and feedback such that supportive positive feedback is more effective in improving performance only in the high strain condition.

Anxiety

Rocklin and Thompson (1985) examined the effects of test difficulty, feedback and anxiety on test performance. They found, not surprisingly, that performance was improved by the provision of item-by-item feedback. Rocklin and

Thompson also found that the least anxious students did best on a very hard test, whereas the most anxious students did poorly on both easy and difficult tests.

There is a sound theoretical basis for the proposition that self-esteem serves an anxiety buffering function (see Solomon, Greenberg, & Pyszczynski, 1991). The relationship between self-esteem and anxiety has its roots in early childhood. The child's main source of love and protection is the parents. As the child develops, the provision of love and protection becomes increasingly contingent on meeting the parent's expectations of standards of good behaviour. As these values become internalised, the relationship between virtuous behaviour (providing self-esteem) and feelings of safety and security becomes established. This relationship is reinforced by both the reactions of other people and cultural myths about how the good are rewarded and the evil punished.

There is also sufficient correlational and experimental evidence to support the link between self-esteem and anxiety (e.g. Hobfol & Leiberman, 1987). There is also evidence to show that anxiety increases when self-esteem is threatened (e.g. Burish & Houston, 1979). Greenberg et al. (1992) tested the anxiety buffering effect of self-esteem in a series of experiments where participants were given false feedback on a bogus personality test. They found that participants given neutral feedback experienced increased anxiety in the face of threat. However, participants given positive feedback to increase their self-esteem did not experience an increase in anxiety following exposure to threat.

Following Greenberg et al.'s (1992) findings it is expected, in the present study, that supportive feedback will lead to increased self-belief in the form of self-efficacy. Thus, it is expected that self-efficacy will be increased in the supportive feedback conditions. This improved self-efficacy should also give rise to lower anxiety levels for participants in the supportive feedback conditions. Previous studies have used both physiological and questionnaire measurements to assess anxiety. The present study uses both questionnaire and blood pressure measures to assess temporary or 'state' anxiety.

Task satisfaction

Satisfaction with one's work is taken to be indicative of mental well being. Locke (1976) defined job satisfaction as a 'pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences'. Measures of job satisfaction usually include attitudes to a wide range of job elements including working conditions, pay, bosses, and career prospects. However, attitudes towards intrinsic aspects of the work (such as task satisfaction) are an important element of measures of job satisfaction such as the Job Description Index (Smith, Kendall, & Hulin, 1969), the Job Satisfaction Scales (Warr, Cook, & Wall, 1979), and the job satisfaction scale of the Occupational Stress Indicator (Cooper, Sloan, & Williams, 1987).

Hackman and Oldham (1976) defined the core job characteristics that affect job satisfaction as skill variety, task identity, task significance, autonomy, and feedback. Hackman and Oldham defined feedback as the extent to which there is correct and precise information about how effectively a worker is performing. Perceptions of the fairness of performance feedback also affect attributions relating to the source of the feedback and the organisation as a whole (Leung et al, 2001). In the present study it is predicted that supportive (negative) feedback, whether accurate/fair or not, will lead to greater satisfaction.

Self-efficacy

Bandura (1977) proposed that belief in one's ability to perform a specific task is a major factor in successful task performance. This belief is considered by a number of motivational theories to be central in the activation and direction of behaviour. This concept is labelled as expectancy beliefs in expectancy theory (Mitchell, 1974; Porter & Lawler, 1968), as the need for competence (White, 1959), and as personal efficacy (Bandura, 1977). It is expected, therefore, that in the present study, expectancy beliefs will be positively related to performance. However, Judge et al. (2007) in a meta analysis of studies examining the effect of self-efficacy on performance found that the contribution of self-efficacy is relatively small when other personality factors were controlled for.

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White (1959) proposed that people are motivated to achieve some sense of mastery over their environment. Feedback information is essential to this sense of mastery. The desire to respond to feedback is influenced by the same message characteristics as those identified as influencing the perception of feedback: timing, frequency and the sign of the feedback message. Feedback may strengthen a person's belief about their ability to perform a task successfully. In the present study it can be expected that those who receive supportive feedback will have higher efficacy beliefs than those who receive unsupportive feedback.

Personality

Costa and McCrae (1980) and Diener, Sandvik, Pavot and Fujita (1992) have found that positive emotionality (a predisposition to have frequent positive emotional experiences) relates closely to extraversion. In the present study this implies a possible linke between extraversion and self-efficacy and task satisfaction, such that extraversion scores are likely to correlate positively with self-efficacy and task satisfaction scores. Neuroticism, on the other hand, has been linked with negative emotionality (Costa & McCrae, 1980) and with the experimental manipulation of anxiety (Larsen & Ketelaar, 1991). In the present study, therefore, a positive relationship is predicted between neuroticism and anxiety. A negative relationship between neuroticism and self-efficacy and between neuroticism and task satisfaction is also predicted.

The research question

The research question addressed in this experiment is can the wording of a performance feedback message affect the subsequent task performance and task satisfaction of the message recipient? If so, what factors (such as task difficulty and personality) are likely to affect the relationship between the message characteristics and subsequent task performance/satisfaction.

7.2 Method

Design

A 2 x 2 factorial design was used. The two levels of feedback were 'unsupportive negative' and 'supportive negative'. The two levels of task difficulty were 'high' and 'low'. Levels of feedback and task difficulty were manipulated by the experimenter

and participants were randomly allocated to either unsupportive or supportive feedback and to high or low task difficulty. Feedback and task difficulty were therefore independent variables. The effects on the dependent variables of task performance, self-efficacy, anxiety, physiological reaction, and task satisfaction were measured. The personality variables of neuroticism and extraversion were also measured

The measures

   Feedback. In order to standardise the delivery of the feedback, participants heard one of two tape-recorded messages in the voice of the experimenter. Participants in both conditions were told that their score was below average (negative feedback). Half of the participants were given the feedback in a supportive way and half in an unsupportive way.

The unsupportive negative feedback message was

   " I'm not sure you've quite got the hang of this sort of task. I am afraid your work is falling behind the average for this task. You have scored 128 out of a possible 300. The average score is around 140."

The supportive negative feedback message was:

   " Your performance is OK but I want you to really concentrate on the task and aim for a good score. You have scored 128 out of a possible 300. The average is around 140. (Here is a tip for the Stroop test – try looking at just the corner of the nearest letter and don't read the word.) I think you could do really well at this task. Stay relaxed and focused – you're doing really well."

   Task difficulty. A computer software programme 'Defined Intensity Stress Simulator' (DISS) was used. The programme presents the participant with four tasks that appear on the screen simultaneously. When a trial begins the computer screen is divided into four quadrants and one task appears in each quadrant. Participants must multitask between the four tasks and points are scored and recorded as they perform the tasks. The tasks are:

1. The 'Stroop test'. In this quadrant participants are presented with a colour word e.g. 'red' that is written in a different coloured ink e.g. green. Participants must select the ink colour that the colour-word is written in, to score points.

2. 'Memory search'. When this task begins participants are presented with a target letter. They are then presented with letter-strings of varying length depending on the strain option (see below). They must say whether or not the letter string contains the target letter.

3. 'Rising bars' is a vigilance task where coloured bars rise up the screen and participants have to click on the bars in the correct order as they reach the top of the screen. A warning sign alerts the player when the bars reach the top.

4. 'Digit tap'. Participants are presented with an array of single digits. They are instructed to click the computer mouse on each highest value digit on the display. For example, if the digits displayed were 1, 1, 2, 5, 5, 7, 7, the participant would click both of the sevens.

The DISS programme has a number of parameters that can be set beforehand. The programme has high, low, and moderate, strain options. In the high strain option, for example, the 'Stroop' test, rising bars and digit tap displays change quickly and in the memory search there are more letters in the letter-strings. In the low-strain option the displays change more slowly and there are fewer letters in the letter-strings of the memory search. The high strain option was used for the high task difficulty and the low strain for the low task difficulty.

The programme allows a choice of how long the tasks will run for, ranging from a minimum of 5 minutes to a maximum of 30 minutes. The programme also allows a practice trial of 2 minutes (no score is computed for the practice trial). The experimenter can also choose whether or not to display the running score on screen to the participant.

Task performance. The 'StressSim' programme records the participants score. Participants score points on the four tasks described above. Points are deducted for

wrong answers and it is therefore possible to get a negative score. The dependent variable is the difference between scores before and after feedback.

Task satisfaction was measured using a 7-item questionnaire developed by Jimmieson & Terry (1998). Each item uses a 5-point Likert-type scale. The items measure a participant's enjoyment of the task, their eagerness to perform such a task in the future, and their willingness to recommend the task to other people.

Self-efficacy. There are many ways to measure self-efficacy ranging from single item measures (e.g. Clement, 1987) to composite scores composed of multiple task elements (see Lee & Bobko, 1994 for a review). Bandura's theory (1977, 1982) defines efficacy expectation as the expectation that one can successfully perform a specific behaviour; hence the need for researchers to develop measures of self-efficacy relating to the specific behaviour of interest. Much has been made of the distinction between measures of efficacy strength and efficacy level. Efficacy strength refers to the degree of confidence in being able to perform a given task. Efficacy level refers to the expectation of being able to perform at a particular level. In the current study self-efficacy was measured by a single item: participants were asked to estimate the level of their performance on the second trial of a task. Although this is a measure of the expected level of performance, there is also an element of strength of expectation, since participants were asked to estimate their own level of performance (rather than a range of options presented by the experimenter).

State Anxiety was measured by both questionnaire and blood pressure measures. The State Trait Anxiety Inventory (STAI, Spielberger, 1983) was used. This is an 8 -item questionnaire using a 4-point scale with scores ranging from 8 to 32. The dependent variable is the difference between scores before and after feedback

Blood pressure was measured using an A&D UA-767PC automatic cuff inflation machine. The model is approved by the British Hypertension Society. Five readings were taken from each participant throughout the procedure. The measure used for the dependent variable was the difference between baseline blood pressure and the reading taken from the participant immediately after they received feedback

Extraversion and neuroticism were measured using the Eysenck Personality Inventory (EPI, Eysenck & Eysenck, 1975).

The facilities

The experiment was conducted using the University Psychology Lab observation facility. This allows the experimenter to be physically absent from the experimental room but to remain in visual and auditory contact with the participant via cameras, microphones and loudspeakers. This facility was used because of the need to use pre-recorded feedback. The two types of feedback were pre-recorded by the experimenter in order that participants in the same condition would receive the same stimulus. The feedback could then be played over the loudspeaker to the participant.

Procedure

The participant was seated in front of the computer monitor and the experimental procedure was explained to the participant. They were asked if they were happy with the procedure (informed consent) and told that they could withdraw at any point during the procedure. The procedure for measuring blood pressure was explained. The participant was shown the electronic blood pressure monitor and asked if they had had their blood pressure taken previously and whether they suffered from raised blood pressure. The blood pressure monitor cuff was then attached to the participants upper-arm and remained attached throughout the procedure. The first blood pressure reading was taken and noted. The four tasks of the DISS computer programme were then explained to the participant both verbally and using the on-screen instructions. When the participant indicated that they understood the instructions they were given a practice trial of 2 minutes duration in low-strain mode. A second blood pressure reading was taken and recorded and participants were asked to complete the state anxiety questionnaire.

The DISS programme was set for five-minutes duration, with the score concealed from the participant. The participant was instructed to "click start to begin". The experimenter then left the room and went to an adjacent observation room where the participant could be observed via video camera. The participant then performed the first five-minute trial, in either high or low strain mode, depending on which

condition they had been allocated to. Following completion of the task the participant was asked to press the 'start' button on the blood pressure monitor. This request was made via a microphone in the observation room and a loudspeaker in the lab. A third blood pressure reading was taken and recorded. Participants were then given either supportive or unfavourable feedback depending on the condition they had been allocated to. The feedback was in fact pre-recorded and delivered to the experimental room by loudspeaker.

Participants in all conditions were told they had achieved the same (fictitious) score and that the score was below the average. A fourth blood pressure reading was taken and recorded. The participant was then asked to complete the measure of self-efficacy and a second state anxiety questionnaire. The participant then completed the second five-minute trial and the final blood pressure measure was taken and recorded. The participant then completed the task satisfaction questionnaire. The purpose of the experiment was then explained to the participant and reassurance given that the feedback they received after the first five-minute trial was pre-recorded and was not their real score. Participants were given the opportunity to see their real scores on both trials.

7.3 Results

Table 7.1 shows the means and standard deviations for each of the dependent variables in all conditions of the two independent variables. The scores given for the variables of task performance, anxiety, and blood pressure, represent the differences between scores before and after feedback. Self-efficacy and task satisfaction were only measured once.

Variable	High task difficulty		Low task difficulty	
	Supportive Feedback (n = 13)	Unfavourable Feedback (n = 12)	Supportive Feedback (n = 12)	Unfavourable Feedback (n = 12)
Performance (difference)				
M	288.46	37.08	191.25	184.17
SD	276.55	320.95	134.08	102.31
Satisfaction				
M	30.08	26.50	29.17	26.92
SD	2.72	5.04	3.43	4.12
Systolic BP (difference)				
M	-3.62	-0.83	3.83	1.92
SD	7.85	8.09	22.56	5.60
Diastolic BP (difference)				
M	-2.39	1.33	1.33	3.00
SD	9.51	7.83	6.20	9.08
Anxiety (difference)				
M	0.46	1.00	0.67	0.17
SD	2.18	3.05	1.72	2.52
Efficacy				
M	147.62	140.08	139.08	141.75
SD	22.84	13.01	7.38	27.82

Table 7.1 Means and standard deviations for all conditions

Analysis

A two-way multivariate analysis of variance (MANOVA) was conducted to explore the effects of task difficulty and feedback on task performance, self-efficacy, task satisfaction, state anxiety and blood pressure. In the case of task performance, state anxiety, and blood pressure, measures were taken before and after feedback. The differences between the before and after feedback scores were used in the analysis.

The result of the multivariate test showed that the type of feedback (supportive or unsupportive) had a marginally significant ($F(6) = 1.713$, $p = .143$) effect. The effects of task difficulty ($F(6) = .532$, $p = .781$) and the interaction between task difficulty and type of feedback ($F(6) = .820$, $p = .561$), showed no overall significance. The effects of the two independent variables on each of the dependent variables are examined below in more detail:

Task performance. Hypothesis 1 stated that participants receiving supportive feedback following Trial 1 will show greater improvement in performance on Trial 2 than participants receiving unsupportive feedback. The results show that the effect of type of feedback on task performance was marginally significant ($F (1, 45) = 1.890$, $p = .055$, partial eta squared $= .080$). Participants receiving supportive feedback tended to perform better than participants receiving unsupportive feedback.

It was predicted that there will be an interaction between type of feedback and task difficulty, such that participants receiving supportive feedback in the high task difficulty condition will show a greater improvement in task performance than participants receiving supportive feedback in the low task difficulty condition. The multivariate analysis showed that the interaction between task difficulty and support was also marginally significant ($F(1,45) = 3.475$, $p = .069$, partial eta squared $= .072$).
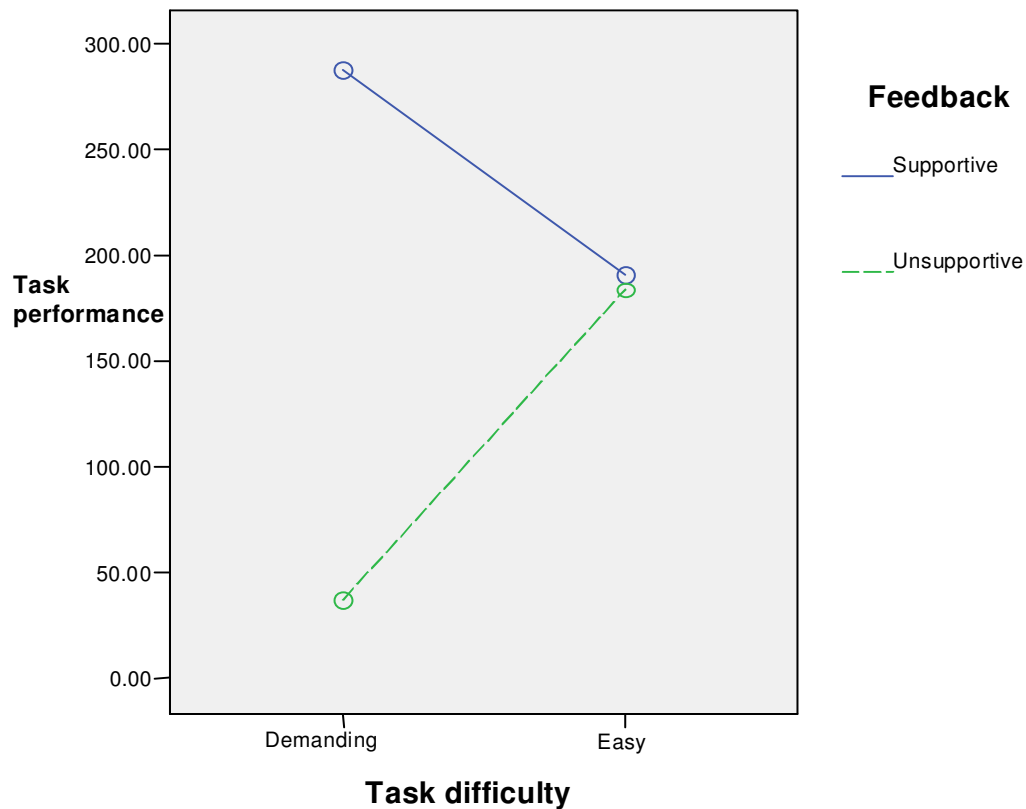
Figure 7.1 Interaction between type of feedback and task difficulty on task performance.

Figure 7.1 shows the interaction between feedback and task difficulty. There is hardly any difference in the mean performance scores in the supportive and unsupportive feedback conditions when the task is easy. However, under difficult task conditions the performance means diverge in opposite directions. When participants received supportive feedback, task performance is higher when the task is more difficult. When participants received unsupportive feedback task performance is lower when the task is more difficult. The difference between the means of performance (for supportive and unsupportive feedback in the demanding task condition) is statistically significant ($t (23) = 2.103$, $p = .047$).

Task satisfaction. Participants receiving supportive feedback should score higher on a measure of task satisfaction than participants receiving unsupportive

feedback. The results of the MANOVA supported this hypothesis. The results showed a significant effect of feedback across both high and low conditions of task difficulty $(F(1, 45) = 6.828, p = 0.012,$ partial eta squared $= 0.132)$. There was no significant interaction between task difficulty and type of feedback $(F(1, 45) = .354, p = .555)$.

Self-efficacy. Participants receiving supportive feedback should score higher on self-efficacy than participants receiving unsupportive feedback. There were no significant effects of task difficulty $(F(1, 45) = .377, p = .543)$ or feedback $(F(1, 45) = .189, p = .666)$ on self-efficacy. The interaction between feedback and task difficulty was not significant $(F (1, 45) = .831, p = .367)$ although, as Figure 2 shows, participants receiving supportive feedback in the high task difficulty condition did score higher than participants receiving unsupportive feedback.
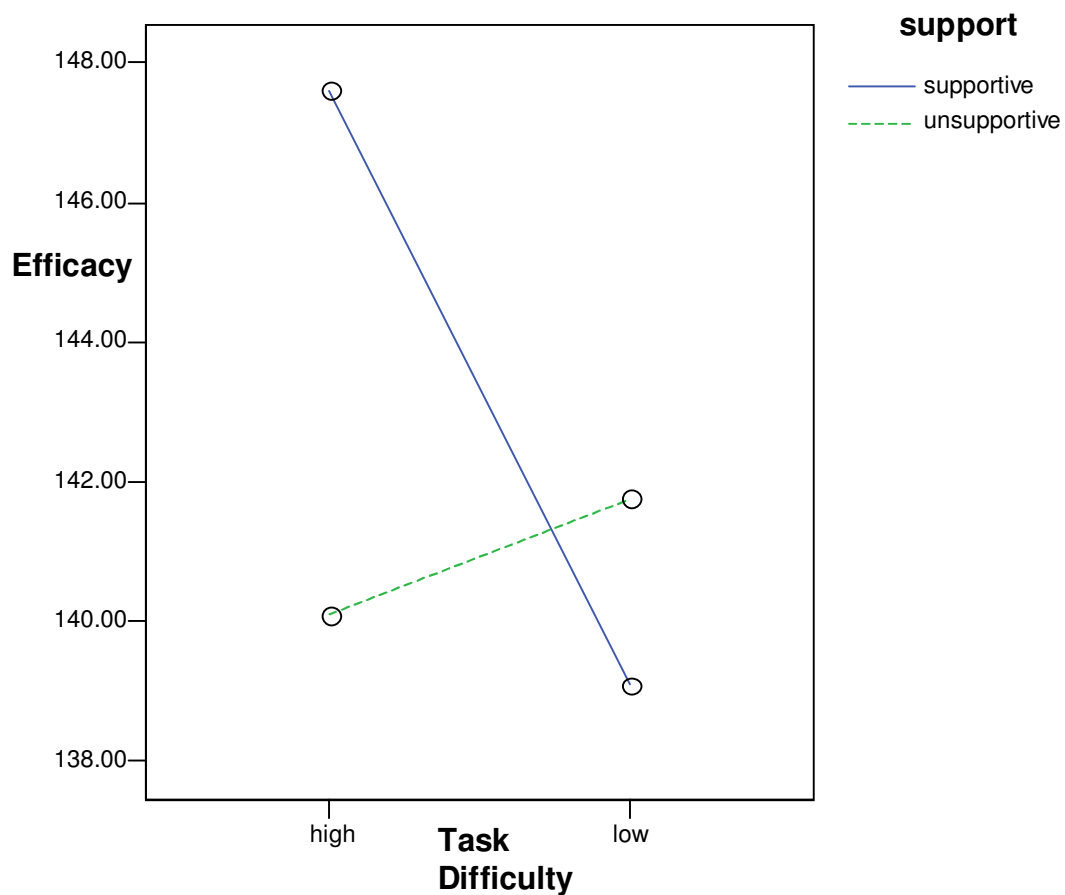
Figure 7.2. The interaction of task difficulty and feedback on self-efficacy

Anxiety. Participants receiving supportive feedback should experience less anxiety than participants receiving unsupportive feedback. Table 5.1 shows that the means for anxiety are in the predicted direction i.e. lower in the supportive feedback condition. However, there were no significant main or interaction effects of feedback or task difficulty on state anxiety.

Participants receiving unsupportive feedback should show a greater physiological reaction (measured by blood pressure) than participants receiving

supportive feedback. However, there were no significant main or interaction effects of feedback and task difficulty on systolic and diastolic blood pressure.

Correlations

	Task satisfaction	Task performance	Systolic BP	Diastolic BP	State anxiety	Extraversion	Neuroticism
Efficacy	.158	.214	-.151	-.016	.168	.092	-.252
Satisfaction		.226	-.264(*)	-.173	-.204	.102	-.192
Task performance			-.215	-.144	.159	-.057	-.267
Systolic BP				.355(**)	-.012	.029	.212
Diastolic BP					-.045	.049	-.015
Anxiety						.181	.042
Extraversion							-.380(*)

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Table 7-2 Intercorrelations between the continuous variables (N = 49)

Table 7.2 shows the correlations amongst the continuous variables. A number of observations can be made about these correlations. First, improvement in task performance is positively related to task satisfaction (r = .226) and self-efficacy (r = .214), and negatively related to neuroticism (-.267) and changes in systolic (r = -.215) and diastolic (r = -.144) blood pressure. Task satisfaction is also positively related to self-efficacy (r = .158), and negatively related to neuroticism (r = -.192) and changes in systolic (r = -.264) and diastolic (r = -.173) blood pressure.

Table 7-2 shows a negative correlation between self-efficacy and physiological reaction and a positive relationship between self-efficacy beliefs and subsequent task performance (r = .214). Interestingly efficacy is only weakly related to performance on trial 1 (r = .141, p = .167).

In order to examine the extent to which the outcome variables of task performance and task satisfaction could be predicted, a standard multiple regression

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was carried out using changes in blood pressure and anxiety, the personality measure of extraversion and neuroticism, and self-efficacy, as the predictor variables.

Variable	B	SE B	Beta
Self efficacy	1.74	1.10	1.57
Extraversion	-4.81	4.95	-0.97
Neuroticism	-5.44	4.01	-1.36
Changes in Systolic BP	-2.47	3.21	-0.77
Changes in Diastolic BP	-3.46	2.49	-1.39
Changes in anxiety	3.71	9.85	.38

Table 7-3 Standard multiple regression analysis for variables related to increase in task performance

The model did not predict a significant amount of the variation of the increase in task performance scores (R square = .262, adjusted R square = .115, $F(36) = 1.778$, p = .138). None of the variables in Table 7.2 make a significant contribution to predicting changes in task performance.

Variable	B	SE B	Beta
Self efficacy	.028	.028	.143
extraversion	.156	.127	.191
Neuroticism	-.013	.103	-.021
Changes in systolic BP	-.116	.083	-.213
Changes in diastolic BP	-.114	.064	-.260
Changes in anxiety	-.882	.254	-.503*

* P = .002

Table 7-4 . Standard Multiple Regression analysis for variables related to task satisfaction.

The model significantly predicted task satisfaction scores (R square = .416, adjusted R square = .299, F(36) = 3.559, p = .009). Table 7-4 shows that changes in scores for state anxiety made a statistically significant contribution to the variation in scores on a measure of task satisfaction. The relationship between the two variables suggests that as anxiety increases, task satisfaction decreases. Changes in blood pressure were marginally significant in predicting task satisfaction (p = .08) in a similar pattern to anxiety: as blood pressure increases, task satisfaction decreases.

7.4 Discussion

The most important finding of this experiment is that the supportiveness of the feedback a person receives about their performance on a task can affect their subsequent task performance. When participants were given encouraging feedback on their performance, their subsequent performance was significantly better than participants given unsupportive feedback. This is despite the fact that all participants were given negative feedback i.e. they were all told that their performance had been below average. This finding challenges the assertion by Illgen, Fisher, and Taylor (1979) that the most important feature of feedback is the sign (positive or negative) of the feedback. The result also challenges a number of studies that have found no effect of social support on task performance (e.g. Searle, Bright, and Bochner, 1999, 2001).

Furthermore, the results show that the high task difficulty/supportive feedback condition produced the greatest improvement in performance. This indicates that the

greatest improvements in performance are to be achieved when an individual is performing a difficult and challenging task and is given encouraging, helpful feedback. Unhelpful, negative feedback, whilst performing a difficult and challenging task, produced the worst task performance results. This finding supports the suggestion by Cohen, and Willis (1985) that social support (in the form of supportive performance feedback) acts as a buffer, improving performance mainly in difficult working conditions.

The findings of the present study may help to explain the contradictory findings regarding the effects of positive and negative feedback in relation to subsequent performance. For example Atwater et al (1995) and Reilly et al (1996) found that negative feedback improved performance whilst Kluger and DeNisi (1996) found that the effects of feedback were variable and in one-third of cases feedback had a negative result. The findings of the present study support the recent finding by Steelman and Rutkowsky (2004) that, the negative effect of unfavourable feedback could be moderated by delivering the feedback in a considerate manner.

The finding that self-efficacy scores are related to task performance following feedback (but not before feedback) suggests that: a) the type of feedback received may influence efficacy beliefs, and b) efficacy beliefs lead to improved performance. Locke, Lee, and Bobko (1984) also found a powerful effect of self-efficacy on task performance. The findings of the present study also support Bandura's (1982) claim that self-efficacy is a key variable in performance.

Bandura (1982) also found that self-efficacy was related to future performance more strongly than it was related to past performance. The findings of the present study support this finding. There was no relationship between task performance on trial 1 and subsequent self-efficacy. However, in the present experiment all participants were given false feedback and told that their score was below average. This is likely to have reduced any effect that knowledge of results might have on self-efficacy.

Participant's level of anxiety was a significant predictor of performance following feedback. Elliman, Green, Rogers, and Finch (1997) found that

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performance decrement due to anxiety was linked to processing deficits in short-term memory. This explanation may well be relevant in the present study, as the tasks were very much a test of short-term memory.

Criticisms

The findings of this study must be interpreted in the light of several limitations. First, the sample consisted of University undergraduates and therefore the results may not be generalizable to other populations. In particular, the student population may be very different from the working population in terms of motivation to work at a task. There may also be important differences in the effects of feedback from a university tutor on a student in an experimental setting, to the effect of feedback from a work supervisor on an employee in a real work situation.

Second, it would be useful to know how the feedback was actually perceived by the recipient. For example, Greenberg et al. (1992) used a 15-item questionnaire on the accuracy, usefulness, quality, and liking for the feedback. A questionnaire of this nature could be used to assess the possible negative affect as a consequence of unsupportive feedback. Also, all participants received false, pre-recorded feedback and some participants may have been suspicious about the nature of the feedback.

Conclusions

This experiment has demonstrated the effect of a supportive versus an unsupportive feedback message on task performance and task satisfaction. This finding supports the findings of the previous two experiments, which demonstrated that the wording and style of a message could influence the physiological, affective and behavioural responses of the recipient. Taken together these findings present strong empirical evidence for supporting attempts to increasing awareness, especially amongst supervisors and managers, of the importance of managing communication with colleagues and subordinates. Although the experiments so far have used both verbal and electronic media to deliver the messages, so far no attempt has been made to compare the effects of the different message media. The next experiment will address the question of how the message medium might influence the recipient's perception of the message.

Chapter 8: Study 5

A comparison of the effects of feedback delivered verbally v feedback delivered electronically

8.1 Introduction

This experiment was designed to address the research question: how does the message medium impact on the recipient's reaction to the message? This experiment is an extension of study 4. In study 4 the feedback following the first trial on the stress-sim tasks was a pre-recorded message played over a loudspeaker. In the present study the feedback is given in written form on the computer. The purpose of this study was to find out whether presenting the feedback in this way would make a difference to the pattern of results found in study 4.

Electronic communication in the form of e-mails and text messages has become commonplace at work. All the evidence points to a continued increase in and reliance on electronic messages at work (APS, 2003). The convenience and speed of electronic messaging has made it the most popular form of business communication. There is also another, more subtle, aspect of electronic messaging that may be seen as an advantage by many people. In electronic messaging you do not have to talk to anybody. You can communicate with any number of people without actually speaking to, or seeing anyone. Electronic communication may therefore be particularly attractive to certain types of people and using electronic mail to deliver performance feedback (especially negative feedback) to employees may be particularly tempting.

In the present study personality was measured using Eysenck's extraversion and neuroticism scales (Eysenck & Eysenck, 1975). Introverts may be expected to react more positively to electronic feedback due to the reduced social contact of the electronic medium. Therefore, personality may play a greater role in performance following electronic feedback. However, there may be occasions when most people may be tempted to use a form of communication that does not require having to speak to, or see the other person. For example, having to tell somebody something they will

not want to hear, such as giving negative feedback about their performance. Such messages may be easier to deliver electronically.

Studies on the effects of computer monitoring of performance have shown a number of negative consequences relating to the effects of reduced social contact (e.g. Aiello, 1983). Sutherland and Cooper (2000) suggest that the observed higher incidence of stress-related illness associated with computer monitoring may be linked to the decrease in social support. Aiello (1983) found a number of symptoms of ill-health associated with the introduction of computer monitoring including feeling less satisfaction with their jobs. Chalykoff and Kopchan (1989) found computer aided monitoring to be directly related to job dissatisfaction. In the present study, where the feedback is delivered electronically, it might be expected that participants will be less satisfied with the task compared with the previous study.

8.2 Method

Design

The design was a replication of the previous experiment except that the stimulus material was delivered electronically. Therefore, a multifactorial (2 x 2 x 2) MANOVA design was used. The three independent variables manipulated by the experimenter were: type of support (unsupportive negative v supportive negative), task difficulty (high v low), and type of feedback (electronic v verbal). The effects on the dependent variables of task performance, self-efficacy, anxiety, blood pressure, and task satisfaction were measured.

The effects of personality (using measures on continuous variables of extraversion and neuroticism) were examined using regression analysis.

The measures

Support. The content and wording of the messages was the same as in the previous experiment:

The unsupportive negative feedback message was

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"I'm not sure you've quite got the hang of this sort of task. I am afraid your work is falling behind the average for this task. You have scored 128 out of a possible 300. The average score is around 140."

The supportive negative feedback message was:

" Your performance is OK but I want you to really concentrate on the task and aim for a good score. You have scored 128 out of a possible 300. The average is around 140. (Here is a tip for the Stroop test – try look at just the corner of the nearest letter and don't read the word.) I think you could really well at this task. Stay relaxed and focused – you're doing really well."   "

Type of feedback. In this experiment the participants received the (false) feedback in text form on the computer screen. A special software programme was designed to deliver the pre-written feedback automatically when the task had been completed. The programme allowed a ten-second delay between finishing the task and delivering the feedback. This was designed to make it look as though the computer was calculating the appropriate feedback. In the previous experiment, pre-recorded verbal feedback in the voice of the experimenter was delivered via loudspeakers.

Task difficulty. As in the previous experiment, a computer software programme 'Defined Intensity Stress Simulator' (DISS) was used. The programme presents the participant with four tasks that appear on the screen simultaneously. When a trial begins the computer screen is divided into four quadrants and one task appears in each quadrant. Participants must multitask between the four tasks and points are scored and recorded as they perform the tasks (see previous experiment for details of the tasks).

Personality. The personality dimensions of extraversion and neuroticism were measured using Eysenck's Personality Inventory (EPI, Eysenck & Eysenck, 1975).

The dependent variables
Changes in blood pressure, changes in anxiety, self-efficacy, changes in task performance, and task satisfaction were measured in the same way as in the previous experiment.

Procedure

Participants followed a similar procedure to the one used in the previous experiment. However, in this experiment, the feedback was delivered via the computer. Participants were told that the computer programme would calculate their score and automatically generate feedback after the first trial. They were told that the feedback would appear on the screen. Participants were given either supportive or unsupportive feedback depending on the condition to which they had been allocated. In this experiment the feedback was presented in text form. A computer programme automatically presented the feedback text on the screen, following a ten-second delay, after the participant had finished the first trial. Participants in all conditions were told they had achieved the same (fictitious) score and that the score was below the average (see '*Support*', above).

8.3 Results

Data from the previous experiment examining the effects of supportive v unsupportive feedback delivered verbally has been combined with the data from the current experiment (feedback delivered electronically). Table 8.1 shows the means and standard deviations for participants in each condition of the three independent variables (task difficulty, level of support, and type of feedback).

	High task difficulty				Low task difficulty			
	Supportive Feedback		Unsupportive Feedback		Supportive Feedback		Unsupportive Feedback	
	Verbal (n = 13)	Electronic (n = 9)	Verbal (n =12)	Electronic (n = 9)	Verbal (n = 12)	Electronic (n = 8)	Verbal (n = 12)	Electronic (n = 7)
Performance (difference)								
M	288.46	221.11	37.08	178.89	191.25	173.75	184.17	161.43
SD	276.55	119.76	320.95	168.91	134.08	129.33	102.31	154.83
Satisfaction								
M	30.08	30.00	26.5	27.33	29.17	27.38	26.92	24.86
SD	2.72	3.04	5.04	4.77	3.43	3.40	4.12	6.82
Efficacy								
M	147.62	153.22	140.08	139.00	139.08	151.63	141.75	155.14
SD	22.84	20.36	13.01	9.38	7.38	35.25	27.82	55.58
Anxiety (difference)								
M	0.46	1.56	1.00	0.89	0.67	0.13	0.17	1.00
SD	2.18	1.74	3.05	2.42	1.72	2.07	2.52	1.41
Systolic BP (difference)								
M	-.85	-3.33	-1.33	-7.56	-2.50	-4.00	4.50	0.00
SD	15.70	19.81	8.95	20.37	7.56	11.08	13.30	17.87
Diastolic BP (difference)								
M	-.62	.66	1.25	-1.56	-.25	-2.13	3.17	-3.57
SD	8.18	8.76	4.77	5.15	5.83	4.76	7.57	12.37

Table 8-1. Means and standard deviations for the effects of task difficulty, support, and type of feedback on the dependent variables.

Changes in task performance

The effect of type of support (supportive or unsupportive) on task performance was marginally significant overall (F (1), = 2.99, p = .088, partial eta squared = .039). There was also a marginally significant interaction effect between support and task difficulty (F (1) = 2.295, p = .134, partial eta squared = .030. Further analysis confirmed a stronger effect of type of support on task performance when task difficulty was high (F (1) = 3.672, p = .063, partial eta squared = .086). This confirms the pattern of results in the previous experiment.

Although the effect of type of feedback (electronic v verbal) was not statistically significant, an examination of the task performance (difference) means in Table 8.1 shows that task performance tended to increase more when feedback was given verbally rather than electronically. This was true in all conditions except the unsupportive/high task difficulty condition where unsupportive verbal feedback appeared to have a dramatic negative effect on performance. Possible explanations are examined in the Discussion section.

Task satisfaction

The strongest overall effect from the analysis was the effect of support on task satisfaction. Participants who were given supportively worded (negative) feedback on their task performance, scored significantly higher on a measure of task satisfaction than participants given negative feedback worded in an unsupportive way (F(1, 74) = 8.250, p = .005, partial eta squared = .100). This supports the findings of the previous experiment. As there are no interaction effects, this appears to be a robust finding i.e. independent of the difficulty of the task, or whether the feedback was delivered verbally or electronically.

Self-efficacy

The effect of type of support on self-efficacy was found to be almost significant in the high task difficulty condition (F(1, 39) = 3.974, p = .053, partial eta squared = .092). This confirms the pattern of results in the previous experiment and shows the importance of supportive feedback under difficult task conditions.

The effect of type of feedback (verbal v electronic) on self-efficacy appears to be very marginal (F(1,74) = 1.733, p = .192, partial eta squared = .023). Table 8.1 shows that participant's estimates of their future task performance tends to be higher following electronic feedback than verbal feedback (except in the high task difficulty/unsupportive condition).

Anxiety

Table 8.1 shows an increase in state anxiety following feedback in all conditions of the independent variables. However, there were no significant effects of the manipulations of the independent variables.

Blood pressure

Table 8.1 shows that diastolic blood pressure tended to increase less when feedback was given electronically than when give verbally. Although the overall effect did not reach statistical significance (F(1, 74) = 2.350, p = .130, partial eta squared = .031), it is notable that the effect was consistent across almost all conditions.

	Task satis-faction	Task perform ance	Systolic BP	Diastolic BP	State anxiety	Extra-version	Neuro-ticism
			Verbal feedback (n = 49)				
Efficacy	.158	.214	-.151	-.016	.168	.092	-.252
Satisfaction		.226	-.264(*)	-.173	-.204	.102	-.192
Task performance			-.215	-.144	.159	-.057	-.267
Systolic BP				.355(**)	-.012	.029	.212
Diastolic BP					-.045	.049	-.015
Anxiety						.181	.042
Extraversion							-.380(*)
			Electronic feedback (n = 33)				
Efficacy	.266	.272	.105	-.161	-.124	.063	.186
Satisfaction		.302(*)	.033	.229	.309(*)	.236	.025
Task performance			.001	.138	.100	-.031	.463(**)
Systolic BP				.186	.059	-.098	.160
Diastolic BP					.025	.172	-.081
Anxiety						-.161	-.176
Extraversion							-.099

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Table 8.2. Correlations amongst the continuous variables for verbal and electronic feedback.

Table 8.2 shows the correlations amongst the continuous variables for both types of feedback (verbal and electronic). The lower half of the table shows the correlations for the electronic feedback condition. Improvements in task performance were positively correlated with task satisfaction ($r = .302$) and self-efficacy ($r = .272$), as in the previous experiment using verbal feedback. However, unlike the previous experiment, improvements in performance for electronic feedback were positively and significantly related to neuroticism ($r = .463$), and also correlated with changes in systolic and diastolic blood pressure. Task satisfaction was positively and significantly related to increased anxiety ($r = .309$) and also correlated with diastolic blood pressure ($r = .229$), as well as extraversion ($r = .236$) in the electronic feedback condition.

Multiple regression
In order to examine the potential of various measures to predict the outcome measures of task performance and task satisfaction multiple regression analyses were carried out.

Variable	B	SE B	Beta
Self efficacy	1.16	0.77	.265
extraversion	-0.52	5.59	-0.02
Neuroticism	13.87	5.09	0.49*
Changes in Systolic BP	-1.51	2.25	-0.12
Changes in Diastolic BP	6.59	5.18	0.23
Changes in anxiety	13.30	11.30	0.21

*$p = .012$

Table 8.3 Standard multiple regression analysis for variables related to increase in task performance (electronic feedback, n = 33).

The model did not predict a significant amount of the variation of the increase in task performance scores (R square = .345, adjusted R square = .174, F(29) = 2.016, p = .105). However, Table 8.3 shows that within the model, the variable of neuroticism significantly predicted changes in task performance scores.

Variable	B	SE B	Beta
Self efficacy	0.05	0.03	0.33
extraversion	0.27	0.19	0.25
Neuroticism	0.11	0.17	0.11
Changes in Systolic BP	-0.08	0.08	-0.18
Changes in Diastolic BP	0.20	0.18	0.19
Changes in anxiety	1.00	0.39	0.26*

*p = .016

Table 8.4. Standard multiple regression analysis for variables related to task satisfaction (electronic feedback, n = 33).

The model did not predict a significant amount of the variation in task satisfaction scores (R square = .355, adjusted R square = .187, F(29) = 2.109, p = .091). However, Table 8.4 shows that changes in state anxiety significantly and positively predicted changes in task satisfaction.

	Task satisfaction	Task performance	Systolic BP	Diastolic BP	Anxiety	Extra version	Neuro ticism
Efficacy	.204(*)	.209(*)	.137	-.088	.028	.041	-.022
Task satisfaction		.235(*)	.152	.136	.010	.196	-.091
Task performance			-.096	-.009	.141	-.029	.035
Systolic BP				.252(*)	.036	-.017	.033
Diastolic BP					.247(*)	.274(*)	-.123
Anxiety						.044	-.046
Extraversion							-.264(*)

* Correlation is significant at the 0.05 level (1-tailed).

Table 8.5 Correlation coefficients amongst the dependent variables for combined (verbal and electronic) feedback (N = 82)

Variable	B	SE B	Beta
Self efficacy	1.70	0.65	0.33*
extraversion	-1.38	3.78	-0.05
Neuroticism	1.08	3.12	0.04
Changes in Systolic BP	-1.77	1.36	-0.17
Changes in Diastolic BP	0.67	2.48	0.04
Changes in anxiety	5.73	7.77	0.09

*p = .012

Table 8.6 Standard multiple regression analysis for variables related to increase in task performance (combined verbal and electronic feedback, N = 82)

The model did not predict a significant amount of the variation of the increase in task performance scores (R square = .116, adjusted R square = .027, F(66) = 1.311, p = .266). Table 8.6 shows that self-efficacy significantly and positively predicted changes in task performance.

Variable	B	SE B	Beta
Self efficacy	0.03	0.02	.018
extraversion	0.15	0.12	0.16
Neuroticism	-0.03	0.10	-0.04
Changes in Systolic BP	0.03	0.04	0.09
Changes in Diastolic BP	0.04	0.08	0.08
Changes in anxiety	-0.14	0.25	-0.07

Table 8-7. Standard multiple regression analysis for variables related to increase in task satisfaction (combined verbal and electronic feedback, N = 82)

The model did not predict a significant amount of the variation in task satisfaction (R square = .093, adjusted R square = .002, F(66) = 1.025, p = .418). Table 8.7 shows that none of the variables significantly predicted task satisfaction.

8.4 Discussion

The results of this experiment support the findings of the previous experiment: that supportive, critical performance feedback leads to a greater increase in task performance and greater task satisfaction than unsupportive, critical feedback. This

was found to be true even though all the feedback given was negative (all participants were told their performance was below average). An interesting feature of this study is that it shows that the effects of electronic feedback closely replicate those of verbal feedback: In both verbal and computer text forms, supportive, encouraging feedback combined with a challenging, complex task, led to higher task performance scores.

The most striking differences between the effects of feedback delivered verbally compared with feedback delivered electronically can be seen in Table 8.2 which shows the correlations amongst the continuous variables for both types of feedback. Of particular note are the correlations for the personality variable of neuroticism: Improvement in task performance, and self-efficacy scores, were negatively correlated with neuroticism when feedback was delivered verbally. This implies that when unsupportive feedback was delivered verbally, participants who scored high in neuroticism did not perform as well and had lower self-efficacy, than their less neurotic counterparts. However, it was found that when unsupportive feedback was delivered electronically (via a computer screen), participants who scored high in neuroticism tended to perform better and showed increased self-efficacy.

The implication of this finding is that personality (especially neuroticism) moderates the effect of the communication medium on both task performance and self-efficacy. Neurotic individuals appear to be more negatively affected by critical feedback delivered verbally and yet benefit from electronically mediated critical feedback. Further experimentation is needed to confirm this finding and to find out whether the effect is limited to just critical feedback or whether it applies to all types of feeback.

Table 8.2 also reveals similarly striking differences between verbal and electronic feedback in the relationships between task satisfaction and changes in state anxiety, and between task satisfaction and changes in diastolic blood pressure. When unsupportive feedback is deliverd verbally, the relationships are in the direction that one might expect i.e. greater task satisfaction is associated with lower anxiety and lower blood pressure. However, when feedback is delivered electronically, the

relationships are in the opposite direction: greater task satisfaction is associated with increased anxiety and increased blood pressure.

This finding may further reflect the role of dispositional factors in the impact of communications media. There is evidence, for example, that blood pressure variablility has a strong dispositional element (e.g. Frattola, Parati, Cuspidi, Albini & Mancia, 1993). Anxiety is also known primarily as a personality variable and despite the distinction between state and trait anxiety (STAI, Spielberger, 1983) it is highly likely that variability in anxiety reactions is, at least in part, a consequence of individual differences.

Conclusion

Taken together these findings indicate that dispositional factors may play an important role in the effectiveness of electronic communication. Anxious/neurotic individuals may benefit considerably when a critical or threatening message is delivered electronically rather than verbally.

Section 3 – General Discussion and conclusions

Chapter 9: The implications of the findings

The results of the five studies reported here demonstrate that the way that individuals communicate with each other in a working environment can have a potentially significant effect on individual health, productivity, attitudes, and behaviour. Most of the studies reported here (with the exception of study 1) represent a snapshot, at the micro level of the effects of communication. However, there is good evidence from other studies that the quality of communication between individuals in an organisation, has implications for the success or otherwise of that organisation. Furthermore, study 1 demonstrates the potential for changing communication style (and the associated outcomes) through training.

9.1 Theories and models

One of the most influential models of stress in the workplace is the demand-control-support model (Karasek, 1979; Johnson and Hall, 1988). The potential shortcomings of this model, in terms of a focus on the benefits of workplace communication as social support, were highlighted in the literature review (chapter 2). It is clear from the examination of interpersonal communication undertaken in this project that the demand-control-support model does not adequately model the range of effects of interpersonal relations at work. Good interpersonal relations can undoubtedly act in a number of ways to help people get through the stresses and strains of work. However, there is growing evidence of a need to further expand our understanding of the negative effects of social interactions at work. There is a need to develop theories and models that can incorporate the full range of interpersonal communications, from positive and supportive to negative and harmful, along with a wider range of associated outcomes.

There is undoubtedly a subjective element in how a particular communication will be perceived. The interactional approach to stress is a useful framework in this respect (see literature review, 2.3c). Within this approach to stress a distinction has been made (Folkman and Lazarus, 1988) between structural or moderator variables (pre-existing conditions such as status, personality, and gender) and mediating variables such as cognitive appraisal, generated during the encounter.

Any attempt to model the effects of communication must take this distinction into account. The stressor-emotion model of counterproductive work behaviour (Spector and Fox, 2005; see literature review Fig. 3.3) makes a distinction between the appraisal of stress during the stressful encounter and aspects of personality that may moderate the effect of the stressor on the outcome.

A number of factors may contribute to the perception of a communication as hostile or offensive. Misunderstandings and misinterpretations are common features of everyday life and most certainly play a part in perceptions of communication at work. There is a tendency, particularly on behalf of the message sender, to blame the message recipient for misinterpreting a message. However, the message sender must also share the blame for not fully communicating the intended meaning. A model of communication must include the sender as well as the recipient. In a dynamic conversation both communicators will be sender and recipient alternately.

The conceptual framework/model presented in Fig. 9.1 is an attempt to map the antecedents and consequences of hostile communication. The framework/model is based on previous work in areas such as communication studies (see McQuail and Windahl, 1981), workplace deviance (e.g. Judge, Scott, & Ilies 2006), and abusive supervision (e.g. Zellars, Tepper, & Duffy, 2002), as well as the findings from the five studies reported in this project. The term 'hostile communication' includes the full range of potentially harmful communications from incivility to emotional abuse and bullying (see literature review, section 3.3).

The elements of the framework/model and their supporting evidence are examined in the following sections. Although the model has been developed from the studies conducted and from the literature discussed in the present project, not all of the elements and relationships proposed in the model have been tested empirically. Suggestions for further research are discussed.
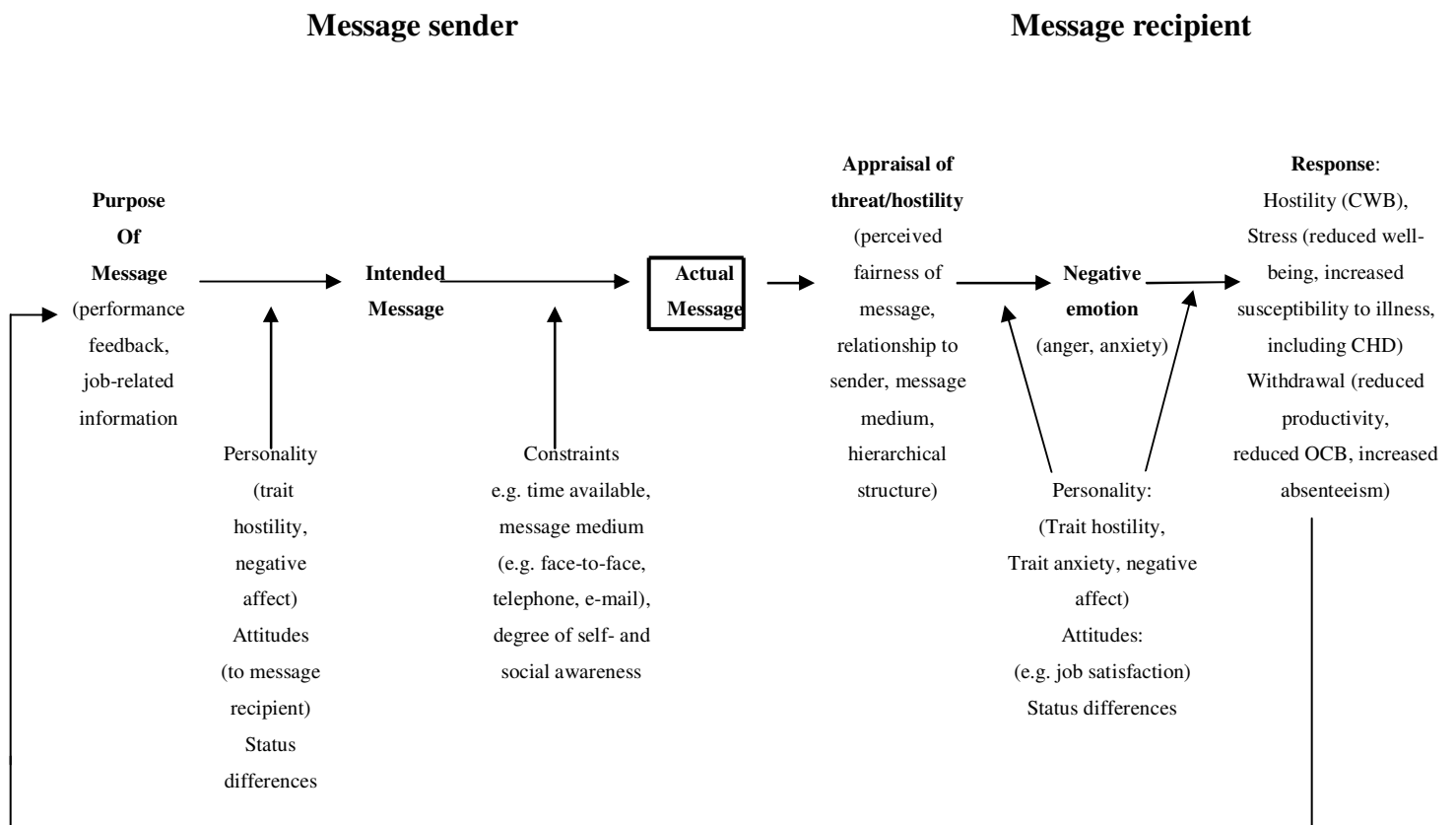
Message sender   **Message recipient**

Fig. 9-1. A conceptual framework/model of the antecedents and consequences of hostile communication

9.1a The message sender

The intended message

The model flows from left to right and begins with the construction of the message by the message sender. This process begins with the intention to send a message. The intended message is determined partly by the purpose of the message (e.g. to provide information to the recipient regarding their current level of performance). At this stage the style of the message may be shaped only in very vague terms, although the sender's attitude to the recipient may already contribute to the overall tone, structure, and choice of medium, of the intended message. The sender's attitude to the recipient will itself be shaped by a number of factors including the sender's personality, leadership style, and their relationship to the recipient, as well as the organisational structure and climate.

One question that needs to be addressed is why do people in organizations and even in their ever day lives communicate with each other in a way that is likely to be counter-productive and harmful. The predominance of this type of communication in organizations suggests that its use must confer some advantage on the user. One explanation is that an aggressive and threatening style conveys an impression of power. Ng and Bradac (1993) examined how people form impressions of communicator power. Their explanation can be traced back to the fundamental and ongoing distinction made in leadership research between socio-emotional and task orientated utterances (Bales, 1951). Ryan and Giles (1982) discussed the distinction between status and solidarity. Status relates to one's position in a hierarchy. This may be connected with wealth, physical strength, job title etc. Solidarity, on the other hand, refers to the degree of inclusion in a particular group. This may be a work group or a reference group such as 'mothers'.

Both status and solidarity are related to group dynamics. However, Ryan and Giles (1982) propose that these concepts also translate to the individual level, as competence (for status) and attractiveness (for solidarity). Thus, we may judge a communicator to be competent regardless of their position in the group or find them attractive regardless of whether they are a group member or not. Ng and Bradac (1993) suggest that when forming impressions of power we attend to issues of status, in group relations, and competence in individual situations. They further assert that

indicators of solidarity and attractiveness such as closeness, likeability and warmth are not associated with power by message recipients. It therefore follows that communicators seeking to assert their authority are unlikely to use speech that conveys warmth and likeability.

O'Barr (1982) recorded and transcribed many hours of courtroom speech. Examination of the transcripts revealed that communicators with low social power (uneducated, inexpert witnesses etc.) used a cluster of linguistic features such as hedges ("I *sort of* liked it") and intensifiers ("I *really* liked it"). These low-power forms of speech were avoided by people with high social power such as lawyers, judges and expert witnesses. As a consequence, the speech of the high power communicators tended to be more direct, fluent and terse.

Another important question relates to the emotions or affect associated with particular speech styles. Ng and Bradac (1993) suggest that speech styles such as loudness and rapid speech rate produce high arousal in the listener and that this leads to judgements of dynamism in the speaker. Although some speech acts may be emotionally neutral, Ng and Bradac claim that most are either positive or negative. For example, praise and compliments are affectively positive, directives (orders, demands, and requests) usually convey negative affect (Brown and Levinson, 1987; Fraser, 1980), and reproaches are also negative communicative acts (Cody and McLaughlin, 1985).

Studies 2 and 3 in this project incorporated such features as directives and reproaches in the messages. However, the increased arousal (measured by blood pressure), and the stronger affective and behavioural responses, were a consequence of differences in the wording and presentation of the message rather than the nature of the communicative act. This suggests that negative affect in the message recipient is not simply a consequence of *what* is being communicated but rather of *how* it is communicated.

It appears that the sorts of speech acts (directives and reproaches) and speech style (terse, direct) associated with power are the same features associated with increased blood pressure, increased negative affect and increased likelihood of a

negative response. It would appear that message recipients generally react negatively to attempts by communicators to exert power over them. This seems to be the case even in situations where the communicator does have legitimate power over the recipient such as in an organizational hierarchy.

This then begs the question of how is an organization to function effectively, in terms of productivity and the well being of its employees if the characteristics of communication associated with exerting power and influence are the same characteristics that produce negative affect and behaviour. There are a number of possible solutions to this problem including leadership style, organisational structure, empowerment, and communication skills training. In situations where people do suffer negative consequences as a result of attempts by others to exert power and influence, it may be that some form of support could be provided. For example, counselling, social support networks, stress reduction guidance, and exercise facilities.

Much of the 'New Leadership' research has focused on examining what leadership really means and on how good leadership is translated into increased productivity. Much of this research questions the traditional notion of a leader as someone who wields power over subordinate employees. A leadership style that has gained much attention and generated a great deal of research in recent times is transformational leadership. One of the key elements of transformational leadership concerns the development and implementation of a vision. Tichy and Devanna (1986) conducted a study using transcripts of interviews with the Chief Executive Officers of twelve corporations. Their analysis revealed that creating a vision was central to the process of transforming an organization.

However, the process of creating a vision in a large, mature organisation was not the same as that of a visionary entrepreneur creating a vision for a new company. Tichy and Devanna found that in a mature organisation the vision emerged over a longer period and was the product of a participative process. To be successful the vision must be developed with the help of key people both inside and outside the organization. Bennis and Nanus (1985) found a similar process in their study of leaders. They found that in order to develop a vision, leaders had to be attentive to

others, particularly people who advocated new viewpoints. They also found that the leader was rarely the person who thought of the vision. Rather, the leaders expertise was in articulating the vision in such a way as to be appealing, realistic, and attainable. Developing commitment to a vision requires sensitivity. A successful vision cannot be communicated by edict or coercion.

The constraints

The process of turning the intended message into the actual message that is sent is subject to a number of constraints including the time available to present the message, the sender's level of self- and social awareness and the chosen medium of communication. Some of these factors may interact with each other. For example, when a person with low self-awareness chooses to communicate using e-mail. According to the emotional intelligence literature (see literature review, 1.2c), lack of self-awareness by the sender (either of the effects of their communication or the reasons for their hostile communication) is a common cause of perceptions of hostility by the message recipient. The characteristics of e-mail (reduced social cues, reduced focus on the recipient) may then serve to exacerbate the senders' lack of awareness.

The effect of the communication medium on self-awareness has been discussed in the literature review (1.4e). Sproull and Kiesler (1986) maintain that the use of any communication medium will lead to reduced social cues compared with face-to-face communication. This implies that the use of any communication medium will reduce the message sender's awareness of the social context in which their message will be received. According to Sproull and Kiesler, a lack of social context cues leads the message sender to behave in a less inhibited way. Mediated communication reduces the information that the sender receives about the effect that the message is having on the recipient.

E-mail communication may be especially vulnerable to a lack of context. Characteristics of e-mail communication, such as the lack of 'presence' of the recipient and the potential time delay between sending a message and receiving a response, are thought to contribute to the lack of context. Because the message sender can spend as much time as they like constructing the message, the message sender's focus is likely to be on the message, rather than the recipient. Thus, communicating

via e-mail is likely to discourage awareness of the social context of the message. This means that the sender is likely to write in a less inhibited way, and be less likely to take the recipient's emotional reaction into account

9.1b The message recipient

The message recipient's perception of threat/hostility will depend on their appraisal of the message. This appraisal is likely to depend on a number of factors. Previous research on organizational justice (see literature review, 3.4) has contributed to our understanding of the importance of employee's perceptions of fairness. Appraisal of the message, in terms of interactional and interpersonal justice, is likely to be particularly important for perceptions of hostility and threat. A message perceived as unfair is likely to be seen as more threatening than one which is interpreted as harsh but fair. This was discussed briefly in relation to study 2 where message recipients received the threat of sanctions relating to actions that most were not guilty of. A proposed extension to this study would be to empirically examine the effect of the fairness of the threat.

Study 2 also demonstrated that the recipient's perception of threat is dependent on their relationship to the message sender. The recipient is likely to appraise the message as more threatening if the message was sent from someone in a position of power and authority over them. However, this effect may depend on the nature of the hierarchical structure in the organization. In organizations with a relatively 'flat' hierarchy (where most employees are of equal status) this effect may be reduced.

Studies have shown that participants in a meeting perceive the communication very differently. This is especially true when the meeting is between people of different status in the organizational hierarchy, such as a boss and a subordinate. Lawler, Porter, and Tenenbaum (1977) examined manager's evaluations of the contacts they had in the normal course of their work. They found that self-initiated communications and communications with superiors were evaluated more positively than contact initiated by others, or contact with subordinates. Lawler et al (1977) suggest that when talking with superiors, subordinates tend to over-interpret what is being said because they place too much emphasis on the meeting. This is likely to be

especially true if the subordinate initiated the meeting. On the other hand, the manager is likely to do the opposite, and attach much less significance to the meeting. In relation to the present project, Lawler et al's (1977) findings imply that communication from a superior is likely to be given greater importance by the recipient than by the sender. As the superior has control over rewards and punishments, it is likely that the subordinate will be particularly attuned to cues relating to praise or threat.

Social rank theory (Gilbert, 1992; Price, Sloman, Gardner, Gilbert, & Rohde, 1994) provides a framework for examining some of the issues raised in the present project relating to the effects of social hierarchies on behaviour. Social rank theorists have developed an explanation of social behaviour, by humans and other species, based on evolutionary selection pressures. Reproductively relevant resources are frequently in short supply and humans and other species are therefore required to compete for them. Consequently, social organization is often hierarchical, allowing higher-ranking individuals greater access to scarce resources.
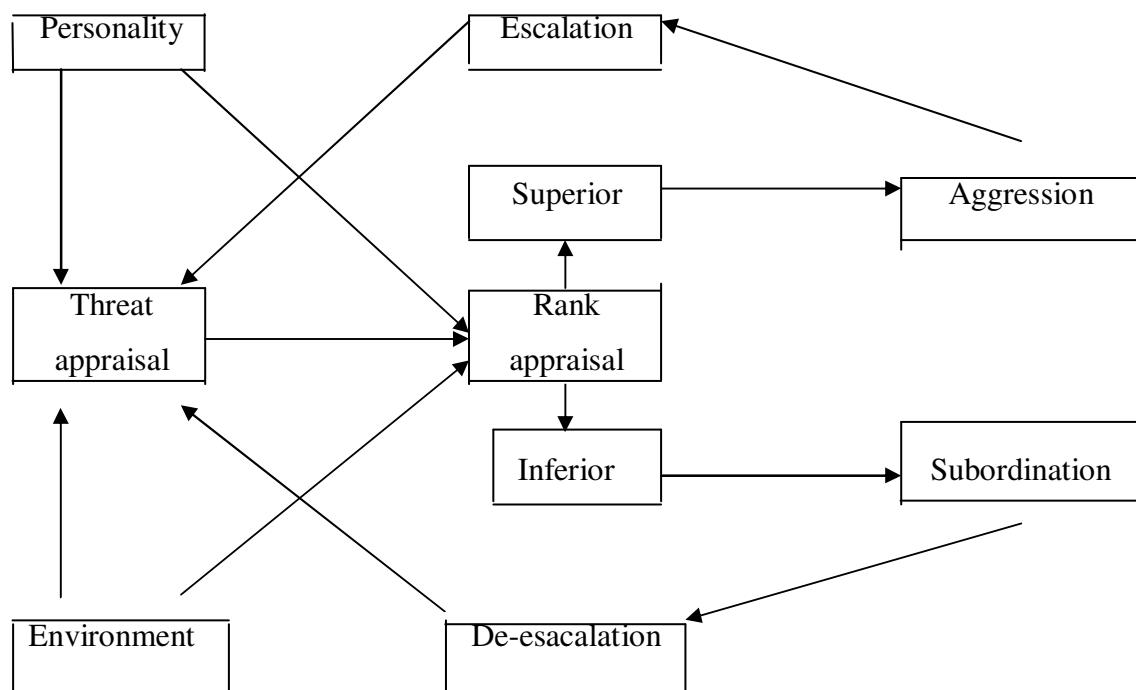

Figure 9.2. The social rank system (Fournier, Moskowitz, and Zuroff, 2002)

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Fournier, Moskowitz, and Zuroff (2002) examined social rank strategies in an organizational hierarchy. They suggested that the social rank system has three components: a threat appraisal component, a rank appraisal component, and a strategy selection component. The appraisal of threat and rank may be dependent on internal and/or external factors. Determination of threat may depend on objective aspects of the environment (e.g. the message) as well as the subjective insecurities of the person (personality). Similarly, appraisal of rank may be guided by external cues, such as position in the organizational hierarchy, but may also be affected by personality (dominant-subordinate), especially in less structured situations.

According to the social rank system, appraisal of a threat will lead to different behavioural strategies, depending on perceived rank. If the person perceiving the threat ranks themselves higher than their competitor, a display of aggression is likely. The purpose of which is to signal a readiness to escalate the competition. If the person perceives a threat and ranks themselves inferior to their competitor, they will tend to behave in a submissive manner and attempt to repair the cooperative alliance. However, the assumption that low-ranking individuals will behave in a conciliatory way towards a hostile superior is not supported by organizational studies on the longer term effects of hostile supervision. The evidence suggests that recipients of hostile supervision will behave in ways that are likely to undermine long-term organisational effectiveness. These behaviours have been classed as workplace deviance (Judge, Scott, & Ilies, 2006), and counter-productive work behaviour (Spector and Fox, 2005) and include aggression, theft, sabotage, absenteeism, and lower productivity.

Study 5 compared the effects of verbal and electronic forms of performance feedback. The results of this study showed that blood pressure following destructive criticism was lower when the criticism was delivered electronically than when delivered verbally. This was especially true in the low strain condition. This implies that the reduced social cues and reduced social presence of e-mail communication, compared with verbal communication, reduce the emotional impact of destructive criticism, especially when the stakes are not high (low strain).

Based on the findings of study 5, it might be tempting to conclude that it is better to communicate bad news electronically than face-to-face. However, any possible advantage of electronic communication on the immediate emotional reaction of the recipient must be weighed against the potential disadvantages of e-mail (misinterpretation of the message, reduced inhibition in the sender etc.), and the potential longer-term effects (reduced job satisfaction, increased feelings of alienation etc.). Based on the finding however, it would appear that any negative effects of the electronic medium are more likely to be a consequence of its influence on the sender (e.g. reduced social cues leading to disinhibition). Further research is needed to clarify the findings of study 5. Such research would need to examine the circumstances under which e-mail may be the most appropriate medium of communication.

The message recipient section of the model is based, in part, on Spector and Fox's (2005) stressor-emotion model of counterproductive work behaviour (see literature review, fig.3.3). As in the Spector and Fox model, the arrows indicate the general flow of causality to be from left to right. However, as Spector and Fox also point out, this does not represent the only possible direction of causality. It is possible, for example, that negative emotions may be caused by a number of other factors, and that a negative emotional state may influence the recipient's appraisal of the message and their perception of threat/hostility.

The findings from studies 2 and 3, in this project, support the view that perceptions of threat/hostility lead to negative emotions. The studies showed that the more threateningly worded messages produced greater increases in blood pressure and greater emotional responses. Fox, Spector, and Miles (2001) found that conflicts with others and interpersonal constraints were related to a composite measure of negative emotions. However, it may be useful in future research to examine the effects of perceptions of hostile communication using established, specific measures of affect.

9.1c Dispositional factors

Negative affectivity

Strong evidence exists to support the view that perceptions of environmental conditions impact directly on work attitudes. Many studies in the area of procedural justice, for example, have shown that the more people perceive their workplace to be

fair, the more satisfied they are with their jobs (Alexander and Ruderman, 1987; Folger and Konovsky, 1989; Kidwell and Bennett, 1994; Masterson, Lewis, Goldman, and Taylor, 2000). However, research (e.g. Staw, Bell, and Clausen, 1986) shows that dispositional factors are also an important influence on work attitudes. For example, it has been shown that the personality trait of negative affectivity (Watson and Clark, 1984) is related to job satisfaction (Watson and Slack, 1993). Connolly and Viswesvaran (2000) conducted a met-analytic study and found a mean correlation between negative affectivity and job satisfaction of -.33 across 27 studies.

Watson and Clark defined negative affectivity (NA) as a predisposition to experience aversive emotional states. Irving, Coleman, and Bobocel (2005) found that employee's job satisfaction was jointly predicted by their personality (negative affectivity) and by situational factors (perceptions of procedural justice). They also showed that NA moderated the effect of procedural justice on job satisfaction such that the relation between justice perceptions and job satisfaction was weaker for those high in NA than for those low in NA.

Because high NA individuals tend to focus more on negative cues in their environment, it is also possible that high NA individuals would be more likely to interpret ambiguous messages as negative or hostile. Further research is necessary to determine whether high NA individuals are more susceptible to a negative interpretation of ambiguous e-mail messages. It may be that clarity is even more important for some individuals than others.

In the present project positive and negative affectivity were assessed in studies 4 and 5 using the more general measures of extraversion and neuroticism. Although some effects of these personality traits were found, it may be more appropriate in future research to use more specific measures. This may be particularly important for negative affectivity because the link between neuroticism and NA is weaker than the link between extraversion and positive affect.

Trait hostility (see Guyll & Contrada and Vranceanu et al for refs)

The term hostility is usually used in a generic sense to cover emotional (e.g. anger), cognitive (e.g. trait hostility), and behavioural (e.g. aggression) components

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(Smith, Ruiz, and Uchino, 2004). Trait hostility represents a set of beliefs that others are a source of frustration and aggression (Smith, 1992, Smith, Fernengel, Holcroft, Gerald, & Marien, 1994). Buss and Perry (1992) observed that individuals high in trait hostility tend to be cynical, mistrustful, and suspicious, and that they often experience bitterness and resentment.

There is now considerable evidence to support the case for hostility as a risk factor in coronary heart disease (Barefoot, Dahlstrom, and Williams, 1983; Dembroski & Williams, 1989; Mathews, 1988). Early studies of the relationship between personality and coronary heart disease (CHD) had focused on the Type A behaviour pattern. Although these studies showed a positive relationship between Type A and CHD, subsequent studies began to cast doubt on the relationship. Further studies revealed that it was the hostility component of the Type A pattern that appeared to pose a serious threat to health (Helmers, Posluszny, and Krantz, 1994).

The psychophysiological reactivity account of the hostility-CHD relationship has received considerable attention. According to this model, individuals high on hostility experience anger more often and more intensely than others. Such experiences activate the sympathetic-adrenomedullary (SAM) system. It is suspected that it is this more frequent and more intense activation of the SAM system that leads to artery disease and eventually to CHD (Kamarck & Jennings, 1991).

A number of laboratory studies have found that hostility scores predict cardiovascular reactivity, especially in response to interpersonal stressors (Powch & Houston, 1996; Smith & Allred, 1989; Suarez & Williams, 1989). Guyll and Contrada (1998) carried out a naturalistic study of the relationship between trait hostility and response to social interaction using ambulatory blood pressure measurement. Guyll and Contrada found that individuals with high hostility scores showed greater blood pressure reactivity during social encounters. This was particularly true for men.

Smith (1992) proposed the psychosocial vulnerability hypothesis in an attempt to explain the relationship between high levels of hostility, increased reactivity to social encounters, and increased susceptibility to ill health. The psychosocial vulnerability hypothesis posits that hostility affects health indirectly by increasing

interpersonal conflict and social stress, and decreasing social support (Gallo & Smith, 1999; O'Neil & Emery, 2002). Hostile individuals have been shown to exhibit patterns of social interaction characterised by antagonism and aggressive actions (Gallo & Smith, 1998). Such behaviours are likely to be reciprocated, leading to the escalation of interpersonal conflict. Studies of conflict in close interpersonal relationships support this hypothesis (Miller, Smith, Turner, Guijarro, & Hallet, 1996; Newton & Kiecolt-Glaser, 1995).

It is also likely that individuals high in hostility have a cognitive bias in the processing of social information (Alfred & Smith, 1991). They are more likely to attend to and process negative information about others. Studies of behavioural aggression support the existence of a negative social information processing bias. These studies have shown that aggressive individuals tend to make hostile attributions of other's behaviour (e.g. Dodge et al., 2003).

The research findings on the processing of ambiguous social stimuli are of particular relevance to the study of communication. This may be especially true for electronically mediated communication where ambiguity is less easily resolved (due to reduced social cues and reduced opportunity for immediate clarification). A number of studies have used video recordings of ambiguous stimuli to demonstrate that aggressive individuals are more likely to interpret behaviour as hostile (Dodge, Petit, McClasky, & Brown, 1986).

In a model proposed by Judge, Scott and Ilies (2006), the authors examined the link between perceptions of interpersonal justice and workplace deviance (Fig. 9.3). The model incorporates cognitive (perceptions of justice), affective (state hostility), and attitudinal (job satisfaction) elements as well as a dispositional (trait hostility) element.

Interpersonal justice

Trait hostility

Job satisfaction

Workplace deviance
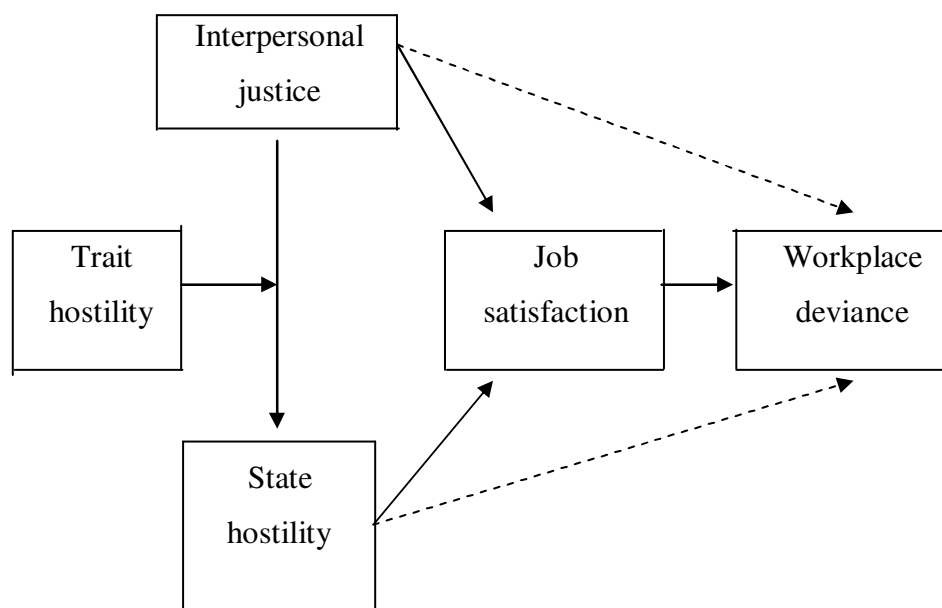
State hostility

Figure 9-3 Conceptual model of the relations among interpersonal justice, hostility, job satisfaction, and workplace deviance.

Of particular importance here is the role of hostility in the link between perceptions of justice and workplace deviance. Interestingly, Judge et al. found that the link between justice perceptions and deviance was entirely mediated through state hostility and job satisfaction. In other words, the association between interpersonal justice and workplace deviance disappeared when state hostility and job satisfaction were controlled.

In this model state hostility represents the affective or emotional component linking justice perceptions to job satisfaction and deviant work behaviour. Judge et al found evidence that the relationship between justice perceptions and state hostility was moderated by trait hostility. In other words, individuals who scored high on trait hostility were more sensitive to justice violations. The interpersonal justice-state hostility relation was stronger for individuals high on trait hostility.

As in the case of negative affectivity, it could be argued that perceptions of threat in a message may arise as a consequence of stable individual differences i.e.

individuals high on trait hostility may be more likely to construe a message as threatening. However, in their study of justice perceptions Judge et al found no relationship between trait hostility and perceptions of interpersonal justice, or between negative affect and perceptions of interpersonal justice. Judge et al. conclude that perceptions of injustice were not confounded by individual differences.

Nevertheless, trait hostility is likely to be an important factor in the *genesis* of hostile communication. The message sender's intended message may partly reflect their underlying hostility. It is also possible that the characteristics of e-mail communication (reduced social cues, increased disinhibition) may compound the effect of trait hostility and lead to a greater likelihood of messages with high levels of hostility. Further research is necessary to examine the possibility that when individuals with a high level of hostility communicate electronically, they are more likely to send a hostile message than when communicating verbally

9.1d The outcomes

The potential consequences of the negative emotion experienced as a result of perceiving a message as threatening/hostile appear in the box at the right-hand end of the model. The stress potential of threatening communication is supported by the first three studies in this project. The first two studies used measures of blood pressure Study 2 also supports previous findings that hostility is a likely consequence of perceptions of threat/hostility. Studies 4 and 5 support the premise that destructive communication leads to reduced productivity.

Discussion of the model

As Bartlett (1998) has pointed out, research in the area of stress has tended to follow the general trends in the pattern of working life. For example, issues such as deteriorating industrial relations, and the decreasing power of trade unions dominated earlier decades. The current trends likely to shape the pattern of working life in the future have been identified by a number of writers as globalization, and information and knowledge-based economies. These developments point to an increased dependence on communication and cooperation

The common feature of all social support research has been the emphasis on the beneficial effects of the various kinds of interpersonal support. Whilst there is ample research to show that interpersonal relationships may have a detrimental effect as well as a beneficial effect, psychological models of stress have tended to focus on the beneficial effects of social support. The aim of this project and of the framework presented in figure 9.1 is to incorporate a broader view of the role of interpersonal relations in stress. In many jobs nowadays, the distinction between factors intrinsic to the job and social relations is very blurred and, in many jobs, social interaction and communication are an intrinsic part of the job.

The transactional approach to stress goes some way to capturing the complexity of the stress process. Rather than attempt to describe the key person and environmental variables prior to an interaction (e.g. gender, socio-economic status or personality traits), it is proposed that mediating variables arise during the stressful encounter. For example, Lazarus (1988) views appraisal as a transactional cognitive mediator because it is generated only when there is a danger to well-being.

However, it is possible that the transactional approach is not transactional enough. Lazarus' approach is based on a cognitive model. In order to understand interaction episodes it may be useful to take a more social constructionist view. As Bartlett (1998) has pointed out there is considerable confusion as to how the variables that have been found to influence the stress response exert their influence. They may be treated as direct, mediating or moderating. Interpersonal communication in the form of social support has been treated principally as a moderator according to Karasek's model. However, it seems the question of whether a variable is a moderator or has a direct influence is largely dependent on the model being used. When the environmental stimulus is another person, who is also interacting in a dynamic and ongoing way, the transactional process becomes even more complex. Consequently, any claims of linear causality in interpersonal relationships can only be transitory.

Gergen (1991) suggests that our very identity is dispersed amidst a variety of social relationships and cultural expectations. Gergen suggests a 'saturated' self, bombarded by communications. Modern technology (mobile phones, e-mail,

television, radio, film, newspapers) contributes to our immersion in the surrounding social world. Shotter (1993) speaks of 'joint action' to indicate how identities are produced in the course of an interaction. He describes identity as emergent, negotiated, and incomplete.

This social view of identity points to the self as being bound up in relationships with others. There is no separate inner or deeper self. Our identity is defined through the many, often transitory and disembodied, interactions we have. There are implications of this view of identity for our understanding of the rapid development of e-mail, internet, and text-messaging technologies and the widespread adoption of these technologies for interpersonal interactions. The liberating effect of being able to control and create an electronic identity can be very seductive.

9.2 The characteristics and consequences of e-mail communication

Following the literature review of the characteristics of e-mail communication (see literature review, 1.3e), the potential consequences of e-mail communication are discussed here in more detail. A model is proposed (Fig. 9.2) showing how the characteristics of e-mail may affect personal and organizational outcomes. Suggestions are made about the implications of the increased use of e-mail as well as strategies for overcoming some of the difficulties.

9.2a E-mail and interpersonal stress at work

E-mail may contribute to workplace stress in a number of different ways. The new technology has exacerbated some problems that already existed, such as work overload. However, some of the unique features of e-mail also influence communication in ways that may contribute in a new way to stress.

The explanation of work stress as a causal agent in physical and mental disorders is one that is not universally accepted by academics or managers. Kasl (1986) has been particularly critical of the literature on stress and has articulated the methodological criteria that must be satisfied in order to demonstrate a causal link. In his view much of the research falls short of this set of criteria. Ganster (1995) questions whether stress has really cost the economy billions of dollars but points out

that what is not in doubt is that the academic community continues to invest significantly in the study of stress.

However, what is also not in doubt is the escalation of compensation costs in the workplace. Berkowitz (1990) showed that compensation costs more than doubled in a five-year period. In more recent years many states in the USA have attempted to crack down on soaring compensation claims by legislative measures. However, the effect of these measures has been patchy with some states seeing dramatic reductions in claim costs whilst others see compensation costs continue to rise, despite the tightening legislation. Griffin (2004) reports that California's compensation costs have reached a crisis.

One of the contributory factors to the escalating costs has been the expanded definition of work-related injury. Key to this expanded definition has been the inclusion of occupational stress claims. In the UK, the Health and Safety Executive (HSE) is urging employers to take the issue of work-related stress seriously. In 2003, in a landmark case, the HSE issued its first 'enforcement notice' against an NHS hospital for failing to protect doctors and nurses from stress at work. The implication of this is that every hospital, school and business faces potential criminal prosecution unless they can show that they are tackling stress in the workplace.

The pressure on organizations to take responsibility for workplace stress and consequently the need for organizations to develop strategic policies to combat stress has never been more important. In a review of studies looking at the characteristics of companies with the highest number of compensation claims compared with those with the lowest number of claims, Moran, Wolff, & Green (1995) showed that the worst organizations had at least 10 times as many claims as the best in each industry. More importantly, they showed that workers compensation costs and associated occupational stress can be managed through employer-driven initiatives. They also claim that even though some of the causes were external to the employer, the most important factor was the organization itself and its management practices.

The HSE has further identified psychosocial stress, relating to style of management and working culture, as an area of concern. One of the key elements in

addressing this area of concern is improving communication and staff involvement. The impact of e-mail needs to be considered in the light of such important concerns about the nature of organizational communication. If the structural properties of e-mail are changing the way we communicate at work then organizations need to be aware of the potential dangers and pitfalls associated with electronic communication.

A body of work has now developed which looks at how the quality of interpersonal relationships at work affects a number of outcome variables including stress and productivity. Communication is central to a worker's relationship with their fellow workers and their supervisor. There is now an urgent need for a greater understanding of the effects of communication style on these relationships. And, given the increasing likelihood that communication at work is likely to be via e-mail, there is also a need to understand how the medium of communication might impact on these relationships.

Some of the research evidence underlines the general importance of relationships at work. For example, Stansfield, Head and Marmot (2000) found that a lack of understanding and support from managers and colleagues at work was associated with higher risk of psychiatric disorder. Social support is a means of enhancing an individual's capacity to deal with stress at work by increasing their perception that they are cared for and loved, that they are held in some esteem and valued, and belong to a network of communications (Quick, Quick, Nelson & Hurrell, 1997). Social support is recognised as having positive health outcomes, whilst social isolation is a risk factor for both mortality and morbidity (House, Landis & Umberson, 1988). Communication from work colleagues that is socially supportive is likely to have a positive effect on health outcomes whilst communication that is not supportive or threatening is likely to have a negative effect.

Other research has tended to emphasise the greater importance of the worker's relationship with their supervisor rather than their relationship with fellow workers. A number of early studies identified the supervisor's excessive demands and personal insensitivity as the source of daily hassles that interfere with productivity and produce strain (Lazarus, 1981). Sutherland and Cooper (1988) also noted that inconsiderate

behaviour, close supervision, and rigid performance monitoring by supervisors, contributed significantly to feelings of job pressure.

Supervisor style has also been shown to affect a number of other organizational outcome variables. Abusive supervision style has been shown to effect organizational citizenship behaviour (OCB). Zellars, Tepper and Duffy (2002) showed that abused subordinates perform fewer organizational citizenship behaviours, especially where such behaviours were seen as outside of their normal role. A number of studies have shown that OCB's benefit organizations in terms of sales, performance quality and quantity, and operating efficiency (Podsakoff & MacKenzie, 1997).

Evidence is emerging of the effect that inconsiderate supervisor behaviour can have on worker's health. Successful litigation has extracted damages from companies on the grounds that a supervisor was instrumental in the deterioration of a worker's health (Sand, 1990). In a longitudinal study of 10,000 initially normotensive civil service workers, the Israeli Ischemic Heart Disease Study (Kahn, Medalie, Neufeld, Riss, & Goldbourt, 1972) examined the response to being hurt by one's supervisor. They showed that responses of brooding and restrained retaliation were related to a greater incidence of hypertension. Haynes and Feinleib (1980) reported that female clerical workers with unsupportive supervisors were more likely to develop coronary heart disease than those with supportive supervisors. In a study of male factory workers, (Mathews, Cottinton, Tabott, Kuller, and Siegal (1987) found that the presence of supportive foremen and coworkers was negatively associated with diastolic blood pressure.

Early attempts to identify the characteristics of harmful supervisors focused on personality traits such as Type A behaviour. Jenkins (1979) describes the Type A manager as egocentric, abrasive, aggressive and a poor listener. Ganster, Schaubroeck, Sime, and Mayes (1991) found that subordinates of Type A leaders reported higher levels of irritation, depression, and physical symptoms of stress than subordinates of Type B leaders. More recent research has tended to focus more on the behavioural characteristics of leaders. Wager, Fieldman and Hussey (2003) showed that when workers were working for a supervisor who they judged to have a non-

supportive or threatening personal style, they had significantly higher blood pressure than when they were working for a supervisor who they judged to have a more supportive style. Such findings led to the development of study 2 which examined the effect that a single e-mail communication might have on a recipient's physiological response. In controlled conditions, participants were sent one e-mail giving a threateningly worded reprimand and another e-mail giving a non-threateningly worded reprimand. The results showed that blood pressure was higher when the recipient was reading the threateningly worded reprimand than when they were reading the non-threateningly worded reprimand. The results also showed that blood pressure was greater when the threatening e-mail came from someone higher in the organisational hierarchy. Furthermore, the increase in blood pressure due to the status of the sender only held for a higher status sender in the same department as the recipient. High status senders from another department did not produce the same increase in blood pressure in the recipient (see Taylor, Fieldman, & Lahlou, 2005).

One of the key features of the stress response is that it is an emotional reaction. In order to understand the impact of e-mail on stress at work, we need to understand how e-mail affects the communication of emotion. Without the additional cues of facial expression, gestures, tone of voice, or head nods, the feedback that one normally receives when communicating is lost (Weisband and Atwater, 1999). According to Nakamura, Buck, & Kenny (1990), facial expressions are key to understanding emotional states and e-mail is often used to communicate information with no particular emotional content. However, in circumstances where there is an emotional element, it has been suggested that electronic communication may exacerbate the emotion. For example, Walther (1996) suggests that much personal information can be conveyed by text and cites examples of e-mail romances, on-line social support communities, and virtual weddings. However, in a work setting the lack of cues may lead to an intensifying of emotions in an entirely different and more negative way. Friedman and Currall (2003) propose that diminished feedback will result in weakened interpersonal bonds, which in turn may act as a trigger for conflict escalation.

Aggression is likely to increase as a consequence of reduced social cues. According to Kiesler and Sproull (1992) when disagreements occur electronically,

social behaviours such as politeness and acknowledgement of the others position decrease and participants engage in deeper conflict

9.2b The impact of electronic mail

The impact of electronic mail can be examined under a number of different headings:

Work overload

A survey by the Australian Psychological Society questioned 1000 senior managers. The study showed that eighty percent of workers spent more than twenty percent of their day dealing with e-mails. Most of those surveyed said they dealt with between twenty and fifty work-related e-mails a day (APS, 2003) The researchers claimed that e-mail was causing mild to moderate stress in addition to the other stresses of daily life.

E-mail has now become an additional in-tray and some workers regularly receive around 100 e-mails a day (Horton Flaherty, 2001). Sixty-nine percent of people find having to deal with a daily avalanche of e-mail mildly or moderately stressful (APS, 2003). People who contact consulting psychologists about workplace stress are identifying e-mails as part of the problem (APS, 2003).

Expectation of response

In addition to the volume of electronic mail, the ease of communication has also brought about an increased expectation of a speedy response. Customers and clients can now contact professionals directly via e-mail. They do not have to go through a secretary. Whilst the removal of this barrier to communication has increased and speeded up communication, it means an extra demand on the professional.

Researchers at the University of Surrey found that the demand for instant, and almost constant communication is adding to workplace stress. They used the acronym SAD meaning Stress, Anger and Distraction to describe the impact of modern communications.

Misunderstanding

A survey of 26,000 e-mail users, showed that 52% of respondents struggle to interpret personal e-mails (Yahoo, 2004). The team identified a new cyber disorder: PPMT (pre and post mail tension). Two elements of electronic mail contribute to possible misunderstandings. The first relates to the lack of non-verbal cues available in e-mail communication. For example, in face-to-face communication sarcasm is relatively easy to detect because of vocal inflection and facial expression. In e-mail communication the meaning is much less clear.

Bullying

As noted above, the use of e-mail technology may lead, unintentionally, to misunderstandings. However, there is also evidence that the technology of e-mail can also be used to assist in the power and politics associated with bullying at work. Romm & Pliskin (1999) showed how e-mail could be used to keep a record of and, consequently, control employees' movements. The manager in this case study used e-mail in this way to improve punctuality and productivity. However, these efficiency gains were achieved at a cost. One of the secretaries was unable to work under the new regime and was fired. The others worked under increasing stress and were resentful and frustrated with their boss.

The manager in Romm & Pliskin's case study also discouraged all forms of communication other than e-mail. This created a psychological distance between himself and other staff. This strategy led to a reduction in productivity as staff engaged in futile attempts at face-to-face contact. The researchers also noted that whilst the manager was successful in establishing e-mail as the main form of formal communication, informal communication via other media such as face-to-face and telephone continued. It was this informal communication that eventually led to the sacking of the manager.

Dispute escalation

A study by Friedman and Currall (2003) set out to identify the dispute-escalating elements of e-mail. They examined whether the structural features of e-mail make it more likely that disputes will escalate when people communicate electronically than when they communicate face-to-face or via the telephone. Building on a model of

conflict escalation developed by Rubin, Pruitt, & Kim (1994) the authors developed a conceptual framework known as the dispute-exacerbating model of e-mail (DEME). They showed how the structural properties of e-mail impact on conflict processes and how these processes in turn, trigger conflict escalation. The authors also discuss how the extent of familiarity between individuals acts as a moderator of these relationships.

9.2c Summary model

It is possible to represent the research findings and the areas for further investigation relating to electronic mail, stress and productivity in the form of a descriptive model:

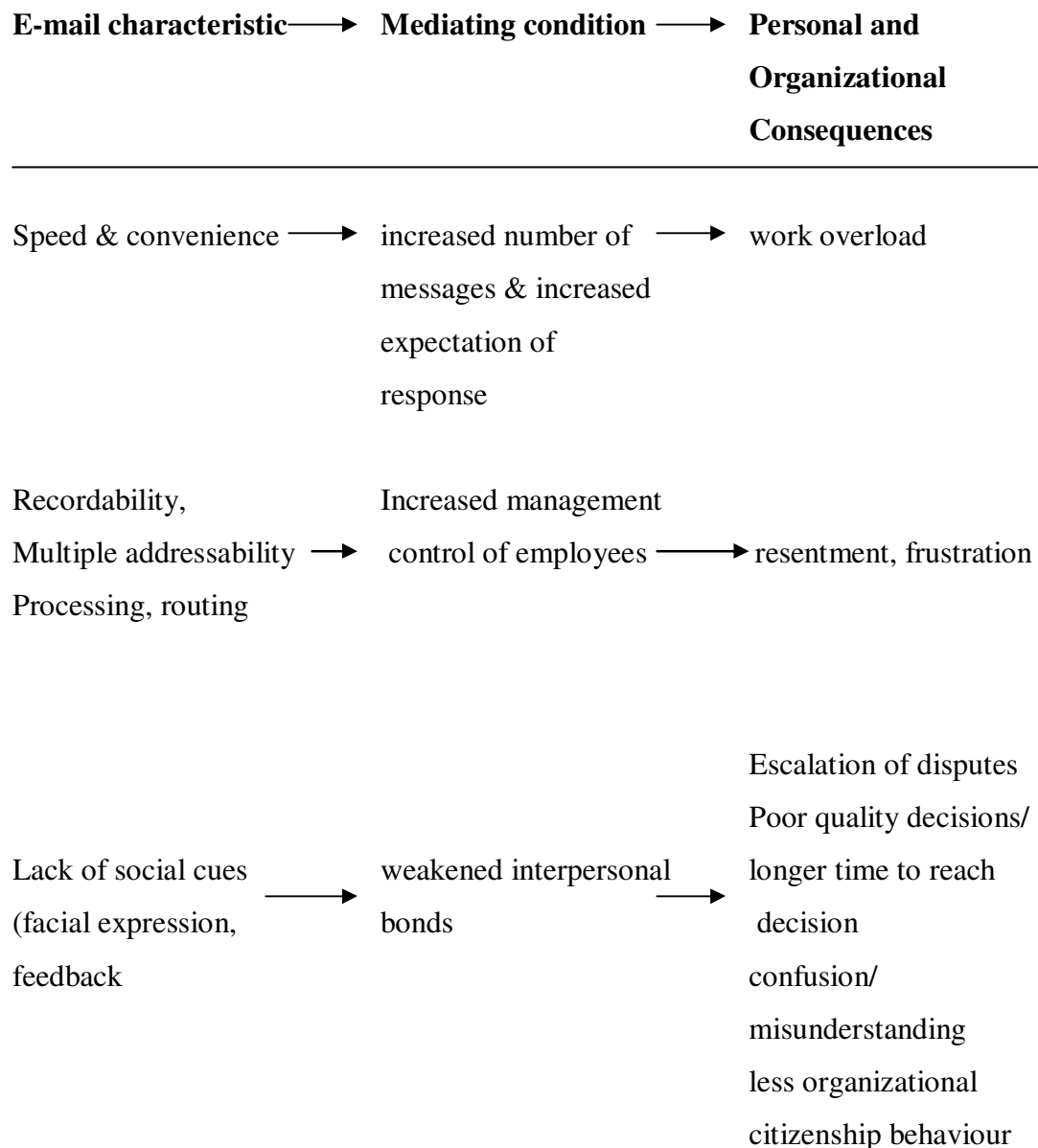| E-mail characteristic →	Mediating condition →	Personal and Organizational Consequences
Speed & convenience →	increased number of messages & increased expectation of response →	work overload
Recordability, Multiple addressability → Processing, routing	Increased management control of employees →	resentment, frustration
Lack of social cues (facial expression, feedback →	weakened interpersonal bonds →	Escalation of disputes Poor quality decisions/ longer time to reach decision confusion/ misunderstanding less organizational citizenship behaviour

Figure 9-4 Model representing how the characteristics of e-mail affect personal and organizational outcomes

The model shown in Figure 9.4 is intended to summarize and describe the proposed relationships between particular e-mail characteristics, the change in communication that the characteristic produces and the subsequent effect on personal and organizational outcomes. For example, the speed and convenience of e-mail communication produces an increase in the number of messages received and an increased expectation of a rapid response. This can lead to an increase in workload, and potentially to work overload. The proposed model is intended as a starting point, developed from the literature review, to stimulate empirical work.

The evidence discussed in the previous section highlights some of the areas of concern in relation to the rapid growth of electronic communication at work. We know that one of the most important areas to focus research upon is communication between co-workers and more importantly between supervisors and their subordinates. Anecdotal evidence also suggests that the increasing use of electronic communication from sources outside of the organization (customers, clients, suppliers, and other organizations) is adding to psychosocial strain at work.

What is also clear is that there is an enormous amount of work to be done in clarifying the effects of particular message characteristics. This is work at the micro level; the need to examine the effects of specific words, phrases and tonal signifiers such as font, message structure and emphases. We need to know firstly whether and how such message characteristics affect the message recipient. Secondly, we need to know how these effects relate to important organizational outcome variables such as employee well being, health, and productivity.

There is also a need for much greater understanding at the macro level. Hard evidence showing how organizations with different communication styles, and different levels of trust and reciprocity differ in the areas of employee well being, health and productivity is needed. But this is only the starting point. What is really needed is evidence of the benefits of intervention: Longitudinal studies showing how organizations can change and develop into more effective workplaces by changing the communication style of their managers and workers.

9.2d Implications of email characteristics

A number of features of email make it a potentially useful training tool. Electronic mail can be recorded permanently on the server as well as the personal computer. Studies such as Romm and Pliskin, (1999) have examined the e-mail record of a series of interactions in order to better understand the relationship between communicated messages, participant's feelings and subsequent events. By using computer records of real interactions in this way it may be possible to produce evidence of how particular types of communication lead to a particular kind of response. It may then be possible for workers to be trained to recognize a potential conflict scenario early on. Strategies could then be implemented to reduce and diffuse the conflict. An example of such a strategy was demonstrated by Van Lange, Ouwrkerk & Tazelaar (2002) in a social dilemma task based on the prisoners' dilemma. Van Lange et al (2002) showed that misunderstandings tended to lead to non-cooperation when partners behaved in a tit-for-tat way. However, the detrimental effect of misunderstanding disappeared when a partner behaved in a slightly more generous way. Morris, Nadler, Kurtzberg, and Thompson's (2002) study of e-mail negotiations showed that the liabilities of e-mail communications could be minimized by a pre-negotiation phone call.

Another feature of e-mail that could be used for training purposes is the monitoring of e-mail messages by the employing organization. Although this is a controversial area due to the potential infringement of human rights, a number of companies are now developing policies that sanction the monitoring of all work-based electronic communication. As case law continues to develop in the area of psychosocial stress and with companies being held more responsible, monitoring of electronic communication may be one way that organizations can gather evidence to show where training is necessary.

9.3 Limitations and recommendations of the thesis

The purpose of this thesis was to raise consciousness about the importance of how we communicate with each other. To show that the words we use and the messages we send to each other can have potentially far reaching effects. The studies have provided evidence that different ways of communicating a message can have a significant effect on the physiological, emotional and behavioural responses of the message recipient. The experimental studies in this thesis have shown that how

messages are worded and presented has implications, not only for the future well being and health of the message recipient, but also for the recipient's task performance and potentially for the health and success of the organization itself.

However, the evidence presented in these studies must be viewed in the wider context. The studies have a number of shortcomings and any recommendations from the findings needs to be supported by further evidence, especially from studies in the field. Most of the studies were conducted under controlled conditions in a psychology laboratory. The advantage of such conditions is that clearly defined variables can be controlled and manipulated in order to precisely measure their effect on specific outcomes. This, of course, is the very essence of the traditional experimental paradigm. It allows the scientist to claim that the controlled changes in the stimulus variable have *caused* the changes in the outcome variable.

The problem with observing such cause and effect relationships under controlled conditions is that the conditions in the real world are unlikely to match those in the laboratory. The studies in this thesis provide a good example of the conflict between the laboratory/experimental approach used in the last four studies and the field-work approach used in the first study on organizational meetings. The real world nature of the first study meant there were too many variables that could not be controlled. By contrast, the controlled nature of the last four studies means that the findings may not translate to the real world.

A further limitation of the studies in this thesis is the cross-sectional nature of the studies. All of the studies provide a 'snap-shot' of behaviour at a specific point in time. This limits the extent to which any conclusions can be made regarding the on-going nature of life in the real world. In order to counter this problem studies would need to carried out on people in their normal working environment and the effects of the stimulus variables observed over a period of time.

A further limitation of all the studies in this thesis relates to the characteristics of the participants. First, a very small number of participants was used in each study and second, most of the participants used in the studies were students. The limitations of the studies carried out in support of this thesis indicate that any findings can only

be tentative in nature. Further studies using larger and more representative samples are needed to confirm the findings. Further studies should also incorporate a wider range of methodologies including field studies and longitudinal studies.

Whilst acknowledging the limitations discussed above, the findings of the studies and the review of the literature point to a number of possible recommendations. The evidence presented here indicates some of the effects that the wording of a message can have on the message recipient, especially in a work context between managers and their staff. Further work is needed to promote a wider understanding of the implications of how people in positions of authority can affect the lives of those who work for them and the organizations they work for. The focus of attention should initially be on education and training. In management training courses, practical exercises can be used to demonstrate the effects that different words, phrases, and styles can have.

A similar recommendation can be made for the problems associated with e-mail communication that have been discussed in this thesis. Because of the ubiquitous use of e-mail and the general lack of training relating to the use of electronic media, supervisors and managers are likely to be unaware of the potential pitfalls of this tyope of communication. A greater appreciation of how electronic communication can, sometimes inadvertently, lead or add to misunderstandings between communicators can only be achieved by education and training.

As discussed above, education and training are the only long-term solutions to addressing the issues raised in this thesis relating to communication at work. However, some of the issues are so serious (e.g. sexual harrasment, and mental and physical breakdown) that more immediate training is called for. The development, publication and dissemination of electronic communications policies by all organizations is an essential first step in raising awareness. The development of software programmes that will indicate inappropriate e-mail content is already underway. For example, the programme 'Eudora', commonly used on Macintosh machines, indicates inappropriate content by displaying chillie peppers on the screen. The more peppers, the worse the content. Strong swear words would elicit the maximum number of peppers.

The use of computer technology would, of course, allow the development of much more sophisticated monitoring techniques. Individual message senders could be identified and records of all messages sent could be held on file. The organization would have the right to monitor and examine the content of all messages and individuals within an organization could then be held to account for the messages sent. However, the use of such a draconian strategy is not recommended as users are likely to find ways of subverting or undermining such a system. Software packages that form part of a wider training and education package are likely to be much more successful.

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STRESS AND MEETINGS INTERVIEW

Interview with Carl Jenkins Fri 26th Jan
H. I am conducting research into meetings at work. Many people……etc. I would like you to think about meetings that you find particularly stressful.

C. I've been to one this week actually, which is a board meeting that I go to. It's attended by consultants, so really intelligent, academic, high level people. What I find intimidating is their use of English language, because it is very different to my use. I use very simple words, they use very complex words and that can be very intimidating.

H. How many people would be at that meeting.

C. There were ten and it is chaired by a senior consultant. My peers and immediate manager.

H. And what is the purpose of the meeting.

C. It's all strategy. And it was my first one so the whole thing was quite intimidating. It's very formal. You have to raise your hand if you want to speak. If you've got something to say you have to bide your time and you have to wait. So that's quite a skill. There ar other things that I notice like where people are sitting. Which does make a difference. For instance we were sitting at a table that was elongated and the chaiman and the director all sat together at the top of the table. On one side sat the medics and the other side sat people like me who are service providers, like the finance director, the HR people. It was interesting how people almost chose these places to sit. And we were facing one-another as well so there was definitely some tension in the air.

H. What are the characteristics of this meeting that make it stressful compared with other meetings.

C. I've been to another meeting this week as well which was about dealing with an issue. And the difference was marked in that we were all working towards a common aim. We all had our bits to contribute. So it was much more collegiate, much more cooperative. We were sat in a circle which is much easier if you are actually working. No convoluted language. It was simple, easily understandable and to the point.

H. What about the people who were at this meeting.

C. There consutants, scientists. So there was still a cross-section of people but I think the fact was we were working for a common cause. Also, the people that were there had a stake in the solution to the problem. We call them action groups and I prefer

them because there's no status, no hierarchy and you're brainstorming quite often. You're just looking for solutions to problems and I much prefer working like that.

H. What do you think could be done to make meetings less stressful?

C. First of all there is an environment issue. If you are sitting around a long table, it's not a good environment for a meeting because it formalises it straightaway. I know some meetings have to be like that, disciplinery one for example. But you don't have to for a board meeting. Also, people could if they wanted to, use simpler language but they don't because they are public school where they learn Latin. It doesn't make them more eloquent. And I'm sure they do it sometimes to put you at a disadvantage. I could say "what does that actually mean" but that would take a lot of fortitude to do. The other thing would be to try to split up who site with who and try to make more of a mix. In some union meetings I have actually sat people, manger, union, manger, union, because that has prevented people being able to attack each other and polarise positions and that worked quite well. The only other thing that would help is taking the formality out of it. So not having Mr. Chairman and all this sort of stuff.

H. So anything that could be done to reduce the formality of the setting – language, seating.

C. I was just thinking about a staff meeting that we had today in the office and we all brought our sandwiches. So straightaway the atmosphere was much lighter. The other thing is that in this meeting everyone gets a chance to speak. We go around the room one-at-a-time to give everyone a chance to say what they want. So ther's no chance of hiding. It's so informal and a really pleasant meeting to be at and yet we still get through the business. If you ask me which meetings have I achieved something, it wasn't the formal one, it was the others. I come away from them thinking we have made progress, we've got a common understanding, a common purpose. So there's three different types of meetings I've been to this week.

H. How does the stress in a meeting affect your behaviour?

C. Well it's inhibiting. I think people are more worried about they appear, worried about saying something in case people think they look foolish or in case they ridicule them. I'll give you an example in the formal meeting. We were trying to think of a name to call the division. I put my contribution in, that we should ask the staff what they think and there were groans from the other side of the table. Now that would make me feel that I'm not going to open my mouth, if that's the way they're going to respond, I'm not going to say anything. Now personally I just don't give a toss, but somebody else might and that is particularly designed and they've done to try and stop me speaking. And somebody on the other side, one of the doctors, said "well let the chair and the director decide" like a paternalistic dictatorship, which I'm particularly opposed to. Whereas in the less formal ones, we just throw ideas up. It stifles the generation of ideas.

H. What about your position in relation to ideas that are generated from the top end of the table?

C. Well in the formal meeting I felt as though I didn't understand what was going on. They're not the sort of things where youcan say can you explain 'cause I don't understand it. So I came away and talked to two of my colleagues and said was it just me or were you bored stiff cause I didn't understand what was going on and yea we felt the same. So you come away thinking I'll avoid that or what a wast of time. And of course two people dominated it was the chairman and the director as well. Whereas the on we had today. Everyone had a chance to speak and we all had a laugh but we were laughing together, not at each other, so nobody felt inhibited. So it generates a comaradery but it also generates ideas, for brainsormingand I think it's good for morale because you come away thinking….. I came away from the formal meeting thinking Jesus wept Ya know. So it was great we managed to move on a few things. We got a lot of communication done.

H. Relative to other aspects of your job, how stressful are meetings?

C. Well generally they're not. I have a lot of meetings but generally they're action orientated. It's the formal meetings that are stressful. They're not stressful as in causing stress because you're doing something difficult. They are stressful in that they are very frustrating. They don't generate ideas. Not only that, you can't relax, because you know you've got to be listening to every word and pick every word you use carefully and for me, somebody with a northern accent I've got to be careful that I don't drop my H's. It's pathetic really, I know, but you get sucked into it. It seems to be the higher you go the more formal they become.

H. How does the general hierarchy of the organisation impact on the meeting?

C. In the action orientated meeting, it bonds people together in a common aim and you can forget you're position.

H. So the formality gets in the way?

C. Oh yea. Because people are more concerned with how they are perceived. Whether they appear clever to their colleagues. It's just not an environment I'm used to. Im used to having an objective.

H. What about the personality of the chair. Do you think that's important, or is it just the position?

C. oh, no, I think it is important. I mean the chair of this very formal group is quite good, he's quite affable, and it does set the tone. Some of the other meetings, the chair tends to be whoever wants to be the chair, again, the action, the common aim, no hierarchy, you are going for it, if you like, and I chair some staff meetings, but it's a very nominal position, it doesn't really mean anything other than just saying to people " your turn to speak", whereas with a formal meeting you have a formal agenda, you're working your way through it, hoping the chairman is summarising the points.

H. What about the personality of the other people in the group. I've been in meetings where you get these personality clashes.

C. Oh yeah, absolutely. Well that can be embarrassing. I've come across it a bit. What I've come across more is people with their own interests, protecting their self interests. Then again, at this normal meeting, there was a discussion about who should be on the group representing whom. There were people on that group who were clearly arguing "it should be this way" because it was protecting their position. One person would say "only this group can be represented by someone from this group" quite clearly meaning her. And so she was really arguing to protect her position, but it was so transparent, it gets your back up that you almost want to argue the opposite rather than addressing it objectively, you tend to get pulled into it and start to become very subjective about it and soon get caught up in it. That's when the chairman has to intervene. But you can soon get wrapped up in that kind of argument, particularly if the person's not well liked, now that does make a difference. If someone isn't liked you can guarantee that everyone will have a turn. And this person isn't, and is known as being self-interested, so you can imagine that at least four of us chipped in, arguing the opposite to what she was arguing.

Personality clashes are actually quite rare, I work in H.R. (Human Resources) I do see it when it happens. Most people can get on with most other people, but you will see people who just rub other people up the wrong way, if for any reason they've got a funny personality, or extreme views, either end of the spectrum or whether they're self-interested, that's what this woman was, she was very, very self-interested. So, people were arguing against her.

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Appendix 2
Blood Pressure Measurement

Introduction
This research is conducted in the spirit of the British Psychological Society's statement on ethical research which begins:

> 'Psychologists are committed to increasing the understanding that people have of their own and other's behaviour in the belief that this understanding ameliorates the human condition and enhances human dignity'

What is Blood Pressure?
Blood pressure is the pressure of the blood in your arteries (the tubes that carry blood from the heart to the rest of the body). The heart is a pump that works by contracting and relaxing. Blood pressure varies at different stages of the heartbeat cycle. It is highest when the contraction of the heart is forcing blood around the arteries. This is known as *systolic* pressure. It is lowest between heartbeats and this is known as *diastolic* pressure.

Howa is blood pressure measured?
Blood pressure can be measured either by using a sphygmomanometer and stethoscope or by using an automatic electronic monitor. A cuff is wrapped around your upper arm. The cuff has a tube attached which is used to force air into the cuff in order to inflate it. The cuff will feel slightly uncomfortable when inflated. A blood pressure reading gives two numbers. The first is the systolic pressure and the second is the diastolic pressure.

What is normal Blood Pressure?
Blood pressure varies throughout the day and according to what activities you are doing. It may become high if you are anxious or under stress. Blood pressure also tends to rise with age. So, what is acceptable for a 70 year old may be high for a 30 year old. Normal blood pressure for adults is generally taken to be below 160/90 (160 systolic and 90 diastolic). However, if you are diabetic or you already have coronary heart disease your target will be lower.

What should I do if my blood pressure is high?
If your blood pressure is consistently above 160/90, you should make an appointment to have your blood pressure checked by your doctor.

Your Blood Pressure
If you agree to participate in the research, your blood pressure will be taken twice in succession before the meeting and twice in succession after the meeting.

Confidentiality and Privacy
Names are required because it is necessary for the researcher to be able to identify blood pressure readings taken before and after the meeting and questionnaire scores. However, the data is used for research purposes only and anonymity is guaranteed.

The right to non-participation
You have the right to withdraw at any point during the procedure.

Appendix 3

Letter to Participants

Dear colleague,

My name is Howard Taylor and I am collecti9ng data for my research into meetings. You are scheduled to attend a meeting of the Faculty Board on 23rd May and I am contacting all attendees prior to the meeting in order to ask you to participate in the study and make arrangements for the testing. I would be very grateful is you would agree to participate in the study.

Participation involves having blood pressure measurements taken (a painless and non-invasive procedure) before and after the meeting and on another day at work. You will also be given a questionnaire about the meeting to complete.

I believe the meeting is scheduled to begin at 1.30 in room 1.10. The blood pressure measurements will be taken in room 1.3 from 1.15 p.m. and in the same room after the meeting. Please remember to allow time before the start of the meeting. Light refreshments will be available.

I hope you will agree to participate in the study and I thank you in advance. If you have any queries regarding blood pressure or any part of the procedure please contact me on extension 3542 or email: howard.taylor@bcuc.ac.uk.

Yours sincerely,

Howard Taylor

Appendix 4

Training presentation

Stress and Communication at work

Study 1

A case study investigation of stress in two organisational meetings, using questionnaire and blood pressure measures

Stress and communication at work   1

Method

- Blood pressure measurements were taken from participants before and after both of the meetings
- Participants in both meetings completed a 36 item questionnaire about the meeting
- Participants subjective comments about the stressfulness of the meetings

Stress and communication at work   2

Results

- Participants reported that the Faculty Board meeting was stressful and the Departmental meeting was not stressful.
- There was a statistically significant increase in diastolic blood pressure from before to after the Faculty Board meeting. There was no significant difference in blood pressure before and after the Departmental meeting.
- Statistically significant differences in responses to six of the questionnaire items.

Stress and communication at work   3

Results

- Mean systolic and diastolic blood pressures before and after the **Faculty Board** meeting

	Systolic BP	Diastolic BP*
Before meeting	127.13	78.17
After meeting	129.08	85.67

*Difference in diastolic pressure before and after meeting is sig. $P<0.05$

Stress and communication at work   4

Results

- Mean systolic and diastolic blood pressures before and after **Departmental** meeting

	Systolic BP	Diastolic BP
Before Meeting	131.5	81.71
After meeting	130.93	76.7

No significant differences

Stress and communication at work   5

Questionnaire items with a significantly different response in the two meetings

Questionnaire item	Mean score in Faculty Board	Mean score in Departmental meeting
The meeting was very informal	2.50	3.71**
I felt frustrated	3.5	2.71*
Outcomes will have important consequences	4.0	3.28*
I tended to sweat	2.58	1.57*
I found it difficult to concentrate	3.5	2.42**
I found the meeting mentally draining	3.67	2.71*

Stress and communication at work   * $p<0.05$, ** $p<0.01$

Conclusions

- Perceptions of the formality of the meeting, feelings of frustration and judgements about the importance of the consequences of the meeting may have a social psychological element i.e.they may be affected by the dynamics of the immediate social situation rather than simply a consequence of the issues discussed.
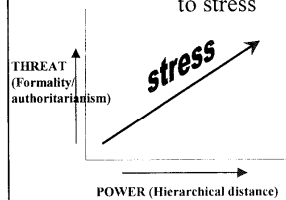
Stress and communication at work   7

Conclusions (cont'd)

- Judgements of the formality of the meeting may be related to the behaviour (authoritarianism) of the chair (same chair in both meetings)
- One of the largest increases in Diastolic BP in the Faculty Board was the chair
- Judgements of the importance of the consequences may be related to position in the hierarchy

Stress and communication at work   8

Prototype model of the psychosocial elements of communication related to stress

THREAT (Formality/authoritarianism)

stress

POWER (Hierarchical distance)

Stress and communication at work   9

Study 2

- Experimental study designed to examine the effects of threat and power in communications on the recipients.
- Changes in blood pressure, attitudes to work and cognitive performance were measured in response to threatening v non-threatening messages from powerful v non-powerful communicators

Stress and communication at work   10

Method

- Blood pressure was measured using the Portapres device (recording continuous, beat to beat blood pressure measurements)
- Participants (students) blood pressure compared whilst reading threatening and non-threatening email messages (repeated measures)
- Comparison of blood pressure changes whilst reading threatening email message from a senior administrator and from a student representative (independent groups)

Stress and communication at work   11

Method

- Also measured the effect of threatening email on feelings about the course (before and after email) and cognitive performance (mental arithmetic before and after)

Stress and communication at work   12

Interim results

- Mean diastolic blood pressure under four different conditions

Reading non-threatening email	Reading threatening email	Answering questionnaire	Performing mental arithmetic
81.72	86.21	77.96	86.72

F = 17.817, p<0.000

Interim results

- No sig. Difference in performance on tests of mental arithmetic before and after
- No sig. Difference in feelings about the course before and after
- Analysis of effect of status (power) of communicator not complete

Appendix 5

Paper published in the Journal of Managerial Psychology

The impact of a threatening e-mail reprimand on the recipient's blood pressure

Howard Taylor and George Fieldman
Buckinghamshire Chilterns University College, High Wycombe, UK, and
Saadi Lahlou
Laboratory of Design for Cognition, Electricité de France, Paris, France

Threatening
e-mail reprimand

43

Abstract

Purpose – This article aims to describe the effects of the communication style of the message sender (threatening or neutral), status of the sender (equal to or higher than the recipient) and the power relationship between sender and recipient (from the same department or not) on the blood pressure of the recipient of an e-mail message

Design/methodology/approach – The study was conducted under controlled laboratory conditions. The experiment was a mixed design, using both within and between subjects variables. The independent variable for the within subjects factor was the task that participants performed. There were three tasks: answering a questionnaire, reading a non-threateningly worded e-mail reprimand, and reading a threateningly worded e-mail reprimand. Although the study used students as participants, the messages they received were from real people in a University College. Discusses the implications in the area of occupational health.

Findings – Diastolic blood pressure was significantly higher ($p < 0.01$) when recipients were reading the threateningly worded reprimand compared to reading a non-threateningly worded reprimand. The effect of status on blood pressure was significant ($p < 0.05$) but only for recipients in the same department as the message sender.

Originality/value – The results add to the evidence that communication style and status can have a direct impact on the recipient's physiological response.

Keywords Electronic mail, Blood pressure, Communication technologies, Occupational health and safety

Paper type Research paper

Introduction

The development of electronic forms of communication has revolutionised the way we communicate with each other. The development has been rapid: in 2003, 48 per cent of households in the UK (11.9 million) could access the internet from home, compared with just 9 per cent (2.3 million) in 1998. For many people e-mail is fast becoming the preferred method of communication. A total of 64 per cent of adults in Britain have used the internet and 84 per cent of those using the internet had used it for e-mail (National Statistics, 2003).

The use of electronic mail for communication in the workplace has now become the norm for most routine mail. There are, however, questions about the suitability of electronic communication for all messages (as in a recent case of employees being sacked by text message). There has already been cause for concern where the subject matter of messages breaks company rules (e.g. personal communications), or the

criminal law (e.g. pornographic material). The exponential growth in the use of electronic communication has led to questions being asked about the lag between the technological advancements and our understanding of the way that these technologies affect our behaviour (e.g. Fisher and Wright, 2001; Gackenbach, 1998). Hostile and aggressive behaviours reported in electronic communication have been referred to as "flaming" (Lea et al., 1992). A number of companies are recognising the potential dangers and developing guidelines for the use of electronic mail in the workplace.

A number of theoretical frameworks exist which offer an understanding of the issues involved in electronic communication. Media richness theory emerged as the main theoretical framework for examining communication in different media (Rasters et al., 2002). Media richness theory (Daft and Lengel, 1986, Daft et al., 1987) sometimes referred to as information richness theory (Ngwenyama and Lee, 1997) or channel richness theory (Blecherman, 1999) originally addressed traditional media such as face to face and telephone communication has now been extended to include e-mail (El-Shinnawy and Markus, 1997). According to this theory a rich medium enables quick communication and offers better understanding of ambiguous or equivocal messages. Meeting face to face is considered the richest medium as it enables verbal, paralinguistic and non-verbal cues to be exchanged easily and rapidly. E-mail is considered to be a lean medium as it does not offer many cues. Furthermore, communication media with high information richness is considered to be more personal and warm whereas low information richness is considered impersonal or cold (Dennis et al., 1999).

However, Rasters et al. (2002) have shown that communication through the supposed lean medium of e-mail does not necessarily lead to low information richness. They showed that it is possible to have rich communication through a lean medium, and argue that we should focus on the richness of the message rather than the medium. However, there is still a question of whether electronic communication lends itself more naturally to low information richness. There is evidence (Baron, 1998) that the linguistic properties of e-mail are analogous to the pidginization and creolization processes in spoken language.

Owens et al. (2000) use the term "bandwidth" to refer to the total amount of information that a medium can simultaneously relay and show that computer-mediated communication results in reduced bandwidth. Owens et al. (2000) also discuss the issue of informality in electronic communication. One of the potential benefits claimed for computer-mediated communication is that it lends itself to a less formal style of communication and that informality in turn leads to a reduction in status differences. However, a number of contradictory claims have been made about the effects of computer-mediated communications on status differences in groups (e.g. Sproull and Kiesler, 1986, 1991; Dubrovsky et al., 1991; Weisband et al., 1995). Indeed, far from computer-mediated communication having a levelling effect on hierarchies and leading to more equal interactions, it is possible that some of the unique features of computer-mediated communication may exacerbate the differences between managers and employees. In a powerful demonstration of this, Romm and Pliskin (1999) showed how e-mail could be used to manipulate, control and coerce employees.

Evidence of a link between communication variables and physiological reactions has begun to emerge (Wager et al., 2003) and there has been some recognition that

communication variables have a direct impact on health. Kasermann *et al.* (1998) showed that cooperative interactions lead to a reduction in arousal, whilst competitive interactions lead to an increase in arousal. In an organisational context, Stansfield *et al.* (2000) found that a lack of understanding and support from managers and colleagues was associated with higher risk of psychiatric disorder.

Elevated blood pressure ($>140/90$ mm Hg) is now being referred to as a major epidemic and effects approximately half of the adult population of industrialized countries by age 60 (Belkic *et al.*, 2001). High blood pressure is a sign that the heart is working extra hard to pump blood through the body. Too much pressure makes the heart overwork and makes it more prone to arrhythmias and heart failure. It also damages arteries leading to heart disease, vascular diseases and kidney disease.

There has been considerable interest in recent years into work-related hypertension, especially the phenomenon known as masked hypertension (Pickering *et al.*, 2002) or occult workplace hypertension (Belkic *et al.*, 2001). This refers to a tendency for blood pressure to be higher during the working day than at other times. Pickering et al. refer to this tendency as hidden hypertension because it is often not picked up by the conventional method of taking a single blood pressure reading in a clinical setting. Thus, single blood pressure readings taken in a clinical setting, may give rise to an underestimate of the extent of hypertension at work. Estimates of the prevalence of hidden workplace hypertension range from 10.2 per cent (Imai *et al.*, 1996) to 23 per cent (Selenta *et al.*, 2000).

Method

The study was conducted under controlled laboratory conditions. The experiment was a mixed design, using both within and between subjects variables. The independent variable for the within subjects factor was the task that participants performed. There were three tasks: answering a questionnaire, reading a non-threateningly worded e-mail reprimand, and reading a threateningly worded e-mail reprimand.

In order to demonstrate that differences in response to the e-mail messages were due to the wording of the messages and not the topic of the message, the e-mail messages were counterbalanced. Reprimanding messages about two topics were prepared: attendance and breaches of regulations. A threateningly worded and a non-threateningly worded e-mail was prepared for each of the two topics. Half of the participants received a non-threateningly worded e-mail about their poor attendance and a threateningly worded e-mail about a breach of regulations and the other half received a threateningly worded e-mail about their attendance and a non-threateningly worded e-mail about a breach of regulations.

The independent variable for the first between subjects factor was the organisational level of the "sender" of the e-mails. There were two conditions: half of the recipients received e-mails from the Senior Faculty Registrar and half received e-mails from a fellow student (elected course representative). The e-mail messages were counterbalanced (as above) within each of these two conditions.

The second between subjects factor measured the effect of the relationship between the e-mail sender and recipient. The blood pressure of recipients from within the same department as the sender was compared with the blood pressure of recipients from outside the department.

The dependent variables were mean systolic and diastolic blood pressure during performance of each of the tasks.

Although the study used students as participants, the messages they received were from real people in a University College. The participants were attached to a machine that measures blood pressure continually and asked to perform certain tasks on the computer (completing questionnaires). The tasks were sent by e-mail from the experimenter. The participants were instructed to read any new messages they received as well as the messages relating to the experiment. The experimenter had created (with permission) profiles in the name of the Senior Faculty Registrar and an elected student representative.

Each participant received two different kinds of reprimand: one was designed to be threatening, beginning with the word "warning", using more threatening language with some words in capital letters and a red font. The other message was written in normal type with less threatening language, opening with 'Dear student' and closing with "regards". Each participant received these messages on breaching two different university college rules from either the Senior Faculty Registrar or a fellow student representative. Thus, we were able to examine the effect of threat (threatening versus non-threatening messages) and the effect of status on blood pressure.

Results

Blood pressure in all conditions can be seen in Table I. Blood pressure whilst completing a questionnaire gives a baseline measure of blood pressure. As expected, the results showed that diastolic blood pressure was significantly higher when participants were reading the threatening e-mail message than when reading the non-threatening message ($p < 0.01$). The results for the effect of status were more complicated. Students based in the same department as the message sender were affected by the status of the message sender: diastolic blood pressure was significantly higher ($p < 0.05$) when students were reading a threatening reprimand from the Senior Faculty Registrar compared to reading a threatening reprimand from a student representative. However, there was no effect of status on students from outside the department.

Implications

This interesting finding indicates that the effect of status is moderated by the power relationship that exists between the sender and the recipient. Where the higher status sender had a more direct influence on the recipient, the threatening message caused a greater increase in blood pressure than a threatening message from someone of equal status. However, if the recipient was not under the direct control of the higher status message sender, then status did not affect blood pressure.

The significance of the effects of threat and status on blood pressure can be evaluated, not just in terms of statistical significance but also in terms of the potential health implications. Collins and MacMahon (1994) established that a difference of 5 mm Hg diastolic blood pressure is associated with a 38 per cent change in risk of coronary heart disease and stroke. Our research has shown that a reprimand worded in a non-threatening way causes an increase of less than 5mmHg on baseline blood pressure and would therefore be regarded as of little clinical importance. However, a threateningly worded reprimand causes an increase of more than 5 mm Hg on baseline

Condition	Sender	Department	Systolic mean BP	Systolic SD	Diastolic mean BP	Diastolic SD	N
Completing a questionnaire	Faculty registrar	Same	133.11	17.84	74.21	13.74	12
		Different	125.88	14.76	68.83	10.10	9
		Total	130.01	16.60	71.92	12.33	21
	Student representative	Same	131.87	18.94	71.35	12.90	17
		Different	136.96	19.35	71.55	17.89	6
		Total	133.20	18.74	71.41	13.92	23
	Total	Same	132.39	18.18	72.55	13.09	29
		Different	130.31	17.02	69.92	13.21	15
		Total	131.68	17.62	71.65	13.04	44
Reading a non-threatening e-mail reprimand	Faculty registrar	Same	145.87	21.61	81.14	15.92	12
		Different	134.20	15.80	71.63	8.98	9
		Total	140.87	20.12	77.06	13.96	21
	Student representative	Same	140.06	24.07	74.62	13.45	17
		Different	142.74	20.01	74.51	17.17	6
		Total	140.76	22.67	74.59	14.09	23
	Total	Same	142.46	22.87	77.32	14.61	29
		Different	137.62	17.97	72.78	12.39	15
		Total	140.81	21.24	75.77	13.92	44
Reading a threatening e-mail reprimand	Faculty registrar	Same	149.67	21.61	84.36	17.57	12
		Different	133.14	15.45	73.13	9.67	9
		Total	142.59	20.56	79.54	15.48	21
	Student representative	Same	141.74	22.30	77.06	12.95	17
		Different	143.05	20.93	75.04	16.16	6
		Total	142.08	21.49	76.54	13.50	23
	Total	Same	145.02	22.00	80.08	15.18	29
		Different	137.10	17.84	73.90	12.15	15
		Total	142.32	20.81	77.97	14.38	44

Table I.
Blood pressures (mm Hg)
in all experimental
conditions

blood pressure, pushing the physiological effect into the clinically significant area. Reading a threatening e-mail reprimand sent from a higher status sender with direct power over the recipient (the equivalent of line manager or supervisor) produced the greatest increase (more than 10 mm Hg) on baseline blood pressure.

The experimental procedure used in our research produced relatively transitory changes in blood pressure. The question of whether brief periods of increased blood pressure have any implications for long-term health can be addressed in at least two ways: firstly, by studies looking at the clinical relevance of blood pressure variability. It has been shown that fluctuations in blood pressure contribute to organ damage. Mancia et al. (1997) showed that organ damage correlates with the number of daily peaks in blood pressure associated with environmental and stressful stimuli. Mancia (2000) claims that intermittent blood pressure elevations cause greater blood pressure variability, which has been shown to result in organ damage, both in animals (Sasaki et al., 1994) and humans (Parati et al., 1987; Frattola et al., 1993). Prolonged increases in cardiovascular reactivity are believed to be an important factor in the development of cardiovascular disorders such as essential hypertension and arteriosclerosis (Manuck, 1994).

Research has also shown that organ damage associated with high blood pressure is more closely related to ambulatory blood pressure over a 24-hour period than to sphygmomanometric values (White, 1991). This finding indicates that isolated blood pressure measurements taken during clinic visits (sphygmomanometric values) do not reflect blood pressure during normal daily conditions. As discussed previously, the issue of occult (hidden) hypertension is emerging as major potential risk factor.

The increased pressure on business organizations to be leaner and use more flexible production and employment practices is increasing the psychological demands of work and thus the risk of job stress (Houtman, 1999). Many of the factors that influence staff health are psychosocial, relating to style of management (Health and Safety Executive, 2001). Hogan et al. (1994) reported that up to 75 per cent of all employees report that the worst and most stressful aspect of their job is their immediate boss. Receiving the kind of messages that we used in our study to produce increases in blood pressure may be a common daily occurrence for a significant number of workers, and further work is needed to quantify the prevalence of stressful communications in work settings.

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Appendix 6

Occupational Psychology Conference Presentation

<div style="border:1px solid">

THE IMPACT OF THREATENING E-MAILS ON INDIVIDUAL PHYSIOLOGY AND ATTITUDE TO WORK

HOWARD TAYLOR
BCUC DEPARTMENT OF HUMAN SCIENCES
27/11/02

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BACKGROUND – RESEARCH ON STRESS AND ILLNESS

- Psychosocial work characteristics leading to cardiovascular disease and other sickness (Marmot & Wilkinson, 1999)

- Increased physiological arousal – heart-rate, saliva cortisol, urinary catacholamines and blood pressure.

- Lack of social support

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BACKGROUND – LEADERSHIP STUDIES

Leadership Studies have distinguished between two different types of leaders
- Bales (1951) Socio-emotional and task orientated leaders
- Lippitt & White (1943) Autocratic and democratic
- Stogdill (1974) Initiating structure and concern for others
- Bass & Avolio (1995) Transformational and transactional leaders

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BACKGROUND – ELECTRONIC COMMUNICATION AND STATUS DYNAMICS

- Exponential growth in number of people using e-mail
- Conflicting claims for the effects of electronic communication. Some claim e-mail decreases status differences due to decreased bandwidth and informality. Other studies have shown the unique characteristics of e-mail can be used to manipulate, coerce and control subordinates.

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THE STUDY

Aims:
- To examine the effect of the wording and style of a message on the recipient's immediate physiological response
- To examine the effect of the status of the communicator on the immediate physiological response of the recipient

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PROCEDURE

44 Participants complete 5 tasks:
- test of mental arithmetic
- answer a Locus of Control questionnaire
- read a non-threatening e-mail reprimand
- read a threatening e-mail reprimand
- test of mental arithmetic
- half of participants receive e-mails from fellow student and half receive e-mails from Faculty Registrar.
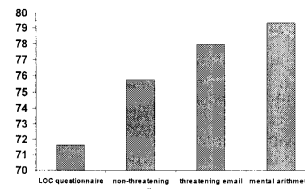
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MEASUREMENT

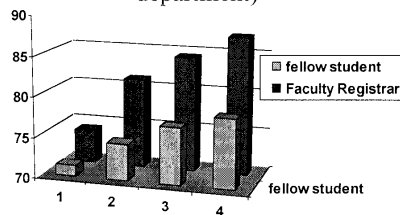Blood pressure measured and recorded continuously throughout the procedure using the Portapres

Participants also completed an 'attitude to work questionnaire' before and after the e-mail messages

RESULTS – THREAT

Diastolic blood pressure during the tasks

RESULTS – STATUS (same department)

FINDINGS

-Diastolic blood pressure is significantly higher whilst reading the *threateningly worded reprimand* than when reading the non-threateningly worded reprimand.
- Diastolic blood pressure is significantly higher whilst reading a threateningly worded reprimand from someone of *higher status* in the same department.

FINDINGS

A threateningly worded message from a higher status sender in the same department as the recipient produced the greatest increase in blood pressure.

Attitudes to work were significantly more negative after the e-mail messages than before

CONCLUSIONS

• The wording and style of a message can have a powerful physiological effect on the recipient
• Higher status communicators in a direct power relationship have greatest impact
• Implications for effect of manager's communication style on worker's health
• Effect on attitudes shows it may be counter effective to write aggressive e-mails

2