THE IMPACT OF FACTORS WITHIN THE WORK ENVIRONMENT ON PERCEPTIONS OF TRAINING TRANSFER.

A thesis presented in partial fulfilment of the requirements for the degree of Master of Arts in Psychology at Massey University.

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1999

ABSTRACT

The current study was designed to investigate empirically the direct effects of various components of the work environment on perceptions of training transfer. The influence of social support from four organisational constituents (peer support, subordinate support, supervisor support, and top management support), organisational commitment and task constraints in the work environment and training transfer were evaluated. The sustained use of trained skills was also considered in the current study. Differences in perceptions of training transfer two weeks and twelve weeks after training were measured, as were the impact of each of the independent variables at each timepoint.

The data was examined using correlation analyses and regression modeling. Results indicated that there were no significant differences in perceived training transfer between the time periods, but different variables were identified as important at each timepoint. Two weeks after training, top management support and organisational commitment explained 32.4 percent of the variance. Twelve weeks after training, organisational commitment was the only significant variable, explaining 31.1 percent of the variance. Results indicated some support for a positive relationship between social support and transfer. Two weeks after training, there was a relationship between transfer and supervisor support, top management support and peer support. Twelve weeks after training, the only relationship was between transfer and subordinate support. There was no relationship between task constraints and perceived training transfer.

The implications of these results are discussed in relation to previous research as well as practical implications for organisations and training practitioners.

ACKNOWLEDGEMENTS

I would like to thank my supervisor, Associate Professor Douglas Paton, not only for his advice, guidance, and constructive suggestions, but also for his flexibility and patience throughout the course of this research.

Many thanks are also extended to all the participants, trainers and administrators who contributed their time and energy in assisting me with this research.

A very special thanks is extended to all my friends and family whose support and encouragement have helped me through this project. I would particularly like to thank my mother Shirley Oates for her ongoing support throughout my return to University.

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CHAPTER ONE - INTRODUCTION

Training Defined

Individuals encounter opportunities to develop new skills and abilities on a daily basis. Often such opportunities are unstructured and learning is dependent on several factors, but occasionally learning events are systematically planned and related to the work environment (Goldstein, 1991). The latter learning events are known as training programmes or courses, and accordingly training may be defined as "a planned learning experience designed to bring about permanent change in an individual's knowledge, attitudes or skills (Campbell, Dunnette, Lawler, & Weick, 1970, cited in Noe, 1986).

In order to differentiate training from development or learning, it is useful to contrast the two activities. As mentioned above, training is a set of planned activities on the part of an organisation. Learning, however, is "a relatively permanent change in behavior that comes through experience" (Landy, 1989 p.306). Therefore learning is something which occurs inside the person which results in a change of some sort, while training is something that is done to the person – a planned experience which is expected to lead to learning (Landy, 1989). The definition of training used here, like many others, states that training is designed to bring about permanent change. While 'permanent' refers to something that is "lasting, or intended to last or function, indefinitely" (Sykes, 1982), its definition in the training context implies that changes in knowledge, attitudes or skills, will become unconscious to the individual. Training is also something that is to be used, while learning need not be used. Training must therefore ensure that learning occurs and that this learning can be used in the

appropriate contexts. This latter requirement emphasises a further distinction between training and learning. While learning is non-specific with respect to the location of its use, training results in the use of learned skills and knowledge in specific situations.

There are several systems for specifying human capabilities required to perform tasks on the job. In their definition of training, Campbell et al (1970, cited in Noe, 1986) suggest that knowledge, skills and attitudes are an important benchmark for examining changes within individuals due to training. Knowledge may be defined as "the foundation upon which skills and abilities are built" (Goldstein, 1991, p.531). Knowledge refers to a body of information which makes adequate job performance possible if applied. However, simply having knowledge does not mean that it will be used. Skill refers to "the capability to perform job operations with ease and precision" (Goldstein, 1991, p.531), while job attitudes can be defined as "consistent patterns of thoughts, feelings, and behaviour toward some aspect of the job" (Berry & Houston, 1993, p.291). Campbell et al's (1970, cited in Noe, 1986) definition of training indicates that change in one or all of these three qualities is the aim of training programmes.

While the definition of training implies that it is a fairly simple task with clear outcomes, the reality is somewhat different. Training is a complex process and has often been viewed as an instructional system with a variety of interacting components (e.g. Goldstein, 1991; Landy, 1989). This indicates that training is more than the selection and design of systematic programmes and the delivery of such programmes. In order to gain pre-training information, prior to the actual training, a comprehensive needs analysis is required to identify what knowledge, skills and abilities (KSA's) are required and to establish training programme

objectives. Post-training information is also vital for the effectiveness of training to be established.

The issue of performance additionally increases the complexity of training. Training may lead to learning, but learning does not ensure that an individual will perform satisfactorily. Similarly, if training or learning has not occurred, an individual's performance may still be satisfactory (Landy, 1989). It can reasonably be assumed that organisations conduct training as it increases the probability of learning and, in turn, learning increases the probability of performance (Landy, 1989). Given that the purpose of organisational training is to increase job performance, the process should also provide information which addresses the level of training transferred back to the work setting. The need to use training in a range of physical and social contexts introduces another level of complexity to this issue.

In addition to training being viewed as an instructional system, training programmes also interact with, and are affected by, other larger systems. The organisational environment, for example, may directly impact on the amount of skills which are transferred to the job. For instance, insufficient time to produce the quality or quantity of work required may lead to a lack of opportunity to perform new skills, thus lessening transfer to the job.

Organisational training is used for a variety of reasons. It provides opportunities for individuals to enter the job market with necessary skills, perform new functions, and be promoted (Goldstein, 1991). It also allows employees to develop their skills in order to increase work productivity and effectiveness, and provides many people with the ability to change career paths.

Training Today

With the ongoing development of a competitive global marketplace, the increased emphasis on improving the quality of services and products has lead to a change in the way organisations accomplish key tasks (Facteau, Dobbins, Russell, Ladd, & Kudisch, 1995). In line with these changes, organisational structure and functions are becoming increasingly complex and rapid technological advancements are being made. Such changes have highlighted the need for organisations to develop a workforce which is both highly skilled and open to learning new skills (Mbawo, 1995). The latter requirement implies that organisations would benefit from their workforce being flexible and adaptable to change. Such a need indicates that it would be beneficial for training to be intrinsic and continuous within organisations, so as to get the best out of its employees. This, in turn, highlights the need for organisations to attend to cultural and environmental issues which have been relatively neglected in the past, but which may have a significant impact on the ease or otherwise with which training is used for the intended purpose.

These needs have contributed to corporate training provision becoming the growth industry that it is today. This growth has been exemplified by estimates of American industry spending in the training and development area. In the early 1980s Georgenson (1982) estimated that up to 100 billion (US) dollars was invested annually in workforce training and development. More recently it has been estimated that organisations may spend as much as 200 billion (US) dollars (McKenna, 1990). Similar figures are not available for New Zealand workforce training, however the Cranfield survey of almost 600 employers throughout the country revealed that 2.5 percent of payroll costs contributed to average total training expenditure (Personal Communication, NZHR List , 1999).

Although these figures are indicative of the emphasis organisations currently place on training, many believe that organisational training will continue to increase (e.g. Anthony & Norton, 1991, Facteau et al, 1995). This may be partially explained by the additional demands placed on workers by increasing global competition and technological development. Facteau et al (1995), however, point out a number of other projected changes which may account for the likely increase in training. They estimate that the proportion of youth entering the workforce will decline, giving way to a greater representation of middle-aged workers in the US workforce. Such a demographic change will impact on various organisational strategies, including training and development. With more competition for employees at the entry level and a need for better utilisation of labour resources, organisations will need to enhance recruitment efforts to attract the appropriate personnel, as well as continually training and retraining current employees (Facteau et al, 1995).

Additionally, a decline in the manufacturing industry will continue to be met with an increase in the high technology, service, and information sectors. With increases in technology, demands on the workforce will also increase and may change regularly. These demands are likely to require a different focus from those in the industrial era, due, in part, to the dynamic nature of technology. Technology increases the cognitive complexity required of individuals (Howell & Cooke, 1989, cited in Goldstein, 1993). Rather than focusing on predictable tasks, the individual will become responsible for "inferences, diagnoses, judgement, and decision making, often under severe time pressure" (Goldstein, 1993, p.14). Accordingly, individuals will have to learn more about how the organisation and its members relate to others, and need to be able to use their judgement with respect to how and where KSA's are used. As a result of technology shifts, an understanding of the types of KSA's required will be

important, as will be the environment within which KSA's are used. Likewise, an increased awareness of environmental issues, such as factors which may constrain certain tasks and types of interpersonal support required, will also be necessary in order to ensure success. Again, the future workplace has direct implications for training systems.

In response to the rate of change in the workplace, continuous staff development is required. This, coupled with the need for different approaches to training, once again emphasises the fact that training must be incorporated within wider organisational systems. While training programmes exist within organisations, it is unrealistic to view them as if they are independent of other systems (Goldstein, 1993). Training is a tactical device which can be used to pursue organisational strategies. It is a means to an end, rather than an end in itself. Organisations have the flexibility to choose, for example, whether they use the selection process or the training process to meet their needs. As outlined earlier changes in jobs as the result of technology can have dramatic effects on the type and level of training required. Likewise, changes in internal systems will also have such effects.

Given that some organisations have initiated attempts to meet changing demands (Ford, Major & Seaton, 1991, cited in Facteau et al, 1995), it is important that the amount of time and money spent on corporate training converts to an appropriate return on investment. Some studies, such as Newstrom (1986), suggest that no more than 20 percent of such investments have been shown to result in behavioural changes on the job. Others, such as Baldwin and Ford (1988) and Georgenson (1982), provide a more conservative estimate of not more than ten percent resulting in transfer. Despite the difference in these estimations, it would seem reasonable to expect a loss of 80

to 90 percent of trained material from the training course to the job. Such figures have lead to recognition of a "transfer problem" in training today (Michalak, 1981, cited in Baldwin & Ford, 1988, p.41). They invoke the need, among researchers and professionals alike, to consider this issue in more depth in order to reduce this loss.

The increased importance of training programmes for organisational success, and the fact that training expenditure does not appear to equate to behavioural change, ensures that the issue of training effectiveness remains paramount for researchers and managers alike. It is important that organisations effectively design and implement training programmes, and that the factors contributing to training effectiveness over time are understood (Facteau et al, 1995). In order to gain as much benefit as possible, it is also imperative that organisations evaluate the effectiveness of their training efforts (Cascio, 1989).

Training Effectiveness

Training effectiveness refers to the extent to which the objectives of a training programme are met, and evaluation usually occurs by the measurement of training and transfer outcomes (Quinones, 1997). Training outcomes generally refer to learning and retention which occurs throughout a training programme. The effectiveness of a training programme can also be influenced by events which occur after the trainee returns to their job. Therefore, transfer outcomes refer to the generalisation and maintenance of learned material following the programme while back on the job. Training outcomes are measures taken during or immediately following training, whereas transfer outcomes are measures taken at a future time, usually in a different setting from where training occurred (Baldwin & Ford, 1988).

The process of evaluating training involves two procedures – the establishment of measures of success (criteria) and the use of experimental and non-experimental designs to determine what changes occurred during the training and transfer process (Goldstein, 1993). In order to thoroughly evaluate the effectiveness of training, "criteria must be established for both the evaluation of trainees at the conclusion of the training programme and the evaluation of on-the-job performance" (Goldstein, 1993, p.26). In his model of training as an instructional system, Goldstein (1993) refers to a number of potential training goals which could be used as a basis for criterion development. Firstly, training validity concerns what was learnt by the trainee during the training programme. Secondly, transfer validity deals with whether what has been learned in training has been transferred as enhanced performance in the work organisation. Thirdly, intraorganisational validity concerns whether the performance of a new group of trainees in the same organisation that developed the training is consistent with the original training group's performance. Finally, interorganisational validity looks at the issue of whether a training programme validated in one organisation can be successfully implemented in another organisation.

Training effectiveness is usually measured through an assessment of one or more of the criteria identified in Kirkpatrick's (1967) model of training outcomes (Noe & Schmitt, 1986). Although some issues have been raised about the relationships among measures within the model (e.g. Alliger & Janak, 1989), Kirkpatrick's four levels of criteria remain the most popular classification of training criteria upon which to evaluate training programmes (Goldstein, 1991). These four levels are reaction, learning, behaviour, and results.

The first level of criteria suggested by Kirkpatrick, reaction, is what the trainees thought of the training programme. A reaction measure is therefore a measure of attitude rather than behaviour (Alliger & Janak, 1989). Measures of reaction also consider the face validity of the training. Such information can be important in determining beliefs and attitudes about the training or about the organisation. Level two, learning, refers to learning performance that occurs in the training programme. Such measures must be quantifiable and objective indicators of learning which has occurred in the programme, not measures of on-the-job performance (Goldstein, 1991). Kirkpatrick's third level of criteria is behaviour. This refers to measures of performance on the job, and today the term is often used interchangeably with the term 'transfer'. It is intended to measure the extent to which job behaviour has changed as a result of attending the training programme, therefore involves evaluation some time after the training has taken place. The fourth level of criteria in Kirkpatrick's classification, results, refers to the achievement of organisational objectives. Results include factors such as profits, production quality, quantity, costs, safety record, absenteeism, turnover, grievances and morale (Kirkpatrick, 1977).

Each of these measures becomes significant at different time points within the training process. Learning-criterion measures are collected early in training, while behaviour-criterion measures are taken after the training has been completed and transfer back to the job setting has occurred (Goldstein, 1993). Goldstein (1993) depicts the time dimensions of criteria as immediate, proximal and distal criteria. Immediate criteria refer to measures which are available during the training programme. Proximal criteria are measures which may be obtained in advanced training or shortly after the training programme, early in the transfer setting. Distal criteria are available after considerable time in the transfer setting. Unfortunately, there are no rules which clearly differentiate

between proximal and distal criteria, so it is difficult to determine when a proximal criteria becomes a distal criteria (Goldstein, 1993). Kirkpatricks' measures of reaction and learning may be defined as proximal criteria as they are gathered late in the training programme, and the results criteria may be defined as distal criteria as considerable time is required to examine changes at the organisational level. However, the time dimension surrounding the behaviour measure is more ambiguous due to its nature. Effectively, behaviour represents a measurement of job performance, which may be obtained early in the transfer setting, or after a considerable time in the transfer setting. As will be seen later, transfer outcomes may be dependent on the time of measurement.

Summary

Throughout this chapter, issues surrounding the transfer of training have been alluded to. While the purpose of organisational training is to increase job performance, statistics indicate that 80 to 90 percent of trained material is not transferred to the job. At a time when training is becoming increasingly important for organisational success, it is apparent that this lack of transfer significantly impacts on the effectiveness of training programmes. Although the amount of training transferred back to the work setting is but one of the issues contributing to the complexity of training, it is obviously worthy of considerable attention.

CHAPTER TWO – TRAINING TRANSFER

Introduction to Training Transfer

Within his model, Kirkpatrick indicates that one of the key criteria for evaluating the effectiveness of any formal training programme is the transfer of training to the job. The transfer of training has been defined as "the degree to which trainees effectively apply the knowledge, skills, and attitudes gained in a training context to the job" (Newstrom, 1984; Wexley & Latham, 1991, cited in Baldwin & Ford, 1988, p.63). Thus in training transfer, the focus is on the extent to which training for a specific purpose is used in the context for which it was intended (Tesluk, Farr, Mathieu, & Vance, 1995). Such a definition infers that transfer of training is not simply a function of the original learning that occurs in a training context (Atkinson, 1972; Fleishman, 1953). For transfer to take place, learned behaviour must be generalised to the job context and maintained over a period of time on the job (Baldwin & Ford, 1988). Baldwin and Ford's (1988) concept of generalisation refers to "the extent to which trained skills and behaviours are exhibited in the transfer setting", while maintenance concerns "the length of time that trained skills and behaviours continue to be used on the job" (p.95). Here the 'job' is considered to be the environment in which training is applied.

The nature of generalisation implies that certain prerequisites must be provided before transfer can occur. For example, it may be that the training has to be relevant to the job, opportunities have to be provided for skills to be used, and so on. This indicates that the transfer of training is dependent on factors within the transfer or work environment as well as those within the training itself. However, most of the research of training effectiveness has focused on the formal training

context only (Tracey, Tannenbaum, & Kavanagh, 1995). Accordingly, most evaluative efforts consider such elements as the design and content of training (Noe, 1986) and tend to focus on reaction and learning measures (Alliger & Janan, 1989; Saari, Johnson, McLaughlin, & Zimmerle, 1988), rather than measures outside of the training environment, such as behaviour and results.

Michalak (1981, cited in Goldstein, 1991) pointed out that due to the over-emphasis placed on the acquisition of skill, little thought is given to what happens after training has occurred and the trainee has returned to their job. Even more recently, many authors continue to raise the issue of a lack of research examining transfer of skills and knowledge acquired in the training context back to the job (e.g. Tannenbaum & Yukl, 1992; Tracey et al, 1995). Goldstein (1991) discussed the issue of transfer in terms of organisational analysis. He noted that individuals who participate in training face a problem as they must learn something in one environment, the training situation, and use it in another, on the job. The original concept of organisational analysis (McGehee & Thayer, 1961, cited in Goldstein, 1991) would not have addressed such an issue. The analysis focused on factors which provided information about where and when training could be used, such as manpower and skill usage. However Goldstein (1978, 1986, cited in Goldstein, 1991) reconceptualised organisational analysis into "an examination of systemwide components" (p.523), allowing an analysis of whether a training programme could produce transfer behaviour. This prospect widened the spectrum of training issues and added organisational constraints to the list of potential reasons for failure of training programmes. Thus it is in relatively recent times that authors have focused on issues relating to the work environment in the transfer of training and empirical research in the area is in its infancy.

A number of different types of transfer effects may occur within the training setting. In order to explain transfer effects, Goldstein (1993) uses the analogy of comparing an experimental group which learns a task and then transfers to a second with a control group which performs only the second task. *Positive transfer* occurs when the experimental group performs significantly better than the control group on the second task. In this case it is assumed that the learning that occurred from the first task has transferred and helped in performing the second task. However, *negative transfer* may also occur, in which case the experimental group would produce a poorer performance than the control group on the second task. Here, learning the first task has caused a decrease in performance on the second task. Finally, when no differences in performance are displayed between the two groups on the second task, there is said to be *zero transfer*.

Although Baldwin and Ford (1988) recognise the importance of gaining a clear understanding of what is meant by transfer before relevant issues can be examined, they also emphasise the necessity of identifying factors which affect the transfer process. Similarly, Tannenbaum and Yukl (1992) called for research which was designed to understand "...why, when, and for whom a particular type of training is effective" (p. 433). Such researchers made explicit the need for the transfer process to be examined in detail, and bought about interest in developing underlying frameworks on which to base future research. Recently, several researchers have developed models which relate to the transfer of training. These include Richey (1992, cited in Garavaglia, 1996), Yelon (1992, cited in Garavaglia, 1992, Foxon, 1994, cited in Garavaglia, 1996, Garavaglia, 1996, and Baldwin and Ford (1988).

Richey's Systematic Model of Factors that Predict Employee Training

Richey (1992, cited in Garavaglia, 1996) adopts a holistic approach to training with his systemic model of factors predicting employee training outcomes. This leads to a focus on factors other than training delivery which affect trainees (Garavaglia, 1996). The components of this model, depicted in figure 1, include trainee background, trainee attitudes, trainee perceptions of the organisational climate (view of management behaviour, co-worker behaviour, employee empowerment, and physical working conditions), and the instructional design and delivery. Each of these components has an affect on training outcomes – defined by knowledge, attitude and behaviour. The initial measure of training outcomes is used as a comparative measure. A comparison of initial measures and measures taken after the training has occurred are used to gauge the level of training transfer.

Figure 1. Richey's Systematic Model of Factors that Predict Employee Training
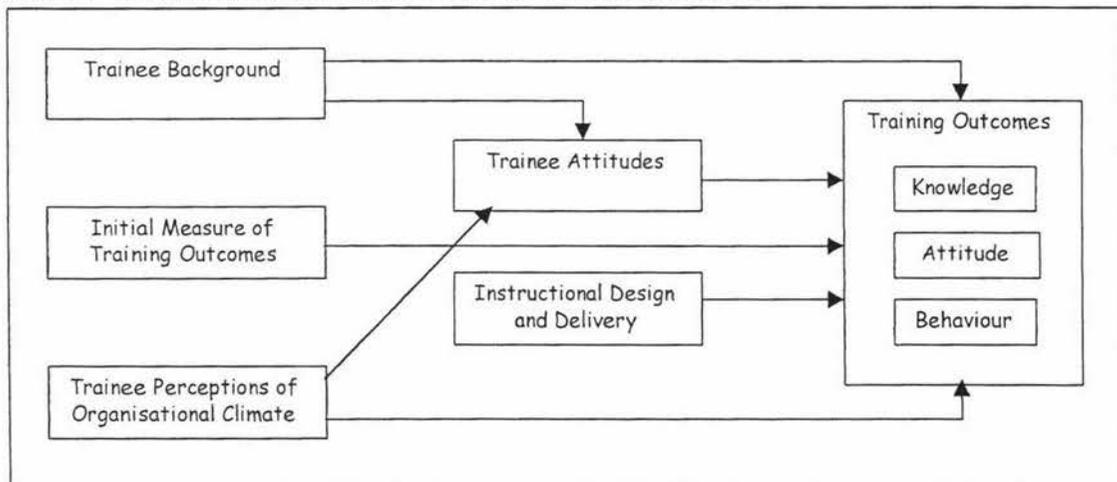
From Garavaglia (1996)

With this model, Richey has provided a basis for further and deeper understanding of the transfer process (Garavaglia, 1996). However, the model does not specify exactly what makes up some of the factors, such as trainee

background and trainee attitudes. This contributes to the difficulty in operationalising key variables, and therefore in testing the model.

Yelon's MASS: A Model for Producing Transfer

Yelon (1992, cited in Garavaglia, 1996) developed MASS: A model for producing transfer with a view to turning trainers into performance technologists. He proposed that trainers who become performance technologists:

- ➢ Motivate trainees to learn and use the training materials;
- ➢ Increase awareness of when to use new skills and ideas;
- ➢ Enable trainees to master and to apply skills; and
- ➢ Give trainees psychological and physical support on the job (Garavaglia, 1996).

Yelon (1992, cited in Garavaglia, 1996) proposes that performance technologists can motivate trainees by ensuring that training addresses a high-priority need, that the work environment supports the use of newly developed skills and that training materials are made relevant for the trainees.

The awareness of the importance of new skills and appropriate times to utilise the skills make up the second part of Yelon's (1992, cited in Garavaglia, 1996) model. For example, trainees having knowledge about their past performance and how to improve it, may assist the transfer process.

Transfer of trained skills to the work setting is also dependent on mastering and applying such skills. Recommendations such as matching the training situation to the job situation and strengthening trainees general cognitive processes are made by Yelon (1992, cited in Garavaglia, 1996).

Finally, support in applying trained skills should occur before, during and after training, thus aiding the transfer process. In general, performance technologists "should determine how to provide opportunities for trainees to exercise, maintain, and improve their skills on the job, and to provide resources and encouragement" (Yelon, 1992, cited in Garavaglia, 1996).

Foxon's Stages of Transfer

Foxon's (1994, cited in Garavaglia, 1996) model depicts transfer of training as a process as opposed to an outcome of the training programme. This perspective of the stages of transfer attempts to reduce the inhibitors that influence transfer, while increasing supporting factors. Figure 2 indicates the process that occurs when trainees try to apply what they learned in training, with the risk of transfer failure indicated by the vertical axis and elapsed time indicated by the horizontal axis.

The model involves five stages, with each stage being a pre-requisite for the next. The first stage, "intent to transfer", deals with the trainee's motivation to apply trained skills when back on the job. Aspects of the training environment, the work environment and the organisational environment, can each affect the intent to transfer. "Initiation" refers to the trainee's attempt to apply learned material to the job. A number of reasons may contribute to a lack of initiation, with Foxon (1994, cited in Garavaglia, 1996) indicating that four categories of factors – organisational climate, training design factors, individual learner characteristics, and training delivery – may inhibit transfer.

Figure 2.   Foxon's Stages of Transfer Model
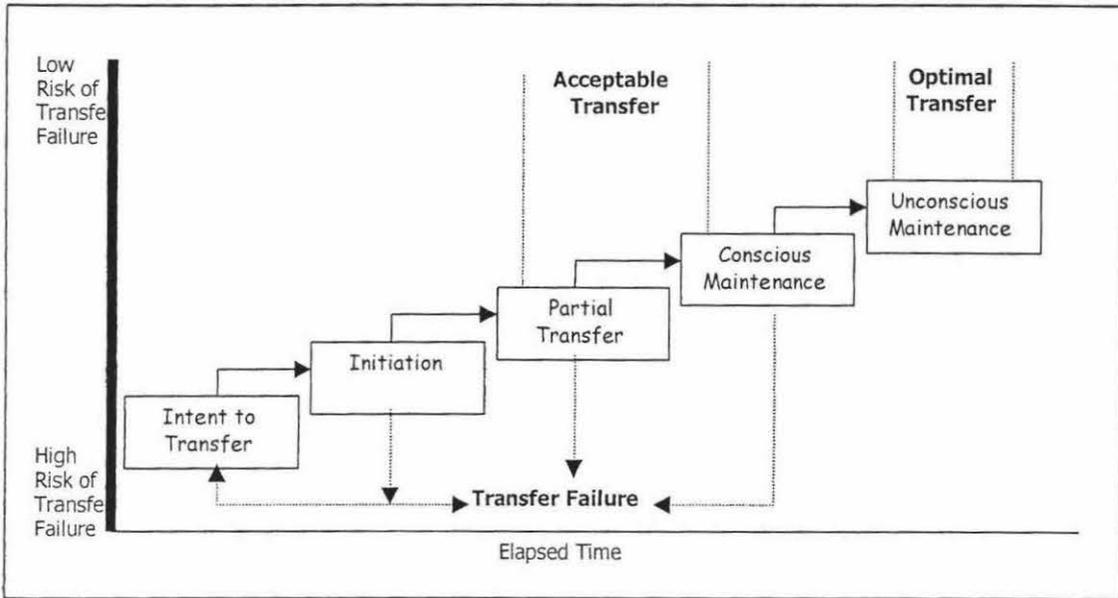
From Garavaglia (1996)

The next stage in the model, partial transfer, occurs either when only some of the skills learned in training are transferred to the job, or when some or all skills are used only some of the time. Lack of confidence, lack of opportunity, and low motivation are cited as reasons why this may occur. The final two stages of the transfer process are "conscious and unconscious maintenance".   At these stages, new behaviours are maintained over time, with "conscious maintenance" indicating that trainees choose to apply what was learned in training to the job, and "unconscious maintenance" indicating that skills are applied unconsciously and become the norm. As shown in the model, acceptable transfer is predicted to occur between partial transfer and conscious maintenance, while optimal transfer occurs only during the final stage, when no relapse in behaviour is observed.

While Foxon's model provides a new perspective for understanding the transfer of training (Garavaglia, 1996) many of the components within the model do not

lend themselves readily to empirical research. Variables such as "intent to transfer" and "conscious and unconscious maintenance" require greater definition, indicating that more work is necessary before this model can be used for research purposes.

Garavaglia's Transfer Design Model

In his transfer design model, shown in figure 3, Garavaglia (1996) utilised information from each of the previous models. At some stages, ideas have been combined to form a particular concept, while others have been expanded upon. Like Richey's (1992, cited in Garavaglia, 1996) model, the first stage in the transfer process is an initial performance measure providing a baseline upon which to examine training improvement. Garavaglia (1996) describes the next two stages of the model as "systemic design factors" and "instructional design factors". The systemic design factors incorporate trainee background and characteristics, and work environment factors. Other factors such as trainee emotions, goal-setting versus self-management techniques and belief in the value of the training, also contribute to this concept. "Instructional design factors" are based on training design and skills concepts from other models. Again, Garavaglia (1996) has expanded this concept to include a number of other specific factors which are deemed to increase the likelihood of transfer.

Following the design of training programmes, actual training occurs. This exists as an individual concept, like in Richey's (1992, cited in Garavaglia, 1996) systemic model of factors that predict employee training. It is the stage where "we begin to get a sense of the effect the training will have on the original performance problem" (Garavaglia, 1996, p.8).

Figure 3. Garavaglia's Transfer Design Model
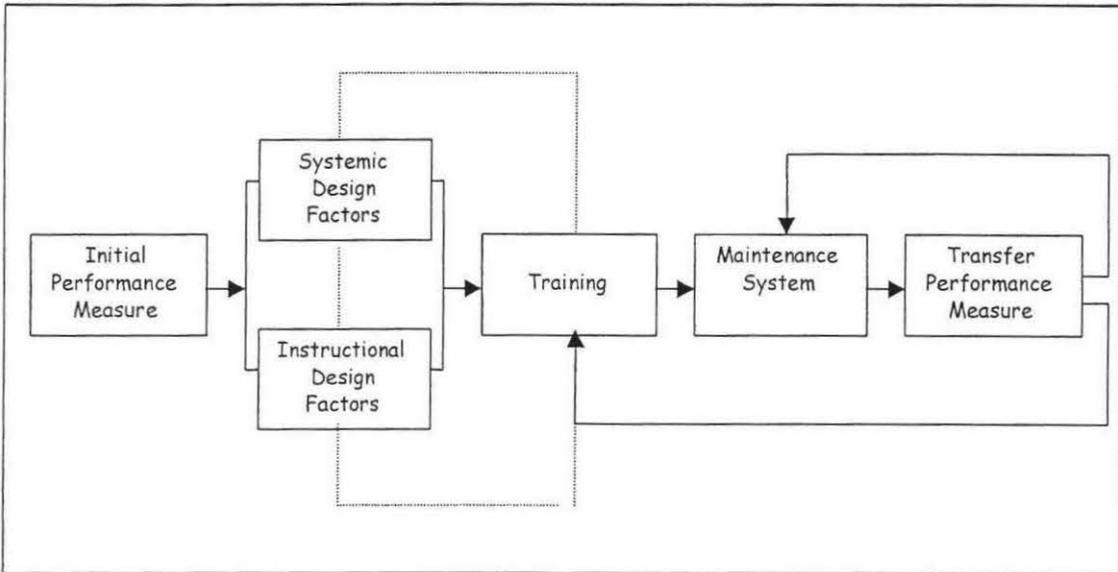
From Garavaglia (1996)

Garavaglia (1996) suggests that, on completion of the training, a maintenance system intended to promote the use of learned skills should be available. Baldwin and Ford (1988) defined this stage as generalisation and maintenance, while Yelon (1992, cited in Garavaglia, 1996) called it support. At this stage, the main expansion proposed by Garavaglia (1996) is in the area of supervisor support, with a focus on the provision of feedback to employees.

While other authors considered measurement of transfer performance to be something that occurred outside of their models, Garavaglia (1996) includes it in the transfer design model and considers it as the main pivot point for decision-making. He considers that, should insufficient transfer occur, a comparison of the initial performance measure and the transfer performance measure will provide sufficient evidence of where problems lie. Effectively, a problem may be in any of the four main factors – systemic design, instructional design, training, or maintenance systems.

Once again, while this model builds on previous efforts, it may not yet be an appropriate basis for empirical research. Like the aforementioned models, a number of the variables, such as "systemic design factors" have not been fully defined and are difficult to measure. Increasing the ability to operationalise these models is important if they are to provide an adequate framework for the transfer process.

Baldwin and Ford's Model of the Transfer Process

Figure 4 illustrates a framework devised by Baldwin and Ford (1988) to assist understanding of the transfer process. Within their model, Baldwin and Ford (1988) differentiate between training inputs, training outputs and conditions of transfer. The conditions of transfer combine both the generalisation and maintenance of information. Baldwin and Ford (1988) refer to generalisation as the extent to which skills and behaviours learned during training are exhibited in the transfer setting. This is distinct from the term maintenance, which refers to the length of time that such skills and behaviours continue to be used on the job. Essentially, generalisation and maintenance represent Kirkpatrick's third level of training evaluation, behaviour. To examine the generalisation of trained skills, a comprehensive training needs analysis, identifying the knowledge, skills and behaviours expected to be transferred to the job is required (Baldwin & Ford, 1988). Baldwin and Ford (1988) also outline other information which is needed in order to develop appropriate measures of generalisation. These include a linkage of needs-assessment information, the specification of training objectives, and a set criteria to use to determine the proportion of learned knowledge, skills and behaviours which are transferred to the job. A task analysis is then needed to outline the importance and frequency of the task performed on the job so as to

identify "how often and in what situations a trainee could reasonably be expected to demonstrate the trained behaviours or skills" (Baldwin & Ford, 1998, p.95). It is also reasonable to assume that an analysis of the context within which training will be applied is appropriate at this stage.

Figure 4. Baldwin and Ford's Model of the Transfer Process
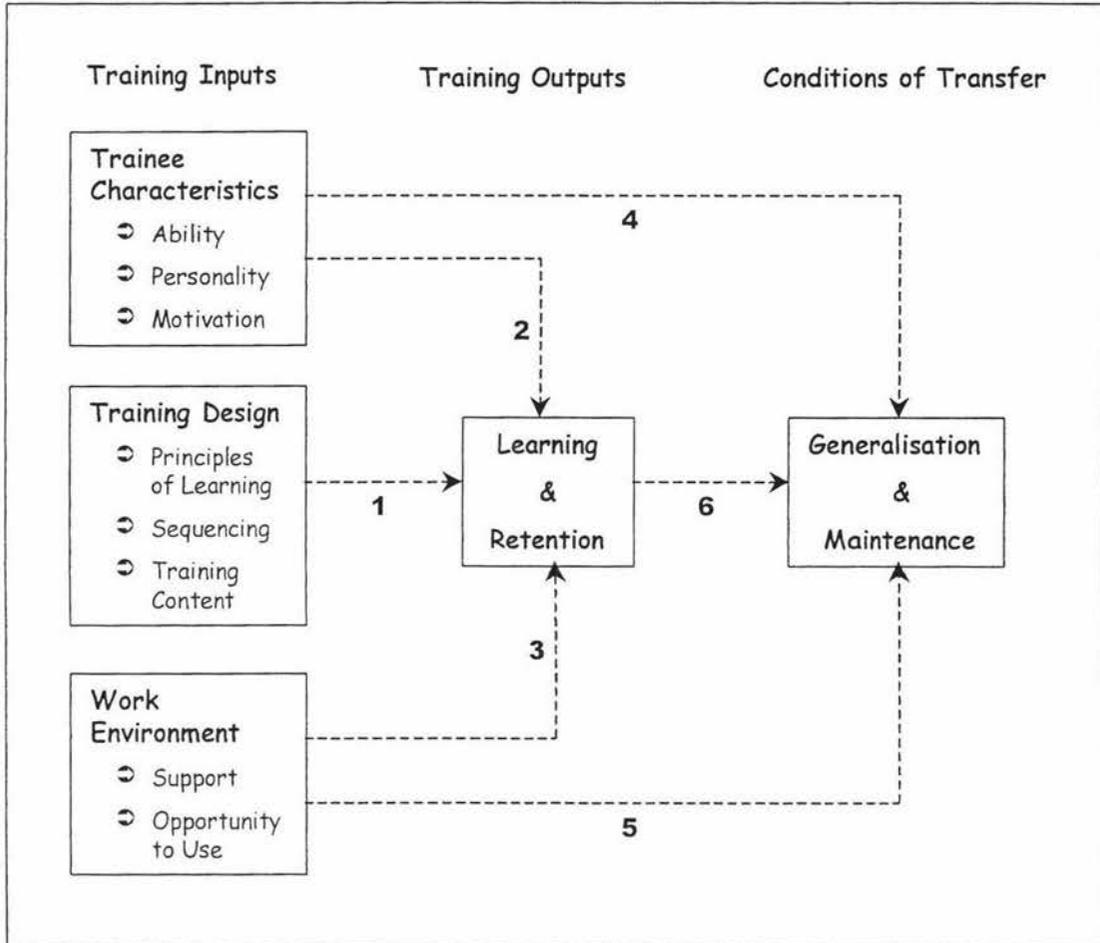
From Baldwin & Ford (1988)

With regard to the maintenance of trained skills and behaviours, Baldwin and Ford (1988) assert that the use of 'maintenance curves' is an effective way to consider this issue. Maintenance curves represent the changes occurring in the level of knowledge, skills or behaviours displayed in the transfer setting as a function of time since the completion of training. The researchers predict that

these maintenance curves could be used to identify different patterns and assist in understanding systematic effects of variables such as the work environment on transfer.

Training outputs were defined earlier as the amount of learning that occurs during the training programme and the retention of such information after the programme is completed. There are both conceptual and functional differences between the concepts of learning and retention. Learning refers to a relatively permanent change in behaviour resulting from conditions of practice (Landy, 1989), and information which is learned must somehow be retained, so that it can be remembered at a later date. Retention, therefore, is the storing of information (Kothurkar, 1985). While learning and recalling or retrieving information involves tangible active processes, retention is inferential and inactive (Kothurkar, 1985). This suggests that while learning can be directly measured, retention cannot.

A number of factors make up the category of training inputs. Each of these will be examined in some detail later, but in summary, training input factors include trainee characteristics, training design and work-environment characteristics. These have been broken down into individual elements which influence each factor. Trainee characteristics are made up of three separate components - ability, personality and motivation. The main elements of training design are the incorporation of principles of learning (Bass & Vaughan, 1966), the sequencing of material within the training programme (Gagne, 1962; Tracy, 1984), and the degree of relevance of the content of the programme (Campbell, 1971; Ford & Wroten, 1984). Finally, work-environment characteristics include factors such as workplace support (for example, from supervisors or peers) and the opportunity to perform tasks learned in training on the job.

Baldwin and Ford's model proposes that the training transfer process can be operationalised by the use of six linkages, with training outcomes and training inputs predicted to have both direct and indirect effects on conditions of transfer. The first three linkages (1, 2 and 3 on figure 4) indicate that training design, trainee characteristics and work-environment characteristics directly affect learning and retention of training material. In addition to this direct effect, the latter of the two training inputs (trainee characteristics and work-environment characteristics) are also proposed to have a direct effect on conditions of transfer (linkages 4 and 5). This effect occurs regardless of any learning which may occur during the learning and retention phase. The sixth and final linkage indicates that, in addition to the direct effects of certain training inputs on conditions of transfer, learning and retention also display such effects. Here training material which has already been learned and retained can then be transferred to the workplace. Table 1 summarises the linkages within the Baldwin and Ford model.

Table 1. Description of Linkages within Baldwin and Ford's (1988) model

Linkage	Effect	Description
1	Direct	Training design factors directly affect learning and retention.
	Indirect	Training design factors indirectly affect generalisation and maintenance through their impact on learning and retention.
2	Direct	Trainee characteristics directly affect learning and retention
	Indirect	Trainee characteristics indirectly affect generalisation and maintenance through their impact on learning and retention.
3	Direct	Work environment directly affects learning and retention.
	Indirect	Work environment indirectly affects generalisation and maintenance through its impact on learning and retention.
4	Direct	Trainee characteristics directly affect generalisation and maintenance regardless of initial learning during training or retention of learned behaviour.
5	Direct	Work environment directly affect generalisation and maintenance regardless of initial learning during training or retention of learned behaviour.
6	Direct	Learning retention directly affects generalisation and maintenance. Skills must be learned to transfer.

From Garavaglia (1996)

Baldwin and Ford (1988) have acknowledged that their model was simply proposed as a framework for understanding the transfer process. As such, little information was provided about how they devised the model, although it is assumed that it was based on what was known at the time about the transfer of training. However, due to the lack of theoretical justification for the model, its use is largely based on its face validity.

While a number of training transfer models exist, the model proposed by Baldwin and Ford (1988) is the most prevalent within training literature and is widely applied within training research. It is easier to develop measures for the variables in this model than for some of the variables contained in models described earlier. Because the Baldwin and Ford model is easier to operationalise than any of the other models, it lends itself to empirical research more readily.

Summary

Each of these transfer models indicates that, while training consists of a number of variables, the wider organisational structure also contributes to the success of training. Not only do organisational systems play a role in the selection and design of instructional programmes, they also must exist to support employees when they return to their jobs. The models outlined above provide the basis for research which may change the concept of training, or in fact the structure of organisations, in future times.

In order to gain maximum benefit from training programmes, organisations must strive to induce positive transfer amongst workers. In doing so, it is important

that they are aware of both transfer effects and the conditions leading to transfer. Each of the models discussed stimulates understanding of the transfer process and assists in the analysis of transfer problems within organisations. They also help managers and training professionals to select appropriate interventions in an attempt to eradicate problems. However Baldwin and Ford's (1988) model is the most widely recognised and critiqued transfer framework and, as such, provides a framework for a large proportion of research in the area of transfer. The concepts within the Baldwin and Ford (1988) model are more tangible than those in, for example, Foxon's model. They are collapsed into operational sections, allowing for easier examination than other models. Therefore, as defined by Baldwin and Ford (1988), transfer conditions will be discussed in terms of training design, trainee characteristics and work-environment conditions.

CHAPTER THREE – CONDITIONS OF TRANSFER

In their model of the transfer process, Baldwin and Ford propose that training outcomes and training inputs have both direct and indirect effects on conditions of transfer. While training design, trainee characteristics and work-environment characteristics are predicted to have a direct affect on learning and retention of training material, the latter of the two training inputs (trainee characteristics and work-environment characteristics) are also proposed to have a direct effect on conditions of transfer. In addition to the direct effects of certain training inputs on conditions of transfer, learning and retention also has an affect on transfer. Here training material which has already been learned and retained can then be transferred to the workplace.

Training Design

In their model, Baldwin and Ford (1988) predict that training design has a direct effect on training outcomes (learning and retention). Subsequently, this learning and retention is assumed to have direct effects on conditions of transfer (generalisation and maintenance). In order to begin to understand the transfer process, it is necessary to comprehend the significance of training design factors. Baldwin and Ford (1988) recognise three distinct sub-categories of these factors – *principles of learning*, *sequencing* and *training content*.

Principles of Learning

Identical Elements Theory

While the basic transfer design may appear relatively simple, the conditions leading to transfer are not easy to determine. However, viewpoints have been recorded which provide information about the type of training design required to achieve positive transfer. Two theories, the "identical-elements" and the "transfer-through-principle" theories, provide a framework for predicting the extent to which transfer occurs (Goldstein, 1993).

Thorndike and Woodworth (1901) originally proposed the theory of identical elements. They hypothesised that maximum transfer would occur if there were identical stimulus and response elements in both the training and transfer setting. Transfer is a function of the similarity between the stimuli and responses. These were summarised by Holding (1965, cited in Goldstein, 1993). Table 2 summaries this information.

Table 2. Type of Transfer – Based on Stimulus and Response Similarity

Task Stimuli	Response Required	Transfer
Same	Same	High positive
Different	Different	None
Different	Same	Positive
Same	Different	Negative

Adapted from Holding, D.H. (1965). Principles of Training. Cited in Goldstein (1993).

Firstly, if the stimuli and responses are identical, there should be high positive transfer. Although this elicits the ideal outcome, it would be unusual for the training and transfer settings to have exactly the same characteristics (Goldstein, 1993). Training programmes attempt to provide an ideal environment in which

learning can occur. This allows the trainee the flexibility to learn new approaches in a safe environment, where feedback and encouragement can be gained. While some programmes try to develop scenarios in environments which replicate the transfer setting, differences almost always remain (Goldstein, 1993). For example, although trainee firefighters can expect to enter burning buildings, they know that instructor presence and the controlled environment lessens the chance of adverse consequences which may occur on a real fireground.

The second case is also unlikely to occur within organisations. This involves both stimuli and responses being so different that practising one task does not relate at all to performance on the transfer task. Such a scenario may eventuate if an "off-the-shelf" training product is used by an organisation with no training needs analysis being conducted prior to purchase. If a training programme was designed in a manner unrelated to the transfer setting, an instance of zero transfer would result.

The third case, which is common within many organisational training programmes, involves the stimuli in the training and transfer settings being different, but the responses being the same. This may occur, for example, in computer training, where an individual who has learned to use one type of computer has little difficulty switching to another. In this case, the trainee is able to generalise from the training environment, even though certain features in the transfer environment may be different. Some degree of positive transfer would thus occur.

The fourth case involves a certain response to training stimuli being practiced so that the same response is given every time those stimuli appear. However, if the

response should become inappropriate, an instance of negative transfer would occur. Goldstein (1993) points out that with increased technological development producing modifications in control and display equipment, often the role of human beings is not considered and responses induce negative transfer. Chapanis, Garner, & Morgan (1949, cited in Goldstein, 1993) illustrate how this effect sometimes occurs in aircraft accidents. The implication of changing a learned element in a stressful situation may cause individuals to revert to old response habits, with potentially harmful results.

Empirical evidence has supported the use of identical elements as a means of increasing the retention of certain behaviours (Crafts, 1935; Gagne, Baker, & Foster, 1950; Duncan & Underwood, 1953; Underwood, 1951, all cited in Baldwin & Ford, 1988).

However, the identical-elements theory has attracted critics, who argue that analysing transfer would not be limited to situations where identical elements exist (Goldstein, 1993). While this approach may be appropriate when dealing with task-oriented, repetitive activities, it may be less appropriate when applied to contemporary jobs where both the job and performance environment are more dynamic. For example, when adapting communication skills for different situations, the identical-elements theory may not provide an adequate explanation. Additionally, stimulus and response variables are hard to specify and control in a given situation. This ensures that the study of the identical elements theory in a work setting is a difficult task.

General Principles Theory

Such criticisms have lead to the transfer-through-principles theory, which purports that transfer is increased when trainees are taught the general rules and theoretical principles that underlie the content of the training programme (McGehee & Thayer, 1961). It is therefore maintained that training environments may be designed without being too concerned about their similarity to the transfer setting, as long as underlying principles are considered (Goldstein, 1993).

Several studies, such as Hendrickson and Schroeder (1941), Crannell (1956), and Goldbeck, Bernstein, Hillix, and Marx (1957) demonstrated the value of teaching through the use of general principles. In each of these studies, individuals instructed in the principles involved in their learning topics performed better in transferring skills.

Stimulus Variability

Baldwin and Ford (1988) have identified additional elements which are focused on improving the design of training programmes. Stimulus variability is the assumption that the likelihood of positive transfer is increased when a variety of relevant stimuli are used during the training experience (Ellis, 1965). It is believed that providing several examples of a concept to a trainee will enhance their understanding, thereby increasing the possibility that they will see how the concept may be applied in the transfer setting (Ellis, 1965). The use of stimulus variation may be particularly appropriate when training individuals who are involved in dynamic jobs or exposed to a dynamic environment. This principle has also been supported by empirical evidence, as seen in Shore and Sechrest's

(1961) study. They found that using a moderate amount of different examples which were repeated a few times each was more effective in increasing learning than using one example repeatedly.

Conditions of Practise

The quest to improve the design of training programmes has involved the incorporation of research concerning a fourth learning principle – various conditions of practise. This category covers a wide range of issues about training design, including massed versus distributed training, whole versus part training, feedback, and overlearning (Baldwin & Ford, 1988).

The issue of whether to complete training in one continuous session (massed practice) or whether to divide training into segments (distributed training) has been studied for some time. Research conducted by Briggs and Naylor (1962, 1963) indicates that retention of training material learned through distributed practice is better than retention through massed practice. Hull (1943, cited in Wexley, 1981) suggested that distributed practice may allow for more efficient learning of skills than massed practice as the rest periods may compensate for the fatigue built up by performing the same responses time and time again. Such an approach may also allow trainees time to reflect, consolidate their learning and obtain feedback. Although such findings indicate the benefit of distributed training, the evidence concerning the learning of factual information is not as clear. Wexley (1981) points out that the less meaningful the material is to an individual and the greater its length or difficulty, the better-distributed practice becomes relative to massed practice. With respect to the completion of complex tasks, Holding (1965) found that when massed practice sessions were given first, followed by distributed sessions interspersed with frequent rest periods, higher

performance occurred. While it may seem simple to apply these findings in a prescriptive manner, it may be more appropriate to apply them in a contingent manner. Training is usually governed by the situation rather than logic, judgements are then made based on certain contingencies. For example, issues such as the type of task being trained and the amount of time available for training may impinge upon whether distributed or massed practise is most appropriate.

In scheduling a training programme, a number of approaches can be taken. Whole versus part training concerns "the relative efficiency of practice with all the material as opposed to practice on one part at a time" (Baldwin & Ford, 1988, p.67). Wexley (1981) provides an example which offers three basic training strategies, with the assumption that one has a task which can be divided into three distinct sub-tasks. This is shown in table 3.

Table 3. Whole versus Part Training

	Phase I	Phase II	Phase III	Phase IV
Whole Training	A+B+C	A+B+C	A+B+C	A+B+C
Pure-Part Training	A	B	C	A+B+C
Progressive-Part Training	A	A+B	A+B+C	A+B+C

Adapted from Wexley, K.N. (1981). Developing and training human resources in organizations.

As indicated, whole training involves practicing all sub-tasks at all training phases. Pure-part training consists of successive sub-tasks being practiced separately in each phase of training. In progressive-part training, the first sub-task is practised in the first phase of training, and one sub-task is added as the phases continue.

In comparing whole and part training, evidence suggests that two components of a task, task complexity and task organisation, impact on which method is superior. For example, when the training material is high in task organisation but low in task complexity, the whole method enhances training outcomes more than the part methods. However, part methods are better than the whole method when task organisation is low (Naylor & Briggs, 1963). In considering the effect of other variables on whole and part training, Naylor and Briggs (1963) also concluded that the whole method was best when the intelligence of the learner was high and practice was distributed rather than massed.

Feedback, or knowledge of results, is a critical element in both learning and motivation (Ammons, 1954; Annett, 1961, both cited in Wexley, 1981). Feedback refers to information which is provided to trainees about their performance (Baldwin & Ford, 1988), and can occur in a number of forms, such as verbal praise, performance measurement and test scores. Evidence suggests that timing and specificity of feedback are two critical variables in determining its effectiveness. Wexley and Thornton (1972) showed that students learn better when their instructors gave them verbal feedback about test results, and concluded that feedback should be provided as soon as possible after the trainee's behaviour had been displayed. The issue of specificity of feedback further implies that the quality of feedback received is also of importance.

Some researchers have suggested that the specificity and amount of feedback provided may be dependent on the capabilities and stage of learning of the trainee (Wexley, 1981). The optimum level of feedback which should be given was hypothesised as an inverted-U relationship by Blum and Naylor (1968), but empirical evidence in this area is lacking (Baldwin & Ford, 1988).

The principle of overlearning refers to providing trainees with continued practice beyond the point when the task has been performed correctly several times (McGhee & Thayer, 1961). Research has shown that the greater the amount of overlearning experienced during training, the greater the retention of the material (Atwater, 1953; Gagne & Foster, 1949; Mandler, 1954). Specifically, overlearning helps trainees transfer their learning back to their job setting (Wexley, 1981). Overlearning is particularly useful when activities can only be simulated because the real situation is too expensive or too dangerous (e.g. in military training contexts), or in tasks where people cannot rely on habitual patterns (Wexley, 1981).

Additional Developments

In addition to the general principles mentioned thus far, developments in the fields of cognitive psychology (Anderson, 1985, cited in Tannenbaum & Yukl, 1992) and instructional psychology (Gagne & Glaser, 1987; Pintrich, Cross, Kozma, & McKeachie, 1986, both cited in Tannenbaum & Yukl, 1992) have increased knowledge about training design. A further major contribution to the advancement of training design are developments made in a variety of learning theories (Tannenbaum & Yukl, 1992).

Sequencing and Training Content

Baldwin and Ford (1988) also consider design issues such as sequencing and training content to contribute to training transfer. In fact these two factors are indicated on their model as part of training design – one of the three training inputs. However, while they note that empirical research in these areas is

lacking, Baldwin and Ford (1988) fail to explore the effects of sequencing and training content on the generalisation and maintenance of behaviour.

Summary

There is no doubt that research concerning learning principles has contributed to our understanding of training transfer. Research on the effects of the learning principles of identical elements, general principles, conditions of practice and stimulus variability on learning and retention has been forthcoming and the results strong. However, the examination of the effects of learning and retention on the generalisation and maintenance of skills has been sparse (Baldwin & Ford, 1988). This restricts our ability to reach any conclusions about the sixth linkage in the Baldwin and Ford model (between learning and retention and generalisation and maintenance). Additionally, as discussed by Baldwin and Ford (1988), most studies used college students as subjects and focused on short-term memory tasks and simple motor tasks. Given that a significant proportion of jobs require the development of more complex skills, the utility of learning principles for designing training is questionable (Tannenbaum & Yukl, 1992). Clearly the problem of generalising results to organisational settings requires attention in the future. Likewise, Campbell (1988) noted that although established guidelines contribute to the effectiveness of training, current principles do not provide precise guidelines for training design.

One of the major problems for research in the work setting is the lack of control over many of the training design factors outlined. For example, it was noted that the study of the identical elements theory in a work setting is difficult due to the lack of specificity and control over variables. In order to effectively study such factors, researchers must be involved in both training design and training

delivery. Perhaps a more arduous task which researchers face is to search for organisations which are willing to place their training process under such control. Certainly, in the present study, time constraints and preset schedules prevented the study of training design factors.

Despite the concerns expressed about the current state of research and theory of the transfer research conducted, experimental work on improving the training process is the most developed and thoroughly researched (Baldwin & Ford, 1988). This research now looks at one of the less well researched training inputs thought to have an effect on both training outputs and conditions of transfer – trainee characteristics.

Trainee Characteristics

A second training input identified in Baldwin and Ford's (1988) model of the transfer process is trainee characteristics. These training inputs are assumed to have a direct effect on conditions of transfer regardless of initial learning during the training programme or retention of material. However, trainee characteristics also have an indirect effect on transfer through their direct impact on training outputs.

In 1988, Baldwin and Ford's analysis of current training transfer literature suggested that although a number of trainee characteristics were thought to affect transfer, empirical investigations of the effects of ability, personality, motivation, and the like, were limited. Research in the last decade indicates an increased interest in this topic and several studies have attempted to uncover the relationship between trainee characteristics and transfer of training (e.g. Gist, 1989; Noe, 1986; Noe & Schmitt, 1986; Robertson & Downs, 1989; Wexley & Latham, 1991). As will be seen from the following review, such research contributes greatly to understanding of the transfer process. In particular, it increases knowledge of some of the important effects on the transfer of trained skills to the work setting.

Ability and Aptitude

A number of researchers have provided evidence which indicates that training transfer on some tasks may be predicted by trainee success in the early stages of a programme or on training samples (e.g. Downs, 1970; Gordon, 1955; Gordon & Cohen, 1973; McGehee, 1948). Robertson and Down's (1979) review

of trainability testing studies suggested that about 16 percent of the variance in trainee performance could be attributed to ability. More recently Robertson and Downs (1989) carried out a meta-analysis of studies on work-sample trainability tests, which attempted to predict whether an individual would be able to successfully complete a training course. Although findings indicated that in most situations such tests do predict future training and job performance, it was also found that trainability tests predict short-term success better than long-term success or transfer to the job setting.

A variety of evidence has been gathered which attests to the usefulness of ability and aptitudes tests as predictors of trainability and trainee performance (see Baldwin & Ford, 1988). Mumford, Weeks, Harding, and Fleishman's (1988) study examined the contributions of trainee characteristics and design characteristics on training effectiveness. Aptitude was found to be one of the most consistent predictors of trainee performance. Despite such findings, some authors continue to question the predictive validity of aptitude tests in the training arena (e.g. Ghiselli, 1966, cited in Baldwin & Ford, 1988).

Studies concerning training performance have focused on the effect of a number of individual differences. Early research compared individuals' rate of learning as a function of continued practice and used ability measures such as reaction time, spatial orientation and speed of arm movement. Learning curves revealed that those high on these abilities displayed higher levels of performance in fewer trials and overall asymptotic performance was better than those with lower abilities (Fleishman & Hempel, 1955). Later studies have shown that individual differences in abilities have a significant effect on training performance (e.g. Ackerman, 1987; Cronbach & Snow, 1977), while Ree and Earles (1991)

discovered that general cognitive ability was a better predictor than were specific abilities.

In addition to the simple relationship between individual abilities and training performance, Tannenbaum and Yukl (1992) point out that a more complex debate is continuing about whether some abilities are more important at various points while skill acquisition is occurring. This leads to inquiries about which abilities are important and under what circumstances. For example Ackerman (1988, cited in Tannenbaum & Yukl, 1992) found that "for novel, moderately complex, but consistent psychomotor tasks, initial performance is best predicted by general and broad content abilities; intermediate levels of skilled performance are best predicted by perceptual speed abilities; and late, asymptotic performance levels are best predicted by psychomotor abilities" (p. 414).

Motivation

While the ability to gain new skills and to transfer them to the workplace may be a significant variable, it is accepted that the will to do also plays a role (Wexley & Latham, 1991; Noe, 1986). Since Baldwin and Ford's (1988) review, the effects of motivational factors in the training context have proved to be of considerable interest to researchers. Levels of motivation can affect training on a number of different levels. Before training takes place, motivation can influence whether or not an individual is interested in their job performance and chooses to attend a training course. During training it can impact on the amount of effort exerted by the trainee, and finally, motivation can affect whether trained skills are applied on the job (Quinones, 1997).

Empirical evidence supports the importance of motivation as a determinant of training effectiveness. Mathieu, Tannenbaum, and Salas (1992) found that those trainees with higher pre-training motivation displayed greater learning and more positive reactions to training. Several other studies also provide support for the positive relationship between training motivation and training outputs (e.g. Hicks, 1984, cited in Noe, 1986; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991; Baldwin, Magjuka, & Loher, 1991). Ryman and Biersner (1975) similarly reported that motivation to learn was a predictor of the successful completion of a U.S. Marine recruits diving programme, and they also found that motivation predicted class drop-out rates.

Literature indicates that a variety of factors can impact on motivation. Hicks and Klimoski (1987) found that perceptions of whether trainees had a choice of whether or not to attend a training programme influenced motivation to learn as well as actual learning. Noe and Schmitt (1986) found a relationship between high job involvement, motivation to learn and the subsequent transfer of skills to the job setting. With regard to training transfer, it has been shown that managers who believe in the value of training are more likely to apply skills in the future (Baumgartel, Reynolds, & Pathan, 1984). A further variable thought to affect training performance is expectations. In reviewing the research concerning this issue, Eden (1990, cited in Tannenbaum & Yukl, 1992) concluded that higher self-expectation of performance can, in fact, lead to an increase in trainee achievement.

It is interesting that while considering the issue of motivation in the context of individual factors which influence training, a further link is apparent. Given that motivation is influenced by the interpersonal and social context, it becomes a

concept which can be readily linked to the work-environment. In fact, while some studies have been categorised by various researchers (e.g. Baldwin & Ford, 1988) as examining individual factors, they could also be seen to be examining work-environment factors. For instance, Hicks and Klimoski's (1987) study considered trainees choices about whether to attend training, while Noe and Schmitt (1986) considered job involvement. Both factors could just as well have fitted into the following section on the work-environment. In fact, as we will see, the relationship between motivation and work-environment factors, such as social support, is becoming more prevalent in work-environment related research (e.g. Facteau et al, 1995).

This issue is indicative of just how ambiguous the subject of training transfer can become. It may seem simple to examine certain effects by seeing factors placed into boxes, but in reality, the relationships between individual factors is far more complex than a model may show. The difficulty of this situation is enhanced as no solid "training theory" exists as a basis for transfer models.

Self-efficacy

Self-efficacy refers to an individual's belief in their ability to perform a specific task (Bandura, 1986). Several studies have explored the relationship between self-efficacy and training effectiveness at various stages of the training process (Quinones, 1997). Overall, individuals who display high self-efficacy tend to perform better than their counterparts with low self-efficacy (Taylor, Locke, Lee, & Gist, 1984; Bouffard-Bouchard, 1990). In particular self-efficacy has been implicated in the transfer of training. Ford, Quinones, Sego, & Sorra (1992) considered self-efficacy as one of the factors affecting the opportunity to perform

trained tasks on the job, and found that individuals with high levels of self-efficacy were more likely to perform more of the tasks they were trained for, as well as to perform more complex and difficult tasks. These findings lent support to the work of Gist and her associates who also stress the important role that self-efficacy played in training transfer (Gist, 1989; Gist, Bavetta, & Stevens, 1990; Gist, Stevens, & Bavetta, 1991). Some attempt has been made to explain why self-efficacy affects the transfer of skills learned during training. Marx (1982) reported that individuals who believe that they will be able to perform trained tasks should be more resilient to constraints which they may come into contact with in the work environment, while Hill, Smith, and Mann (1987) found that they would be more willing to attempt new tasks.

Additional Factors

The effect of several other trainee characteristics on both training outputs and conditions of transfer have also been considered by researchers. Noe and Schmitt (1986) found some support for the effects of locus of control on pre-training motivation and learning. Baumgartel, Reynolds, and Pathan (1984) found that managers high in need for achievement and with an internal locus of control were more likely to transfer newly gained training knowledge into the work setting.

Tannenbaum and Yukl (1992) maintain that although the concept of goal orientation has been applied only in the educational setting, its importance could also be realised in the training context. Elliot and Dweck (1988, cited in Tannenbaum & Yukl, 1992) proposed that individuals pursue either performance goals or learning goals while in achievement situations. Performance goals relate to the attempt to maintain positive judgements about ability, while learning

goals relate to the attempt to increase ability. Tannenbaum and Yukl (1992) believe that trainees with a learning goal orientation will approach training differently from those with a performance orientation. This statement adds yet another trainee characteristic to the list of potential effects on training effectiveness which should be studied in the future.

Literature indicates a multitude of other characteristics which may increase understanding of the training process. These include problem-solving style (e.g. Basadur, Wakabayashi, & Graen, 1990, cited in Tannenbaum & Yukl, 1992), action orientation (Kuhl, 1985, cited in Tannenbaum & Yukl, 1992), openness to experience (Barrick & Mount, 1991, cited in Tannenbaum & Yukl, 1992), and fairness perceptions (Quinones, 1997).

As can be seen, certain individual factors influencing the transfer of training, such as motivation, may also have links to work environment factors. While Baldwin and Ford (1988) did not propose linkages between training inputs, it has been argued that contextual factors are likely to affect malleable individual factors (Quinones, 1997). These, in turn, have been shown to lead to differences in training in transfer outcomes. In order to incorporate such perspectives into a more holistic view of transfer, the final training input, the work environment will now be examined.

Work Environment

The final training input proposed by Baldwin and Fords' model to have an affect on training outputs and conditions of transfer is the work environment. As with trainee characteristics, factors within the work environment are hypothesised to have both direct effects on generalisation and maintenance, and indirect effects (via learning and retention). While the literature often fails to provide a definition of the work environment, it can be assumed that any factors surrounding an individual when they arrive back on the job after training constitute the work environment. Therefore human factors, such as supervisor and peer support, would be included in the definition. Task constraints and organisational commitment would also be considered as work environment factors, as would a number of other constructs. These will be considered in more depth in the following discussion.

Work environment characteristics are perhaps the most inadequately empirically researched component of training transfer. In fact, when Baldwin and Ford (1988) reviewed existing investigations, they found only seven studies which had examined the relation of environmental characteristics to transfer of training. Table 4 presents information about the seven studies conducted prior to 1988. Fortunately, since the late 1980s, researchers have begun to heed the call for more empirical work in the area and environmental characteristics have become more topical recently.

Table 4. Empirical Studies of the Work-Environment and Transfer of Training (1953-1988)

Author(s)	Sample	Training Content	Variables	Source & (timing)	Criteria Measures & Results
Fleishman (1953)	122 Manufacturing foremen	Leadership training	Perceptions of leadership climate	Self (varied 2-24 months after training)	Leader behaviour (LBDQ) – Leader behaviour was significantly affected by the leadership climate in the trainee's work environment. Trainees who returned to supervisors high in consideration exhibited more consideration. No such change occurred for those returning to supervisors lower in consideration.
Miles (1965)	34 Elementary school principals	Two-week human relations programme	Perceptions of transfer climate	Self (8 months after training)	Perceived on the-job change – Organisational factors (security, autonomy, power, & problem-solving adequacy) mediated the perceived change associated with laboratory training.
Baumgartel & Jeanpierre (1972)	240 Indian managers	Management development programme	Perceptions of transfer climate	Self (immediate)	Effort to apply – Favourable organisation climate perceptions were significantly and positively related to effort to apply.
Hand, Richards, & Slocum (1973)	21 Middle manager	Human relations training	Perceptions of transfer climate	Self (3 & 18 months after training)	3-month evaluation – No significant changes in attitudes or behaviours of trainees were observed. 18-month evaluation – Significant positive changes in attitudes were observed in the experimental group; negative changes existed in the control group. Three climate perceptions (whether the organisation favours participation by subordinates, innovative behaviour, and independence of though), moderated the findings.
Baumgartel, Reynolds, & Pathan (1984) (Study 1)	260 American managers	Human relations	Perceptions of transfer climate	Self (immediate)	Effort to apply – Favourable organisation climate perceptions were significantly and positively related to effort to apply. The most favourable organisation climate was characterised by high appreciation for performance and innovation, encouragement of risk taking and freedom to set own performance goals.
Baumgartel, Reynolds, & Pathan (1984) (Study 2)	246 Indian managers	Management development programme	Perceptions of transfer climate	Self (immediate)	Effort to apply – Favourable organisation climate perceptions were significantly and positively related to effort to apply. The most favourable organisation climate was characterised by high appreciation for performance and innovation, a climate of freedom, a rational reward system, and openness in relationships among managers.
Huczynski & Lewis (1980)	48 Electronic managers	Three-day network analysis training programme	Supervisor support & perceptions of transfer climate	Self (4 months after training)	Attempt to transfer – Transfer attempts were more likely when the trainees had pre-training discussions with boss and where the boss "sponsored" the new idea. The management style and attitudes of the trainee's boss were found to be the most important factor in attempt to transfer.

From Baldwin & Ford (1988)

Recent reviews of training literature indicate that a number of different factors may contribute to the effect of the work environment on the transfer of training. Based on the results of research prior to 1988 (see table 4), Baldwin and Ford (1988) argue that two variables, supervisory support and organisational climate provide the crucial influences. Tannenbaum and Yukl (1992) detail such influences and indicate that "elements of the posttraining environment can encourage (e.g. rewards, job aids), discourage (e.g. ridicule from peers), or actually prohibit the application of new skills and knowledge on the job (e.g. lack of necessary equipment).

To gain some insight into just how recent the link between the work environment and transfer of training is, it is useful to consider the first study suggesting such a link. In 1955, Fleishman, Harris, and Burtt (cited in Rouiller & Goldstein, 1993) found that the positive effects of a training programme they had conducted had disappeared when a follow-up investigation occurred at a later date. Following a number of interviews to determine the cause of such an effect, it was concluded that the supervisors of the managers trained in the programme were not supportive of the training goals, thus a supportive climate was deemed to be a factor in the transfer of learning to the work setting. Exactly what was meant by "supportive" in this study was not clear, nor were the factors which contributed to the measurement of such an environment. This makes it difficult to determine why the reported effects may have emerged. Further studies, however, have gone on to examine this issue in more depth.

While authors tended to agree with and promoted the need for a supportive climate (e.g. Mosel, 1957; Eddy, Glad, & Wilkins, 1967; Marx, 1982) Baumgartel and his colleagues sought to empirically research such issues in the early 1970's

(Baumgartel & Jeanpierre, 1972; Baumgartel et al, 1984). These studies examined perceptions of the work climate and utilised a self-reported measure of effort to apply trained skills gathered immediately after the training programme was complete. Findings indicated that managers who perceived that they worked in a favourable organisation climate were more likely to apply trained knowledge when back in the work setting. Characteristics of the most favourable climate included high appreciation for performance and innovation, freedom to set own goals, encouragement of risk taking and a supportive environment.

Like the Baumgartel studies, Russell, Terborg, and Powers (1985) also considered the importance of a supportive organisational climate. They evaluated co-worker and supervisory practices to discover whether they used similar methods as those taught in training courses. They believed that if these personnel behaved consistently with the training, trainees themselves would be reminded to use such behaviour on the job (Goldstein, 1991). Results indicated that organisation support is significantly correlated with performance.

Hand, Richards, & Slocums' (1973, cited in Baldwin & Ford, 1988) study also considered perceptions of the transfer climate, but measured both self-reports and supervisory reports of behaviour at two points after the training was complete. This is a significant difference in design from the Baumgartel studies, which effectively used a "motivation to transfer" measure as perceptions were gathered immediately subsequent to training. Hand et al (1973, cited in Baldwin & Ford, 1988) were, however, able to measure the generalisation and maintenance of skills by taking measures some months after the training had occurred. Although no evidence of attitudinal or behavioural changes were observed at the time of the three-month evaluation, after 18 months positive changes in human-relation skills existed. These were found to be due to

organisational decisions that reinforced attitudes learned in training. However, as pointed out by Baldwin and Ford (1988) the study was diminished by the lack of process measures taken, and therefore a lack of understanding of why such results were found.

Huczynski and Lewis (1980) considered the issue of intent to transfer in a slightly different light. Respondents were asked four months after training which factors they perceived in their work environment as hindering or facilitating transfer. Supervisory support was found to underlie most of the facilitating factors, with the supervisors' attitude and management style of crucial importance. Transfer attempts were also more likely to be successful when the trainee had pre-training discussions with the supervisor and the supervisor had "sponsored" a new idea. Responses indicated that the main inhibiting factors were issues which prevented the individual to take action (such as 'overload of work' and 'crisis work') and factors within the environment which prevented proposed changes from being accepted (such as 'convincing older people' and 'high rate of change').

Following Baldwin and Fords' call for the identification and operationalisation of key work-environment variables affecting the transfer of training, Roullier and Goldstein (1993) attempted to explore the issue of organisational transfer climate. The transfer of training climate was defined as "those situations and consequences which either inhibit or help to facilitate the transfer of what has been learned in training into the job situation" (p. 379). The relationship between this and the dependent variable, posttraining behaviours, was assessed based on a proposed conceptual model. Based on Luthans and Kreitners' (1985) behaviour modification model, Roullier and Goldstein (1993) classified transfer climate components into two groups – situational cues and consequences.

These cues and consequences each consisted of four dimensions. Situational cues, which provide reminders for trainees or provide them with an opportunity to use their training on returning to the job are - goal cues, social cues, task cues, and self-control cues. Consequences, which will affect trainees further use of what they have learned, are - positive feedback, negative feedback, punishment, and no feedback. Roullier and Goldstein (1993) collected data from trainee managers, as well as from their supervisors and coworkers. The results provided new insights into the transfer climate, with trainees demonstrating more transfer behaviour in areas which displayed a more positive transfer climate. The two dimensions studied – situational cues and consequences – explained much of the variance in behavior. Learning and organisational climate together accounted for 54 percent of the variance in transfer behaviour. Such findings indicated that trainees were influenced to use what they had learned and were rewarded for doing so. Additional findings suggested that those who learned more in training performed better on the job, however the interaction between transfer climate and learning was not significant. This factor provided unique evidence that, despite learning, conditions within the work setting influence the transfer of training behaviour to the job. The realisation that such conditions may be as, or more, important than learning is vital when we consider the ten to 20 percent use of training on the job. It gives organisations a place to begin in order to increase these estimates and to reap the rewards of training programmes.

More recently, Tracey, Tannenbaum, and Kavanagh (1995) considered the importance of the work environment on the application of trained skills on the job, but operationalised the work environment in terms of transfer of training climate and continuous-learning culture. The researchers built on the approach of Rouiller and Goldstein (1993) with regard to the transfer of training climate, but also considered the possibility that other important factors may not have been

accounted for in their research. Based on the assumption that a continuous-learning environment may be valuable in understanding how trained behaviours are applied (Dubin, 1990; Noe & Ford, 1992, both cited in Tracey, Tannenbaum, & Kavanagh, 1995), Tracey et al (1995) selected this as a testable variable. A continuous-learning culture was conceptualised as being "reflected by a pattern of shared meanings associated with multiple methods for knowledge acquisition and application" (p. 242). Characteristics of such a culture would include policies accentuating development of employees, and values and beliefs about quality work, innovation, and competitiveness. The acquisition, implementation, and sharing of knowledge, behaviours, and skills from different sources would be promoted, and continuous learning may be encouraged through supervisor and peer support (Tracey et al, 1995). Tracey et al (1995) emphasised that the difference between a continuous-learning culture and transfer of training climate is that the latter is based on an individual frame of reference, rather than an organisational frame of reference. The results of the investigation (involving both management trainees and their supervisors) revealed that there was a direct relationship between both culture and climate and the use of skills acquired in the training programme. In particular, the social support system plays a crucial role in the transfer of training, and the researcher concluded that interventions targeting those who interact with trainees (e.g. Supervisors and co-workers) may provide the greatest benefit in creative a supportive training and learning environment.

A further study which credits supervision with a significant role in the transfer of training was conducted in China, by Xiao (1997). He examined whether organisational factors common in developed countries (such as the United States) are also beneficial for training transfer in Shenzhen, a prototype for economic development in China. Approximately nine months after training,

electrical company employees completed questionnaires from which data was derived about, among other variables, application orientation, match of KSA's (knowledge, skills and abilities) with work design, rewards, supervision, peer relationships and transfer behaviour. These organisational factors accounted for most of the transfer over and above training (29 percent). Among the organisational variables, human factors, particularly supervisor, appeared to be the most influential in promoting transfer of training.

With the exception of the study by Hand et al (1973, cited in Baldwin & Ford, 1988) most empirical research has tended to examine the transfer of training in light of one, fairly immediate measure. Axtell, Maitlis, and Yearta (1996) conducted research which took a longitudinal approach to the study of the work-environment and training transfer. Unlike Hand et al (1973, cited in Baldwin & Ford, 1988) they found that trainees felt that they had transferred at least a moderate amount of skill and knowledge from the training course to the job after both one month and one year. Counter to predictions, the environmental variables tested, management support and autonomy, did not appear to significantly effect the transfer of training during the initial period. After one year, however, the key predictors of transfer changed, with the degree of autonomy in the job playing an important role at this stage. In opposition to other research, after considering the effects of other variables, managers did not appear to have a significant effect on transfer. Axtell et al (1996) reported that members of the participating organisation commented that the amount of control employees had was largely a result of the autonomy which managers allowed them. Indeed, the two environmental variables, management support and autonomy, were correlated. Such a finding raises an important issue about the conceptual overlap which may exist between such variables, and increases awareness of

the potential for certain effects to be masked by the measurement of indistinct factors.

A different variable which has been considered in the effort to investigate training transfer is the extent to which a trainee is provided with or obtains experiences relevant to trained tasks. The opportunity to perform trained tasks on the job was the focus of Ford, Quinones, Sego, and Sorra's (1992) study, in which they considered the breadth, activity level, and type of tasks performed and the effect of three general factors – organisational, work context, and individual characteristics, on Air Force technical trainees. It was determined that there were substantial differences in opportunity to apply the training and variations in the breadth of time before trainees were able to first perform trained tasks. Such differential opportunities were most related to work context and individual factors. In breaking down the issue of work context, Ford et al (1992) reported that the main impact was from supervisor's perceptions of airmen's capability, skills, and likablity, while those assigned to workgroups that were highly supportive performed more complex and difficult types of tasks. Once again, evidence indicates that supervisor and peer support is paramount if trained skills are to be successfully transferred into the work setting.

While the concept of supervisor support has been identified as a critical predictor of transfer, the development of what is meant by supervisor support has been less forthcoming (Baldwin & Ford, 1988). Additionally, supervisor support has customarily been studied as a global construct, whereas it is clearly a multidimensional construct. For example, such a construct may include behaviours like encouragement to attend training, goal-setting activities, reinforcement activities, and modeling of behaviours (Baumgartel et al, 1984; Eddy, Glad, & Wilkins, 1967; Huczynski & Lewis, 1980). This would tend to

indicate that a global approach to the supervisor support variable leaves little room for increasing understanding of specific supervisory behaviours and their effects on the application of trained skills to the job.

However, in a New Zealand study, McSherry and Taylor (1994) examined the relationship between specific supervisory support behaviours and transfer of training. Within the context of an outdoor team-building training course, these researchers derived a set of 27 supervisory support behaviours from Broad's (1982, cited in McSherry & Taylor, 1994) 74 management support actions. Results indicated that while most of the trainees transferred only a small to moderate amount of skills from the training, five of the supervisory support behaviours were significantly related to the transfer of training. These factors were: supervisors' use of skills and terminology from the training programme; creating opportunities for trainees to make decisions based on newly learned skills; reinforcing trainees use of trained skills; creating opportunities to practise new skills; and providing feedback on skills use. Further analysis revealed that supervisory support accounted for 17 percent of the variance in transfer of training.

In Noe's (1986) model, which described how trainees attributes and attitudes may influence the effectiveness of training, environmental favourability was predicted to have a direct influence on motivation to learn, motivation to transfer, and results criteria. Environmental favourability was conceptualised as consisting of two components – task and social. As the aforementioned studies suggest, the social context of the work setting certainly plays a role in transfer of training. Noe (1986), however, also suggested that situational constraints in the posttraining environment can impede the transfer of trained skills. He purported that "the extent to which technological necessities such as proper tools and

equipment, materials and supplies, and monetary support are perceived to be available determines the extent to which knowledge and skills acquired in training either will be used or constrained in the work setting" (p. 744). This perspective was based on Peters and O'Connor's (1980) identification of categories of constraints which they believed restricted the use of skills on the job. These include lack of required services from co-workers, insufficient job-related information, improper tools and equipment, inadequate budgetary support, unfamiliarity with the task, lack of skills to perform the task, and poor physical working conditions. Some of the potential outcomes of individuals experiencing such constraints may include frustration, dissatisfaction, and turnover (O'Connor, Peters, Pooyan, Weekley, Frank, & Erenkranz, 1984; Peters, O'Connor, & Rudolf, 1980).

In a recent study, Facteau et al (1995) attempted to determine the effects of employees' perceptions of the training environment on pretraining motivation and perceived training transfer. Unlike many earlier studies, their hypothesised model (see figure 5) indicates that pretraining motivation was one of the primary criteria.

Figure 5.   Facteau, Dobbins, Russell, Ladd, and Kudisch's Hypothesised Model
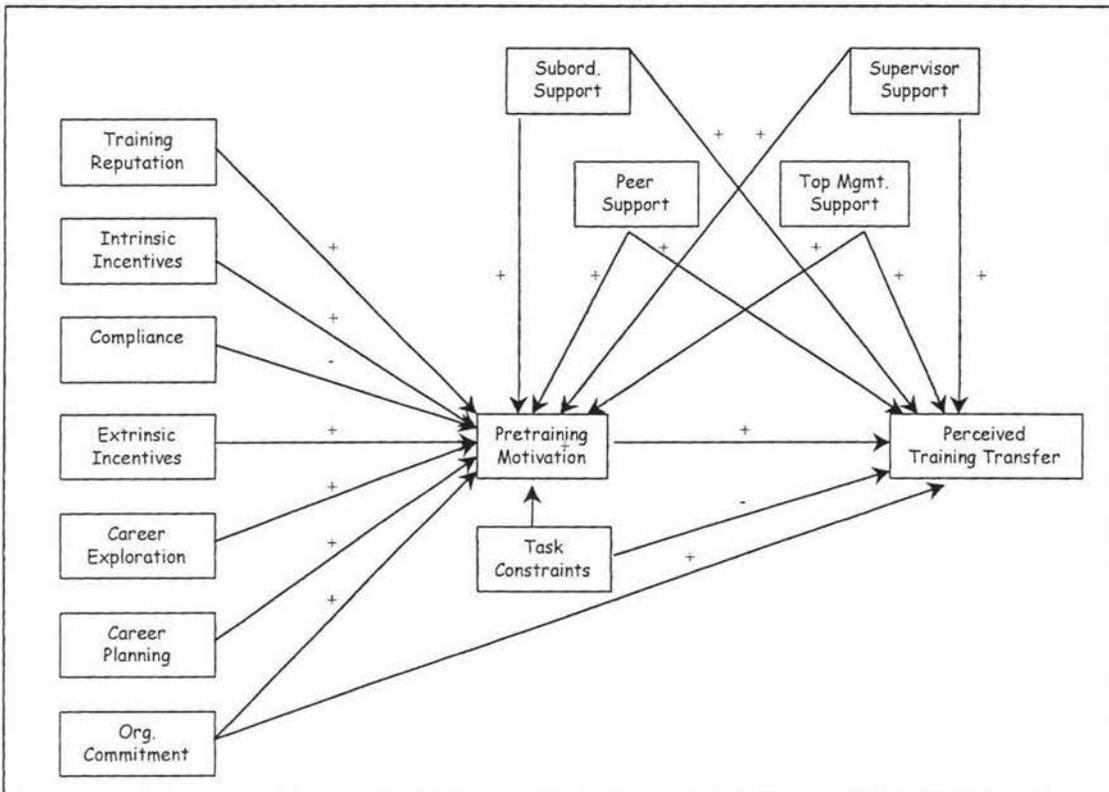
From Facteau et al (1995)

It was therefore predicted that a number of individual attitudes, such as career exploration and planning, would have a direct affect on motivation, which would in turn affect perceived training transfer. The social and task support constructs were also predicted to affect pretraining motivation, as a lack of support from individuals within the work setting, or task constraints, would cause a lack of motivation to attend and learn from training. However, such measures were also predicted to have a direct affect on perceived training transfer, regardless of motivation. Notable is the differentiation of the social support construct into four predictors. The examination of different sources of support allowed the researchers to examine unique effects that each may have on pretraining motivation and training transfer. An additional variable that Facteau et al (1995) predicted would directly affect training transfer was organisational commitment.

Although Tannenbaum et al (1991) found that organisational commitment was highly correlated with motivation, its relationship to perceived training transfer had not previously been examined. With regard to direct effects on the transfer of trained skills, the findings indicated that pretraining motivation and subordinate, peer, and supervisor support were predictive of managers' perceived transfer. Organisational commitment was not significantly related to perceived transfer, while contrary to the researchers expectations, and to other studies (e.g. Noe, 1986) task constraints were not significantly related to transfer.

Table 5 summarises the studies which have examined the relation of work-environment characteristics to transfer of training since Baldwin and Ford's (1988) review. This table indicates the limited number of studies which have been carried out on the work environment and transfer of training. While certain factors, particularly human factors such as supervisor support, appear to have effects on the transfer of training, further research is certainly required.

Table 5. Empirical Studies of the Work-Environment and Transfer of Training (1988-1998)

Author(s)	Sample	Training Content	Variables	Source & (timing)	Criteria
					Measures & Results
Tziner, Haccoun, & Kadish (1991)	94 Military instructors	Advanced training methods programme	Relapse prevention module Perceptions of work environment, locus of control, motivation to transfer	Self & supervisor (10 weeks after training)	Those who benefited from a relapse prevention training module showed higher levels of immediate post-training mastery of training contents, were more likely to use skill transfer strategies, and were more likely to transfer and apply skills. This was especially true for those relapse prevention trainees who were internals and who believed they worked in a supportive environment. There was not a main effect on transfer of training for the locus-of-control and the work environment factors alone.
Ford, Quinones, Sego, & Sorra (1992)	180 Air Force graduates	Technical training programme	Opportunity to perform trained tasks, work context	Self, supervisor (4 months after training)	Differential opportunities to perform trained tasks were most related to work context and individual factors. Specifically, the work context factor that had some impact on opportunity to perform was supervisor's perceptions of capability, skills, and likability. Individuals perceived by the supervisor to be competent and likeable obtained greater breadth of experience and performed more complex and difficult tasks. Those assigned to highly supportive workgroups also performed more complex and difficult tasks.
Rouiller & Goldstein (1993)	102 Fast-food chain managers	Manager training programme	Organisational transfer climate (situational cues and consequences)	Managers (varied – first several weeks after training to twelve weeks after training)	Training transfer behaviour – The organisational transfer climate, as measured by situational cues and consequences, is significantly related to training transfer, even after learning and unit performance are accounted for. The more positive the organisational transfer climate, the more the trainees demonstrated transfer behaviours. Situational cues and consequences were each separately found to significantly add to the explained variance in the degree of transfer behaviour and to independently contribute to transfer behaviour.
McSherry & Taylor (1994)	99 employees of a large service organisation	Team-building training	Supervisory support	Self & supervisor (one year after training)	Perceived training transfer – Trainees transferred only a small to moderate amount of skills from the training. Five supervisory support behaviours were critical for transfer of training – supervisors' use of skills and terminology from the training; creating opportunities for trainees to make decisions based on newly learned skills; reinforcing trainees' use of trained skills; creating opportunities to practise new skills; and providing feedback on skill use.

Author(s)	Sample	Training Content	Variables	Source & (timing)	Criteria — Measures & Results
Facteau, Dobbins, Russell, Ladd, & Kudisch (1995)	967 Managers and supervisors in state government	Management training programmes	Perceptions of transfer climate	Self (varied after training)	Perceived training transfer – Three social support variables (subordinate, supervisor and top management support) were predictive of pretraining motivation. In addition, pretraining motivation and subordinate, peer, and supervisor support were predictive of managers' perceived training transfer.
Tracey, Tannenbaum, & Kavanagh (1995)	505 Supermarket managers	Supervisor behaviours and skills programmes	Transfer of training climate & continuous learning culture	Self, co-workers, supervisor (6-8 weeks after training)	Posttraining behaviours – Both transfer of training climate and continuous-learning culture had direct effects on posttraining behaviours. In particular, the social support system appeared to play a central role in the transfer of training. For transfer of training climate, the social and goal cues were of most importance, and for continuous-learning culture, the social support indicator was of most importance.
Axtell, Maitlis, & Yearta (1997)	75 Non-managerial, technical staff	Interpersonal skills training	Managerial support & autonomy	Self & managers (immediate, 1 month & 1 year after training)	Perceived training transfer – After one month, the environmental variables did not have a significant effect on transfer. One year on from training, workplace autonomy was a significant predictor of transfer. Additionally, trainee-rated transfer of training at one month was a significant predictor of trainee-rated transfer after one year. There were no significant differences in ratings of transfer between time one and time two.
Xiao (1997)	106 Electrical company employees	Production training for new employees	Organisational variables	Self (9 months after training)	Learning in training was significantly related to improved on-the-job performance. Organisational factors accounted for most of the transfer over and above training. In addition, organisational variables that encourage application of KSA in the workplace promoted the transfer of training. Among the organisational variables, human factors, particularly supervision, appeared to be the most influential.

CHAPTER FOUR – THE PRESENT STUDY

The purpose of the present study is to investigate empirically the direct effects of various components of the work environment on perceptions of training transfer. Given that this is a relatively new area of research and little empirical evidence exists, it is intended to build on the base work which has already been conducted. An attempt will also be made to address some the issues raised at the conclusion of other studies.

Based on the finding of several studies reviewed in the previous section, three criteria will be examined – organisational commitment, task constraints, and social support.

Organisational commitment may be defined as "the extent to which one identifies with and is involved in an organisation" (Porter, Steers, Mowday, & Boulian, 1974; cited in Berry & Houston, 1993, p.100). Facteau et al (1995) consider that individuals who are more committed to the organisation should be more motivated to transfer skills to the work setting, displaying consistency with the organisational goals and mission. The notion of organisational commitment having a direct effect on the transfer of trained skills had not been examined prior to Facteau et al's (1995) study and it was not found to be related to perceived training transfer. However, given the lack of research in this area, this relationship will be examined in the present study.

Although, in previous research, task constraints have been considered in the examination of training transfer, they have been part of an environmental favourability construct. Researchers such as Noe and Schmitt (1986) used

separate measures of social support and task constraints, but used the scales to form just one variable. Such a measure is of dubious psychometric quality and makes it difficult to differentiate between the effects on transfer of social constraints and those of task constraints. Therefore, as directed by Facteau et al (1995), the present study will measure and examine task constraints separately from other variables.

While training literature suggests that social support for the transfer of training activities may be constituted from a variety of sources (e.g. subordinates, peers, supervisors and top management), most of the research prior to that of Facteau et al (1995) consistently viewed social support as a unidimensional construct. Likewise, management support for training has often been divided into two components within practitioner-oriented literature. While top management support and supervisor support have been heralded as important in the transfer of training to the workplace, training research affords little attention to such a differentiation (McSherry & Taylor, 1994). Therefore, consistent with the recommendations of such studies, the social support construct will be broken down into four predictors. Thus supervisor, peer, subordinate, and top management support will be considered. It is likely that the different sources of social support may have different effects on the transfer of training. For example, supervisor support may be more important than subordinate support in the prediction of transfer. Similarly, each source may play different roles depending on the time of skill transfer. For example, supervisor support may be important in the immediate stages of transfer and become less important as time progresses.

One of the most significant issues raised in Baldwin and Ford's (1988) review concerned the static nature of the research in relation to the dynamic nature of

the transfer process. Many of the early studies relating to the effect of the work environment on the transfer of training simply took one measure and often this measure was recorded immediately after the training programme was completed. It will be useful for research to be conducted in which measures are taken at multiple intervals so that the interactive effects of work-environment characteristics and time of skill use and skill reduction can be examined (Baldwin & Ford, 1988). While researchers have noted that the period of time on the job immediately after training is critical for transfer of training to occur (e.g. Baldwin & Ford, 1988; Noe, 1986) opinions vary with regard to how much time is needed to allow individuals time to demonstrate trained skills. Some studies imply that transfer is immediate (e.g. Baumgartel and associates, 1972, 1984), others have determined that a six to eight week period is required (e.g. Tracey et al. 1995), and a number of researchers take measurements at time periods from three to 18 months after training. It is unlikely that transfer can be determined in such a prescriptive manner. It is likely, however, that the time taken to transfer trained skills to the workplace will be highly dependent on factors such as the task to be completed, the individual, feedback quality and quantity, and a multitude of other conditions.

The benefit of studies which combine a number of data points in time are that they address the issue of what helps to sustain the use of trained skills. However, only a handful of studies take more than one measure (e.g. Hand et al, 1973; cited in Baldwin & Ford, 1988; Axtell et al, 1997). The current study will consider the differences in perceptions of training transfer at two time periods, and will consider the impact of different measures at different times.

The dependent variable in the current study is perceptions of training transfer. This measure is intended to gain information regarding the extent to which

individuals believe a variety of desirable outcomes have occurred as a result of their ability to transfer the skills they have learned in training courses back to the job (Facteau et al, 1995). Self-reported measures of training transfer have often been used in research of this nature. Baldwin and Ford (1988) comment that this is not surprising given that behavioural changes in interpersonal relations are difficult to operationalise. It has also been argued that an individual's perception of their environmental conditions is more relevant to their ability to transfer training than a more objective measure may be (Axtell et al, 1996).

Self-reports have traditionally been looked upon with some scepticism, particularly as they are prone to various measurement and rating biases. However studies have compared self-reports with other measure deemed 'objective', and findings suggest that individuals can reliably evaluate themselves in a manner similar to that of peers, supervisors, and objective performance data (Fox & Dinur, 1988; Somers & Birnbaum, 1991; Vance, MacCallum, Coovert, & Hedge, 1988).

Hypotheses

On the basis of the research and theory discussed previously, five hypotheses relevant for the transfer of training have been proposed.

Hypothesis one is that there will be a direct positive relationship between the four social support variables (peer support, subordinate support, supervisor support, top management support) and perceived training transfer at both time one (T1) and time two (T2). It is predicted that higher levels of support will increase the

likelihood of transfer. This hypothesis is based on the work of researchers such as Huczynski and Lewis (1980), Tracey et al (1995), and Xiao (1997).

Hypothesis two is that there will be a direct positive relationship between organisational commitment and perceived training transfer at both T1 and T2. It is predicted that higher levels of organisational commitment will increase the likelihood of transfer. This hypothesis is based on studies by Tannenbaum et al (1991) which found a relationship between organisational commitment and motivation to learn, and Facteau et al (1995), who found that organisational commitment affected transfer indirectly, through its effect on pretraining motivation.

Hypothesis three is that there will be a direct negative relationship between task constraints and perceived training transfer at both T1 and T2. It is predicted that higher levels of task constraints will decrease the likelihood of transfer. Few studies have attempted to conceptualise task constraints as separate from social constraints and study their effect on transfer, so this hypothesis is based primarily on literature. For example Noe (1986) and Peters and O'Connor (1980) suggested that situational constraints in the posttraining environment could impede the transfer of trained skills.

In addition to the hypotheses regarding the effects of independent variables on the dependent variable, perceived training transfer, predictions are made about the sustained use of skills over a twelve week time period.

Hypothesis four is that transfer will be greater at T2 (twelve weeks after training) than at T1 (two weeks after training). Such a hypothesis has rarely been

examined by way of empirical research in the past. Hand et al (1973, cited in Baldwin & Ford, 1988) and Axtell et al (1996) both measured transfer in longitudinally designed studies, but arrived at different results. Hand et al (1973, cited in Baldwin & Ford, 1988) found more transfer 18 months after training than twelve weeks after, while Axtell et al (1996) found similar ratings of transfer both one month and one year after training. It is difficult to generalise from the results of these studies for several reasons, such as their different design features and different measurement points. Primarily due to the significantly shorter time period examined in the present study, it is predicted that individuals will have had more opportunity to perform trained tasks twelve weeks months after training than they will have after only two weeks.

Hypothesis five is that different variables will affect perceived training transfer at T2 than those that affected it at T1. It is predicted that support, particularly supervisor support, will be particularly important two weeks after training. However, over time, other factors such as organisational commitment will become more important. Once again, the examination of the different factors which help to sustain the use of trained skills over time has not been forthcoming. This hypothesis is therefore based on suggestions by researchers such as Marx (1982) that during the initial phases of transfer, reinforcement from supervisors may be particularly important in helping trainees maintain new skills. It is also based partially on the study by Axtell et al (1996), who found that the key predictors of transfer after one year were different from those after one month. While Axtell et al (1996) found that autonomy became a key predictor of transfer over time, it is suggested that organisational commitment may produce a similar outcome. The present study deals with management training, and autonomy is implicit to some extent in any management position, for example in the willingness to invest time and effort in developing an appropriate skill base.

While supervisor support is necessary to provide opportunities to put training into practise, in the longer term trainees must practise and apply skills autonomously, so organisational commitment may be a better determinant of training transfer.

CHAPTER FIVE – METHODOLOGY

Subjects

The initial sample consisted of 214 ANZ Banking Group employees, who attended internal training courses between July and September 1998. This represents the total number of individuals who completed training through the ANZ Bank training department. The total sample indicates that a higher proportion of women attended training during this period than men. 63.1 percent of the total sample were female (n=135) and 36.9 percent were male (n=79). This split between the sexes is, however, not necessarily representative of the actual proportion of men and women within the organisation.

Procedure

During the period 7 July 1998 to 20 September 1998, all individuals attending internal training courses with the ANZ Banking Group were advised that following the course they would receive information requesting them to participate in a study about the training they had attended. They were assured that management had been advised of this research and were encouraged to participate. At this time each individual was handed an information sheet which ensured confidentiality, advised that those who chose to participate could refuse to answer any questions or withdraw at any time, invited individuals to contact the researchers at any time, and informed them that they could access information about the results of the study on its completion.

Approximately two weeks after the training course, each trainee was sent the first of two questionnaires. Once again, individuals were advised of their rights and were invited to participate in the research. Of the 214 questionnaires sent at T1, 64 were returned completed. This represented a response rate of 29.9 percent. 71.9 percent of the subjects were female (n=46) and 21.9 percent were male (n=14). Four questionnaires were returned without this information. Of the 64 questionnaires returned, one was unusable due to incomplete data.

At T2, twelve weeks after the training course had been completed, 60 follow-up questionnaires were sent out to those who had responded to the first questionnaires. The T2 questionnaires were sent to the specific T1 respondents, identified by name on the T1 questionnaire. Four individuals who responded to the first questionnaire had not supplied this identifying information, so a follow-up could not be sent to them. The initial data they provided was, however, still usable at T1. Of the 60 questionnaires sent out, 46 were returned completed, representing a response rate of 76.7 percent. 73.9 percent of the subjects were female (n=34) and 26.1 percent were males (n=12). Once again, only one of these 46 returned questionnaires was unusable due to incomplete data. Although a high response rate was expected as individuals had expressed interest in the study by completing the initial questionnaire, the response rate at T2 was increased by follow-up prompts. Those who had not returned a questionnaire after four weeks were reminded of the study and encouraged to respond.

Measures

In order to test the relationship between the work environment and perceptions of training transfer, measures of six theoretical constructs were included on the

questionnaire. These constructs were measured with a total of 42 items. The questionnaire was adapted from that used by Facteau et al (1995), and table 6 provides a description of the scales used in the study. Responses to all of the items on the questionnaire were made on five point Likert-type scales (e.g. 1="Strongly Agree", 5="Strongly Disagree"). For data analysis purposes this scale was reversed, so that higher scores indicated higher levels of the variable measured.

Table 6. Description of Scales Used in the Study

Scale	Number of Items	Sample Item
Perceived Training Transfer	9	The productivity of my subordinates has improved due to the skills that I learned in the training course.
Subordinate Support	4	My subordinates allow me to get accustomed to using my new training skills on the job.
Peer Support	4	My peers encourage my efforts to incorporate new procedures that I have learned in training.
Supervisor Support	10	My supervisor is tolerant of changes that I initiate as a result of learning new skills in training.
Top Management Support	5	Top management believes in the importance of training for supervisors and managers.
Task Constraints	10	Inadequate financial resources hamper my ability to apply new skills learned in training back to my job.

From Facteau et al (1995)

All of the constructs were assessed with scales that have been used in previous research. The development of each of these constructs is outlined below.

Social support for training – Facteau et al (1995) viewed social support for training and transfer of learned skills as a multidimensional construct, and,

accordingly, developed items based upon a review of literature (e.g. Baumgartel & Jeanpierre, 1972; Baldwin & Ford, 1988; Noe, 1986). The extent to which subordinates, peers, supervisors and top management were supportive of an individual's training efforts were measured. Facteau et al (1995) noted that, in general, items "assessed the extent to which these sources: (1) provided opportunities for managers to utilise trained skills; (2) were supportive of managers' efforts to apply trained skills back on the job (e.g. were tolerant of mistakes); and (3) reinforced managers' efforts to transfer skills to their job situation" (p. 10).

Task constraints – Peters and O'Connor (1980) have identified a number of categories of constraints which they believed restricted the use of skills on the job. Task constraints were therefore assessed with a scale based upon Peters and O'Connor's (1980) taxonomy of situational factors that may constrain individual performance. This scale was also used by Facteau et al (1995) in their study.

Organisational commitment – Concordant with Facteau et al (1995), organisational commitment was assessed using four items from Porter and Smith's (1970, cited in Facteau et al, 1995) scale.

Perceived training transfer – This scale was also developed by Facteau et al (1995), with items based upon a review of relevant literature (e.g. Noe, 1986; Tziner, Haccoun, & Kadish, 1991; Wexley & Baldwin, 1986). It measured "the extent to which managers believed that a variety of desirable outcomes (e.g. improved performance, reduced turnover, etc.) have occurred as a result of their ability to transfer the skills they have learned in supervisory and management training back to the job" (p.10).

Facteau et al (1995) constructed the items in the perceived training transfer measure so as to maximise the validity of self-reports. For instance, these items were as specific as possible, so as to follow research indicating that self-reports made on ambiguous scales are more inflated and less accurate than those made on specific scale anchors (e.g. Dunning, Meyerowitz & Holzberg, 1989; Farh & Dobbins, 1989, both cited in Facteau et al, 1995). Additionally, in an attempt to improve the accuracy of self-reports, the study was designed so that questionnaires were returned directly to the researcher and anonymity was maintained.

Analysis

The SPSS/PC statistical package was employed to examine data and relationships among the variables used in the study. Various analyses were undertaken. Initially, the data was separated into T1 and T2 information for the purposes of analysis. Each time point was then analysed independently.

All of the research variables were analysed using descriptive statistics. Following these preliminary analyses, the relationships between all the variables were examined via correlations (Pearson r's). The relationships between the perceived training transfer variable and the independent variables were then examined via stepwise regression analysis.

In order to establish whether any significant differences existed for each variable between T1 and T2, a paired sample t-test was carried out. Also with regard to the combined data set, a stepwise regression model was fitted to investigate the possibility that a model could account for data variation at both T1 and T2.

The results of the above analyses are presented in the following chapter and will be discussed within the context of the current research literature in chapter seven.

CHAPTER SIX – RESULTS

The results of the present study are presented in stages – descriptive statistics; results at T1 (two weeks after training was completed); results at T2 (twelve weeks after training was completed); and results comparing data at T1 and T2.

Descriptive Statistics

Table 7 shows the mean, median, and standard deviation for each of the variables, at both T1 and T2. These are based on the reversed scale, so that higher scores indicate higher levels of the variable measured. The scale ranged from one to five.

At T1 the mean score range for the support variables was 3.210 to 3.679, with the mean for top management support clearly lower than the others. There appears to be a similar standard deviation around the mean for each of the support variables, with the range from 0.56 to 0.64. Means for organisational commitment and perceived training transfer are also within a similar range as support variables (3.495 and 3.246 respectively).

At T2, the mean score range for the support variables was 3.298 to 3.673. As at T1, the mean for top management support was clearly lower than the others. There appears to be a similar standard deviation around the mean for each of the support variables, with the range from 0.55 to 0.63. These figures are also similar to those at T1. Means for organisational commitment and perceived training transfer are also within a similar range as support variables (3.539 and 3.293 respectively).

The descriptive statistics for T1 and T2 display a great deal of similarity. With the exception of peer support and supervisor support the means at T2 appear to be slightly higher than those at T1. This indicates higher levels of the variable measured - increased perceptions of transfer, subordinate support, top management support, organisational commitment and task constraints. The opposite effect is indicated for peer support and supervisor support. However, this effect is minimal for most variables, with changes of less than 0.09. The only exceptions are supervisor support (0.11) and task constraints (0.151). The other noteworthy effect between the two data points are the smaller standard deviations at T2. All but two of the variables displayed a lower deviation around the mean at T2, indicating less discrepancy between perceptions. Only peer support and subordinate support had higher standard deviations at T2. The differences between the T1 and T2 data will be examined in more detail in the final section of the results, with a paired samples t-test.

Table 7. Descriptive Statistics at T1 (two weeks after training) and T2 (twelve weeks after training).

Variable	Mean (Time 1)	Mean (Time 2)	Median (Time 1)	Median (Time 2)	Std. Deviation (Time 1)	Std. Deviation (Time 2)
Perceived Training Transfer	3.246	3.293	3.222	3.333	0.46	0.42
Peer Support	3.658	3.623	3.750	3.750	0.56	0.59
Subordinate Support	3.608	3.673	3.750	3.750	0.62	0.63
Supervisor Support	3.679	3.569	3.800	3.600	0.58	0.55
Top Management Support	3.210	3.298	3.200	3.400	0.64	0.59
Organisational Commitment	3.495	3.539	3.500	3.500	0.66	0.56
Task Constraints	2.405	2.556	2.400	2.600	0.61	0.53

Time 1: n=63
Time 2: n=45

Time One (two weeks after training)

Correlation Analysis

The intercorrelations among the constructs are presented in table 8. This indicates that a number of variables significantly correlated with perceived training transfer. Two of the support variables correlated with transfer at the $p<0.01$ level. These were supervisor support (0.384) and top management support (0.481). Peer support also correlated with transfer ($p<0.05$, 0.264). Of the four support variables, only subordinate support did not significantly correlate with transfer. The highest correlation was 0.464 ($p<0.01$), between perceived training transfer and organisational commitment. Task constraints and transfer did not significantly correlate.

Regression Analysis

To investigate the relationships between perceived training transfer and work environment variables, a regression model was fitted. This regression model is presented in table 9. The first explanatory variable in the model was top management support, as this was the most highly correlated with perceived training transfer. Stepwise regression was then used to see if other environmental variables improved the model significantly. Organisational commitment did significantly improve the model, raising R-squared from 0.232 to 0.324. Adding other variables did not significantly change the amount of explained variance, and no further significant predictors were observed. Together, top management support and organisational commitment explained 32.4 percent of the variance.

Table 8. Intercorrelations Among Study Variables (T1)

Variable	Perceived Training Transfer	Peer Support	Subordinate Support	Supervisor Support	Top Management Support	Organisational Commitment	Task Constraints
Endogenous variable							
Perceived Training Transfer	1.00						
Exogenous Variables							
Peer Support	.264*	1.00					
Subordinate Support	.178	.304*	1.00				
Supervisor Support	.384**	.431**	.581**	1.00			
Top Management Support	.481**	.378**	.486**	.529**	1.00		
Organisational Commitment	.464**	.320*	.393**	.339**	.381**	1.00	
Task Constraints	-.059	-.093-	-.303*	-.130	-.285*	-.167	1.00

Note: ** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

Table 9. Regression Analysis on Perceived Training Transfer at T1 (two weeks after training).

Independent variable	Beta	R-square	Adjusted R-square	Adjusted R-square change
Step 1				
Top management support	0.481	0.232	0.219	
Step 2				
Top management support	0.356			
Organisational commitment	0.328	0.324	0.301	0.082

Excluded variables	Beta if included
Peer support	0.030
Subordinate support	-0.174
Supervisor support	0.121
Task constraints	0.107

Time Two (twelve weeks after training)

Correlation Analysis

Table 10 outlines the intercorrelations between constructs at T2, twelve weeks after training. Overall, fewer significant correlations exist, both between perceived training transfer and the independent variables, and amongst the independent variables. Only two of the work environment variables correlated significantly with perceived training transfer. Of the four support variables, only subordinate support significantly correlated with transfer ($p < 0.01$, 0.382). Peer support, supervisor support, and top management support did not significantly correlate with transfer. Again the highest correlation was between perceived training transfer and organisational commitment (0.557, $p < 0.01$). Task constraints and transfer were not significantly correlated.

Table 10. Intercorrelations Among Study Variables (T2)

Variable	Perceived Training Transfer	Peer Support	Subordinate Support	Supervisor Support	Top Management Support	Organisational Commitment	Task Constraints
Endogenous variable							
Perceived Training Transfer	1.00						
Exogenous Variables							
Peer Support	.128	1.00					
Subordinate Support	.382**	.347*	1.00				
Supervisor Support	.243	.509**	.269	1.00			
Top Management Support	.211	.265	.414**	.279	1.00		
Organisational Commitment	.557**	.236	.432**	.487**	.298*	1.00	
Task Constraints	-.219	-.118	-.405**	-.265	-.477**	-.123	1.00

Note: ** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

Regression Analysis

To investigate the relationships between perceived training transfer and work environment variables, a regression model was fitted. This regression model is presented in table 11. As at T1, the variable most highly correlated with perceived training transfer was the first explanatory variable in the model. In this case organisational commitment was the variable used, and it explained 31.1 percent of the variance. Stepwise regression was then used to see if other environmental variables improved the model significantly. Adding the other five independent variables did not significantly change the amount of explained variable, and no significant improvements could be made to the model.

Table 11. Regression Analysis on Perceived Training Transfer at T2 (twelve weeks after training).

Independent variable	Beta	R-square	Adjusted R-square	Adjusted R-square change
Step 1				
Organisational commitment	0.557	0.311	0.295	

Excluded variables	Beta if included			
Peer support	-0.003			
Subordinate support	0.174			
Supervisor support	-0.038			
Task constraints	-0.153			
Top management support	0.049			

Paired Data – Time One and Time Two

Correlation Analysis

A number of differences can be observed between the correlations at T1 and those at T2 (presented in table 8 and table 10). Overall, more study variables were significantly correlated at T1 than at T2. This effect was evident in the relationship between the dependent variable, perceived training transfer, and the independent variables. At T1 three variables (supervisor support, top management support and organisational commitment) correlated at the $p< 0.05$ level, and one variable (peer support) correlated at the $p<0.01$ level. However, at T2, only two variables correlated with perceived training transfer ($p<0.05$), one of which had correlated at T1 (organisational commitment) and one which had not (subordinate support).

Paired T-Test

In order to establish whether any significant differences exist for each variable at the two data points (T1 and T2), a paired sample t-test was carried out.

Table 12 contains information about the differences between each set of data. This indicates that only two variables were significantly different between T1 and T2. Individuals reported more supervisor support at two weeks after training (T1) than twelve weeks after (T2). They also reported that there were more task constraints twelve weeks after training than two weeks after.

Table 12. Paired Samples Test

Variables	Paired Differences			
	Mean	Std. Dev.	t*	Sig. (2-tailed)
Perceived Training Transfer T1 & Perceived Training Transfer T2	-.2000	3.9920	.393	.696
Peer Support T1 & Peer Support T2	.2889	1.9024	1.019	.314
Subordinate Support T1 & Subordinate Support T2	-.1333	2.4365	-.367	.715
Supervisor Support T1 & Supervisor Support T2	1.2444	4.4780	1.864	.069
Top Management Support T1 & Top Management Support T2	-.1778	2.9641	-.402	.689
Organisational Commitment T1 & Organisational Commitment T2	.1111	1.8976	.393	.696
Task Constraints T1 & Task Constraints T2	1.8667	5.1460	2.433	.019

*df=44

CHAPTER SEVEN – DISCUSSION

Summary of Results

The present study was designed to examine the impact of a number of work-environment factors on trainees perceptions of their transfer of skills from the training setting to the work setting. In recent times a number of authors have raised the issue of a lack of research examining transfer of skills and knowledge acquired in the training context back to the job (e.g. Tannenbaum & Yukl, 1992; Tracey et al, 1995). Goldstein's (1978, 1986, cited in Goldstein, 1991) reconceptualisation of organisational analysis into "an examination of systemwide components" (p.523), prompted the analysis of whether a training programme could produce transfer behaviour. Other researchers, such as Baldwin and Ford (1988) have also emphasised the need to identify factors which may affect the transfer process. Although such needs have been clearly recognised, the development of underlying frameworks dealing with transfer issues has been relatively neglected. Several models have been produced which enhance understanding of the transfer process and assist in the analysis of transfer problems within organisations. However, most of these models display a lack of theoretical justification, and their use is largely based on their face validity.

While the present study was justified by the lack of theory and research in the area of training transfer, it was also driven by economic and practical concerns. With estimations that 80 to 90 percent of trained material may be lost between the training course and the job setting, it is clear that the amount of time and money spent on training does not convert to an appropriate return on investment.

With the increased importance of training programmes for organisation success in today's dynamic business climate, the issue of training effectiveness is paramount. In practical terms, it is vital that training practitioners and managers realise the roles that organisational systems play in the transfer of training. In order to gain maximum benefit from training programmes, organisations must strive to produce positive transfer amongst employees. Any research which increases awareness of transfer effects and the conditions leading to transfer will therefore be beneficial. In prompting greater understanding of such effects, the analysis of transfer problems within organisations will also help managers in the selection of appropriate interventions to eradicate potential problems.

Five hypotheses provided the basis for this examination. The outcome of each hypothesis is outlined below, prior to a more in-depth discussion of the findings.

Hypothesis one: That there will be a direct positive relationship between the four social support variables (peer support, subordinate support, supervisor support, top management support) and perceived training transfer at both time one and time two.

Results of the analysis at T1 indicated partial support for this hypothesis. Three of the social support variables, supervisor support, top management support and peer support, correlated with perceived training transfer. At T2, only subordinate support correlated with perceived training transfer. Further analysis of the data, in the form of regression modeling, indicated that top management support was the most significant predictor of perceived training transfer two weeks after training. However, at T2, twelve weeks after training, none of the social support variables were significant predictors of perceived training transfer.

Hypothesis two: That there will be a direct positive relationship between organisational commitment and perceived training transfer at both time one and time two.

This hypothesis was supported, indicating that higher levels of organisational commitment increased the likelihood of transfer. Organisational commitment and perceived training transfer were significantly positively correlated at both T1 and T2. Regression analyses also indicated that organisational commitment was a significant predictor of perceived training transfer at both data points. At T1, organisational commitment was one of the two variables which made a significant contribution to the model, while at T2, it was the only significant variable in the model.

Hypothesis three: That there will be a direct negative relationship between task constraints and perceived training transfer at both time one and time two.

No relationship between task constraints and perceived training transfer was indicated, therefore this hypothesis was not supported. No correlation between the variables was observed, nor did task constraints contribute to the regression model at either at T1 or T2.

Hypothesis four: That there will significantly more transfer at time two (twelve weeks after training) than at time one (two weeks after training).

This hypothesis was not supported. The paired samples t-test indicated that there was no significant difference in the amount of perceived training transfer between T1 and T2.

Hypothesis five: That different variables will affect perceived training transfer at time two than those that affected it at time one.

This hypothesis was partially supported. Correlation analyses and regression models at the two times identified the importance of different variables. At T1, two weeks after training, supervisor support, top management support, peer support and organisational commitment significantly correlated with perceived training transfer. At T2, twelve weeks after training, subordinate support and organisational commitment significantly correlated with perceived training transfer. The regression analysis at T1 indicated that top management support and organisational commitment significantly contributed to the model, explaining 32.4 percent of the variance. At T2 organisational commitment was the only significant variable in the model, explaining 31.1 percent of the variance.

Work Environment and Transfer

The central purpose of the present study was to examine the effects of several variables within the posttraining work environment on perceptions of training transfer. Previous theory (e.g. Noe, 1986) and research (e.g. Baumgartel & Jeanpierre, 1972; Baumgartel et al, 1984; Russell et al, 1985; Huczynski & Lewis, 1980; Tracey et al, 1995) has indicated that support from people in the work environment, such as supervisors and peers, can be conducive to the transfer of trained skills when back on the job. However, in many studies, the concept of social support has been incorporated within a wider concept, such as organisational climate (Baumgartel & Jeanpierre, 1972; Baumgartel et al, 1984), organisational support (Russell et al, 1985), or continuous-learning culture and transfer of training climate (Tracey et al, 1995). Some researchers have singled out supervisor support as a core variable rather than considering it as part of a

broad system. Xiao (1997), for example, found that supervision was the most influential variable in the promotion of transfer, while McSherry and Taylor (1994) also found that certain supervisory behaviours were critical for transfer. These included supervisors' use of skills and terminology from the training, creating opportunities to practice and make decisions based on new skills, reinforcing trainees use of trained skills and providing feedback on skill use.

Moreover, while support for the relationship between social support and transfer exists, in past research social support has been viewed as a unidimensional construct. Clearly, support in the transfer environment may originate from several sources. In this study, four separate variables constituted social support – subordinate support, supervisor support, peer support and top management support. Such a differentiation followed the work of Facteau et al (1995) who measured the same variables but at one time point only. Like the present study, they found different effects for each of the four forms of social support and training transfer. Despite this similarity, the effects on transfer differed substantially. Facteau et al (1995) found that only subordinate and peer support were positively related to perceived transfer, while supervisor support was negatively related. In the present study, two weeks after training, supervisor, peer and top management support correlated with perceived training transfer. Twelve weeks after training, only subordinate support correlated with perceived training transfer. The regression model indicated that top management support was the most significant predictor of transfer at the two week period, and none of the social support variables were significant predictors at the twelve week period. At this time, organisational commitment was the most significant predictor of transfer.

Despite such indications from the regression model, it is interesting to consider the findings associated with the change in relationship between subordinate support and perceived transfer between T1 and T2. The different levels of correlation between the support variables and transfer at each time point may indicate that different types of support are important at different times. Marx (1982) suggested that during the initial phases of transfer, reinforcement from supervisors may be particularly important in helping trainees maintain new skills. While Axtell et al (1996) found that, over time, factors such as autonomy became more critical in the maintenance of skills, it is also reasonable to assume that subordinate support may be of greater importance after the initial transfer phase. Conceivably, autonomy may involve a trainee moving away from the support of a supervisor, and coming to rely more on support from those who they work in a reciprocal arrangement with – subordinates. As such propositions about support are so new to the study of training transfer, it would be worth examining this area in greater detail in the future.

These results suggest that social support plays less of a role for the present sample than would have been expected on the basis of previous research. Issues surrounding support in the context of transfer may be dependent on additional issues, such as the level of the employee and the type of training conducted. The results also suggest that social support (specifically top management support) is more important during the immediate period after the completion of training, than later on. This latter issue will be discussed in more depth later when considering the sustained use of trained skills.

In interpreting the findings regarding the social support variables, it is important to recognise the potential problems with the scales used. The correlation analysis conducted on T1 data raises the possibility that social support may be

measuring the same, or very similar, latent constructs. Such an argument is also be strengthened by the limited attempts to examine support as a multidimensional issue within the literature and indicates that more work needs to be done to define support, who provides it and whether its context will change over time or in relation to task demands. While Baldwin and Ford (1988) were critical of this level of research with regard to supervisor support, few researchers have addressed the issue of the concept of support. McSherry and Taylor (1994) have produced one of the few studies which does attempt to identify specific supervisory behaviours and relate them to transfer. Having raised such an issue, it is also notable that fewer significant correlations exist between the social support variables at T2 than at T1. This may somewhat weaken the above argument, as similar intercorrelations would have been expected had the same latent constructs been addressed. Only future research involving the use of these scales would clarify this issue.

A further possible explanation for the largely unexpected results again relates to the correlations between the independent variables. While top management support appears to be important in the transfer of training, it may be indicative of the general level of perceived support within the organisation. If fact, each of the support variables may elicit a similar shared concept which actually measures support in general, rather than one of the more specific concepts. Likewise, it is interesting to note that all but one of the support variables correlated with organisational commitment, which was a significant variable in regression models at both T1 and T2. This may be indicative of these variables tapping into a factor more general than support. For example, if supervisors are viewed as promoting autonomy and the use of new skills, this may be reflected in the concept of organisational commitment.

Aside from the social support variables, organisational commitment and task constraints were predicted to be significantly related to perceived training transfer. In accordance with predictions, increased levels of organisational commitment did lead to increased perceptions of transfer. While organisational commitment was a significant predictor of perceived training transfer at both T1 and T2, at T2, twelve weeks after training, it was the only significant variable in the regression model.

While previous research, albeit limited, has indicated that organisational commitment appears to have an indirect effect on transfer (e.g. Facteau, 1995), this is the first study to support a direct link between the two variables. The indirect link discovered in previous studies concerned the issue of motivation. While Tannenbaum et al (1991) found that organisational commitment was correlated with motivation to learn during training, Facteau et al (1995) studied the concept in relation to the transfer issue. They found that organisational commitment was predictive of pretraining motivation, which was in turn significantly related to perceived transfer. The concept of motivation was not examined in the present study, so it is not feasible to determine the cause of such effects. However, it is worthwhile considering some of the possible interpretations for the direct effect between organisational commitment and perceived training transfer found in the present study.

This finding needs to be considered in light of the organisation studied. The banking industry is undergoing significant changes, primarily due to the competitive nature of the business and new service delivery demands. Such changes have lead to the introduction of new technology, and the need for the organisational structure and individuals within the organisation to change is greater than ever.

Bartol and Martin (1994) set out four key organisational change components: structural, technological, human resource and cultural. They point out that whilst minor change may only incorporate one component, major changes are likely to include all four. They indicate that effects upon one component apply pressures to others as if each were interconnected by rubber bands. In the organisation studied, there is major change occurring, and this has been the case for quite a long period. If Bartol and Martin (1994) are correct, the results of this study would not be surprising in regard to organisational commitment. The pressures asserted in the human resources area, where there are regular redundancies occurring, would be influencing the culture of the organisation, the shared values and belief systems of which training is an integral part. The resistance to change which many individuals display would also be influencing this culture. Resistance occurs for a variety of reasons, for example the threat of increased demands, threats to autonomy or job security, or simply fear of the unknown. The changes may or may not be consistent with particular values and beliefs held by the individual, and, depending on the change process implemented, may or may not involve the individual. These two factors – identification with and involvement in the organisation – form the basis of organisational commitment. All such factors would be being influenced also by the organisational structure which is itself changing rapidly.

It would be beneficial to replicate this study some time in the future when the organisation becomes more stable. However, as pointed out earlier, with the ongoing development of a competitive global marketplace, the nature of business is constantly changing and becoming more dynamic. Therefore, it may be that the results of this study reflect such changes in organisations. This would then indicate that the study of work-environment factors and transfer of training is also a dynamic entity, with different factors being salient at different

times in the life of an organisation. This of course would also make such factors somewhat contingent on the forces impacting on the organisation at the time.

Although this explanation may contribute to the finding which relates organisational commitment and perceived training transfer, it may also help to account for significance of top management support in the model. It is likely that top managers are leading changes occurring within the organisation. If individuals perceive such role models in a positive light, they may be more likely to follow them and to take positive steps in their work-environment. One step may be to make a more concerted effort use the skills developed through training programmes. It is interesting to note that the results indicated a significant correlation between top management support and organisational commitment at both T1 and T2. This may lend support to the argument that organisational change is a force which may impact on both variables.

Another explanation for the relationship between organisational commitment and perceived training transfer may lie in a measure not examined in the study - effort to apply. Baumgartel and his colleagues (Baumgartel & Jeanpierre, 1972; Baumgartel et al, 1984) found that favourable perceptions of the organisational climate were significantly and positively related to the effort individuals exerted in applying trained skills. It may be that, in the present study, those who are more committed to the organisation put greater effort into applying the skills they have learned and therefore perceive that they have transferred more to the job setting. On the other hand, individuals who are not as committed to the organisation may not have put a great deal of effort into applying skills, so it would follow that their transference of skills would be lower. Although such an idea would seem logical, the lack of such a process measure makes it impossible to examine this link at present.

Regardless of the explanation, the relationship between organisational commitment and perceived training transfer may have important implications for organisations. For example, it suggests that those who are highly committed to the organisation may be more likely to benefit from training than those less committed (Facteau, 1995). This information contains practical value for organisational development. It indicates that it may be beneficial for organisations to incorporate the concept of organisational commitment into a training needs analysis so as to identify problem areas requiring intervention. In order to fully utilise training, changes in organisational climate may therefore be required.

Contrary to expectations, task constraints were unrelated to perceived transfer. While some researchers (e.g. Noe, 1986) suggest that task constraints make up part of the concept of environmental favourability, they have rarely been studied as an independent measure. Although Facteau et al's (1995) study considered task constraints as a variable in the transfer of training, the notion that situational constraints in the posttraining environment could impede the transfer of trained skills had been postulated for some time. Researchers such as Noe (1986) and Peters and O'Connor (1980) appear to have adopted such a viewpoint well before empirical studies examined it, with Peters and O'Connor (1980) even identifying categories of constraints which they believed restricted the use of skills on the job. Despite such a perspective, both Facteau et al's (1995) study and the present study found no significant relationship between task constraints and the transfer of training. It was suggested by Facteau et al (1995) that the failure to find a relationship between these two variables may have reflected the fact that individuals in their study did not believe that severe task constraints were present in their work environment. Previous research of a slightly different nature lends support to this idea. Studies conducted in a laboratory setting has

shown that situational constraints have a debilitating effect on performance (Facteau et al, 1995). However, Peters, O'Conner & Eulberg, 1985, cited in Facteau et al, 1995) have produced evidence suggesting that these constraints do not consistently lower job performance, and also point out that work environments which have strong situational constraints are rare. They then went on to suggest that constraints become impediments to performance only when they are severe.

Like Facteau et al's (1995) findings, indications in the present study are that most individuals viewed task constraints as having only a modest effect on their ability to transfer trained skills. Such a conclusion has been drawn from the mean score on the task constraint measure at T1 and T2 (2.405 and 2.556 respectively). The findings discussed above may therefore be applied to the present results. It would appear that the task constraints perceived by individuals were not severe enough to have a negative effect on the transfer of trained skills.

It is also conceivable that as individuals in the present study were in management roles, they may have become accustomed to dealing with task constraints within the environment. The relatively high levels of subordinate support reported - indicated by the mean score on this measure (3.608 at T1 and 3.673 at T2) – also suggest that task constraints may not have been present, or that supervisors were able to deal with such constraints effectively.

Time Differences

While very few studies have examined the transfer of training over time, researchers have acknowledged that a key issue concerns the sustained use of trained skills over time (e.g. Axtell, 1996). The present study contributes to research in that it takes a longitudinal approach to the study of training transfer, measuring the effect of several variables at two time points, two weeks after training, and twelve weeks after.

One of the interesting findings relating to the time factor is that perceptions of training transfer did not change between the time periods. This finding suggests that the use of skills two weeks after training and twelve weeks after training did not change substantially. However, while transfer remains constant, it is clearly supported by different organisational factors. Only two of the empirical studies of the work-environment and transfer of training have considered transfer changes over time. While Hand et al (1973, cited in Baldwin & Ford, 1988) found no significant changes in attitudes or behaviour three months after training, after 18 months, significant positive changes in attitudes were observed in the experiment groups. Whereas the results of Axtell et al (1996) indicated similar transfer patterns as the current study. At both time periods, one month after training and one year after training, trainee ratings of transfer were similar, with at least a moderate amount of skill and knowledge from the training being transferred to the job. Such conflicting results make it difficult to draw any firm conclusions concerning the issue of transfer across time.

It is would also be unwise to generalise from such research findings as each study measures the transfer of training at different times. In particular, the present study only considered transfer up until twelve weeks after training.

A further factor which confounds results is the nature of the training which occurred. Hand et al's (1973, cited in Baldwin & Ford, 1988) sample was made up of managers attending human relations training programmes, and the training content of Axtell et al's (1995) selected programme was similar, interpersonal skills training. The present study examined the perceptions of individuals who attended a range of training programmes within the same organisation. For example, training programmes focusing on negotiation skills, management and leadership, business skills, dealing with difficult interviews, performance management, business communication skills, time management and developing high performance teams, were all included in the spectrum of this study. An issue which must be raised when considering such a broad array of training topics is that it may take a varied amount of time to see the benefits of training in each area. It is likely that transfer is contingent not only on certain training design, individual and environmental factors, but also on time factors. For example, skills learnt in a time management course may be implemented almost immediately after completion of the course as it is a day to day issue. However, skills and knowledge gained about dealing with difficult interviews may not be so easy to implement quickly if an individual does not have a difficult interview to deal with straight after training. This is an important issue to consider in future research as it may make a significant difference to the way training programmes are researched. Training in areas such as budgeting and strategic management may require much longer periods than considered before in order for a true reflection of transfer to become apparent. Budgeting occurs on an annual basis and consequently transfer should be measured after 12 months. Strategic management skills may, however, take several years to transfer into the work setting due to the long-term nature of such training.

Unlike other studies of training transfer, the six independent variables were also examined for differences across time. Two variables showed significant differences at the two week and twelve week periods – supervisor support and task constraints. Comparisons revealed that more supervisor support occurred two weeks after training than twelve weeks after training. They also revealed that there were more task constraints twelve weeks after training than two weeks after. This finding, coupled with the results of the regression models at T1 and T2 indicate that while the perceptions of training transfer did not change over time, the use of trained skills may be sustained by different underlying processes at different times.

The differences in supervisor support may be explained by such managers showing an early interest in the training their employees had undertaken, and this interest waning over time. Likewise, the trainee may actually call for more support from their supervisor in the early stages after training with the need for such support deteriorating over time. The same effect would also result if managers had expectations of the likelihood of problems occurring in the implementation of new skills. Marx (1982) discusses this issue in terms of relapse prevention models which assist in maintaining behaviour change. In doing so, he implies that the initial stages following the completion of training, when crises and temporary failures are most likely, require the highest levels of supervisory support for trainees. Whether the reduced levels of supervisor support in the present study were due to conscious or unconscious decisions by the supervisor or trainees, several explanations are worthy of consideration and further examination.

It is difficult to approach the issue of increased levels of task constraints without substantial knowledge of the organisational setting and influences at the time.

The fact that individuals perceived there to be more constraints twelve weeks after training than two weeks after is unlikely to be related to the training itself or to transfer issues. In fact, as seen, analyses indicated that task constraints were in fact unrelated to perceived training transfer. Therefore the rise in task constraints is likely to be indicative of internal organisational workings at the times of measurement.

In a similar vein to the differences in variables at each time point, the present study also examined whether different variables would affect perceptions of transfer at T2 than those that affected it at T1. It was hypothesised that there would be a significant difference in variables predictive of transfer, for reasons such as those mentioned earlier in the discussion of changes in supervisor support. To a certain extent this hypothesis was supported, although because the social support variables were not as important as predicted, the relative effects at T1 and T2 were also not as expected. Regression models indicated that different factors influenced perceptions of training transfer at the two time points. Two weeks after training top management support and organisational commitment explained over 32 percent of the variance, while none of the other variables were significant predictors of transfer. Twelve weeks after training, however, organisational commitment became the only significant predictor of transfer, explaining approximately 31 percent of the variance. That organisational commitment was the overriding variable of importance in each model may be attributed to similar causes as mentioned in earlier discussions.

A further notable point about the different effects on perceived training transfer is that fewer significant correlations between this variable and the independent variables were observed at T2 than at T1. In fact, while three of the support variables (peer, supervisor and top management support) and organisational

commitment correlated with perceived training transfer at T1, only subordinate support and organisational commitment correlated at T2.

Limitations

The results of the present study must be considered in light of its limitations. One of the most obvious limitations is the relatively small sample size. This is true for both phases of the research, although the sample size is particularly small at T2, twelve weeks after training occurred. While such a sample size is lower than desirable for regression analysis, clear-cut trends have emerged, but the results may not be particularly robust.

The fact that participation in the study was voluntary was emphasised at several points in the data collection process. Such voluntarism may differentiate those trainees who agreed to participate from those who declined. Several distortions may have occurred due to this factor, and the comparative proportions of male and female participants may indicate one such distortion.

The data obtained in the study were collected from a single source, trainees self-reports. The results of single source data may be affected by method variance, increasing the potential for false relationships among some variables (Campbell & Fiske, 1959, cited in Facteau et al, 1995). Such an issue may therefore result in artifactual effects caused by the measurement process used rather than actual relationships between the constructs. Facteau et al (1995) have reviewed the debate about the seriousness of method variance. Researchers appear to have vastly different views on the seriousness of the issue. While Spector (1987, cited in Facteau et al, 1995) found little evidence that method variance biases

relationships, Williams, Cote and Buckley (1989, cited in Facteau, 1995) argued that method variance accounts for approximately 25 percent of the variance in the same variables. While it is important to consider the possibility of such a single source bias occurring, the seriousness of the problem depends upon the type of investigation occurring (Facteau, 1995). In this case, because perceptions are of primary interest such a bias may be a less serious issue.

Several steps were taken in the present study to increase the accuracy of the self-report data obtained. Likewise, the potential for inflation of responses was minimised where possible. For example, based on Facteau et al's (1995) scales, items were highly specific, and, additionally, confidentiality and anonymity were both assured and maintained. However, while other researchers have utilised similar measures of training transfer, the self-report measure may be seen as a potential limitation of the study. In addition to the potential for inflation, a further bias prevalent in self-reports is the tendency for individuals to rate leniently. Leniency is usually prompted by social desirability processes which dictate that trainees would appear foolish if they did not report a post-training improvement (Schmitt & Klimoski, 1991). Self-reports have been found to be, on average, over half a standard deviation higher than supervisor ratings, and approximately one-quarter of a standard deviation higher than peer ratings (Harris & Schaubroeck, 1988). Once again though, it is important to remember that the perceived training transfer measure was intended to gain information regarding the extent to which individuals believe a variety of desirable outcomes have occurred as a result of their ability to transfer the skills they have learned in training courses back to the job (Facteau et al, 1995). Effectively, by not setting out to measure transfer per se, the potential for leniency bias to effect results is lessened.

A related limitation is that pre-measures of the use of skills examined were not available prior to the courses. With regard to leniency bias, an accurate evaluation of training transfer would have been possible had pre-measures been taken as trainees typically exhibit the same amount of leniency on both pre- and post-self-ratings. Such an effect would then still yield a measure of training effect. Furthermore, levels of transfer may have remained similar between two weeks and twelve weeks simply because the trainees were using such skills anyway. Whether or not this was the case, without the use of a control group, the difference between pre- and post-training behaviours cannot conclusively be attributed to training (Tracey et al, 1995). However, without the benefit of pre-measures it is still possible to see the changes occurring over time between the work environment and perceptions of transfer.

With regard to measurement issues, the present research has, to some extent, addressed the need to examine data from multiple intervals so as to define the interactive effect of work environment characteristics and training transfer. However, time restrictions allowed only a twelve week follow-up which is not ideal for the identification of behaviour changes. It would be beneficial in the future to study changes over a longer period of time, such as one year (e.g. Axtell et al, 1996), or 18 months (e.g. Hand et al, 1973, cited in Baldwin & Ford, 1988). Additionally, it would be ideal to obtain information from more than two data points.

One of the criticisms of previous research examining work-environment characteristics and the transfer of training can also be made of the present study. Baldwin and Ford (1988) point out that "support for the importance of environmental characteristics to transfer is based solely on correlation studies in which causality can not be inferred" (p.85), and go on to state that key variables

must be identified and operationalised. Like many other studies in this area, the present study did not consider which supervisory behaviours actually led to perceptions of support by trainees. While McSherry and Taylor's (1994) study examined specific supervisory support for training behaviours, this issue must be investigated in the future. Only when work-environment characteristics are operationalised can effective interventions be developed and their effects on the transfer of training examined (Baldwin & Ford, 1988).

Future Research

Given the recent findings regarding contextual influences on training transfer, future studies should continue to examine the role of the work environment. Several suggestions have been made throughout this discussion with regard to the focus for future research in this area. One of the main thrusts for future research lies in the incorporation of literature and research into conceptual and operational frameworks which can be used to demonstrate the importance of the work environment for the transfer of training.

However, a more pressing task may be for the key variables associated with the work environment to be identified and operationalised. Although Baldwin and Ford (1988) have emphasised this need, it has not yet been adequately addressed. While research suggests that several support factors may be important in affecting transfer, few attempts have been made to understand particular behaviours which lead to trainees perceptions of support. As suggested by Baldwin and Ford (1988), only when operationalisation has occurred can interventions be developed and their effects on conditions of transfer examined.

The present study continues to demonstrate the importance of viewing support as a multidimensional construct. The unique effects of the different social support variables on perceived training transfer were examined and found to be differentially related. These findings affirm the importance of separating the effects of different aspects of the support variable. Thus, future research should attempt to better understand the manner in which social support variables operate in combination with other types of support to affect training transfer.

The findings reported here have implications for future research on training transfer. They suggest that it is important to examine the organisational context in which training exists. For example, top management support may affect the transfer of training in the workplace. It may be that these groups can provide support to trainees by expressing their belief in the importance of training and by encouraging the use of new behaviours and rewarding the use of such behaviours. This study also indicates the importance of viewing training transfer in a systemwide perspective. Results suggested that the importance of different work environment factors may be contingent on the forces impacting on the organisation. For example, the major change occurring in the organisation studied may have contributed to the fact that organisational commitment was a key predictor of perceived training transfer.

It is important that future research continues to consider the sustained application of training to the workplace. The present study indicates that, while levels of transfer may not differ greatly over time, the underlying mechanisms impacting on transfer do change. In order to help trainees maintain new skills, it is important for research to identify which interventions are critical at each phase of transfer. Such an issue can only be addressed by examining transfer in longitudinal studies.

One of the factors which has the potential to confound results, both in this and other research, is the nature of the training which occurs. While transfer is contingent on certain training design, individual and environmental factors, it is also likely to be contingent on time factors. This implies that the amount of time to see transfer in the work setting will be dependent on the type of training conducted. Training in areas such as budgeting and strategic management may require much longer periods than previously considered in order for a true reflection of transfer to become apparent. Such an issue may make a significant difference to the way training programmes are researched in the future. Again, it enhances the need for transfer to be studied using longitudinal research.

Summary

The present study was designed to examine the impact of a number of work-environment factors on trainees perceptions of their transfer of skills from the training setting to the work setting. The findings have several research and practical implications. In summary, the results suggest that it is important to continue examining work environment factors related to training transfer. Some support was found for the relationship between social support and transfer and, in particular, top management support was a key predictor of transfer. This provides further support to previous research which indicates that managerial follow-up in the workplace is necessary to improve productivity through training. The present study emphasised the complexity of the concept of workplace support. It implied that support involves different elements at different times, accentuating the need for basic research in this area.

While organisational commitment has rarely been studied in relation to training transfer, the present research indicated that increased levels of organisational commitment led to increased perceptions of transfer. This finding warrants greater consideration of the organisational commitment construct in the future, but may also provide insights for organisations currently undergoing significant changes. One of the practical implications of such a finding is that that those who are highly committed to an organisation may be more likely to benefit from training than those less committed. This may then have further flow-on effects for other organisational activities. For example, the concept of organisational commitment may be incorporated into a training needs analysis so as to identify problem areas requiring intervention.

The present study contributes to research in that it takes a longitudinal approach to the study of training transfer, measuring the effect of several variables at two time points, two weeks after training, and twelve weeks after. While perceptions of training transfer did not change between the time period, results indicate that different underlying processes may sustain the use of trained skills at different transfer phases. In practical terms this indicates that managers need to increase their awareness of both transfer processes and the impact of work environment factors on these processes. It is likely that managers will need to adapt their behaviours in order to provide adequate support so that positive transfer can occur.

It is important at this stage to remember that the transfer process involves a variety of training inputs. While the present research has emphasised the importance of the work environment on conditions of transfer, other factors also combine to provide a framework for considering this issue. The models described at an earlier stage (e.g. Baldwin & Ford, 1988; Richey, 1992, cited in

Garavaglia, 1996; Garavaglia, 1996) all predict that aspects of training design and delivery, and trainee characteristics, contribute to transfer. Both of these factors require considerable lead-in time prior to training in order to be effectively studied. In the present study, there was no control over training design or instructional factors, nor was there a significant amount of time prior to the selection of trainees in order to examine their individual characteristics. While future theory and research will help in the prediction of the relative strengths of training design, trainee characteristics and work environment factors at different times, the complexity of the transfer issue will remain.

With the substantial amount of time and money invested in workforce training and development, it is important to convert it for an appropriate return on investment. The current 80 to 90 percent loss of trained material from the training course to the job is therefore unacceptable for organisations existing in today's dynamic business world. Any research which can enhance understanding of the transfer process and help to reduce this substantial loss must have potential worth.

The challenge is to conduct research based on sound theoretical principles, in a systematic scientific manner, free from the many problems which seem to have accompanied research on work environment constructs to date.

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APPENDIX ONE - INFORMATION SHEETS

The Impact of Factors Within the Work Environment on Perceptions of Training Transfer

INFORMATION SHEET
Questionnaire 1

The purpose of the current study is to examine the impact of the work environment on the transfer of training. It is about how certain factors within the work environment (e.g. supervisory and peer support, organisational climate) may affect the use of skills, learned during training, on the job. The study will examine the use of such skills at two periods following training, so participants will be asked to fill in questionnaires approximately two weeks and three months after training.

A short time ago (about two weeks) you completed an ANZ Bank training course. As a participant in an ANZ training course, you are now invited to participate in this study. The enclosed questionnaire is the first of two questionnaires. Responses to this questionnaire will be used to make an initial assessment of the impact of the training. This information can subsequently be used to enhance the utility of training on the job.

If you have any queries regarding this research please contact either myself, the researcher (Keryn Weir), or my supervisor, Associate Professor Douglas Paton. Our contact details are:

Keryn Weir	*Douglas Paton*
Phone: 06 353 1113	*Phone: 06 350 6151*
E-mail: keryn.w@clear.net.nz	*Email: D.Paton@massey.ac.nz*

You have the right to decline to take part should you wish – participation in the study is totally voluntary. Completion of this initial questionnaire implies consent to continue to participate in the study. You have the right to withdraw at any time during the study and to refuse to answer any questions asked of you. If at any time during participation in this study questions should arise about the research they may be directed to the researcher. One more questionnaire will be sent to you in about two months.

All information given by participants throughout the duration of the study will be treated in the strictest confidence. The information will be held by the researcher and no part of the information or specific details of responses will be made available to any individual or organisation.

Because this study is investigating the transfer of training over time, it is important that I am able to contact you directly in the future. For this reason, your name has been used as a means of contacting you. Neither names, or any other identifying information, will be disclosed to bank personnel and future questionnaires will be sent direct to you.

Once completed, please place your response into the self-addressed envelope provided. The questionnaire will be sent direct to me.

This study is independent of the training course you took part in, and is therefore also independent of any assessment procedure associated with the training course. The study has no impact on any work or study you are involved with in the bank.

On completion of this study a summary of the research findings will be available to participants through the ANZ Bank. No reference will be made to any particular person or group, nor will information which might identify such individuals or groups appear on any thesis or publication prepared from the data obtained here.

In summary, you have the right:
- ➲ to decline to participate;
- ➲ to refuse to answer any particular questions;
- ➲ to withdraw from the study at any time;
- ➲ to ask any questions about the study at any time during participation;
- ➲ to provide information on the understanding that your name will not be used unless you give permission to the researcher;
- ➲ to be given access to a summary of the findings of the study when it is concluded.

The Impact of Factors Within the Work Environment
on Perceptions of Training Transfer

INFORMATION SHEET
Questionnaire 2
Follow up 1

Approximately three months ago you completed a questionnaire on training. As a participant in an ANZ training course, you are invited to continue to participate in this study. At that time, the fact that a follow would be conducted was mentioned. The purpose of the current study is to examine the impact of the work environment on the transfer of training. It is about how certain factors within the work environment may affect the use of skills, learned during training, on the job. The enclosed questionnaire is the second, and final, of two questionnaires. The follow-up is important as it will allow a measure of transfer to be obtained. This information can subsequently be used to enhance the utility of training on the job.

If you have any queries regarding this research please contact either myself, the researcher (Keryn Weir), or my supervisor, Associate Professor Douglas Paton. Our contact details are:

Keryn Weir   *Douglas Paton*
Phone: 06 353 1113   *Phone: 06 350 6151*
E-mail: keryn.w@clear.net.nz   *Email: D.Paton@massey.ac.nz*

You have the right to decline to take part should you wish – participation in the study is totally voluntary. Completion of the enclosed questionnaire implies consent to continue to participate in the study. You have the right to withdraw at any time during the study and to refuse to answer any questions asked of you. If at any time during participation in this study questions should arise about the research they may be directed to the researcher.

All information given by participants throughout the duration of the study will be treated in the strictest confidence. The information will be held by the researcher and no part of the information or specific details of responses will be made available to any individual or organisation.

Because this study is investigating the transfer of training over time, it is important that I have a means of matching this questionnaire with the last one you completed. For this reason, your name has been used to identify you. Neither names, or any other identifying features, will be disclosed to bank personnel.

Once completed, please place your response into the self-addressed envelope provided. The questionnaire will be sent direct to me.

This study is independent of the training course you took part in, and is therefore also independent of any assessment procedure associated with the training course. The study has no impact on any work or study you are involved with in the bank.

On completion of this study a summary of the research findings will be available to participants through the ANZ Bank. No reference will be made to any particular person or group, nor will information which might identify such individuals or groups appear on any thesis or publication prepared from the data obtained here.

In summary, you have the right:
- ➲ to decline to participate;
- ➲ to refuse to answer any particular questions;
- ➲ to withdraw from the study at any time;
- ➲ to ask any questions about the study at any time during participation;
- ➲ to provide information on the understanding that your name will not be used unless you give permission to the researcher;
- ➲ to be given access to a summary of the findings of the study when it is concluded.

APPENDIX TWO - THE RESEARCH QUESTIONNAIRE

Name: ....

Department: ....

QUESTIONNAIRE

The Impact of Factors Within the Work Environment on Perceptions of Training Transfer

When considering the following questions, please relate them to the ANZ course you recently attended.

Instructions

Please use the following scale to indicate how often each of the following factors has hampered your ability to apply new skills that you have learned in training back to your job.

1 = *Almost always*
2 = *Frequently*
3 = *Occasionally*
4 = *Seldom*
5 = *Never*

Task Constraints	Almost Always	Frequently	Occasionally	Seldom	Never
Unclear task assignments or instructions.	1	2	3	4	5
Lack of necessary tools, equipment, mechanical devices and/or material aids.	1	2	3	4	5
Inability to obtain the raw materials, parts, or supplies.	1	2	3	4	5
Inadequate financial resources.	1	2	3	4	5
Insufficient personnel.	1	2	3	4	5
Uncooperative co-workers and/or poor relationships between people in different departments/divisions.	1	2	3	4	5
Insufficient time to produce the quality or quantity of work required.	1	2	3	4	5
Poor environmental conditions (e.g. cold, hot, noisy, frequent interruptions).	1	2	3	4	5
Uncooperative supervisor or productivity pressures from your supervisor.	1	2	3	4	5
Inabilities of subordinates or co-workers to take on additional work or responsibilities.	1	2	3	4	5

Instructions

Please use the following scale to indicate the extent to which you agree with each of the following statements:

1 = Strongly agree
2 = Agree
3 = Neutral
4 = Disagree
5 = Strongly disagree

Organisational Commitment	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am willing to put in a great deal of effort beyond that normally expected in order to help this organisation be successful.	1	2	3	4	5
I talk up this organisation to my friends as a great organisation to work for.	1	2	3	4	5
I find that my values and the organisation's values are very similar.	1	2	3	4	5
For me, this is the best of all possible organisations to work for.	1	2	3	4	5

Subordinate Support	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
My subordinates allow me to get accustomed to using my new training skills on the job.	1	2	3	4	5
My subordinates accept me making mistakes on the job as a necessary part of my trying out new training skills.	1	2	3	4	5
My subordinates offer me constructive feedback when I use new skills and behaviours learned in training.	1	2	3	4	5
My subordinates believe that training is an important use of my time.	1	2	3	4	5

Peer Support	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
My peers encourage my efforts to incorporate new procedures that I have learned in training.	1	2	3	4	5
My peers reward me for using new skills taught in training.	1	2	3	4	5
My peers attend training and try to use new skills in their jobs.	1	2	3	4	5
My peers believe in the importance of training.	1	2	3	4	5

Supervisor Support	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
My supervisor helps me when I ask him/her for advice about how to use the skills taught in training.	1	2	3	4	5
My supervisor is tolerant of changes that I initiate as a result of learning new training skills.	1	2	3	4	5
My supervisor offers me opportunities to use new skills I learned in training.	1	2	3	4	5
My supervisor gives me constructive feedback when I try out new skills or behaviours learned in training.	1	2	3	4	5
My supervisor rewards me for using new skills on the job that I learned in training.	1	2	3	4	5
My supervisor believes that training is important and she/he attends relevant courses.	1	2	3	4	5
My supervisor actively practices those skills taught in ANZ training courses.	1	2	3	4	5
Before I attended training, my supervisor met with me to set goals for my performance after training.	1	2	3	4	5
After completing training, my supervisor met with me to discuss how I could use my new training skills.	1	2	3	4	5
If a last minute departmental crisis arose, my supervisor would still allow me to attend training as scheduled.	1	2	3	4	5

Top Management Support	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Top management encourages the use of innovative behaviours among employees.	1	2	3	4	5
Top management encourages risk-taking among managers and employees.	1	2	3	4	5
Top management believes in the importance of training for supervisors and managers.	1	2	3	4	5
Top management is willing to spend money for training.	1	2	3	4	5
Top management rewards individuals for using skills taught in training.	1	2	3	4	5

Perceived Training Transfer	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am able to transfer the skills learned in the training course back to my actual job.	1	2	3	4	5
Supervisors, peers, or subordinates have told me that my behaviour has improved following the training course.	1	2	3	4	5
I have changed my job behaviour in order to be consistent with material taught in the training course.	1	2	3	4	5
My actual job performance has improved due to the skills that I learned in the training course.	1	2	3	4	5
The productivity of my subordinates has improved due to the skills that I learned in the training course.	1	2	3	4	5
Absenteeism in my group has decreased due to the skills that I developed in the training course.	1	2	3	4	5
Turnover in my group has decreased due to the skills that I developed in the training course.	1	2	3	4	5
Morale of my work group is higher due to the skills that I developed in the training course.	1	2	3	4	5
My subordinates are more committed to the mission of ANZ due to the skills that I developed in the training course.	1	2	3	4	5

APPENDIX THREE - FOLLOW-UP LETTER

Date

Name
Address

Dear Name

THESIS PROJECT

About three or four months ago you completed a questionnaire which was to contribute to my thesis titled 'The Impact of Factors Within the Work Environment on the Transfer of Training'. Thank you for choosing to participate in this study and returning the initial questionnaire.

Since that time a second, follow-up, questionnaire was sent to you. I have not yet received this questionnaire back from you and would like to remind you of the importance of this questionnaire to the study.

Unfortunately a fairly low response rate was gained, so it is important that I receive as many of the follow-up questionnaires as possible. The second questionnaire is vital to the study – without it the first questionnaire becomes invalid.

I have enclosed a copy of the questionnaire in case you did not receive the one sent to you, or you have lost it. It would be much appreciated if you would complete the questionnaire and return it to me in the envelope provided.

If you have any problems or questions, please feel free to phone me on 06 353 1113 at any time. Once again, thank you the time and effort you have spent participating in this study.

Yours sincerely

Keryn Weir