SUPPORTING TRANSFER OF TRAINING

EFFECTS OF THE SUPERVISOR

Derk-Jan J.M. Nijman

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PROEFSCHRIFT

ter verkrijging van
de graad van doctor aan de Universiteit Twente,
op gezag van de rector magnificus,
prof. dr. F.A. van Vught,
volgens besluit van het College voor Promoties
in het openbaar te verdedigen
op vrijdag 10 december 2004 om 15.00 uur

door

Derk-Jan Jacob Matthias Nijman

geboren op 21 september 1972

te Dordrecht

Dit proefschrift is goedgekeurd door de promotor Prof. dr. W.J. Nijhof
Assistent-promotor: Dr. A.A.M Wognum

Voorwoord

Hoewel ik wel eens heb gedacht dat promovendus een van de meest eenzaam mogelijke beroepen moet zijn, heeft juist dit onderzoek me laten zien dat ik het zonder zoveel anderen nooit had afgerond. Dit voorwoord is niet voldoende om iedereen die heeft bijgedragen persoonlijk te bedanken, maar een aantal mensen wil ik graag toch even specifiek noemen. Om te beginnen zijn dat mijn vaste begeleiders: Wim Nijhof, Ida Wognum en Bernard Veldkamp. Wim, je bent een constante bron van kennis en inspiratie geweest, terwijl je altijd de juiste vorm van ondersteuning wist te vinden om me doelgericht te houden en me soms zelfs een deadline te laten halen. Als de werkplek daadwerkelijk leerpotentieel heeft, zou het me niet verbazen als dat komt door de aanwezigheid van mensen zoals jij. Ida, je kwam erbij op een moment dat ik dat absoluut nodig had, en je kennis, structurerings- en relativeringsvermogen zijn uiteindelijk onmisbaar gebleken. En Bernard, je methodologische bijstand hielp me de juiste keuzes te maken, maar vergezeld van de nodige humor ging je hulp veel verder dan de methodologische stukken alleen. Behalve gewoon plezierig vond ik het een voorrecht met jullie samen te mogen werken, en ik hoop dat die samenwerking zich in de toekomst voortzet.

Ten tweede wil ik graag alle betrokkenen binnen de verschillende meewerkende organisaties bedanken. In een tijd van voornamelijk reorganisaties zagen jullie het nut van mijn onderzoek, wisten jullie anderen daarvan te overtuigen, dachten jullie mee en boden jullie me de gelegenheid en alle medewerking de benodigde data te verzamelen. Han Sligt, Ingemar Methorst, Arjen Lammers, Pieter de Witte, Maarten Welkers, Monique Walrave, Irene de Boer, Mireille Merx-Chermin en Jindra Kessener, jullie hulp was onmisbaar!

Veel dank gaat ook uit naar iedereen die ik de afgelopen jaren als collega heb leren kennen, en van wie velen meer dan collega's zijn geworden. Binnen CBB hebben Bert, Cindy en Franck altijd meegedacht en vaak meegeholpen, maar bovenal meegeleefd. Monique en Anouk hebben bovendien veel praktisch werk uit handen hebben genomen, en met Loek, Marianne, Marloes, Rolinda en Ellen waren jullie altijd geïnteresseerd en bereid te luisteren. Al met al maakten jullie dat het een plezier was dagelijks naar CBB te komen. Carolien, Elvira, Inge,

Kim en Martijn wisten de laatste maanden veel gezelliger te maken dan dat hoort voor een promovendus in de laatste fase, en voorzagen ook nog eens mijn hoofdstukken van commentaar. En ook de collega's die betrokken waren bij verschillende AIO-bijeenkomsten, AIO-etentjes en leren-op-de-werkplek bijeenkomsten hebben bijgedragen aan de uiteindelijke afronding. Ik vond al jullie inhoudelijke steun fantastisch, en des te meer nog alle gezelligheid!

Tenslotte maak ik graag van de gelegenheid gebruik Jonneke, Femke, Atie en Dick te bedanken. Ik weet eigenlijk niet anders dan dat jullie steun er is, zo vanzelfsprekend dat ik altijd het gevoel heb dat ik op jullie kan terugvallen. Juist dat onvoorwaardelijke maakt dat ik nu bedank voor veel meer dan voor alles tijdens de periode van het schrijven van een proefschrift alleen. Onmogelijk in feite, maar ik weet niet hoe anders: bedankt!

Derk-Jan Nijman
Enschede, november 2004.

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Chapter 1

Introduction

1.1 Introduction

Within an ever-changing global society, organisations need to adapt and adjust continually if they want to be successful. The processes according to which employees are required to work, the equipment they need to do so and the setting in which they have to perform their job are all changing, and, as a consequence, the competencies that employees need to do their work are also changing. To keep up with these demands and requirements, it is necessary for employees in organisations to keep learning. The field of research and practice that aims at making sure that employees acquire the right knowledge, skills and attitudes is known as Human Resource Development (HRD). Among many possible definitions, Nadler and Nadler (in Walton, 1999, p. 58) state that HRD "..is organised learning experiences provided for employees within a specific period of time to bring about the possibility of performance improvement and/or personal growth". HRD thus focuses on delivering the learning conditions that are needed to have employees develop to their full potential, in order to optimise organisational performance. Investments in human development interventions are ultimately meant to have a positive effect on organisational outcomes, for example, in terms of turnover, profits and survival.

Mulder, Nijhof and Brinkerhoff (1995) state that much of this necessary learning can be facilitated through corporate training programmes. Corporate training "..consists of instructional experiences provided primarily by employers for employees, designed to develop new skills and knowledge that are expected to be applied immediately upon (or within a short time after) arrival on or return to the job" (Broad & Newstrom, 1992, p. 5). By increasing or changing employees' knowledge, skills and attitudes, these training

programmes provide them with the opportunity to perform better and become more productive.

In addition to these - obvious - material benefits, such as increased productivity or a reduction in errors at the workplace, corporate training might also have other positive effects by, for example, motivating employees in their job and increasing the attractiveness of the organisation to new recruits (Sibthorpe, 1991). All in all, corporate training programmes can be seen as one of the main possible interventions that HRD has to realise the effectiveness of employees, groups and organisations (Sibthorpe, 1991).

Not only is it believed that corporate training can facilitate the necessary learning, but also that much of the necessary learning is facilitated by corporate training, or - perhaps more accurately - a great deal of corporate training is carried out to facilitate the necessary learning. The training of employees in organisations has become well established and widespread, and most employees will probably participate in one or more training programmes during their working career. Reviews of the extent of corporate training in organisations in general show large general organisational investments, while, for example, the relative and absolute number of trainees increased significantly in the last decade (see eg. CBS, 2001; Wognum, Van der Heijden, Kwakman, Streumer, & Van Zolingen, 2003).

Considering the common use of corporate training programmes, it seems logical to believe that these programmes live up to what is expected of them. The large organisational investments suggest that training programmes are perceived as effective and efficient, leading to the intended changes in employee performance at the workplace, and in subsequent returns on investment that exceed the expenditures that are associated with them. Yet, in terms of this return on investment, how efficient is corporate training really? Brinkerhoff and Gill (1994) state that information on the actual efficiency of corporate training programmes is quite worrying, indicating that training programmes are often rather inefficient. They note three main reasons for this. The first of these is that the costs that are generally associated with corporate training are understated. For example, employees' loss of productivity during their training participation is usually not taken into account. Secondly, ".. the impact of common training practices is shockingly small" (p. xii). More specifically, the knowledge, skills and attitudes that have been learned in training programmes are believed to be converted to changes in job behaviour and performance to a very limited extent only, implying that a significant part of the investment in training does not pay off. And, lastly, as a consequence of the second, if these new knowledge, skills and attitudes are not used as expected, organisational revenues will be below expectations. For example, organisational turnover and profits might develop less well than estimated.

Although a correct assessment of the costs of training is clearly important for determining training efficiency, more crucially - especially in the longer term -

seems to be the fact that the intended objectives of training programmes might not be realised. These training objectives usually consist of a change in the functioning of employees, which is assumed to lead to better individual and general performance at the workplace. Employees are thus expected to apply in their job the knowledge, skills and attitudes that they have gained in training, in order to improve their functioning. This application of learning to the job is referred to as the transfer of training, i.e. the conversion of learning into changed behaviour in the job. In line with Brinkerhoff and Gill's (1994) remark, several other researchers have also indicated that the actual transfer of training programmes does not match that intended. Thus, there are serious doubts about the actual effectiveness of corporate training programmes, in terms of their transfer by employees.

1.2 Transfer of Training and its Determinants

The question that subsequently arises is why employees - as trainees - do not fully transfer new knowledge, skills and attitudes to their job. Logical reasoning suggests two possibilities: either these trainees do not want to transfer the new knowledge, skills and attitudes to their job as intended, or they are unable to do so.

Trainees' willingness to transfer new knowledge, skills and attitudes refers to their motivation, and can be seen as a rather individual trainee characteristic. Even if they possess the required competencies, trainees who do not want to transfer are not likely to do so. The specific characteristics of trainees might also be the reason for their not being able to transfer training, for example, because they lack self-confidence or do not have the cognitive ability to transfer knowledge to new situations (Baldwin & Ford, 1988).

Whereas the above are relatively individual and trainee-specific characteristics, the most logical general explanation for trainees' failing ability to transfer training would be that the training programmes themselves have not led to the intended mastery of knowledge, skills and attitudes. A training programme may be designed in a way that does not cover the entire range of skills that are required for the improvement in performance that is targeted, or may, for example, be too short to enable trainees to learn everything they need to know. In that case, transfer cannot take place, because there is simply too little to transfer. Baldwin and Ford (1988) define characteristics of the training programme as training design, and indicate that these possibly affect transfer of training by leading to different learning results among trainees.

Brinkerhoff and Gill (1994) argue that the common assumption that corporate training programmes are efficient is based on the paradigm that these programmes independently affect employee performance at the workplace. In fact, the rationale of Instructional Systems Design (ISD) for the design of

training programmes is that these programmes bring about the desired performance only if they are well designed and managed. However, findings on the transfer of training programmes suggest otherwise. Even if training programmes have led to the intended acquisition of new knowledge, skills and attitudes, which usually seems the case, their transfer to the workplace often still falls behind. For an explanation of the inferior levels of transfer of training, research thus has to look beyond the boundaries of training itself. The effective performance of individual employees, groups and organisations is not determined just by corporate training programmes, but is believed to depend on other factors as well (Mulder et al., 1995). Most significantly, the organisational setting to which new knowledge, skills and attitudes have to be transferred - the trainees' work environment - is assumed to have a major impact on and be of great importance to transfer of training (Baldwin & Ford, 1988). New skills will only be practised, for example, to the extent that the work environment possesses the equipment that is necessary for their application. Or, as Brinkerhoff and Gill (1994, p. 8) state: "The most powerful force for learning in a company is not the training department; it is the organization itself. The workplace can untrain people far more efficiently than even the best training department can train people". Thus, if new knowledge, skills and attitudes are to be transferred to the workplace, this workplace should be designed in a way that stimulates and facilitates transfer. In other words, the work environment should provide support for transfer of training.

In a way, it can be said that, for transfer of training to take place as intended, both training and the respective work environment should be aligned. Robinson and Robinson (1989) argue that, in order to enhance transfer of training, HRD professionals should form partnerships with key line managers at the workplace. Similarly, Brinkerhoff and Gill (1994) advocate a systems and process approach to training, in which line managers are given responsibility for the training and transfer process. Both thus propose a view in which training and the concern for its effects are no longer restricted to the training department, but rather become the responsibility of managers or supervisors at the workplace. As these managers or supervisors are expected to have a valid perception of the knowledge, skills and attitudes that are required at the workplace, this might not only lead to a better work environment for transfer of training, but also create a better understanding of both what training is needed at what time and which employees ought to take part in training. In effect, the emphasis on the role of the manager or supervisor in the training and transfer process might improve the connection between the demands from the workplace on the one hand and the actual delivery of training on the other. It might also improve the supportiveness of the work environment to transfer, and, in addition, motivate employees to take part in and transfer training. Consequently, the supportiveness of trainees' direct work environment, especially from supervisors, might be very important -

if not crucial – to trainees to transfer training (e.g. Foxon, 1997; Rouiller & Goldstein, 1993).

1.3 This Study

The aforementioned issues surrounding transfer of training have resulted in great interest in the topic from both scholars and practitioners. The main feature of this interest is that both are pursuing the same objective: to determine what factors affect transfer of training, in order to find ways to make training programmes more effective, thus more efficient. Research is therefore being conducted to find out what factors enhance or impede the transfer of training. Considering the importance that has been - and continues to be - attached to the work environment, and especially to the behaviour of managers and supervisors, several studies have also been conducted on their effects on transfer of training. More specifically, the assumption that supervisors who support trainees will enhance trainees' transfer of training has been stated in research very frequently, and examined quite often as well. The actual results of research into the effects of supervisor support on transfer of training are not unambiguous, however, and thus do not clearly confirm this assumption. Some research indicates the strong positive influence of support of transfer (e.g. Kontoghiorghes, 2001b), while a study by Fitzgerald (2002), for example, reveals no significant positive effect. In addition, Ford, Quiñones, Sego and Speer Sorra (1992) indicate that, while support from the workgroup is often stated to affect transfer, little research has been conducted to study the actual mechanisms by which support influences transfer. Although there is thus a strong common assumption that support from supervisors has a positive effect on trainees' transfer of training, more research is needed to test its validity. This study therefore aims to provide a better insight into the relationship between supervisor support and transfer of training. Regarding the findings of previous research, this concerns both the existence of such a relationship and the kind of relationship - positive or negative. The central question that will subsequently guide this study is:

What is the effect of supervisor support on transfer of training?

The assumption underlying this research question thus is that support from supervisors at the workplace will enhance the transfer of training from subordinate trainees, and will therefore increase the effectiveness and efficiency of their corporate training programmes.

1.4 Overview of the Book

The structure of this study is as follows. Chapter 2 starts by focusing on transfer of training in general, and on factors that are believed to affect transfer. First, the concept of transfer of training is further explained and clarified, including the different facets and results of research. After that, an overview of factors related to transfer is presented, consisting of those that have emerged from previous research. The chapter concludes with a preliminary framework of transfer, which will be used to examine the effects of supervisor support.

The focus in Chapter 3 is specifically on the relationship between supervisor support and transfer of training. First, the chapter gives an overview of the results of previous research, providing a better insight into what is actually known about this relationship, as well as a greater insight into where the gaps in the knowledge of this relationship remain. Then there follows a description of what is known about the nature and effects of social support - from which the notion of supervisor support emanates - in other fields of science. This results in a concept that consists of four different types of supervisor support - informational, instrumental, appraisal and emotional - and three different times of supervisor support - before, during and after training. This concept is subsequently integrated into the framework of transfer.

Chapter 4 focuses on the research design and the instrumentation of the study. This chapter starts with the definition of two specific sub-questions, which are based on the general research question and the conceptualisation of supervisor support. The first sub-question concerns the effects of general supervisor support on trainees' transfer of training, while the second question regards these effects of supervisor support when distinguishing between its different types and times. The chapter subsequently provides a discussion of the design and methodology of the study, including a description of the instrumentation.

The process and results of a pilot test on the instrumentation are reported in Chapter 5. This begins with a description of the organisation in which the pilot was carried out, after which it deals with the reliability of the instrumentation. It concludes with an overview of the results of analyses that were conducted on the data from the pilot, with reference to the research questions.

The organisations and training programmes that were selected for the main data gathering are described in Chapter 6, in addition to the procedure for their selection. It also provides a description of the changes that were made to the instrumentation after the pilot test, and an estimation of the reliability of the instruments in the final data collection.

Chapter 7 presents the results of the analyses carried out to answer research question 1, i.e. the effects of general supervisor support on transfer of training. A distinction is made within the chapter between analyses that are conducted on data received from trainees and those from supervisors.

A similar distinction is also made between trainee and supervisor data in Chapter 8, which describes the results of the analyses carried out to answer sub-question 2. This chapter thus provides the results relating to the question of what the effects of supervisor support on transfer of training are, when distinguishing between different types and times of supervisor support.

The conclusions of the study are described in Chapter 9. This chapter starts with a short summary of the study, before describing some methodological issues. It subsequently provides the conclusions on both sub-questions, and a discussion of these. The chapter concludes with a short note on the future of supervisor support for training and development in organisations, in the light of both organisational changes and new concepts of learning and transfer.

Chapter 2

Towards a Framework
for Transfer of Training

2.1 Introduction

The greatest potential for the success of an organisation consists of the people within it, and their ability to learn (Stolovitch & Keeps, 1999). This is reflected in the frequent use of interventions to improve employee performance, such as corporate training programmes. Since the transfer of these training programmes is considered a crucial yet somewhat problematic intermediate stage in attaining intended training effectiveness, the focus of this study will be on the variables that are assumed to intervene and/or affect transfer. More specifically, the problem definition concerns the extent to and the way in which supervisors might affect their employees' transfer of training by providing support.

In order to study the effects of supervisor support on transfer, it is necessary first to take a more detailed look at transfer at the workplace. This chapter will therefore provide an overview of the knowledge available on transfer of training so far, starting with a definition and a description of dimensionality and empirical evidence in Section 2.2. In Section 2.3, the influence of several factors affecting transfer will be discussed, after which Section 2.4 will conclude with the design of a preliminary framework to provide the opportunity to systemically examine the effects of supervisor support on transfer.

2.2 Transfer of Training

2.2.1 Defining Transfer of Training

The term 'transfer' literally means "to convey from one person, place, or situation to another" (Webster's, 1977, p. 1240). Transfer thus indicates something like a change or movement, or a shift from one situation to another. In the light of Human Resource Development, transfer refers to the relationship between intentional actions aimed at the development of employees in organisations on the one hand and the actual consequences of those actions on the other. Swinney (in Foxon, 1993, p. 131) therefore refers to transfer as "..that almost magical link between classroom performance and something which is supposed to happen in the real world".

Cormier and Hagman (1987) indicate that transfer of learning takes place when previously acquired knowledge and skills exert an influence on the learning and use of knowledge and skills in other - new - situations. Transfer is referred to as both transfer of learning and transfer of training, depending on whether the situation being transferred to is a learning or a working situation (Gielen, 1995). Although transfer might theoretically apply to a broad range of situations, the objective of corporate training programmes (usually) consists of realising certain organisational targets (e.g. Bergenhenegouwen, Mooijman, & Tillema, 1998). In other words, training programmes are offered and carried out in order to improve organisational performance, supposedly by means of improving individual employee performance. Corporate training programmes are thus believed to lead to improved performance when individual trainees use new knowledge and skills in their jobs, implying that transfer of training refers to changes in behaviour at the workplace. Behavioural changes in different situations are considered irrelevant with regard to training objectives, and will therefore not be included in a definition of transfer of training. Burke and Baldwin (1999, p. 227) subsequently define transfer of training as "..the degree to which trainees apply to their jobs the knowledge, skills, and behaviours learned in training".

Whereas training programmes aim at improvement in individual employee performance, training might actually lead to, for example, lower productivity. This is referred to as negative transfer, while learning that does result in subsequent facilitation or improvement in performance is called positive transfer. Some authors also mention non-existent or zero transfer, where previously acquired knowledge and skills have no effect on later learning or performance (Gick & Holyoak, 1987; Gielen, 1995; Olsen, 1998). Incorporating the intended positive effects of transfer, Baldwin and Ford (1988, p. 63) define *positive* transfer of training as "..the degree to which trainees effectively apply the knowledge, skills, and attitudes gained in a training context to the job".

What is characteristic of Baldwin and Ford's definition of transfer is also the addition of the *effective* application of new knowledge and skills. Although they do not specifically explain when to consider the application of knowledge and skills effective, their subsequent remark - that for transfer to occur, learned behaviour has to be generalised to the job as well as maintained over time - indicates that effective application consists of at least these two dimensions. Laker (1990) defines these as the *generalisability* and the *temporal* dimensions, and notes that it is appropriate and useful to regard transfer as a multi-dimensional construct. Several researchers indeed include both dimensions in their definition of transfer, but, by distinguishing between effective and continuing application, most seem to link effective application only to the extent of generalisation. In other words, effective application of new knowledge and skills mostly refers to application in the right situation in the right way, while continuance indicates its maintenance over time. Broad and Newstrom (1992, p. 6) define transfer, for example, as "the effective and continuing application, by trainees to their jobs, of the knowledge and skills gained in training - both on and off the job".

In summary, knowledge, skills and attitudes gained in training are considered to be transferred when they are applied in a way that is intended in training objectives, and maintained as such over the period, as intended in these training objectives. Along with this distinction, positive transfer of training is defined in this study as the effective and continuing application in the job environment of the knowledge, skills and attitudes gained in a training context.

2.2.2 Dimensionality of Transfer of Training

The definition of transfer as provided in Subsection 2.2.1 states that transfer of training is desired to be positive, even though negative - or non-existent - transfer is also considered possible. In addition to this distinction between positive and negative transfer, Foxon (1993) implicitly makes reference to other dimensions within the concept of transfer, by asking questions about the actual determination of transfer. How, for example, does the generalisation of skills to more complex tasks compare to the plain replication of tasks that are similar to those in the training situation, in terms of transfer? And while transfer of procedural or psychomotor skills (also described as physical skills, see Romiszowski, 1981) might be relatively easy to determine at the workplace, how could transfer of cognitive skills be measured? Thus, the question is how to determine transfer, or how to interpret transfer of training to provide for accurate measurement.

Regarding the dimension of generalisability of new knowledge, skills and attitudes when determining transfer, Laker (1990) notes that a first distinction concerns the extent of agreement between these and the tasks to be conducted.

The exact replication of, for example, certain activities is referred to as self-transfer, while closely related near transfer indicates a strong similarity between prior learning and the tasks to be performed. When tasks or activities are very different from those in the learning situation - either in the time elapsed since training or in the similarity of tasks - the change in performance is referred to as far transfer (Gick & Holyoak, 1987).

A second distinction within the generalisability dimension concerns the range of situations in which transfer might take place. In other words, new knowledge and skills could relate to a broad range of tasks or situations at the workplace, in which case transfer is less related to the actual content of these tasks. This kind of transfer is referred to as general transfer. Conversely, transfer might also relate to specific tasks or activities on the job when opportunities for transfer strongly depend on the content of these tasks. In this light, it is referred to as specific transfer (Cormier & Hagman, 1987).

As a third distinction of generalisability, Gagné (in Cormier & Hagman, 1987) discriminates between lateral and vertical transfer, in which lateral transfer indicates the performance of a task with similar complexity to the one learned. Vertical transfer, on the other hand, refers to the use of knowledge and skills in tasks with different complexity from the original learning task.

When considering the temporal dimension of transfer, Laker (1990) distinguishes a continuum, ranging from transfer initiation to maintenance of transfer. This suggests that the extent of transfer changes over time. According to Foxon (1993), practitioners often consider transfer to be a product or outcome of training: either new knowledge and skills are being applied on the job, or they are not. She indicates that defining transfer in terms of this application could be problematic, however. It is, for example, difficult to determine what length of time after training changed behaviour at the job will provide an accurate estimate of transfer levels: will initial attempts to transfer suffice, or do new skills have to be completely integrated into regular behaviour at work to label it transfer? Consequently, the concept of transfer is at times also referred to as a process, rather than a product (Den Ouden, 1992). Indeed, Foxon (1993) indicates that treating transfer as a process serves the above-mentioned difficulties better than does regarding it as a product. Within such a process approach to transfer, several stages can be distinguished, along which the course of transfer can be followed (Foxon, 1993, 1994, 1997). In the first of these, trainees leave training with some degree of intention or motivation to transfer what has been learned. The second, the stage of transfer initiation, represents trainees' initial attempts to apply new knowledge, skills and attitudes on the job (see also Laker, 1990). The third stage represents partial transfer, which occurs when only some skills are transferred, or when new skills are used in some - but not all - opportunities. Transfer maintenance, the fourth and fifth stages, consists of both conscious and unconscious maintenance of the

application of knowledge, skills and attitudes on the job. Transfer is taken to be acceptable from stage three, when new knowledge, skills and attitudes are partially transferred, whereas stage five - unconscious maintenance - is considered optimal transfer. Finally, when trainees fall back into their original (pre-training) behaviour - thus fail to achieve partial transfer or maintenance of transfer - this is referred to as transfer failure (Foxon, 1993).

2.2.3 Research on the Extent of Transfer of Training

In general, little empirical evidence of research exists that shows that training actually transfers to the job setting. This lack of evidence can be attributed to two factors. Firstly and most importantly, the empirical evidence available suggests that the actual extent of transfer is often slight. Foxon (1995) refers to a study by Baumgartel, Reynolds and Pathan, which indicated that no more than 50% of managers from different countries reported significant attempts to transfer knowledge from the managerial training programmes they had participated in. Hoekstra (1998) comparably refers to two earlier studies (Baumgartel & Jeanpierre; Huczynski & Lewis), which indicated that 25% and 35% respectively of trainees attempted to use new knowledge and skills on the job, which she still considers relatively low. Georgenson (in Baldwin & Ford, 1988) estimated that only 10% of training investments are transferred to the job, and Marx (1986) consequently indicated that in some programmes as much as about 90% of training might possibly not be transferred. Foxon (1993), however, points to a discrepancy between the different kinds of transfer intended. Whereas there is hardly any evidence of transfer of training in, for example, conceptual and cognitive skills (far and general transfer), procedural and motor skills often have to be applied on the job in order not to fail in job performance (near and specific transfer). Hence, regarding the extent of actual transfer of training, "there is a better track record with training in procedures and motor skills" (Foxon, 1993, p. 130).

The second factor explaining the small amount of evidence is that research on the actual transfer of training seems scarce. Practitioners in general are reluctant to estimate the percentage of transfer (Foxon, 1995; 1997), and studies of training effectiveness often use, for example, trainees' motivation to apply new skills or end-of-course tests as measurement, while relatively few studies actually look at the effects of training in the longer term or in different contexts (Hoekstra, 1998). Perhaps the main cause of both the use of measures such as end-of-course tests and the little actual research on transfer is that determining transfer is rather difficult. In particular, when considering training programmes aimed at conceptual and cognitive knowledge and skills - such as problem-solving skills - assessing transfer appears problematic, as mentioned before. Thus, several authors indicate that research on transfer so far mainly concerns procedural and motor skills, while research on the transfer of conceptual

knowledge or cognitive skills is quite limited (e.g. Gielen, 1995). Macaulay (2000) subsequently argues that, while near transfer is relatively easy to measure in experimental and job settings, there is as yet no real evidence of actual far (and general) transfer.

In addition, Ford, Quiñones, Sego and Speer Sorra (1992) indicate that the transfer of cognitively complex skills, such as troubleshooting, may decrease even more rapidly than does the transfer of closed or directly applicable skills. A study by Wognum (1999) provides confirmation of this assumption, by showing that automation training leads to more positive perceptions of training effects in problem situations than does social skills training. When also considering the fact that the extent of routine tasks in many jobs is declining, whereas the application of, for example, problem-solving skills is actually gaining priority, it is precisely this achievement of far and general transfer that will become increasingly important in corporate training (Van der Klink, Gielen, & Nauta, 2001). Thus, to summarise, the available research on transfer of training is limited and mainly restricted to motor and procedural knowledge and skills. The actual available empirical evidence of transfer shows that the extent of transfer in practice is slight, which is to be considered problematic, specifically with regard to the shift in emphasis to far and general transfer.

2.3 A Systemic View of Transfer of Training

Both Human Resource Management and Human Resource Development are engaged in optimising human performance at the workplace. In this light, Purcell (2004) refers to human resource advantage, which aims at determining the internal (organisational) sources of sustained competitive advantage. Purcell (2004) also alludes to Boxall when dividing HR advantage into Human Capital Advantage (HCA) and Organisation Process Advantage (OPA), which reflect 'better people and better processes' respectively (p. 2). With regard to HCA and OPA, training is but one of the many possibilities that practitioners have to intervene in general employee performance in organisations. Other possibilities range from, for example, job aids and the recruitment/selection of personnel to the introduction of working in teams, and even to the development of completely new organisational structures or systems (e.g. Purcell, 2004; Spitzer, 1999). Both training and other possibilities to affect performance can all be related to what is called Human Performance Technology, a field of practice and study that specifically aims at improvement in performance. Human Performance Technology (HPT) is directed at the achievement of valued human performance in the workplace by taking a holistic look at performance problems and their possible solutions (Stolovitch & Keeps, 1999). In other words, employee performance and problems with this performance are approached in a systemic way, in which performance is believed to be imbedded in (and affected

by) one or more organisational systems or subsystems of influencing factors. Stolovitch and Keeps (1999, p. 10) describe HPT and its practitioners as:

> *"..an engineering approach to attaining desired accomplishments from human performers. HP technologists are those who adopt a systems view of performance gaps, systematically analyze both gaps and systems, and design cost-effective and cost-efficient interventions that are based on analysis of data, scientific knowledge, and documented precedents, in order to close these gaps in the most desirable manner."*

HPT largely stems from systems theory and behaviourism, and approaches performance from a number of specific assumptions (Stolovitch & Keeps, 1999). First, reflecting its behaviouristic roots, HPT supposes that employee performance follows specific laws and can subsequently be predicted and controlled. With regard to the point of view that little is actually known about human behaviour, HPT relies on both practical experience and scientific research. Secondly, HPT has originated in many fields of research and practice: behavioural psychology, communications theory, information theory, systems theory, recently also cognitive sciences, and others. This enables HPT to draw on several different sources, while at the same time developing its own. And finally, HPT is empirical and thus demands verification of its results.

Human Performance Technology is - or can be - related to training and transfer in two ways. First, training is often a part of selected performance interventions that are implemented to improve employee performance. In this light, training is directed at improving employees' knowledge, skills and/or attitudes, in order to fill the gap between present and desired levels of performance.
Secondly, and most relevant in this case, transfer of training can also be seen as the intended performance itself, in which case perceived low levels of transfer or an actual lack of transfer are to be considered problematic performance. In other words, HPT implies an approach to transfer that considers the entire system in which training has to be transferred. In this light, it can be taken as a guide to a systematic and systemic identification of the impeding and facilitating factors of transfer of training, and to interventions to improve transfer. HPT thus also provides a starting point from which to examine the effects of supervisor support on transfer of training, taking its position within a larger system into account.
Spitzer (1999) indicates that HPT directs interventions to improve human performance at the particular constellation of factors in the respective system - referred to as the human performance system (p. 163). This human performance system can be divided into internal (employee) factors, such as employees' knowledge, skills and personality characteristics, and external factors, such as feedback, expectations from others, and resources and constraints at the

workplace. Employee performance depends on separate inhibiting and/or facilitating forces from internal and external factors, as well as on forces resulting from their interaction and specific constellation. Considering the gap between actual and intended levels of transfer, these factors also apply to the conceptual (human performance) system, in which trainee performance - thus transfer of training - is imbedded. Holton, Bates and Ruona (2000b) refer to this system as the *transfer system*, which they define as "all factors in the person, training, and organization that influence transfer of learning to job performance" (p. 335). The transfer system reflects all internal and external factors that are related to trainees' transfer of training, and provides insight into the possible interrelatedness and interaction between these factors, and into their specific constellation at, for example, the level of the workplace.

Several researchers emphasise the importance of approaching transfer from a systemic point of view, instead of examining separate relationships without taking other factors into account (e.g. Fitzgerald & Kehrhahn, 2003; Salas & Cannon-Bowers, 2001). Brinkerhoff and Gill (1994) illustrate this by stating that "it is the capacity of the total organization to manage the learning process for maximum value that is in need of attention" (p. 10). And even though recent research is limited in providing such a holistic approach, and hardly examines, for example, the relationship between person and environment in attaining transfer (Awoniyi, Griego, & Morgan, 2002), the findings (or assumptions) of low levels of transfer have led to a significant amount of research on the separate factors that have promoted and/or inhibited transfer in the past few decades. In this way, the results of research provide insight into the different components that will most probably also affect transfer when examining it in a larger transfer system. Researchers in general divide these components into three groups of characteristics: work environment characteristics, trainee characteristics and training characteristics (e.g. Baldwin & Ford, 1988; Ford & Weissbein, 1997). Work environment characteristics correspond to external factors affecting human performance at the workplace, whereas trainee characteristics reflect internal factors, as distinguished within Human Performance Technology (Spitzer, 1999). However, the notion of the influence of specific characteristics of the training programme points to an important difference between evaluating and improving general human performance at the workplace, as HPT does, and evaluating transfer of training. While HPT indeed focuses on general and continuing performance, the transfer issue concerns the intended change in individual performance as a consequence of training. In other words, new knowledge, skills and attitudes have to be learned by trainees in a way that allows them to use these as intended. Transfer of training will only take place to the extent that trainees have achieved the intended learning outcomes. Specific training characteristics then are - or should be - expected to affect the learning process, learning outcomes and, subsequently, transfer of

training. This also implies that research on transfer of training includes relevant periods before, during and after training (e.g. Broad & Newstrom, 1992; Russ-Eft, 2002). Trainees who, for example, do not feel moved to take part in training will probably learn less than those who actually are motivated, and will consequently show less transfer of training. Thus, transfer of training is believed to be affected by the characteristics of the work environment, the trainee and the training programme, before, during and after training.

Foxon (1993; 1995) conducted a content analysis of 33 relevant - yet non-empirical - articles referring to factors assumed to inhibit transfer, and divided the findings into four groups. First, she found 42% of the inhibiting factors to reflect characteristics of the organisational climate, which corresponds to the work environment. Specific learner or trainee characteristics reflected 21% of these factors, while characteristics of both design and delivery of training together accounted for 35%. Foxon (1995) indicates that some of these could either inhibit or facilitate transfer, depending on specific situational cues.

The next subsections will concern the identification of specific factors that affect transfer of training, in order to be able to construct a preliminary framework of a transfer system. As most research on transfer-influencing factors has so far made no distinction between possible stages of transfer (see Subsection 2.2.2), the effects of influencing factors will be related to *transfer outcomes*. Positive transfer outcomes reflect the extent of effective (and continuing) application in the job environment of the knowledge, skills and attitudes gained in a training context, as measured at a certain point in time after training. The objective of this identification is not to provide a complete outline of all the factors that are suggested to have influence on transfer outcomes, but rather to put together those factors that have been empirically shown to affect transfer outcomes, or for the effects of which strong indications exist. The incorporation of these factors in a framework of a transfer system provides the opportunity to examine the possible effects of supervisor support from a - limited - systemic point of view, in which a process approach to learning and subsequent transfer outcomes can be adopted. In addition to the direct effects of separate factors on transfer outcomes, these subsections will also deal with their possible indirect effects on transfer outcomes, by means of trainees' learning outcomes, their work environment and their motivation both to learn and to transfer (motivational factors will be further explained in Subsection 2.3.2.2). This is because these factors have been shown to relate closely to transfer outcomes, and are therefore generally included in models reflecting the transfer process (Noe, 1986). The subsections will follow the differentiation mentioned earlier, starting with the characteristics of the work environment in Subsection 2.3.1, because of their assumed relevance. Subsection 2.3.2 will similarly specify the most important trainee characteristics, after which Subsection 2.3.3

will conclude with a summary of the important training characteristics demonstrated.

2.3.1 Work Environment Characteristics

Reflecting on the external factors that affect human performance (Spitzer, 1999), this subsection concerns the effects of trainees' work environment on their transfer of training. Several researchers have indicated that the characteristics of the work environment exert a significant influence on workplace performance in general, and thus on transfer of training as well (e.g. Babin & Boles, 1996; Holton, 1996), and some consider the work environment as important for transfer to occur as the extent of learning itself (Rouiller & Goldstein, 1993). Gielen (1995) refers to the work environment as "the conditions in which an employee has to perform tasks and duties belonging to his or her function" (p. 28). Regarding the connection between the work environment and training effectiveness, Richey (1992) distinguishes three levels of related (work) environmental factors: general environmental factors, factors generally related to training and factors specifically related to training. She indicates that these are interrelated, as the general environment to a certain extent controls and determines the factors generally related to training, while these factors, in their turn, affect the factors specifically related to training. Holton et al. (2000b) provide indications in the same direction by arguing that the transfer climate is to be seen as a mediating variable in the relationship between the organisational context and an individual's job attitudes and work behaviour. Consequently, it is assumed that the influence of the work environment on transfer can be conceptually divided into general characteristics of the work environment which are relatively consistent, and characteristics of the work environment which have specific importance with regard to transfer of training and which are referred to as the transfer climate.

2.3.1.1 General Work Environment
The range of factors from the general work environment affecting training effectiveness could be endless, and it has consequently been suggested that several of these may influence transfer. Some, for example, mention the presence of a continuous learning culture as facilitating post-training behaviours (e.g. Cheng & Ho, 2001; Tracey, Tannenbaum, & Kavanagh, 1995), while a study by Lim and Johnson (2002) points to budget restrictions, a lack of coordination between different departments, and the level of involvement and interest of top management, among other things. Most of these have barely been studied, however, for which reason they will not be discussed further here. As empirical evidence does provide indications of the importance of both trainees' job autonomy and their workload, these will be elucidated below.

Job Autonomy
Job autonomy refers to the degree to which the job provides substantial freedom, independence and discretion to the employee in scheduling his or her work and in determining the procedures to be used in carrying it out (Robbins, 2001). Axtell et al. (1997) note that it is likely that the more control trainees have over their work, the better they are capable of avoiding and overcoming obstacles to transfer. Consequently, trainees who work in more autonomous work environments are expected to attain better training outcomes. The study of Axtell et al. (1997) indeed shows the extent of job autonomy to predict long-term transfer. Moreover, a study by Fitzgerald (2002; Fitzgerald & Kehrhahn, 2003) points out that trainees in an autonomous job context rely less on climate factors - such as supervisor support - in their decision to transfer training, and might thus be expected to be more motivated to do so.

Workload
Excessive workload refers to a situation in which an employee is faced with too much to do in the time available (Kirmeyer & Dougherty, 1988). Holton et al. (2000b) refer to workload with regard to transfer outcomes as the trainees' personal capacity for transfer, which they define as "the extent to which individuals have the time, energy, and mental space in their work lives to make changes required to transfer learning to the job" (p. 344). When workload on the job - in terms of, for example, too little time or energy - becomes too heavy, this might hinder or obstruct learning and subsequent transfer. Although research on the influence of workload on training effectiveness is still limited (Russ-Eft, 2001), a study by Seyler et al. (1998) shows that positive reactions to the learning environment in on-the-job training (thus also the work environment) are positively related to trainees' motivation to transfer. Fitzgerald and Kehrhahn (2003) similarly report that the trainees' personal capacity for transfer is positively correlated with their motivation to transfer.

2.3.1.2 Transfer Climate
According to Burke and Baldwin (1999, p. 229), "transfer climate refers to those perceptions describing characteristics of the work environment that may facilitate or inhibit the use of trained skills". As regards the conceptual difference between the general work environment and the more specific transfer climate, however, transfer climate characteristics concern those components of the work environment that are specifically and intentionally directed at the transfer of training.
Current knowledge of the composition of the transfer climate draws to a large extent on a study by Rouiller and Goldstein (1993), who adapted several categories and definitions from a behaviour-modification model in order to examine the effects of transfer climate. This has been followed by the works of Holton, Bates, Seyler and Carvalho (1997) and Holton et al. (2000b), who

subsequently differentiate seven transfer climate constructs: supervisor support, opportunity to use, peer support, supervisor sanctions, personal outcomes-positive, personal outcomes-negative, and resistance to change. Ever since, research on the transfer climate has more or less included these constructs (e.g. Colquitt, LePine, & Noe, 2000; Donovan, Hannigan, & Crowe, 2001), and the results indeed indicate meaningful relationships between these constructs and transfer of training (Lim & Johnson, 2002). These constructs and their effects on transfer will therefore be discussed below, in relation to their integration into a framework reflecting the transfer system.

Supervisor Support
Various studies have been carried out on the effects of supervisor support, which is considered one of the most important determinants of transfer by many researchers (e.g. Brinkerhoff & Montesino, 1995; Cohen, Underwood, & Gottlieb, 2000; Cromwell & Kolb, 2002). This supposed importance stems both from notions of the effects of social support in general and from the works of industrial and organisational psychologists, who indicated supervisors to be among the most significant sources of feedback for employees on their performance (Van der Klink et al., 2001). Feedback is indeed often considered a part of supervisor support, in addition to, for example, the encouragement of trainees, assisting trainees in identifying suitable situations in which to use new knowledge, skills and attitudes, and guiding trainees in applying these (Elangovan & Karakowsky, 1999). The supervisor is mostly believed to affect transfer outcomes directly, or indirectly by means of the trainees' motivation to transfer or different factors in the transfer climate (e.g. Cromwell & Kolb, 2002).

The results of research on the effects of supervisor support differ, however. An experimental study by Brinkerhoff and Montesino (1995), for example, shows that employees whose supervisor provided a brief before-and-after training stimulus transfer more than employees whose supervisor did not, as measured by self-reports. Cohen (1990) notes that employees also believe that new knowledge and skills will help them perform on the job, when they perceive that their supervisor supports them. However, in a review of two studies of banking organisations, Van der Klink et al. (2001) conclude that there is no convincing evidence of the supposed impact of supervisor behaviour. A study by Fitzgerald (2002; see also Fitzgerald & Kehrhahn, 2003) actually shows a negative correlation between the extent of supervisor support and transfer of training.

It thus remains unclear if supervisor support affects transfer of training, and in what way. In addition, research is needed to delineate the specific aspects of supervisor support that affect transfer, and the way in which they do so (Elangovan & Karakowsky, 1999). This study will subsequently focus on these

points of concern, for which reason supervisor support will be further elucidated in Chapter 3.

Opportunity to Use
In addition to the assumed influence of supervisor support, trainees need sufficient opportunities to use new knowledge, skills and attitudes in their jobs. The extent to which trainees perceive and have sufficient time and resources available determines the extent to which knowledge, skills and attitudes acquired in training will be used or constrained on the job (Noe, 1986; Russ-Eft, 2002). Moreover, Hoekstra (1998) states that new material in most cases will not directly be fully integrated into the way the trainee performs on the job. This is a consequence of both the difference, which is often large, between training and regular work and the fact that training is often too short to result in the automatic and unconscious application of learning. By regularly applying new knowledge and skills, these will be better integrated into intended behaviour on the job, as well as the trainees being better able to assess the opportunities and consequences of this intended behaviour in different settings. The opportunity to use can consequently be defined as "the extent to which a trainee is provided with or actively obtains work experiences relevant to the tasks for which he or she was trained" (Ford et al., 1992, p. 512). Ford et al. (1992) note that the concept of opportunities to use can be regarded as a multidimensional one, suggesting a differentiation between the breadth of the tasks to be performed, the activity level of performance - i.e. the number of tasks - and the type of tasks to be performed.
Several studies show the importance of opportunities to use training on the job for actual transfer of training. In their qualitative study, Lim and Johnson (2002) found perceived opportunities to use of great importance to transfer by Korean HRD professionals, and Hoekstra (1998), for example, found the use of new meeting skills after training to depend significantly on the number of meetings attended. Seyler et al (1998) show that the perceived opportunities to use enhance trainees' motivation to transfer, while Mathieu, Tannenbaum and Salas (1992) point out that situational constraints at the workplace have a marginally negative effect on trainees' training motivation. The results of a study of airmen indicate that they have different opportunities to use tasks from a technical training programme, even when checking for the effects of jobs and tenure (Ford et al., 1992).

Peer Support
Peer support concerns the extent to which peers behave in a way that optimises the trainees' use of learning on the job, for example, by setting goals together and by giving trainees concrete assistance (Russ-Eft, 2002). Similar to support from supervisors, peer support is believed to affect learning and transfer outcomes, as well as trainees' training motivation (Noe, 1986). In addition, peer

support might also affect other characteristics of the transfer climate and work environment, such as opportunities to use (Russ-Eft, 2002), the sanctioning of transfer, resistance to change, and positive and negative personal outcomes.

A study by Facteau et al. (1995) shows support from peers to positively predict perceived transfer of training, and Seyler, Holton, Bates, Burnett and Carvalho (1998) point out that peer support also significantly predicts trainees' motivation to transfer. Hoekstra (1998) notes that the positive differences in the subjective norm from pre-training to post-training - in her study defined as expected peer appraisal of the use of acquired meeting skills - positively affects the use of these skills after training. Perceived workgroup support, in terms of a supportive atmosphere and assistance from co-workers, also predicts the perceived opportunities to use new knowledge, skills and attitudes, as can be seen in a study by Quiñones, Ford, Sego and Smith (1995).

Personal Outcomes-Positive

Elangovan and Karakowsky (1999) state that organisational reward systems have a major effect on transfer of training. Referring to the expectancy theory (Vroom, 1964), it is argued that promised rewards for the use of new knowledge and skills on the job increase the assumption that transfer will lead (strength of expectancy) to valued outcomes (valence), increasing the motivational force to transfer. Thus, rewards for transfer are expected to increase trainees' training motivation (Noe, 1986). Corresponding to Rouiller and Goldstein's (1993) category of positive feedback, Holton et al (1997) label the positive consequences of training as *Personal Outcomes-Positive* and define these as "the degree to which application of training on the job leads to positive outcomes or payoffs for the individual" (p. 110). Examples of such positive outcomes include rises in salary and career development (Holton et al., 1997), higher performance evaluations (Facteau et al., 1995) and increased job security (Cheng, 2000).

In a study of training of women in four electronics companies in China, rewards - such as verbal praise and promotion chances - are shown to moderately increase transfer outcomes (Xiao, 1996), while Cheng's (2000) study of transfer by MBA graduates indicates that transfer rewards enhance the trainees' motivation to learn. A recent meta-analysis of the effects of both monetary and non-monetary yet tangible incentives shows that these lead to a mean gain of 22% in general employee performance, while also demonstrating a significant gain in the employees' motivation to start doing a new job (Condly, Clark, & Stolovitch, 2003). Another meta-analysis by Jenkins, Mitra, Gupta and Shaw (1998) results in a correlation of .34 between the financial incentives and the subsequent quantity of performance, although no significant relationship to the quality of performance is found. With regard to a relationship between supervisor support and positive personal outcomes, Cohen (1990) concludes that trainees who perceive their supervisors to be supportive also believe that

knowledge and skills from training will help them perform on the job and obtain salary increases.

Personal Outcomes-Negative
In addition to the positive consequences (feedback) of training participation and transfer of training, Rouiller and Goldstein (1993) also distinguish negative feedback, no feedback, and punishment. Holton et al. (2000b; 1997) have continued research on the effects of different consequences, and refer to comparable constructs defined as personal outcomes-negative, supervisor sanctions and resistance to change. Personal outcomes-negative match the negative feedback distinguished by Rouiller and Goldstein (1993), and can be described as the negative consequences for trainees of not using learned behaviour in their jobs. Examples of such negative consequences include being overlooked for rises or promotion and being reprimanded when not using new knowledge or skills on the job.
Although research on the negative consequences of falling back into or maintaining pre-training behaviour is limited, Ruona, Leimbach, Holton and Bates (2002) show that the perceived negative outcomes of not transferring new knowledge, skills and attitudes to the job lead to increased motivation to transfer.

Sanctioning of Transfer
One of the consequences of transfer that Rouiller and Goldstein (1993) distinguish concerns the extent of punishment trainees receive when transferring training to the job. An example of this is being ridiculed by more experienced colleagues when using new knowledge, skills and attitudes. This category also emerges from the work of Holton et al. (2000b; 1997), although their conceptualisation is limited to sanctioning by supervisors only. Holton et al (2000b, p. 345) define supervisor sanctions as "the extent to which individuals perceive negative responses from supervisors-managers when applying skills learned in training", including, for example, supervisors' indifference and active opposition to the use of new skills (Russ-Eft, 2002). Similarly, the sanctioning of transfer can be defined as "the extent to which individuals perceive negative responses from others when applying knowledge, skills and attitudes learned in training".
Whereas research on the extent and effects of sanctioning of transfer is also still limited, Seyler et al. (1998) show that supervisor sanctions lead to reduced trainee motivation to transfer. Mathieu et al. (1992) similarly found situational constraints to decrease trainees' training motivation, while the results of a study by Facteau et al. (1995) indicate that these constraints are negatively related to support from others at the workplace.

Resistance to Change
Elangovan and Karakowsky (1999) refer to group norms and pressures when indicating that transfer of training is related to conformance to group norms that determine performance. Smith-Jentsch, Salas, and Brannick (2001, p. 281) refer to the team (transfer) climate as the trainee's "individual perceptions of the degree to which a particular group of teammates accepts and expects the use of behaviours learned in a specific training programme". Both seem - although inversely - related to general feelings of resistance or openness to the use of new knowledge, skills and attitudes at the workplace. Holton et al. (2000b) included resistance to change in their research, and defined it as "the extent to which prevailing group norms are perceived by individuals to resist or discourage the use of skills and knowledge acquired in training".
A study by Ruona et al. (2002) shows perceived openness to change to result in increased motivation to transfer. Cheng (2000) indicates that a continuous learning culture, which seems closely related to openness to learning and transfer, positively predicts transfer outcomes.

2.3.1.3 Concluding the Work Environment and Transfer of Training
This subsection has provided an overview of the work environment characteristics which have been shown to affect transfer outcomes. In general, work environment characteristics affect transfer outcomes directly, or by means of the trainees' motivation to transfer. With regard to the general work environment, both the extent of trainees' job autonomy and their workload are considered to affect transfer of training. In addition, these are also believed to exert an influence on the trainees' motivation to transfer, as well as on factors within the transfer climate. Regarding the transfer climate itself, research has indicated the importance and effects of supervisor support, peer support, opportunities to use new knowledge, skills and attitudes at the workplace, positive outcomes when using these on the job, as well as the negative consequences of not using them, the sanctioning of transfer by others, and the extent of resistance to change at the workplace. Based on the results of empirical research, factors in the transfer climate are believed to affect transfer of training directly, and indirectly by means of trainees' motivation to transfer. Since the focus of this study is on supervisor support, it has been included separately here. The concept of supervisor support as related to transfer outcomes will be discussed in further detail in Chapter 3, however. All the work environment factors discussed and their suggested direct and indirect relationships to transfer outcomes are presented in Figure 2.1.
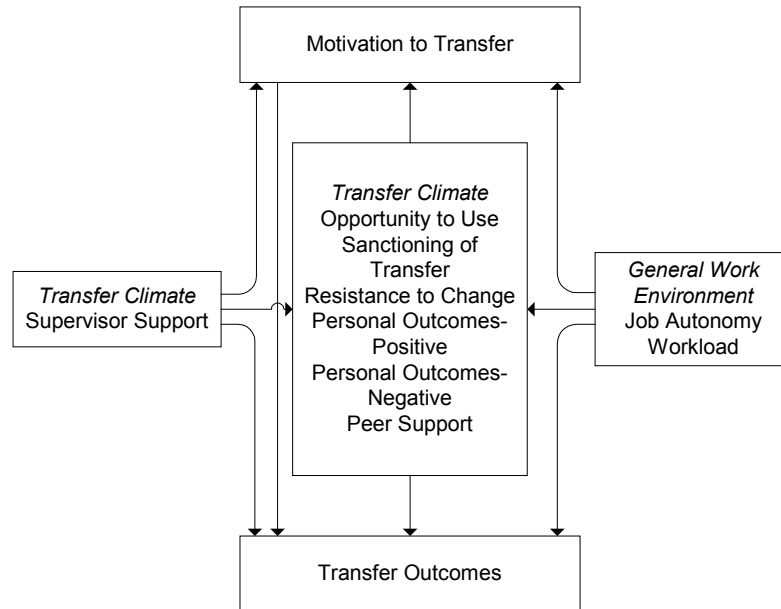
Figure 2.1 Relationships between Work Environment Characteristics and Transfer Outcomes.

A last note concerns the difference between the 'objective' and the perceived work environment. According to Babin and Boles (1996), perceptions of the work environment are related to emotional cognitions, as employees determine whether or not their workplace is beneficial or detrimental to their personal well-being. They note that work environment variables are sometimes called psychological 'climate' variables, which are defined as "meaningful interpretations of a work environment by the people in it … (that) are somewhat unique to different individuals" (p. 58). This suggested uniqueness thus refers to a distinction between the 'objective' work environment, which is considered relatively similar for all employees, and the perceived work environment, which might significantly differ between employees. It is probably for this reason that Noe (1986) included trainees' perceptions of the work environment as trainee characteristics, implying that the same work environment might be considered both supportive and inhibiting by different trainees.

2.3.2 Trainee Characteristics

Spitzer (1999) indicates that, besides external factors, internal employee factors affect their general performance. Indeed, a wide variety of trainee characteristics is suggested to influence the use of new knowledge, skills and attitudes on the job. It has also been argued that trainee characteristics actually

account for most of the variability in training transfer scores (Van der Klink et al., 2001), although without providing empirical evidence. Noe (1986, p. 737) refers to the influence of trainee characteristics on individual performance as the concept of trainability, which he considers a function of three factors: trainees' ability, their motivation and their perceptions of the work environment. Trainability thus implies that transfer will only take place to the extent that trainees are able and willing to use new knowledge and skills on the job (see also Van der Klink et al., 2001), and to the extent that the work environment is perceived to favour transfer. Recently, however, researchers have separated trainee characteristics from work environment and training characteristics, citing ability, motivation and personality as important categories of trainee characteristics (e.g. Baldwin & Ford, 1988). In addition, trainee attitudes such as job involvement and organisational commitment have been suggested to relate to training effectiveness (e.g. Colquitt et al., 2000). Trainee characteristics influencing training effectiveness are therefore considered to be classified under one of four dimensions: ability, motivation, personality and attitude. This classification will be followed when describing below those trainee characteristics that have been demonstrated to affect transfer.

2.3.2.1 Ability
Whereas the ability of trainees is generally considered one of the most important factors in attaining training effectiveness (e.g. Van der Klink et al., 2001), its conceptualisation differs. Holton (1996) refers to trainees' ability as their general cognitive ability (*g*) only, and states that it is likely that general cognitive ability will affect training outcomes. Noe (1986), however, refers to ability as both the cognitive and psychomotor skills that trainees possess, and argues that these directly determine whether trainees are able to learn the content of training. Hoekstra (1998) speaks of general personal capabilities, among which she refers to cognitive ability as intelligence. Later on, Holton, Bates and Ruona (2000b) indicate that research suggests that a wide range of cognitive as well as psychomotor and physical ability constructs affect transfer outcomes. Although the exact extent of trainee ability thus remains somewhat indistinct, there are clear indications that general cognitive ability plays a major role in attaining training effectiveness. It is logical to assume that physical ability will also be of great significance with regard to, for example, the acquisition and transfer of certain motor skills. Actual research, however, still seems lacking.
Bearing a significant link to the trainees' possession of motor and psychomotor skills, however, several researchers indicate the importance of experience and prior knowledge for training to be successful (e.g. Van der Waals, 2001). The effects of trainee ability on the transfer of training will therefore be discussed by means of both trainees' general cognitive ability and a category reflecting their combined age, experience and prior knowledge.

General Cognitive Ability
General cognitive ability, or *g*, can be considered a single general mental factor underlying individual differences in specific mental abilities (Reeve & Hakel, 2002). It thus refers to basic information-processing capabilities or the levels of cognitive resources of individuals, and has occasionally been defined as the ability to learn (Colquitt et al., 2000). Research relates cognitive ability to, for example, creativity, health, personality and job performance, and also provides strong evidence of a positive relationship to training performance (Ree & Carretta, 2002). The study by Tannenbaum et al. (1991) of military recruits points out that general cognitive ability is strongly correlated with these recruits' learning outcomes, as measured by their test performance (see also Cannon-Bowers, Salas, Tannenbaum, & Mathieu, 1995). Including the study by Tannenbaum et al., a meta-analysis conducted by Colquitt et al. (2000) shows trainees' general cognitive ability to positively predict their learning outcomes, in terms of the acquisition of skills and declarative knowledge, as well as to predict their self-efficacy. Trainees' general cognitive ability is thus believed to be positively related to their learning outcomes.

Age, Experience and Prior Knowledge
The age, experience and prior knowledge of trainees are generally believed to relate to their training effectiveness, both in terms of learning and transfer. Trainee age is in general considered to relate negatively to training effective-ness. A meta-analysis conducted by Kubeck, Delp, Haslett and McDaniel (1996) shows that older employees need more time to complete training, and gain poorer results in the final tests in training programmes. A study by Hastings, Sheckley and Nichols (1995) also indicates that older employees have more difficulties in transferring learning to their working situation. The meta-analysis of Colquitt et al. (2000) points out that higher age negatively predicts the trainees' training motivation and self-efficacy, but their mediated model indicates age to have a slight but positive effect on learning and subsequent transfer. They state that this seems to be a suppressor effect, in which the negative effect of age on training effectiveness is mostly due to its negative influence on the trainees' motivation to learn.
In her study of employees in a banking organisation, Gielen (1995) left out employees' age, as this strongly correlates with their working experience. The results of the study point out that employees with relevant working experience actually gain less from training, probably as a result of the fact that these employees already possess the intended knowledge, skills and attitudes. Den Ouden (1992), on the other hand, shows that the quality and variety of trainees' work experiences - prior to training - is a strong predictor of transfer outcomes. Thus age, experience and prior knowledge seem rather interrelated with regard to training effectiveness. Whereas older employees in general seem to attain lower learning (and transfer) outcomes, their - probably greater - familiarity

with the subject of training (prior knowledge as a result of experience) may result in higher learning outcomes.

2.3.2.2 Training Motivation

The second group of trainee characteristics concerns trainees' motivational attitudes, which have often been suggested to be very important - if not crucial - to transfer of training (e.g. Cheng & Ho, 1998; Noe, 1986). In general, an individual's motivation is suggested to consist of energising, directing and maintenance components (Noe & Schmitt, 1986; Steers, Porter, & Bigley, 1996). With regard to training effectiveness, motivation is assumed to affect trainees' enthusiasm for training (energising), the direction of participants to learn and master training (directing), and the use of knowledge and skills on the job (maintenance) (Noe, 1986). Most researchers distinguish between trainees' motivation to learn the content of training and their motivation to apply new knowledge and skills after training (e.g. Noe, 1986; Noe & Schmitt, 1986), as these are considered different motivational constructs with regard to training effectiveness. Recent research, however, also looked at the influence of both motivational aspects combined, labelling this as trainees' *motivation to improve work through learning* (Naquin & Holton, 2001). Although the initial results of this overall motivational construct are promising, they are still limited. Considering the large amount of research on both individual constructs, this subsection will subsequently look separately at the influence of motivation to learn and of the motivation to transfer on transfer.

In addition to the influence of both motivational constructs, several factors before and after training that are related to trainee motivation have also been suggested to relate to transfer. Colquitt et al. (2000), for example, indicate that the perceived training valence predicts trainees' motivation to learn, and thus their learning outcomes. Holton (1996) divides these factors into two categories: intervention readiness and intervention fulfilment. The first category - *intervention readiness* - has also been described as *learner readiness* (e.g. Fitzgerald & Kehrhahn, 2003; Russ-Eft, 2002) and reflects trainees' readiness to take part in training (Holton, 1996). The second category refers to the extent to which training has fulfilled needs and expectations, and has been defined as *intervention fulfilment* (Holton, 1996). Both these categories will also be reviewed with regard to the relation between trainee motivation and transfer outcomes.

Motivation to Learn

Pre-training motivation, also defined as motivation to learn, can be described as "a specific desire on the part of the trainee to learn the content of the training program" (Noe & Schmitt, 1986). Colquitt et al. (2000) provide a more specific definition by describing *training motivation* as "the direction, intensity, and persistence of learning-directed behaviour in training contexts", referring to the

components of motivation mentioned above. Facteau, Dobbins, Russell, Ladd and Kudish (1995) indicate that employees who are more motivated to take part and learn in training are expected to learn more, are more likely to complete training and are subsequently expected to attain higher transfer results.

Several studies of the effects of motivation to learn have been conducted, and findings indeed indicate significant positive causality with training effects. The meta-analysis by Colquitt et al. (2000) shows that trainees' motivation to learn positively predicts the acquisition of skills and declarative knowledge in training, as well as leading to higher post-training self-efficacy and positive reactions to training. From their study of training programmes for managers, Facteau et al. (1995) additionally conclude that trainees' motivation to learn can lead to stronger perceptions of transfer. Thus, trainees' motivation to learn is believed to predict their training outcomes.

Motivation to Transfer
Motivation to transfer can be described as the trainee's desire to use on the job the knowledge and skills that have been learned in the training programme (e.g. Axtell et al., 1997; Noe, 1986). Foxon (1997) argues that motivation to transfer is intuitively expected to affect transfer, and is perhaps even as influential as trainees' post-training capability. Motivation to transfer is believed to be affected by, for example, trainees' self-efficacy regarding the use of new skills, their perception of the relevance of training and their perceptions of opportunities to use learning on the job (Foxon, 1997). Naquin and Holton (2001) note that few studies have examined the effects of motivation to transfer on transfer, but Axtell et al. (1997) found trainee reports of their motivation to transfer to be a key variable in predicting the levels of transfer that trainees felt they had achieved one month and one year after training participation.

Learner Readiness
Holton (1996) argues that trainees' readiness for training affects training effectiveness, specifically by means of trainees' motivation to learn. Learner - or intervention - readiness can be defined as "the extent to which individuals are prepared to enter and participate in training" (Holton et al., 2000b), and includes, for example, freedom of choice to attend training and perceptions of the relevance of training. Employees who are free to decide whether to take part in training are expected to develop a greater appreciation of that training than employees who are obliged to take part, possibly resulting in enhanced motivation to learn (Elangovan & Karakowsky, 1999). Similarly, employees who perceive a training programme to be relevant to their job are expected to be more motivated to learn.

Studies by Hicks and Klimoski (1987) and Cohen (1990) indeed indicate that trainees are more motivated to learn if they feel that training participation is voluntary; yet some findings also suggest that the obligation to take part

motivates trainees to learn, as they perceive mandatory training to be more important (e.g. Tsai & Tai, 2003). With regard to pre-training perceptions and knowledge, research results, for example, show positive attitudes towards training (Carlson, Bozeman, Kacmar, Wright, & McMahan, 2000), perceived valence and importance of training (Colquitt et al., 2000; Tsai & Tai, 2003), and familiarity with training content (Tsai & Tai, 2003) to predict trainees' motivation to learn. Baldwin and Magjuka's (1991) study also shows trainees to be more motivated to transfer when they receive information prior to training and when they perceive the training programme to be mandatory. The extent of prior participation in training and development activities can also be seen to result in greater intentions to participate in training (Maurer, Weiss, & Barbeite, 2003).

Intervention Fulfilment
Intervention fulfilment refers to the extent to which training has met trainees' expectations and job-related needs, and is expected to relate positively to training effectiveness (Holton, 1996). Elangovan and Karakowsky (1999) argue that trainees who perceive training to be relevant and important are relatively more likely (motivated) to transfer new knowledge and skills than trainees who do not, whereas it is suggested that training that fails to meet expectations or desires leads to a negative attitude change (Tannenbaum et al., 1991). The study by Tannenbaum et al. (1991) of recruits in a military socialisation training programme shows training fulfilment to be a strong predictor of training motivation in general, as well as of organisational commitment and, to a lesser extent, of measures of self-efficacy. A study by Axtell et al. (1997) shows no relation between the perceived (post-training) relevance of training and trainees' motivation to transfer, but does indicate that both have a significant direct effect on transfer of training. The results of research by Seyler, Holton, Bates, Burnett and Carvalho (1998) point to the possible mediating effects of trainees' attitudes and reactions to training, in the relationship between trainees' organisational commitment and their motivation to transfer.

2.3.2.3 Personality Characteristics
Pervin (1989, p. 4) defines personality as "those characteristics of the person or of people generally that account for consistent patterns of behavior". Based on their review of transfer research, Baldwin and Ford (1988) indicate that trainees' personality characteristics could possibly be important predictors of training effectiveness, although empirical evidence on the impact of personality is still limited (Baldwin & Ford, 1988; Ford & Weissbein, 1997). Several personality characteristics have appeared in only a few studies, such as trainees' extraversion and need for achievement (Colquitt et al., 2000). Research has shown, however, more or less robust findings on the effects of trainees' self-efficacy, conscientiousness, locus of control and anxiety (e.g. Colquitt et al.,

2000), mostly with regard to trainees' motivation to learn. These personality characteristics and their effects will therefore be discussed separately below.

Self-efficacy

The concept of self-efficacy is derived from social cognitive theory and refers to a sense of confidence that individuals have regarding the performance of certain specific tasks (Lorsbach & Jinks, 1999; Pervin, 1989). Bandura (1986, p. 391) defines self-efficacy as "people's judgments of their capabilities to organise and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with the judgments of what one can do with whatever skills one possesses." It is suggested that self-efficacy beliefs - among other things - affect how well people motivate themselves and persevere in the face of difficulties, and it is also suggested that they influence vulnerability to stress and the making of important choices (Bandura & Locke, 2003). Consequently, trainees' positive self-efficacy beliefs will have motivating and mobilising effects, and moreover, these trainees will invest more energy and perseverance in affecting actual transfer of training (Hoekstra, 1998). According to Van der Klink et al. (2001), self-efficacy is connected with trainee characteristics such as motivation, job involvement and work experience, with training characteristics such as the attention paid to the development of transfer intentions and the length of the training, and with organisational characteristics such as workload, opportunity to perform the trained tasks and supervisory behaviour.

The assumed positive effects of self-efficacy are confirmed in research on several aspects of training effectiveness as well as in research on more general job performance. Cheng (2000) shows that MBA students reporting higher self-efficacy also indicate greater motivation to learn. Mathieu, Martineau and Tannenbaum (1993) report that the self-efficacy of students participating in an introductory bowling class was the only significant predictor of their bowling performance after the course, while also showing that initial performance was a significant predictor of this self-efficacy. In their meta-analysis of training motivation, Colquitt et al. (2000) similarly point out that pre-training self-efficacy enhances trainees' motivation to learn, while post-training self-efficacy leads to higher transfer outcomes. The results of a study by Axtell, Maitlis & Yearta (1997) indicate autonomy and motivation to be more important with regard to transfer than is self-efficacy, but regarding the correlation between self-efficacy and motivation, they argue that self-efficacy may influence transfer via motivation.

Conscientiousness

Conscientiousness refers to "a trait reflecting qualities such as being reliable, hardworking, self-disciplined, and persevering" (McCrae & Costa in Colquitt & Simmering, 1998). London (1997) adds that conscientious people are generally

more organised, efficient and goal-oriented, and that this conscientiousness is positively related to their motivation and job performance. Hence trainees who are more conscientious are also expected to be more motivated to learn, and thus to attain better training outcomes. A study by Naquin and Holton (2002) indicates conscientiousness to correlate significantly with both motivation to learn and motivation to transfer, although causal effects are mediated by the level of work commitment. Colquitt and Simmering (1998) show that conscientiousness positively predicts trainees' motivation to learn, implying that more conscientious trainees are more motivated to learn during training participation. However, they found the relationship with conscientiousness to be mediated by expectancy and valence. The meta-analysis conducted by Colquitt et al. (2000) showed no significant causality between conscientiousness and motivation to learn, but did indicate that conscientiousness positively predicts training effectiveness as well as job performance in general. Although not specifically related to training motivation, a meta-analysis by Judge and Ilies (2002) points to a close relationship between conscientiousness and performance motivation.

Anxiety
Basic anxiety was defined by Horney as an "all pervaded feeling of being alone and helpless in a hostile world" (in Gleitman, 1991), differing from fear in that it is a chronic fear that has no particular object, but is there at all times. Anxiety at work is expected to relate negatively to job performance, and consequently, anxiety is also assumed to lead to a decrease in trainees' training effectiveness. Webster and Martocchio (1993) show computer anxiety to relate negatively to trainees' motivation to learn and their test performance, and the meta-analysis conducted by Colquitt et al. (2000) points out that anxiety negatively predicts motivation to learn and learning outcomes, but is positively related to transfer and job performance.

Locus of Control
Locus of control refers to the differences between people in how much control they perceive themselves to have over what happens to them and the world surrounding them (Mitchell & Larson, 1987). With regard to work and training, Noe (1986, p. 738) defines locus of control as "the extent to which the individual is apt to make internal or external attributions regarding work outcomes". He argues that locus of control is likely to affect trainees' training motivation and learning ability, and thus affects their trainability. In addition, trainees with a more internal locus of control are also expected to achieve higher learning and transfer outcomes, and to react more positively to training (Tziner, Haccoun, & Kadish, 1991).
Quiñones, Ford, Sego and Smith (1995) demonstrate a strong positive correlation between trainees' internal locus of control and the learning results

among graduates from an Air Force training programme. The results of the meta-analysis by Colquitt et al. (2000) also show (internal) locus of control to predict higher motivation to learn, higher learning and transfer outcomes, and better job performance in general. A more external locus of control is also seen to strengthen the relationship between the perceived team climate and performance (Smith-Jentsch et al., 2001).

2.3.2.4 Trainee Attitudes

Whereas the group of elements reflecting trainees' training motivation is specifically directed at trainees' attitudes towards training, general trainee attitudes might also be related to training effectiveness. A person's attitude concerns an evaluative statement about something, and can be defined as "a rather stable mental position held toward some idea, or object, or person" (Gleitman, 1991, p. 459). Attitudes differ from personality characteristics in that they are less stable, yet fairly specific (Mitchell & Larson, 1987). Mitchell and Larson (1987) mention the importance of job attitudes, job satisfaction, job involvement, and organisational commitment, but research on the relationship between job attitudes and training effectiveness has so far mostly been limited to trainees' job involvement. Other trainee attitudes that have incidentally been related to training effectiveness include, for example, career commitment, career exploration and career planning (Colquitt et al., 2000). Regarding the extent of research on trainee attitudes, only the relationship between trainees' job involvement and training effectiveness will be discussed here.

Job Involvement

Job involvement reflects "the degree to which the individual identifies psychologically with the work, or the importance of the work for the person's total self-image" (Noe, 1986, p. 742). Employees with a high level of job involvement strongly identify with their work, and care about it (Robbins, 2001). As highly involved employees are likely to invest more time and energy in their jobs, job involvement is expected to enhance job performance. Job involvement has indeed been found to relate negatively to employee absenteeism, turnover and tardiness (Mitchell & Larson, 1987; Robbins, 2001), and positively to the number of hours worked. Accordingly, job involvement is also expected to predict training effectiveness, both by means of training motivation (Noe, 1986) and training outcomes. Noe and Schmitt (1986) show no relationship between job involvement and trainees' motivation to learn, but do indicate that job involvement significantly predicts higher learning outcomes. Gielen (1995) shows a positive relationship between job involvement and job performance after training for employees in a banking organisation, although this relationship does not show any direction of causality.

2.3.2.5 Concluding Trainee Characteristics and Transfer of Training

The review of trainee characteristics relating to training effectiveness, specifically transfer of training, in general suggests that a large number of factors are important, most of which, however, have rarely been studied. What is clear is that trainees' general cognitive ability is of significant importance with regard to their learning, transfer and job performance. Trainees' age in itself is believed to decrease training effectiveness, but related experience and prior knowledge in general increase the extent of learning and transfer. Trainee motivation is also seen to have strong effects on training effectiveness, separating trainees' motivation to learn from their motivation to transfer. The more motivated trainees are, the higher learning and transfer outcomes they will achieve. In addition, the extent to which trainees are ready to take part in training as well as the extent to which training fulfils needs and expectations relate strongly to trainees' training motivation, and subsequently also to training effectiveness. Similarly, the personality characteristics of self-efficacy, anxiety, conscientiousness and locus of control are believed to relate to training effectiveness, mainly by means of trainees' training motivation. And finally, trainees who are more involved with their job are expected to be more motivated to learn and transfer, and are subsequently expected to achieve higher effectiveness from their training participation. These factors, as well as their main - direct or indirect - relationship with transfer, are depicted in Figure 2.2.
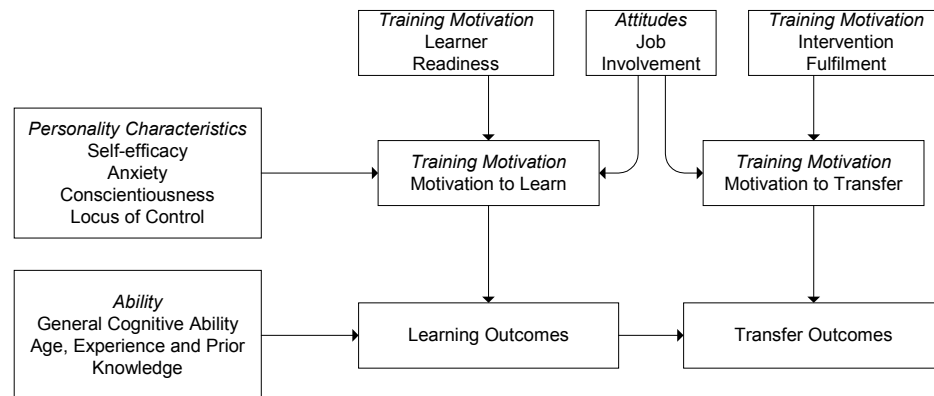
Figure 2.2 Relationships between Trainee Characteristics and Transfer Outcomes.

2.3.3 Training Design Characteristics

Although Human Performance Technology provides a suitable starting point for the examination of the relationship between supervisor support and transfer of training, it was noted at the start of Section 2.3 that a discrepancy exists between the systemic views of human (workplace) performance in general and specific transfer of training. In other words, human performance technology is directed at improving general performance, whereas this study aims at improvement in transfer – thus improvement in the intended change in performance. As performance is expected to change under the influence of the degree to which the intervention has led to the intended learning outcomes, specific characteristics of the intervention should be taken into account. In addition to the distinction between internal (employee) and external (work environment) factors (Spitzer, 1999), transfer is therefore also considered to be affected by the characteristics of the training itself.

The importance of the design and delivery of training has frequently been stressed (e.g. Baldwin & Ford, 1988; Foxon, 1995; Tannenbaum & Yukl, 1992). Specific training design and delivery characteristics affect the overall extent of transfer, and seem to be of special importance with regard to the dimensionality of transfer in terms of near vs. far and general vs. specific transfer. Design and delivery characteristics stem partly from underlying theories of learning, in general, referring to behavioural, cognitive or constructivist points of view (e.g. Ertmer & Newby, 1993). Several specific characteristics have been proposed, but empirical evidence for many of these still seems limited. Examples of such characteristics are providing attentional advice and metacognitive instruction to trainees (e.g. Cannon-Bowers, Rhodenizer, Salas, & Bowers, 1998; Foster & Hoff Macan, 2002), incorporating error-based learning in training (e.g. Heimbeck, Frese, Sonnentag, & Keith, 2003; Russ-Eft, 2002), including action planning in the training process (Foxon, 1997), and provide trainees with advance organisers (e.g. Cannon-Bowers et al., 1998; Russ-Eft, 2002). Machin and Fogarty (2003) specifically relate training characteristics to transfer outcomes by referring to them as transfer-enhancing activities, and include identical elements, general principles, varied practice, overlearning, relapse prevention, goal-setting, self-management cues and management support. They indicate that, although the empirical results for these are not quite unambiguous, "there is at least some supportive evidence for each" (p. 53). Whereas their study focused on transfer-enhancing activities in general, only training characteristics will be discussed in this subsection. Support from managers or supervisors is consequently discussed in Section 2.1 and Chapter 3, and is irrelevant with regard to a review of training characteristics. In addition, self-management cues mentioned by Machin and Fogarty (2003) show a strong correspondence with both relapse prevention and goal-setting, for which reason these self-management cues will not be discussed in this study. With regard to

the effects of training characteristics on transfer of training, this subsection will subsequently focus on the inclusion of identical elements, general principles, varied practice, overlearning, relapse prevention and goal-setting.

Identical Elements
The notion of the effects of the correspondence between a training and an application setting stems from Thorndike and Woodworth (see e.g. Baldwin & Ford, 1988; Tuomi-Gröhn & Engeström, 2003), and is referred to as the principle of identical elements (Baldwin & Ford, 1988) or fidelity (Machin & Fogarty, 2003). This concept implies that the presence of similar stimulus and response elements in both settings maximises positive transfer of training (Wexley & Baldwin, 1986), by means of improved retrieval of the representation of the training situation during a transfer task (Gick & Holyoak, 1987). For this reason, Van der Klink (1999; Van der Klink & Streumer, 2002) notes that the great similarity between the training and work environment in on-the-job training programmes has raised expectations about enhanced transfer of training with these on-the-job training programmes, in comparison to other forms of training. It has been argued that only the perception of similarity will suffice as regards the enhancement of transfer, which is referred to as functional fidelity (Machin & Fogarty, 2003).
Baldwin and Ford (1988, p. 66) indicate that empirical results support the use of identical elements, in order to increase the retention of both motor and verbal behaviours. From their study of the learning and transfer intentions of a computerised information system, Machin and Fogarty (2003) note a positive correlation between the perceived similarity of training and job setting on one hand, and trainees' intention to transfer on the other.

General Principles
A second learning principle that is believed to affect learning and transfer when incorporated into training design is the extent to which trainees are being taught general principles regarding the training content, instead of - or along with - their acquisition of applicable skills (Baldwin & Ford, 1988). The notion of the importance of general underlying principles originates from Judd (see e.g. Tuomi-Gröhn & Engeström, 2003), and states that trainees' ability to use new knowledge, skills and attitudes in a work setting is enhanced by teaching them the general rules and theoretical principles that underlie the training content. It is believed that such abstract rules or schemata facilitate transfer, especially when the learning and transfer situation is superficially dissimilar (Gick & Holyoak, 1987). Machin and Fogarty (2003) refer to the inclusion of general principles as principles-meaningfulness.
The importance of including general principles and the teaching of them within training is related to the concept of structuring knowledge or knowledge organisation, which has also been labelled as, for example, mental models,

conceptual frameworks and schemas (Day, Arthur, & Gettman, 2001). Schema theory suggests that knowledge is stored in long-term memory in the form of schemas, where schemas "categorize elements of information according to the manner in which they will be used" (Sweller, Van Merriënboer, & Paas, 1998, p. 255). Schemas can be both constructed and used consciously, when working memory actively processes information from - or stores it in - long-term memory, or unconsciously and automatically, in which case the working memory is passed over through automation (practice). Sweller et al. (1998) state that schemas are constructed for two reasons: the storage and organisation of information in long-term memory, and the reduction in working memory load. They argue that these two functions should constitute the primary role of training and education.

Recently, research into the relationship between training, schema theory, and transfer of training has focused on the role of cognitive load. Cognitive load refers to that part of individuals' working (or short-term) memory that is needed or used for processing specific information, in which 'specific' reflects a certain structure and content of information. Paas (1992) notes that two different dimensions can be distinguished within cognitive load: mental load and mental effort. Mental load concerns the load imposed on people's mental capacity as a consequence of the nature of instructional parameters (task-based), while mental effort indicates the amount of capacity that an individual allocates to the execution of a task (learner-based) (see also Sweller et al., 1998). Since working memory is considered to determine comprehension and learning, the cognitive load on working memory actually sets an upper limit to the extent to which trainees are able to learn. Cognitive load theory is therefore primarily concerned with the ease with which information is processed in working memory (Sweller et al., 1998). The load on working memory can be influenced by both the intrinsic nature of the material or information, which is referred to as intrinsic cognitive load, and by the way in which the information is presented, referred to as extraneous load. Intrinsic cognitive load is the cognitive load that is inherent in the information that has to be processed, such as the interaction between elements that has to be taken into working memory in order to construct a representative schema. A further distinction is made between extraneous cognitive load and germane cognitive load. Extraneous load reflects the extent of load on working memory that does not contribute to the learning process (Van Gerven, Paas, Van Merriënboer, & Schmidt, 2002). Germane cognitive load, on the other hand, refers to the load imposed on working memory by cognitive processes that are directly relevant to learning (Van Merriënboer, Schuurman, De Croock, & Paas, 2002).

Research on the influence of general principles on transfer of training (and training effectiveness) has mainly focused on instructional design characteristics that lead to the development of general principles or schemas, instead of actually providing these. These design characteristics will be

explained further in the next subsection on varied practice. The results of the study by Machin and Fogarty (2003) do, however, indicate that trainees who perceive that they have learned general principles regarding the content of training also perceive that they have attained better learning outcomes, as well as showing greater intentions to transfer what has been learned. Day, Arthur and Gettman (2001) show that the similarity of trainees' knowledge structures to those of an expert (correspondence of schemas) enhances skill retention and transfer, although the method used to derive the expert's knowledge structure is seen to play an important role. The results of their study also indicate that knowledge structures mediate the relationship between general cognitive ability and skill-based performance.

Varied Practice
Gick and Holyoak (1987) note that the number and variability of examples used during training affects the extent of transfer. This is referred to as varied practice, which is defined as "learning new knowledge or skills under a variety of conditions and using a variety of examples during training" (Machin & Fogarty, 2003, p. 54). Varied practice corresponds to both stimulus variability and conditions of practice, as proposed by Baldwin and Ford (1988), and is related to the concept of general principles in that both aim at the development of general rules or schemas (Machin & Fogarty, 2003). In this way, the mere repetition of similar practice tasks largely or wholly bypasses working memory, leading to the automation of skills, which seems suitable mostly for near and specific transfer. On the other hand, varied practice leads to the development of schemas by means of trainees' conscious processing in working memory, limiting learning ability by means of trainees' cognitive load, but providing better opportunities for the generalisation of transfer. This implicitly refers to 'the transfer paradox': the phenomenon that instructional methods that at first sight seem to be deficient, because they require a higher investment of mental effort and longer training times from learners to reach a certain level of performance, might turn out to be highly effective, because they result in superior transfer performance after practice (De Croock, 1999). Hence, it is proposed that varying tasks during practice in training may be more useful for enhancing transfer and generalisation than mere repetition of the same task (Foster & Hoff Macan, 2002).

One way of varying practice in training is to insert periods of rest or no practice for trainees, which is referred to as spaced practice. Massed practice, on the other hand, reflects conditions in which trainees practise a task continuously without rest (e.g. Russ-Eft, 2002). A recent meta-analysis of the effects of spaced vs. massed practice indicates that spaced practice leads to better post-training performance than massed practice, although this effect seems to be limited by the complexity of the task to be performed (Donovan & Radosevich, 1999).

Overlearning
A specific kind of variation in practice concerns overlearning. Overlearning refers to "deliberate training and practice beyond a set criterion performance" (Russ-Eft, 2002, p. 54), and can be defined as "engaging in practice beyond one successful attempt at a new skill, or practising a skill in the same way repeatedly" (Machin & Fogarty, 2003, p. 53). It is argued that learning and practising beyond the point to which trainees are able to perform a task will lead to a greater amount of information being learned and retained, as well as allowing further feedback on the correctness of the response (Driskell, Willis, & Copper, 1992). Gick and Holyoak (1987) argue that this basic rule of a positive relationship between the degree of learning and positive transfer indeed applies when structurally similar responses are required in both the learning and transfer task. However, they also note that an increasing amount of learning initially leads to a decrease in transfer, before reversing and reaching levels of positive transfer.

A meta-analysis by Driskell et al. (1992) shows overlearning to lead to a moderate improvement in retention after training, in which the retention interval refers to the number of days after training. The effects of overlearning are shown to be somewhat stronger for cognitive than for physical tasks, although longer retention intervals between practice and retrieval (transfer) only has a negative effect on cognitive tasks. Their results also indicate that the greater the degree of overlearning, the greater its effect on retention.

Relapse prevention
Relapse prevention is a self-management technique for individuals to become aware of environmental and intrapersonal threats to skill maintenance, in order to anticipate and recover from possible lapses into 'old' behaviour and prevent these in the future (Burke & Baldwin, 1999).

Machin and Fogarty's (2003) study of employees taking part in advanced training for a computerised information system shows that the extent of relapse prevention during training correlates positively with learning outcomes, as well as with employees' motivation (intention) to transfer and their post-training self-efficacy. The results of a study of a training programme for military instructors also shows that trainees' participation in a relapse prevention module leads to better learning results and increased use of transfer strategies (Tziner et al., 1991). A study by Burke and Baldwin (1999), however, indicates that there is less need for relapse prevention strategies when the transfer climate becomes more supportive. They note that relapse prevention in favourable conditions might actually have detrimental effects, for example, by lowering trainees' self-efficacy.

Goal-Setting
Goal-setting involves either the actual setting of goals with regard to the implementation of new knowledge, skills and attitudes on the job (Werner, O'Leary-Kelly, Baldwin, & Wexley, 1994), or the teaching of trainees how to set goals (Machin & Fogarty, 2003). Cannon-Bowers, Rhodenizer, Salas and Bowers (1998) include goal orientation as a pre-practice condition, although others also consider it an activity that can be conducted during (e.g. Machin & Fogarty, 2003) or after training (e.g. Werner et al., 1994). This difference in timing relates to the content of goals to be achieved. Two classes of goals have been identified: performance goals and learning or mastery goals (e.g. Cannon-Bowers et al., 1998; Stevens & Gist, 1997). Performance goals are outcome-oriented, focusing on performance targets by demonstrating one's competence. Intended transfer outcomes can be described as performance goals. Mastery goals, on the other hand, focus on improving individual knowledge and skills, by directing attention at the learning process, thus enhancing understanding of the task and task strategies.
A study by Werner et al. (1994) of undergraduate university students taking part in a training programme on assertiveness skills shows that goals, which in some cases may have been assigned, led to a better retention of learning outcomes, as well as to partially better transfer. The results also show that students in the goal-setting condition initially reacted less favourably to training than others, although this changed after the last measurement. Wexley and Baldwin (1986) differentiate between assigned and participatory goal-setting, but show that both lead to higher levels of self-reported maintenance of behaviour after training.

2.3.3.1 Concluding Training Characteristics and Transfer of Training
This subsection has provided a review of training characteristics that are in general considered important with regard to transfer of training. The factors identified concerned the extent of identical elements between training and transfer setting, the teaching of general principles in training, the variation in both extent and variability of practice conditions, the extent of overlearning included in the training programme, and both relapse prevention and goal-setting procedures. Although these characteristics are generally expected to affect transfer through the extent of learning outcomes - thus indirectly - they might not always lead to differences in observable learning outcomes. Consequently, these training characteristics are mainly expected to affect transfer of training directly, as depicted in Figure 2.3.
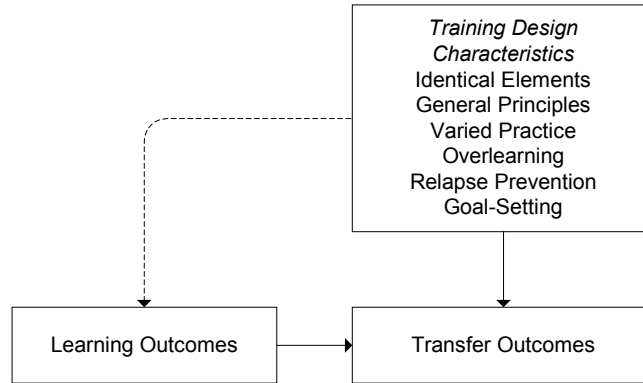
Figure 2.3 Relationships between Training Design Characteristics and Transfer Outcomes.

2.4 Towards a Framework for the Transfer System

Having identified transfer of training within the context of several training, trainee and work environment factors, it is now possible to compose a framework of the transfer system in order to evaluate transfer. This can subsequently be used as a framework to examine the influence of supervisor support on transfer.

With regard to the evaluation of training programmes, Kirkpatrick (1994; 1996) introduced four levels by which to determine training effectiveness. This four-level structure consists of trainee reactions to the training, the extent to which intended learning results have been achieved, the extent to which learning is being applied on the job, and the extent to which this application leads to changes in organisational results. Van der Klink (1999) notes that a much-used further specification of these levels distinguishes between training outputs and training outcomes, as depicted in Table 2.1. Training outputs refer to direct effects that can be attained during and after training, while outcomes reflect effects that will only appear after a while. As the objective of training consists of realising organisational targets, the main general interest is in training outcomes (Van der Klink, 1999).

Table 2.1 *Training Effects (Van der Klink, 1999)*

Level of effect		Description
outputs	1. reaction	trainee satisfaction with training
	2. learning	trainee learning in training
outcomes	3. behaviour	trainee change in functioning after training
	4. results	change in results after training

Although Kirkpatrick's structure is still quite influential, it also receives a lot of criticism. Alliger and Janak (1989) among others argue that not all levels need to be affected by training, and that the assumed - positive - causality between levels is at the least questionable. Wognum (1999) states that reactions to training are not to be considered a measure of training effectiveness as intended, but merely as a mediating or effectiveness-enhancing factor (see also Wognum & Lam, 2000). Research results indeed show that the presumed positive causality between reactions and learning is not confirmed (Colquitt et al., 2000), although recent research indicates some relation between trainees' reactions to the utility of training and their motivation to transfer (Ruona et al., 2002). Reflecting on much of this criticism, Holton (1996) indicates that the four levels should in fact be seen as a taxonomy of training (and HRD) outcomes, instead of a model. According to Holton, intervening variables that affect training outcomes are lacking, and there is a lack of boundaries to the taxonomy. Hence Holton's criticism corresponds with the plea for a more systemic approach to the transfer of training, as mentioned in Section 2.3. He therefore suggests the more comprehensive 'HRD Evaluation Research and Measurement Model', as depicted in Figure 2.4.

Within this model, both the levels of training outcomes (Kirkpatrick, 1994) and the three groups of factors influencing learning and transfer identified by Baldwin and Ford (1988) are combined. Following Noe's (1986) model of motivational influences on training effectiveness, Holton distinguishes three result measures of HRD interventions: learning, individual performance and organisational results. Learning reflects the extent to which intended learning results are achieved by the training programme, while individual performance reflects the change in individual performance as a result of new knowledge, skills and attitudes being applied on the job. Organisational results refer to changes as a consequence of changes in individual performance, such as increased turnover. Trainees' reactions to training are incorporated as influencing environmental elements, instead of a measure of training results.
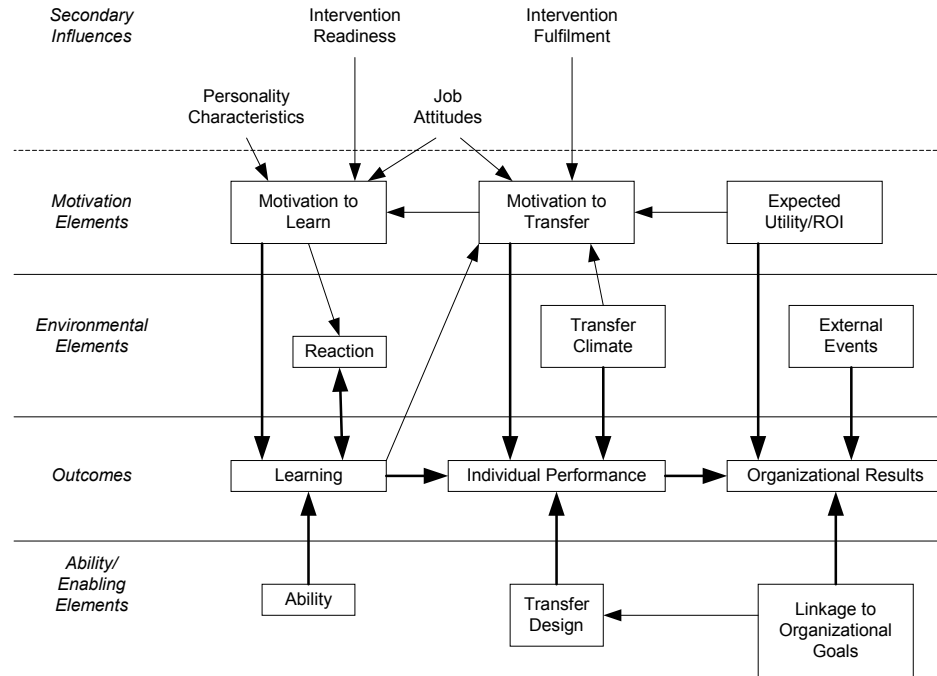
Figure 2.4 HRD Evaluation Research and Measurement Model (Holton, 1996, p. 17).

Within the model, four levels are identified that affect training outcomes - either directly or indirectly. As mentioned, the level of environmental elements contains trainee reactions to the training programme followed, as well as the transfer climate and external events that might alter organisational results. The level of motivational elements consists of trainees' motivation to learn, their motivation to transfer, and the expected utility and/or Return On Investment of the training programme. Ability and Enabling elements reflect trainees' ability, the transfer design, which reflects transfer enhancing training characteristics, and the linkage of the training with organisational goals. Finally, the level of secondary influences contains the relevant personality characteristics of trainees, their job attitudes and the extent to which they are ready to participate in training and to which training has fulfilled needs and expectations.

By incorporating learning, individual performance and (organisational) results as well as influencing factors, the 'HRD Evaluation Research and Measurement Model' in fact places the transfer system or subsystem within the larger human performance system or supersystem and relates it to organisational results. As such, the model provides a comprehensive and systemic view of transfer of training and its influencing factors, as well as of the position of transfer related

to more general human and organisational performance. On the other hand, the model remains unclear as to the specific content of several of the elements included. Holton (1996) provides little insight into the exact characteristics that constitute the influence of trainee, training and work environment, nor (of possible differences) in their specific relationships. The extent to which external events affect organisational results could be endless, and the model is subsequently limited in its direct applicability within empirical research. In addition, several hypothesised relationships have not been tested empirically, or only to a limited extent. Even though recent research does provide evidence for the influence of, for example, personality characteristics on training effective-ness and general performance (e.g. Ford, Smith, Weissbein, Gully, & Salas, 1998; Judge & Ilies, 2002; Yeo & Neal, 2004), it is still limited and usually restricted to single relationships. The model is thus to be considered normative and/or hypothetical, for which reason Holton (1996, p.17/18) subsequently states: "Future research will need to operationalize the variables shown and test the hypothesized relationships".

Concluding the above, the 'HRD Evaluation Research and Measurement Model' (Holton, 1996, p. 17) provides an extensive but rather normative and global conceptualisation of "the holistic approach to determining the effective-ness of training programmes" (Seyler et al., 1998, p. 3). Having reviewed the relevant work environment, trainee and training characteristics, however, it is now possible to incorporate these factors into the HRD model in order to achieve a research model for transfer of training. The resulting framework is presented in Figure 2.5.

The framework as depicted in Figure 2.5 shows transfer of training as a necessary in-between variable of the relationship between learning and organisational results. Training leads to certain learning outcomes, which affect trainees' individual performance by the extent to which subsequent transfer outcomes are achieved. In turn, changes in individual performance, caused by the extent of transfer outcomes, will affect organisational results.

With regard to the review of factors influencing transfer outcomes, four main dependent variables have been distinguished: transfer outcomes themselves, learning outcomes, motivation to learn and motivation to transfer. Learning outcomes are considered a necessary prerequisite for the achievement of transfer outcomes, and are believed to be affected by trainees' ability in terms of their general cognitive ability and their age, experience and prior knowledge. In addition, trainees' motivation to learn is considered to positively predict their learning outcomes. Trainees' motivation to learn in itself is believed to increase under the influence of higher levels of self-efficacy, conscientiousness and internal locus of control, while anxiety and external locus of control seem to lessen trainees' motivation to learn. Moreover, trainees are assumed to be more motivated to learn to the extent that they are ready to take part in training, as well as to the extent that they are involved with their jobs.
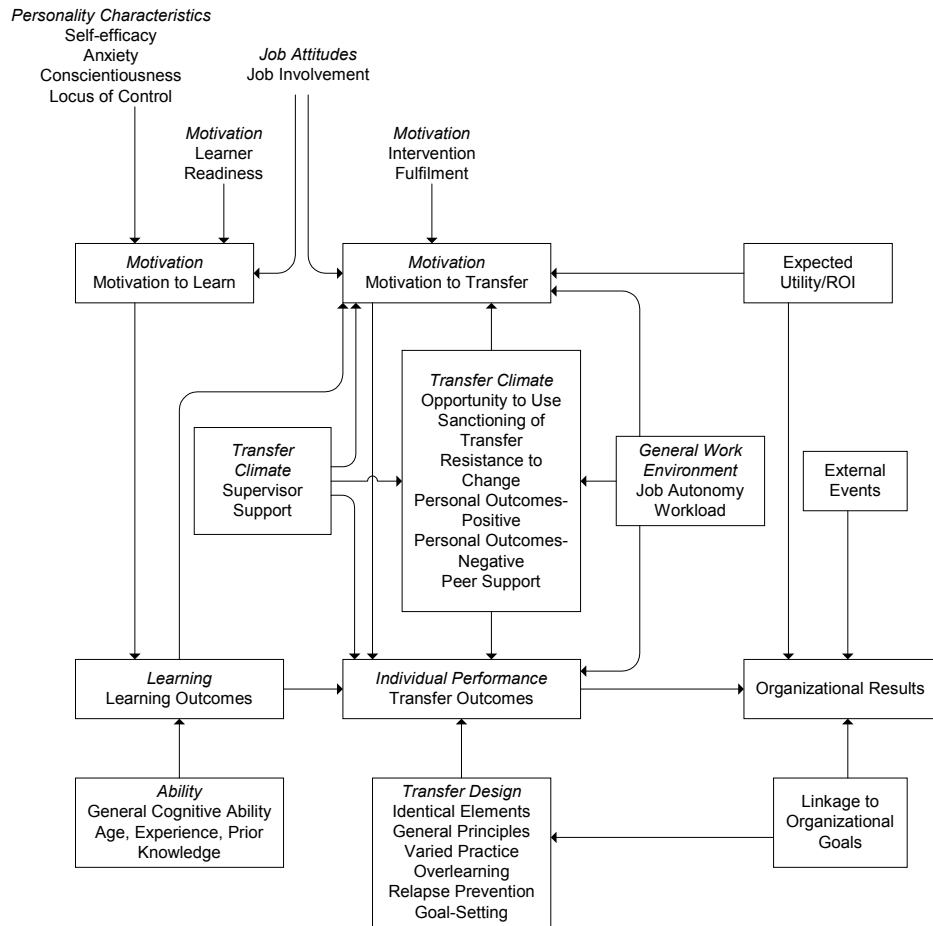
Figure 2.5 Preliminary Transfer Framework.

Trainees' transfer outcomes are expected to increase by means of their learning outcomes, their motivation to transfer and the specific (transfer) design of the training programme in terms of identical elements, general principles, varied practice, overlearning, relapse prevention and goal-setting.

Regarding the general work environment, job autonomy is assumed to enhance transfer outcomes, trainees' motivation to transfer and the transfer climate, whereas workload is believed to decrease these. Supervisor support, the opportunity to use learning, peer support, personal outcomes-positive and personal outcomes-negative are expected to lead to better transfer outcomes as well as to trainees that are more motivated to transfer. The other two factors from the transfer climate - sanctioning of transfer and resistance to change - are

believed to diminish both transfer outcomes and trainees' motivation to transfer. In addition, supervisor support is believed to improve the transfer climate.

Trainees' motivation to transfer is also expected to increase to the extent that trainees consider the training to have fulfilled needs and expectations, when trainees are more involved with their jobs, and when they perceive that they have achieved higher learning outcomes.

Finally, the transfer framework also incorporates organisational results, and factors affecting these. Although these factors are not assumed to relate to individual training performance and thus fall outside the realm of this study, their inclusion provides the opportunity to examine the effects of learning and transfer within a larger organisational setting.

The Preliminary Transfer Framework as presented in Figure 2.5 provides a systemic approach to transfer of training, which is considered necessary in order to evaluate transfer beyond the influence of some single and separate factors and relationships. Regarding the assumed influence of supervisor support on transfer outcomes, the framework offers the opportunity to examine supervisor support in relation to the influence of other factors, most specifically other work environment factors. The focus in the next chapter will therefore be on the identification and development of the construct of supervisor support, in relation to the other factors in the Preliminary Transfer Framework.

Chapter 3

Supervisor Support

3.1 Introduction

According to Purcell (2004), a recurring problem in Human Resource Management and employment relations concerns the discrepancy between intended and enacted human resource policies. What it is believed that should be done regarding official human resource policy is not put into practice in the way intended at the workplace. Purcell's (2004) study of employees' experiences of human resource policies and practices indicates that these experiences are mediated by the extent to which supervisors are perceived to carry out these policies, also in terms of their enthusiasm and greater role in managing human resources. In addition, this study shows that the quality of the relationship between an employee and his or her direct manager is a very strong predictor of this employee's job satisfaction and motivation, while developments such as the return of HR activities to the line suggest that the role of managers and supervisors has become even more important in the last decade or so. Managerial behaviour is consequently believed to have a significant impact on individual employee performance and subsequent organisational performance, and, similarly, its - alleged - importance is also regularly stressed with regard to the achievement of trainees' transfer outcomes (e.g. Cheng & Ho, 2001).

In the light of such a positive relationship between specific managerial behaviour and positive transfer outcomes, this behaviour is usually referred to as supervisor support, manager support or managerial support (e.g. Foxon, 1997; Van der Klink, Gielen & Nauta, 2001). For the present, it can be said that supervisor support concerns support from those who directly lead or supervise trainees on the job (see Smith-Jentsch, Salas & Brannick, 2001). Supervisor support is considered important to the achievement of transfer outcomes for

several reasons. Referring to social support at the workplace in general, House (1981, p. 7), for example, indicates the relative ease with which support can be altered: *"Yet, especially in the work environment, it appears possible, at least in theory, to enhance social support without great expenditures of time and money and with few negative side effects"* (see also Van der Klink et al., 2001). It has, however, been said that the relationship between supervisor support and transfer of training is still unclear. This study therefore aims to provide more insight into the relationship between supervisor support and transfer outcomes.

Chapter 2 provided an overview of research on transfer of training, concluding with a preliminary framework of transfer of training within an organisational context. This framework is meant to assist in examining the effects of supervisor support on transfer, for which reason this chapter will further elaborate on supervisor support and its relation to transfer. First, an overview of research on the relationship between supervisor support and transfer outcomes will be presented in Section 3.2, concluding with a description of the questions that this relationship still contains. Section 3.3 provides a general view of social support, divided into a subsection conceptualising social support (3.3.1), another about modelling the effects of social support (3.3.2) and a third classifying the different types of social support (3.3.3). Section 3.4 will subsequently discuss social support at the workplace, with providers and effects of social support at the workplace in Subsection 3.4.1 and a definition of supervisor support of transfer of training at the workplace in Subsection 3.4.2. Subsections 3.4.3 and 3.4.4 will give a classification of supervisor support for transfer of training and the way in which the different kinds of support might affect transfer, being visualised in Subsection 3.4.5. Finally, this classification of supervisor support for transfer of training will be integrated into the Preliminary Transfer Framework in Section 3.5.

3.2 Supervisor Support and Transfer of Training: Results of Research

3.2.1 Supervisor Support and Transfer of Training: A Positive Link

Researchers often mention supervisor support as one of the most important factors for training to transfer to the job (e.g. Baldwin & Ford, 1988; Cheng & Ho, 2001; Elangovan & Karakowsky, 1999; Ford & Weissbein, 1997; Pucel & Cerrito, 2001; Russ-Eft, 2002; Tannenbaum & Yukl, 1992). Moreover, managers, training directors and other organisational members involved with corporate training themselves indicate that they consider a supportive culture and reinforcement and coaching to be the most helpful transfer strategies (Olsen, 1998). A considerable amount of research has consequently been carried out on the relationship between supervisor support and transfer of training, both in different ways and with different results. Most researchers use

perception measures to determine the extent of supervisor support, while studies include quantitative and qualitative methods, as well as experimental and non-experimental research. Lim and Johnson (2002), for example, carried out a qualitative study of Korean HRD professionals. The results of their study indicate that the most important - individual level - work environment factors affecting transfer of training are considered to be a discussion with the supervisor on the use of new learning, the supervisor's involvement or familiarity with the training and positive feedback from the supervisor. From the results of another qualitative non-experimental study - in a human service agency - it is argued that a lack of supervisor support seems to be one of the most important reasons for low transfer ratings (Clarke, 2002). In addition, the amount of support in this study was found to be rather erratic by several trainees and the content of support to contain hardly any feedback on the use of training. Clarke concludes that without feedback from supervisors in terms of performance expectations and associated standards, it is likely that a large variation in transfer outcomes will emerge.

Xiao (1996) describes a quantitative survey that was conducted of women working in production groups in four electronics manufacturing companies in Shenzhen, China. Supervision was conceptualised by means of the supervisors' help in setting goals and criteria, providing assistance and feedback, and discussing the possibilities of using learning on the job, while the transfer outcomes consisted of a decrease in scrap rates in production. Of the variables included in the survey, the extent of supervision is seen to be the most important predictor of transfer outcomes.

Both Brinkerhoff and Montesino (1995) and Bradfield (1993) discuss experimental studies, pointing to a positive relationship between supervisor support and transfer outcomes. Brinkerhoff and Montesino (1995) examined the transfer outcomes of five training programmes on behavioural skills. They had supervisors conduct pre-training and post-training meetings with trainees in an experimental group, and compared these trainees' transfer outcomes to those of trainees who had had no such meetings with their supervisor. Pre-training meetings included, for example, information on training content, its relation to the job, and expectations and encouragement of the use of training. Post-training meetings consisted, among other things, of the identification of barriers and an opportunity to transfer, the expectations of the use of learning and the assurance that coaching would be provided. The results indicate that the transfer outcomes of the experimental group were significantly higher than those of the control group, with trainees in the experimental group also mentioning fewer transfer-inhibiting and more transfer-facilitating factors in their work environment.

Bradfield (1993) conducted an experimental study of the employees in a payment collection department of a large financial institution. The results of this study showed that employees whose supervisors received assistance from the

training department in providing the right kind of support achieved better transfer results than employees whose supervisors provided self-directed support. Specifically, the results indicated that these employees were more effective and productive.

The results of the studies described above provide clear indications of a significant positive relationship between supervisor support and transfer outcomes, which is confirmed by the results of several other empirical studies (e.g. Cromwell & Kolb, 2002; Gumuseli & Ergin, 2002; Kontoghiorghes, 1998; Kontoghiorghes, 2001b). Van der Klink, Gielen and Nauta (2001) subsequently indicate that there exists a great deal of agreement on the impact of supervisor behaviour on transfer outcomes, but, on the other hand, they state that empirical evidence is not convincing. In other words, in addition to the above, a number of studies indicate a rather weak relationship or none at all between supervisor support and transfer outcomes, and some studies even show a negative connection. These studies will be reviewed briefly below.

3.2.2 Supervisor Support and Transfer of Training: No Positive Link

Branderhorst (1994; see also Branderhorst & Wognum, 1995) conducted an experimental study on the transfer outcomes of trainees at an oil company taking part in a training programme on information handling, problem analysis and decision-making. In the experimental group, supervisors supported trainees with supportive behaviours similar to those described by Brinkerhoff and Montesino (1995, see Subsection 3.2.1), before, during and after training. Trainees in the control group received no specific supervisor support. The results of the study show no difference between transfer outcomes in the two groups however, which Branderhorst explains by - among other things - the fact that supervisor attention to training and its effectiveness was quite unusual within the organisation.

Fitzgerald (2002; Fitzgerald & Kehrhahn, 2003) reports on a non-experimental study of the transfer outcomes of a training programme on decision-making skills for the employees of a large state agency. The results show that, within that autonomous job context, no factors in the learning transfer system (e.g. Holton, 2000a; Holton, Bates & Ruona, 2000b) correlated with transfer of training. In fact, a rather large (but non-significant) negative correlation between supervisor support and transfer of training emerged ($r = -.43$, $p = .07$), which is suggested to relate to the autonomous and less cohesive work environment of these employees. Fitzgerald and Kehrhahn (2003) state that these results are consistent with other research indicating that different combinations and/or configurations of variables within the transfer climate have to be optimal in order to enhance or optimise transfer.

Using questionnaires, Hastings, Sheckley and Nichols (1995) examined the influence of a training programme for interviewers in a large state agency. Referring to supportive behaviours, such as the provision of sufficient time to practise new skills on the job and modelling desired behaviour, their results indicated no separate effect of supervisor support on transfer outcomes. When checking for trainees' age, however, supervisor support is seen to increase transfer outcomes.

Studies by Jukes (1996) and Nauta (1994) provided similar findings. Thus, in summary, different studies indicate no relationship between supervisor support and transfer outcomes, and others even show a negative correlation. The results of research on the relationship between supervisor support and transfer outcomes are therefore to be considered ambiguous at the very least, and, to some extent, even contradictory.

3.2.3 Supervisor Support and Transfer of Training: An Indirect Link

One interesting point regarding the relationship between supervisor support and transfer outcomes is demonstrated by the results of a study by Facteau, Dobbins, Russell, Ladd and Kudish (1995). They examined the influence of perceived supervisor support and several other factors on trainees' perceptions of pre-training motivation and on achieved transfer outcomes. The study included managers and supervisors employed by a state government as trainees, and questionnaires were used to retrospectively assess these trainees' perceptions of both their general motivation to learn and their general transfer of training - that is, the perceived transfer of training programmes followed in general. Although their results indicate a positive zero-order correlation between perceived supervisor support and transfer outcomes, the regression analysis shows this supervisor support to lead to a decrease in transfer outcomes. Support is shown to lead to increased motivation to learn, which, in turn, is seen to enhance transfer outcomes. Facteau et al. (1995) argue that supervisor support functions as a suppressor variable (see Krus & Wilkinson, 1986), suppressing variance in other variables that is unrelated to transfer outcomes. More specifically, supervisor support might suppress any irrelevant variance in trainees' motivation to learn, thereby increasing the strength of the relationship between trainees' motivation to learn and their transfer outcomes. Hence, the results of the study by Facteau et al. (1995) point to the fact that the relationship between supervisor support and transfer outcomes might be both direct and/or indirect. In addition to research examining the influence of supervisor support on transfer of training directly, several studies therefore also concern the relationship between support and other factors that are connected to transfer or assumed to be so. Ford, Quiñones, Sego and Speer Sorra (1992), for example, investigated the influence of workgroup support (both supervisor and peer support) and supervisor attitudes on airmen's opportunities to perform the

trained tasks of a technical training course on the job. They conceptualised the opportunities to perform by means of the breadth of the trained tasks that could be performed (for example, all or only some trained tasks), the number of times these trained tasks could be performed, and the type of tasks that could be performed - differing in level of complexity. Support was composed of, among other things, the extent to which supervisors provided a comfortable environment for trying out new skills and the cooperation between co-workers, while supervisor attitudes related to trainees' likeability. Questionnaire results indicated that support from the workgroup was a strong predictor of the type of tasks these airmen got to perform in their jobs, while supervisor perceptions of the airmen predicted both the breadth and type of trained tasks to be performed. Ford et al. (1992) subsequently argue that the supervisor and workgroup might be the "key gatekeepers" (p. 524) regarding the provision of opportunities to use new knowledge, skills and attitudes on the job.

Axtell, Maitlis and Yearta (1997) report on a non-experimental survey-study of technical employees in a multinational organisation, taking part in courses on developing interpersonal skills at work. Management support was conceptualised in this study as both the encouragement of new skills on the job and the extent of tolerance towards mistakes when using these new skills. Using questionnaires at three separate times after training, results show perceived management support to be positively related to self-reported transfer one month and one year after training. Regression analysis, however, shows no significant regression weight of management support on transfer outcomes, which Axtell et al. relate to the correlation between management support and the extent of trainees' job autonomy. As perceived job autonomy is seen to be a strong predictor of transfer outcomes one year after training, they argue that conceptual overlap might exist between support and autonomy, thereby suppressing the influence of management support.

Several other studies have been carried out on the effects of supervisor support on trainees' training motivation. A French study by Guerrero and Sire (2001) shows that supervisor support leads to increased intrinsic and extrinsic instrumentality of training, in which instrumentality corresponds to the trainees' perceptions that their efforts in training will enable them to gain rewards at work. A survey of Australian managers indicates that the extent of social support at work - from peers and supervisors - correlates significantly with these managers' general training motivation (Orpen, 1999), and Baldwin and Magjuka (1991) note that perceived accountability to the supervisor enhances trainees' post-training intentions to transfer.

Hoekstra (1998) points out that trainees in a training course on meeting skills achieve higher transfer outcomes when their self-efficacy has increased during training, in interaction with the extent of social support experienced. More specifically, differentiating between practical and emotional support, the results show that improvement in self-efficacy has a positive effect on transfer

outcomes when trainees receive more practical support from others. The results do not indicate a direct effect of social support on transfer outcomes.

3.2.4 Supervisor Support and Transfer of Training: Concluding Research

In concluding the above, it has already been stated that the description of previous research of the relationship between supervisor support and transfer outcomes shows that results are inconclusive (e.g. Fitzgerald & Kehrhahn, 2003; Van der Klink et al., 2001). The results indicate both a positive and a negative relationship, as well as no relationship at all. Assuming that an actual relationship does exist, the review points to two characteristics of previous research that might have contributed to these mixed findings.

Firstly, it is not clear in which way supervisor support affects transfer outcomes. Whereas most research looked at the possible direct effects of supervisor support on transfer outcomes, the study by Facteau et al. (1995) shows that other factors may intervene, and may even change the direction of a relationship between supervisor support and transfer outcomes. More specifically, the work environment, trainee, and training design (transfer) factors identified within the transfer system in Chapter 2 might all relate to supervisor support and/or transfer outcomes, or to their relationship. In addition to a direct effect, supervisors might therefore be able to increase transfer outcomes by, for example, providing trainees with opportunities to use new skills (work environment characteristic), by motivating them to learn and transfer (trainee characteristic) and by setting transfer goals with trainees (transfer design characteristic). Furthermore, a specific constellation of factors within the transfer system might lead to a negative (direct) relationship between supervisor support and transfer outcomes, whereas a different constellation might actually imply a positive connection.

Secondly, the variety in the conceptualisation of supervisor support in different studies indicates that the exact nature or content of effective supervisor support is still unclear. In other words, what constitutes effective supervisor support? Baldwin and Ford (1988) note that there is little known about the exact content of supervisory behaviour that is perceived as supportive, yet *"only by clearly operationalizing work characteristics such as support can interventions be developed and their effects on generalization and maintenance of training be examined"* (p. 85). Hastings, Sheckley and Nichols (1995) argue that supervisors can create a climate that is favourable to transfer by articulating how the application of new knowledge and skills relates to personal and organisational goals, by aligning the workplace to the learning goals of the training programme, giving trainees the time needed to practise and apply new knowledge, skills and attitudes, and by modelling desired behaviour. Russ-Eft (2002), however, states that supervisor support also includes setting goals together with trainees, and offering positive reinforcement of the use of new

behaviour. Moreover, whereas Axtell et al. (1997) ask trainees about the supervisor support they experienced at the moment of training completion - thus referring to both periods before and during training - Hoekstra (1998), for example, only measures support experienced after training. In addition, Foxon (1997, p.53) refers to the extent of supervisor support by indicating that it is to be seen as *"..a continuum, ranging from the manager's initial and low-key interest about the training through the personal involvement with the learner as coach or mentor.."*. Together with the previously mentioned lack of insight into the optimal content of supervisor support, both remarks indicate that research so far has provided no insight into the best time to provide supervisor support or the optimal extent of support either. Thus, with regard to the relationship between supervisor support and transfer outcomes, it is necessary to determine what support to provide, when to provide it and to what extent.

With regard to the conceptualisation of supervisor support in research, it is useful to note a difference between experimental studies aimed at evaluating interventions with regard to supervisor support on the one hand, and non-experimental research evaluating the existing practices of supervisor support on the other. Whereas, for example, Brinkerhoff and Montesino (1995) specifically designed pre-training and post-training support strategies for supervisors (possibly on best practice), Gielen (1995) evaluated supervisor support to the extent that it was actually being provided at the workplace. Gielen noted that supervisor support in her study concentrated on providing acceptable conditions for the employee's training, with little attention being given to the training content. In referring to her study, Van der Klink et al. (2001) subsequently indicate that the actual supervisor support provided was rather superficial. Consequently, the conceptualisation of supervisor support in experimental studies might considerably differ from that in survey research, leading to differences in the effects on transfer outcomes.

As stated earlier, this study focuses on the relationship between supervisor support and transfer of training and on the possible effects of supervisor support on transfer outcomes. To examine this relationship, it has become clear that it is necessary to take into account possible different paths of relatedness, as well as the specific content of support. The subsequent merging of these refines the problem definition to what kind of supervisor support affects transfer outcomes, and in what way. In Chapter 2, an overview of factors relating to transfer of training was provided, after which these were integrated into the Preliminary Transfer Framework. This framework is designed to examine different possible causal paths of the relationship between supervisor support and transfer outcomes. Thus, it is now necessary to take a closer look at the possibilities for supervisors to provide support, and to determine and develop a classification of supervisor support that can be incorporated into the Preliminary Transfer Framework. As the notion of the influence of supervisor support stems from the

concept of social support (e.g. Cheng & Ho, 2001; Hoekstra, 1998), the next section will provide a more detailed look at the conceptualisation of this social support.

3.3 A General View of Social Support

3.3.1 Conceptualising Social Support

Studies in several different domains of research have shown that environmental help through relationships with others can assist people in coping with difficult situations, or at least diminish the negative consequences of these situations (Hoekstra, 1998). For example, companionship within an army combat team is known to reduce the distress of battle (Taylor, 1991), while social relationships through marriage and church membership have both been shown to negatively predict mortality rates (Stroebe, 2000). The main assumption regarding the beneficial effects of relationships is that these effects are largely due to the buffering properties of relationships in times of problems or difficulties, such as stressful periods. This sort of help through relationships is usually referred to as 'support' (House, Umberson & Landis, 1988), indicating that they mainly concern the ability to cope with certain situations. The term 'environmental' refers to those who are the actual providers of support, like friends, family, co-workers or professional organisations, such as Alcoholics Anonymous (e.g. Duffy & Wong, 2000). The social aspect of this kind of relational support has led to it usually being referred to as social support (House et al., 1988).

Whereas there is clear evidence of its effects, the conceptualisation of social support in terms of its comprehensiveness varies greatly. Buunk and De Wolff (1992) note that some regard social support in terms of the quality of social relationships a person has, or, for example, the quality of the social climate in which one works, while others define social support more specifically as, for example, the exchange of emotional support, feedback and information. House et al. (1988) similarly state that terms such as 'social network', 'social relationships' and 'social support' have been used interchangeably "..to refer to essentially the same phenomena – the existence, number, and frequency of social relationships" (p. 301). They argue that research should distinguish between three classes or dimensions within social relationships: social integration/isolation, social network structure and relational content.
Social integration or isolation refers to the number or quantity of social ties or relationships an individual has, which can be further separated into the type (for example, marital or colleagues) and the frequency of contacts. Duffy and Wong (2000) refer to social integration as social embeddedness, and state that the quantity of relationships with others at the workplace determines the extent to

which an employee can draw on others when seeking support. The degree of social integration can subsequently be seen as a determinant of social support.

Social network structure refers to the structure of relationships, such as their direction. House et al. (1988) differentiate between dyadic properties, referring to, for example, reciprocity, multiplexity or dispersion in the relationship between a trainee and a supervisor, and network properties, referring to, for example, the density, homogeneity and dispersion of the relationships of a trainee with two or more colleagues. As such, the characteristics of the social network structure can also be seen as a determinant of social support.

Finally, relational content refers to the functional nature or quality of relationships with others. This relational content can depend on its source, such as supervisors or colleagues, and can be distinguished into social support, relational demands and conflicts, and social regulation or control. Relational demands and conflicts refer to the negative or conflictive aspects of relationships that may have negative consequences, while social regulation or control indicates a controlling or regulating function of relationships that can have both positive and negative consequences. According to House et al. (1988), social support refers to the positive aspects of relationships, such as instrumental aid, emotional concern and information.

Having determined the relative position of social support, as compared to social relationships and their features, House (1981) states that the general concept of social support is rather familiar - as most people know who to consider supportive or non-supportive. Specification of the concept has led to several different definitions and ideas, however. This seems to be partly due to a distinction that can be made in the focus of defining social support, as social support can be defined in many different ways (Newcomb, in Bhanthumnavin, 2003). Roughly speaking, social support has been defined both in terms of its content and its effects, in addition to definitions combining the two. Leavy (in Viswesvaran, Sanchez & Fisher, 1999, p. 314), for example, defined social support by rather broadly combining content and effects as "..the availability of helping relationships and the quality of those relationships", in which 'relationships' relates to the content of support and both 'helping' and 'quality' indicate its effects. In terms of the content of social support, Cobb (in Taylor, 1991, p. 244) defined social support as "..information from others that one is loved and cared for, esteemed and valued, and part of a network of communication and mutual obligation". Kottke and Sharafinski (in Stinglhamber & Vandenberghe, 2003, p. 253) define the supervisor support perceived by employees in broad terms of content as "..general views concerning the degree to which supervisors value their contributions and care about their well-being". And finally, Shumaker and Brownell (in Duffy & Wong, 2000, p. 100) limited their description of content, but emphasised intended effects by defining social support as "..an exchange of resources

between two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient".

Although the diversity of definitions would suggest great conceptual vagueness about social support, several components seem to be ubiquitous. First, social support always concerns relationships between at least two individuals, in which the behaviour of one individual influences the feelings and/or behaviour of the other. Moreover, as the term 'support' implies, social support is expected to result in positive consequences, such as feelings of appreciation or enhanced well-being. Social support always refers to a certain objective or outcome if it is to be considered supportive. For example, the act of cycling will in itself not be considered supportive, yet cycling in order to show someone else how to do it can be considered as social support. Although offering a homeless individual help in housecleaning will in general not be considered sincerely supportive in its literal form, the receiver might consider it so in the sense of being cared for, or in the sense of expected support in time of need. Thus, the extent to which an action can be considered supportive depends on the kind of consequence, even though such a consequence is not necessarily predetermined in terms of an objective.

An important feature of three of the above definitions is that these - implicitly or explicitly - refer to perceptions of social support, instead of more objective measures. Duffy and Wong (2000) similarly differentiate between the categories of enacted support and perceived social support.

Enacted support (or 'objective support', House, 1981) concerns the availability of actual support, thus the actual actions others perform in order to support. Even though an employee may be part of an extensive social network (at the workplace), the level of enacted support by others might still be low.

Perceived social support (or 'subjective support', House, 1981), on the other hand, reflects the cognitive appraisal of social support, thus the perception of availability and adequacy of support through relationships with others. Even if a theoretically objective measure might indicate high levels of social integration and enacted support, people can still consider it too little or inadequate. Perceived social support can refer to the perceptions of both the receiver and the provider, or the extent of their correspondence. Duffy and Wong (2000) indicate that perceived social support is the more frequently examined construct of the two.

In line with these different notions, some researchers restrict their definition of social support to the actual support provided, whereas others only consider support to take place when it is perceived as such. Den Ouden (1992) further indicates that the provision of social support might be conscious and intended, but might also be unreasoned and/or coincidental. Hence there also remains a possibility that some behaviour will not be interpreted by either providers or

recipients as support, but still exert an influence on, for example, well-being or job performance.

3.3.2 Modelling the Effects of Social Support

Considering the importance that is attributed to social support, how exactly is it then believed to produce an effect? Duffy and Wong (2000) refer to Shumaker and Brownell when clarifying the positive effects of social support. They state that the main advantage of social support - as a coping strategy - concerns its beneficial effects on individuals' well-being, which can be divided into several more specific functions. The first of these, social support is believed to cater to individuals' basic needs for affiliation. In other words, social support leads to contacts and subsequent feelings of companionship with others, providing individuals with a sense of, for example, trust and belonging. As a second function, social support is believed to enhance self-identity and self-esteem through interactions with others. Relating social support to the concept of social comparison (e.g. Buunk & Mussweiler, 2001), comparison to others helps individuals to get to know themselves better. Thus, social support might, for example, enhance individuals' feelings of self-efficacy. And finally, social support helps in reducing feelings of stress. Duffy and Wong (2000) indicate three possible mechanisms for this stress-reducing function: social support helps individuals to alter their cognitive appraisal of a stressful event, leading to a clearer understanding of the stress. Secondly, social support can assist individuals in finding the right techniques to respond to stress, and lastly, social support might provide direct help in itself.

Whereas the first two above-mentioned functions of social support refer to rather general benefits, more or less regardless of other influences, its stress-reducing function can be considered quite situation-specific. An example of such situation-specific effects of social support is the negative relationship between stress experienced at the workplace and personal health. Employees who, for example, experience a more excessive workload run greater health risks than employees who do not (Taylor, 1991). In order to reduce these health risks, employees might subsequently decide to take up sporting activities together. Social support - in terms of playing sports together - is then considered to directly negatively affect the level of health risks, thus positively affect health. This is referred to as a direct effect model, which assumes social support to affect certain intended outcomes in a direct and unconditional way, irrespective of, for example, the influence of the workload experienced.
Several other mechanisms of the influence of social support have also been suggested, however. Again referring to the negative relationship between work stress and health, social support might also indirectly affect health by reducing the level of stressors, or weaken the strength of the relationship between stress

and health, by buffering the effects of stress (e.g. Duffy & Wong, 2000). House (1981) considers the direct and indirect effects of social support to be its main effects, and makes a distinction between these and the buffering effects of social support. Most researchers make no real distinction between direct and indirect effects, however, and distinguish only between direct effect processes and buffering effect processes. These researchers thus consider, for example, the influence of social support on the level of stressors also to be a direct effect, even when it is mainly intended to improve health (e.g. Hoekstra, 1998; Stroebe, 2000; Viswesvaran et al., 1999).

Following House's conceptualisation for reasons of clarity, the main effects of social support are considered to consist of both direct and indirect effects. In addition to the direct effects that have been clarified above, indirect effect models reflect the influence of social support on a dependent variable, by means of its effect on another variable. For example, social support might improve an individual's health by reducing his or her workload at the workplace.

Related to the main effects of social support, Viswesvaran et al. (1999) refer to two kinds of so-called mediational models: mediator effects models and suppressor effects models. Their effects - mediator and suppressor effects - can both be seen as specific constellations of the direct and indirect effects of social support. Mediational models in research on the relationship between work stress and health suggest either that support mediates between stress and health, or that stress mediates between support and health. In other words, each of these variables (support or stress) is a necessary in-between variable regarding the relationship investigated.

Mediator effects models assume social support to mediate the relationship between one (or more) variables and certain intended outcomes. In other words, at least part of the relationship between, for example, work stress and health can be clarified by the relationship of each with social support. One example is that work stress could lead to a decrease in social support, while social support increases an individual's health. An increase in work stress will then lead to less social support, which, in its turn, will reduce health. The negative (zero-order) correlation between work stress and health is in this case greater than their partial correlation when checking for social support, indicating that social support accounts for a part or the whole of the strength of this relationship. When a significant correlation between work stress and health remains, after partialling out the effects of social support, it is referred to as a partial mediation model. A full mediation model implies no remaining significant correlation between stress and health, after taking into account the effects of social support.

Suppressor effects models suggest that social support also mediates between, for example, work stress and health, but does so by suppressing the irrelevant variance in the work stress experienced. Consequently, the negative relationship between work stress and health will grow stronger. The study by Facteau et al. (1995) indicates that supervisor support acts as a suppressor of variance in

trainees' motivation to learn. This strengthens the relationship between motivation to learn and transfer outcomes, yet turns the positive zero-order correlation between supervisor support and transfer outcomes into a negative regression weight.

Buffering effects models are also known as moderating or interaction effects models (see Dormann & Zapf, 1999), and should be seen as rather different from the models including the main effects of social support. Buffering effects models assume social support to mitigate relationships between other variables. Again referring to the relationship between work stress and health, social support might modify - preferably lessen - the relationship between these. In other words, the buffering effect hypothesis states that social support might diminish - or buffer - the impact of work stress on health (House, 1981). Work stress will consequently have a greater impact on the health of individuals receiving (or perceiving) less social support.

Whereas these interaction effects are called 'buffering' because of their buffering properties against certain negative situations or events, Duffy and Wong (2000) also refer to an interaction effect that strengthens a relationship. This is called a boostering effect, which, for example, occurs when a social supporter indicates the health-improving effects of some positive experience. The positive relationship between that positive experience and health will then be greater for individuals who receive more social support.

Research on the precise effects of social support has not yet provided a decisive understanding of the way in which these effects occur, with results differentially pointing at both main and buffering effects (e.g. Duffy & Wong, 2000; Van der Doef, Maes & Diekstra, 2000; Van Vegchel, De Jonge, Söderfeldt, Dormann & Schaufeli, 2004). Duffy and Wong (2000) argue that a possible explanation might be found in the different techniques and methodologies that have been used in research. They point to possible differences between, for example, correlational surveys and experimental research using active manipulations of social support. This is comparable to the notion that experimental and non-experimental research on the relationship between supervisor support and transfer outcomes might have differed (see Subsection 3.4.2).

3.3.3 Classifying Social Support

Section 3.2 indicated a rather broad diversity of conceptualisations of supervisor support in research on transfer outcomes, a diversity which can also be seen in the conceptualisation of social support in general in Subsection 3.3.1. This diversity seems to a large part to be related to confusion about what social support is actually comprised of, and which possible aspects of social support should be considered the most important (House, 1981). However, it in fact

reflects concerns about the assumption - and use - of social support being a unidimensional construct (Viswesvaran et al., 1999). In their meta-analysis of studies on the relationships between social support, stressors and strains, Viswesvaran et al. (1999) state that these relationships depend on, among other things, the type and source of support. They indicate that this is referred to as the matching or specificity hypothesis, the main thesis of which is that "..if the right kind of support from the right source of support is matched to the kind of stressors faced, then specific strains will be reduced" (p. 318) (see also Taylor, 1991). Hence, they separate a right kind of support from a wrong kind, implying that social support consists of different kinds or dimensions of support.

Indeed, various classifications of support functions or dimensions have been distinguished and used in research (Stroebe, 2000). In their meta-analysis of the role of social support in the process of work stress, Viswesvaran et al. (1999) themselves, for example, distinguish between tangible, non-tangible and miscellaneous support, in addition to a differentiation between different sources of support. Smit (2001) differentiates instrumental from social support, indicating that the first refers to the provision or availability of the necessary equipment, and the second to the attention received from peers and the supervisor. Karasek, Triantis and Chaudhry (1982) distinguish four categories of supervisor support: instrumental support, attentive socio-emotional support, tolerant socio-emotional support, and demanding-authoritarian support. They indicate that instrumental support refers to, for example, the offering of new ideas and the encouragement of new methods, while both the socio-emotional categories reflect active and passive kinds of emotional support respectively. The demanding-authoritarian category indicates a task-oriented supervisory style, in which a supervisor insists on, for example, working hard and following the rules.

Bhanthumnavin (2003) includes three types of support (emotional, informational, material), which are directly derived from a description of social support as given by House (1981). House's description is the most commonly accepted and used categorisation of social support, and actually distinguishes four types: instrumental, informational, emotional and appraisal support.

Instrumental Support refers to the provision of "..instrumental behaviours that directly help the person in need" (House, 1981, p. 25), and has also been described and included in research as tangible support (e.g. Viswesvaran et al., 1999), practical support, behavioural assistance and material aid (Cohen, Underwood & Gottlieb, 2000). Instrumental support consists of the offering of concrete help or facilities in order to solve or handle difficult situations (Den Ouden, 1992). For example, individuals give instrumental support when they provide others with the tools and equipment to do their work, provide others with money or help them pay their bills, and give assistance with child care and housecleaning. According to Cohen et al. (2000), the - theoretical - benefit of

instrumental support is that it solves practical problems and allows more time for relaxation or other coping mechanisms (referring to stressful situations).

Informational Support means providing someone with information that he or she can use in coping with personal and environmental problems (House, 1981). According to Cohen et al. (2000), informational support has also been examined using terms such as advice/guidance, cognitive guidance and problem-solving. Informational support consists of offering information that helps someone get a better grip on and/or view of reality (Buunk, 1992; Den Ouden, 1992). House (1981) indicates that the difference between this and instrumental support lies in the fact that informational support is not in and of itself helpful, but assists others in helping themselves. Examples of informational support are the provision of information about resources, or suggesting alternative ways to perform certain tasks at the workplace. The benefits of informational support consist of an increased amount of useful information available, it helps to obtain the services needed and leads to more effective coping strategies (Cohen et al., 2000). Buunk (1992) refers to the theory of social comparison (see also Buunk & Mussweiler, 2001) when arguing that informational support is important with regard to new or unclear situations, in which individuals seek information from others in order to compare or construct their own opinion. Informational support thus helps to reduce, for example, feelings of insecurity (Buunk, 1992).

Emotional Support consists of the availability of persons who can listen sympathetically when one is facing difficulties or problems, and who can provide empathy, care, love and trust (Cohen et al., 2000; House, 1981). Emotional support has also been investigated in terms of confidant support, esteem support, reassurance of worth, attachment and intimacy (Cohen et al., 2000). For example, one can emotionally support others by allowing discussions of feelings, and by indicating sympathy, approval and compassion. Emotional support refers mainly to feelings of psychological proximity and openness, and is believed to reduce tension and anxiety (Buunk, 1992). Buunk (1992) notes that emotional support notably enhances individuals' psychological well-being in radical and far-reaching situations that are relatively difficult to change. According to Cohen et al. (2000), the theoretical benefits of emotional support consist of reducing the perceived threat (or impact) of certain life events, enhancing self-esteem, reducing anxiety/depression and motivating people to cope (better) with situations or events.

The last of these four, *Appraisal Support*, involves the provision of information which is relevant to an individual's self-evaluation (Cohen et al., 2000; House, 1981; Stroebe, 2000). In this case, House refers to Festinger's theory of social comparison, stating that individuals use information about (and from) others to evaluate their own opinions and abilities. In their description of supportive functions, Cohen et al. (2000) comparably mention validation, also known as feedback or social comparison. The main - theoretical - benefits of appraisal

support are that it decreases perceived deviancy, allows acceptance of feelings, provides favourable comparisons and increases feelings of being able to handle problems (Cohen et al., 2000). Appraisal support, for example, consists of giving compliments or providing feedback about job performance and giving indications about one's relative status in a population.

House (1981) states that appraisal support can be both implicitly and explicitly evaluative. The first consists of, for example, the provision of a role model which allows employees to evaluate for themselves whether they are performing in accordance with the norm, while the latter may consist of compliments given by a supervisor when they are performing well on the job. Buunk (1992) indicates that it is especially supervisor appreciation at the workplace that is important to employees' well-being, and that positive feedback is specifically appreciated when one feels insecure about one's functioning or has low self-esteem.

These four types are derived from several earlier conceptions of social support, none of which, however, included all four types. House (1981) argues that, instead of questioning which of these types really is social support, all can and should be considered supportive with the relevance of each type depending on the person and situation - similar to the relevance of the provider of social support. Most classifications of social support bear significant similarity to these four dimensions (e.g. Smit, 2001), yet they have been used and referred to most frequently in research (e.g. Buunk, 1992; Deelstra et al., 2003; Den Ouden, 1992; Dormann & Zapf, 1999; Hoekstra, 1998; Stroebe, 2000).

3.4 Social Support at the Workplace

3.4.1 Effects and Providers of Social Support at the Workplace

Whereas research thus indicates the positive effects of social support with regard to, for example, cancer patients, young adolescents, gamblers and homeless people (Duffy & Wong, 2000), significant effects have also been found for social support at the workplace. Social support at the workplace has frequently been related to a reduction in job-related stress, with several studies confirming this relationship (e.g. Babin & Boles, 1996; Kirmeyer & Dougherty, 1988). Similarly, perceived or actual social support also enhances job satisfaction (e.g. Babin & Boles, 1996; De Jonge et al., 2001), commitment to work (Bhanthumnavin, 2003), and perceived organisational support (Eisenberger, Stinglhamber, Vandenberghe, Sucharski & Rhoades, 2002), and is negatively related to, for example, employees' emotional exhaustion and turnover intentions (Houkes, Janssen, De Jonge & Bakker, 2003). Most research on actual processes of social support at the workplace is directed at work stress

- or strains - and, for example, its relation to personnel health, but House (1981, p. 7) was among the first to note that "..the work organization provides a good mechanism for efforts to enhance support, and enhanced support may improve individual and organizational effectiveness beyond its effects on stress or health or the relationship between them". In other words, social support at the workplace is not only deemed important because of its abilities to lessen work stress or strains, or reduce the relationship of stress to health, but social support at the workplace also has promising abilities to improve individual and organisational performance. Den Ouden (1992) draws a parallel between stressful situations in general and situations at the workplace, in which employees have to apply the knowledge, skills and attitudes that have been gained in training. As employees return from training to a usually unchanged work environment, they have to incorporate their new knowledge, skills and attitudes in addition to carrying out their regular activities. The work environment may subsequently contain several actual or perceived barriers to the use of learning, which can be interpreted as a rather stressful situation. Social support might diminish these, or provide a buffer against their deleterious effects. In addition, social support might enhance transfer outcomes directly, regardless of the extent of barriers or inhibiting factors at the workplace. Thus relating social support and transfer outcomes, social support concerns the influence of support from others in favour of intended transfer outcomes.

Training literature suggests that support for training activities may originate from a variety of organisational members such as subordinates, peers, supervisors, senior management and other trainees (e.g. Den Ouden, 1992; Facteau et al., 1995). In general, however, social support at the workplace is almost without exception comprised of support by supervisors and peers, and only to a lesser extent by subordinates or clients. Buunk and De Wolff (1992) note that often no differences are found in the effects of supervisor or peer support at the workplace, but when there are, it is most often supervisor support that turns out to be the more important. Moreover, Purcell's (2004) study shows that employees' perceptions of an organisational HR policy and practice are strongly mediated by the supervisors' way of implementing these and the extent to which they do so, indicating that direct supervisors could function as sort of a filter with regard to the influence of all kinds of supportive activities at the workplace, especially those from senior management. Supervisors also often have close and direct personal relationships with employees, implying that they are aware of their employees' personal and affective states and are able to react quickly to these. As supervisors often function as formal or informal role models, giving the right example will assist and guide employees in performing accordingly (referring to the principles of upward comparison from the social comparison theory). And as supervisors usually have formal decision-making power over their employees' job content, they are capable of facilitating

intended job behaviour. Church (1995, p. 176) subsequently states that *"the dyadic linkage between supervisor and subordinate is a powerful means of transmitting culture, information, practices, beliefs, and attitudes"*. Thus to conclude, especially supervisor support is and can be considered an important factor in relation to general employee performance at the workplace, and might as such also be expected to exert an influence on transfer of training.

3.4.2 Defining Supervisor Support in relation to Transfer of Training

Indeed, most researchers indicate supervisor support to be a strong predictor of transfer outcomes, exerting more influence than support from co-workers (Foxon, 1997), and, not infrequently, rating it as the most important work environment aspect with regard to transfer (e.g. Richey, 1992). Just as there are a variety of definitions of social support in general, however, several different definitions of supervisor support also exist. In a way similar to the distinction made with regard to definitions of general social support, definitions of supervisor support refer to either enacted or perceived support (see Duffy & Wong, 2000). Bhanthumnavin (2003) states that support from supervisors in relation to general job performance can be described as the positive work interaction between a supervisor and a subordinate, but links support to employee motivation: *"A supportive supervisor can provide what subordinates need in order to motivate them to work better"* (p. 79). Subsequently, Perceived Social Supervisor Support is defined in Bhantumnavin's study (2003, p. 81) as "..an interpersonal behavior between a supervisor and a subordinate in a working situation in which the subordinate perceives that the supervisor provides one or more types of the three supports –emotional, informational, and material- in order to increase his or her performance". Similarly, Burke, Borucki and Hurley (1992, p. 719) refer to employees' perceptions by defining management support in general as "the extent to which employees perceive their immediate manager as assisting in performing their jobs and showing concern and respect for employees". Facteau et al. (1995, p. 5) refer to the influence of supervisor support on transfer outcomes, by stating that "..the social component is concerned with employees' perceptions of the extent to which the social context at work supports training transfer".

Whereas the above definitions explicitly include employees' perceptions of supervisor support, several definitions of supervisor support as related to transfer outcomes refer to the extent of enacted support. Orpen (1999, p. 36), for example, defines social support in relation to training as "..the amount - and quality- of relevant support received from peers, managers, family and friends", although this definition includes more sources of support at the workplace, and bears no clear reference to transfer outcomes. Holton et al. (2000b, p. 345) define supervisor support in relation to transfer of training as "the extent to which supervisors-managers support and reinforce use of training on the job",

while Russ-Eft (2002, p. 48) comparably notes that supervisor support in relation to transfer outcomes "..refers to situations in which supervisors provide reinforcement for the use of learning on the job". Xiao (1996, p. 58) speaks of supervision, and directly relates it to intended training objectives, by defining it as "..the extent to which the supervisor behaves in ways congruent with the training objectives..". Although Xiao's definition seems one of the most comprehensive in terms of the actual content of supervisor support, it leaves open to what extent support should be provided. Having determined that certain supervisor behaviour is only considered supportive with regard to the extent to which it increases intended transfer outcomes, (enacted) supervisor support of transfer of training is defined here as:

The extent to which supervisors behave in a way that optimises employees' use on the job of the knowledge, skills and attitudes gained in training.

It is acknowledged that this definition overlooks the assumption that the effects of supervisor support on transfer outcomes are mediated - at least partly - by the trainees' perceptions of support. On the other hand, this definition includes the possibility of supervisors enhancing transfer outcomes without the trainees perceiving this, for example, by transferring work to others during training in order to relieve the trainees' workload when they return to their jobs. As stated in Subsection 3.3.1, the notion that support might be provided unconsciously (Den Ouden, 1992) in fact implies that neither trainees nor supervisors might recognise supportive behaviour, even when it is actually present. Since perceived supervisor support is believed to possibly affect transfer outcomes separately and independently from enacted support, for example, through trainee attitudes such as motivation, it can be concluded that enacted supervisor support and perceived supervisor support can be seen as different constructs. Perceived supervisor support can therefore be defined as:

Perceptions of the extent to which supervisors behave in a way that optimises employees' use on the job of the knowledge, skills and attitudes gained in training.

It was noted before that most research on social support concerns perceived social support (Duffy & Wong, 2000), usually by asking the receivers of support. House (1981) points out that this is both the easiest and most appropriate method of examining the effects of social support or making initial attempts to do so. It is the easiest because, at the same time, data on, for example, trainees' training motivation can be collected, and the most appropriate as it is likely that support is primarily effective to the extent that it is perceived. On the other hand, it is important to understand how enacted support affects perceived support, if only to determine in what way support should best

be given. The relationship between enacted and perceived social support should therefore be considered an important topic, although it is largely neglected in research (House, 1981).

If transfer of training is considered to amount to a change in individual workplace behaviour, another comment concerns the actual relationship of supervisor support to this behaviour. The term 'support' refers to a supervisor's contribution to changing employee workplace behaviour and using a new kind of behaviour, but, in a broad sense, support could also refer to the discouragement of - and opposition to - the use of the 'old' workplace behaviour. Even though the actual difference between supervisor behaviour enhancing transfer outcomes and its reducing of the previous ways of performing might in fact be difficult to detect, supervisor support is limited here to those supervisor behaviours that are specifically directed at increasing transfer outcomes.

3.4.3 Classifying Supervisor Support in relation to Transfer of Training: What, When and to What Extent?

The review of studies examining the effects of supervisor support on transfer outcomes in Section 3.2 indicated two major points of attention. One concerns the question of how supervisor support should be provided in order to optimise trainees' transfer outcomes. The second refers to the way in which supervisor support affects these outcomes.

With regard to the question of how supervisor support can best be given to enhance transfer outcomes, three different dimensions were distinguished. The first of these concerns the actual content of supervisor support, in other words: what do supervisors actually have to do to support trainees' transfer outcomes? The second reflects the timing of supervisor support: at what time can supervisors best provide support in order to optimise trainees' transfer outcomes? And finally, a dimension of the extent of supervisor support was distinguished. In other words: to what extent should supervisors provide support in order to optimise trainees' transfer outcomes?

Researchers studying the effects of supervisor support on transfer outcomes usually considered it a unidimensional construct - and thus examined it as such, often significantly differing in their mutual conceptualisation, however. This raised the question of how supervisor support should be conceptualised in order to optimise transfer outcomes. The review of social support in other fields of research indicated that social support is - and should thus be taken to be - a multidimensional construct. More specifically, research on social support has led to a prevailing and generally accepted distinction between instrumental, informational, emotional and appraisal support, a distinction that has been applied in extensive research on physical and psychological well-being (e.g. Buunk, 1992). As the original notion of the effects of supervisor support on

transfer outcomes was derived from social support theory, this classification might also be expected to apply to a multidimensional approach to supervisor support. This is not to say that these four categories or types automatically provide a perfect and final conceptualisation of supervisor support for transfer outcomes. It is, however, believed that they provide a rather grounded and seemingly comprehensive framework, which at least ensures the inclusion of each of these types of social support. Consequently, initial attempts to distinguish between at least some of these types have been made (e.g. Den Ouden, 1992; Hoekstra, 1998). This study therefore postulates that supervisors could support trainees by providing them with instrumental, informational, emotional and appraisal support. In order to determine how supervisor support should be conceptualised to optimise trainees' transfer outcomes, these four types can thus be included in research.

In addition to the optimal conceptualisation of the content of supervisor support with regard to transfer outcomes, a second point of attention concerns its timing. It was argued in Section 2.3 that the intended change in performance, as a consequence of the use of new knowledge, skills and attitudes, might depend on three different periods in relation to training: before, during or after training. Several researchers indeed indicate that these three periods should all be included when looking at transfer outcomes and their antecedents (e.g. Broad & Newstrom, 1992; Robinson & Robinson, 1989), and several others have already made a distinction in timing when examining the effects of supervisor support on transfer outcomes (e.g. Gielen, 1995; Gumuseli & Ergin, 2002). Trainees enter training with certain knowledge, skills and attitudes; they adjust these during training, and have to apply their adjusted knowledge, skills and attitudes after training. Each of these periods might therefore contribute to the final extent of transfer outcomes in its own specific way, although little is known about their - possibly differential - effects. Moreover, when distinguishing between different types of supervisor support, combining both types and timing of supervisor support could provide an insight into specific combinations that will yield optimal transfer outcomes. For that reason, it is stated that research on the effects of supervisor support on transfer outcomes should differentiate between the periods before, during and after training.

The overview of research on social support in general provided little insight into the extent of supervisor support that would lead to optimal effects. The matching or specificity hypothesis (Taylor, 1991; Viswesvaran et al., 1999) mentioned in Subsection 3.3.3, however, indicates that the extent to which social support should be provided at the least depends on the way in which it is intended to enhance transfer outcomes. For example, if trainees are barely motivated to learn, supervisors might specifically provide them with forms of appraisal support before training, to increase their motivation. The results of research affirmatively indicate that the positive effects of social support are merely attributable to the extent that support is actually wanted or needed -

depending on the situation - rather than to absolute separate measures of support (Hoekstra, 1998), although actual evidence is relatively scarce. It is therefore believed that the extent of supervisor support that is best provided in order to achieve its intended effects depends on the extent to which this support is desired.

To summarise, the combination of the four main kinds of social support (instrumental, informational, emotional, appraisal) with the three different times related to training (before, during, after) results in a twelve-component structure of possible supervisor support for transfer outcomes. The extent to which supervisors should provide support in order to optimise transfer outcomes is believed to depend on the way in which it is intended to affect transfer outcomes, for example, directly or indirectly, and as such on the specific constellation of factors in the transfer system. This modelling of the possible effects of supervisor support on transfer outcomes will be worked out and clarified in Subsection 3.4.4. The conceptualisation of supervisor support for transfer outcomes is worked out in more detail below, on the basis of the differentiation between the four types distinguished.

3.4.3.1 Instrumental Supervisor Support

Instrumental supervisor support refers to the extent to which supervisors provide employees with all kinds of practical help in order to enhance trainees' transfer outcomes. Instrumental supervisor support can be provided before training by, for example, allowing trainees to take sufficient time to prepare for the training programme, and involving them in planning this (Broad & Newstrom, 1992). Better preparation and better adaptation of training to work will help trainees achieve better learning outcomes, while having a say in the planning of training might also increase trainees' motivation to learn. Instrumental support provided by supervisors during training consists of behaviours such as making sure that daily work does not interfere with the course of the training programme, and helping employees to plan the use of learning on the job (Broad & Newstrom, 1992). A reduction in work-training interference will provide trainees with better opportunities to learn, for which reason they are expected to achieve better learning outcomes. In addition, help in planning the use of new knowledge, skills and attitudes will probably lead to better planning and, subsequently, to better transfer outcomes; it might also motivate trainees to use what has been learned. Supervisors can instrumentally support trainees after training by, for example, offering them opportunities to use what has been learned, and providing them with the right tools and equipment (Broad & Newstrom, 1992). In this way, instrumental support will lead to a more facilitative transfer climate in terms of, for example, better opportunities to use learning, while the obvious provision of support might motivate trainees to use new knowledge, skills and attitudes on the job. Babin

and Boles (1996) also indicate that the provision of resources, such as the necessary equipment, will help prevent trainees from experiencing role conflict (work stress), when they know that they are expected to use learning on the job, but might not be able to do so.

3.4.3.2 Informational Supervisor Support

The second category refers to the extent of informational support that supervisors provide trainees with, consisting of information that will help these employees to use learning at the workplace in the right way. Informational supervisor support before training consists, for example, of involving the employee in a needs assessment regarding the training programme, and emphasising the importance of the training programme for daily work. Informational support during training is comprised of, for example, talking with employees about the link between the training programme and their daily work, and talking with them about possible opportunities to use learning at the workplace and any difficulties in doing so. Both periods of informational support might enhance trainees' training motivation, while information on the link between training and work could also have a direct positive effect on learning outcomes. Supervisors can provide informational support after training by, for example, providing employees with information about how to apply learning (e.g. referring to others as role models), and giving them feedback on their use of new knowledge, skills and attitudes. In this way, informational support is likely to affect training motivation as well as perceptions of the transfer climate. In a way, informational support also refers to the social learning theory, which states that learning can take place through observation and direct experience (Bandura, 1986). Information by means of observing role models can help trainees in learning what new knowledge, skills and attitudes to use, and how and when to use them. Informational support then functions as a sort of extension or continuation of training, providing new moments of learning, which can be related to the principles of variation in practice and overlearning (see Subsection 2.3.3). Bhanthumnavin (2003) also suggests that supervisors can enhance the self-efficacy of employees (and thus of trainees) by being good role models and by using verbal persuasiveness.

3.4.3.3 Emotional Supervisor Support

Emotional supervisor support refers to the extent to which supervisors draw employees' attention to their own psychological proximity and that of others, and to situations of openness and trust. Such support is believed to affect transfer outcomes mainly by means of increased training motivation and by more positive trainee perceptions of the transfer climate. Emotional supervisor support before training consists of, for example, showing an understanding of possible future problems because of the combination of work and training, and letting employees know that they will always be given support when facing

training-related or other problems. Supervisors can provide emotional support during training by, for example, indicating that trainees should have confidence in their ability to complete the training programme, and making it clear to them that they can always count on support in the event of difficulties. Similarly, emotional supervisor support after training is composed of, for example, showing an understanding of any possible difficulties or problems trainees may face when using learning at the workplace, and encouraging them to have confidence in the successful application of their new knowledge or skills.

3.4.3.4 Appraisal Support by Supervisor

Finally, appraisal support by the supervisor refers to the extent to which supervisors give an appraisal to trainees with regard to their transfer outcomes, or to intermediate stages in the process of attaining these transfer outcomes. It was mentioned in Subsection 3.3.3 that appraisal support can consist of both information that is directly (explicitly) evaluative or implicitly evaluative. For example, supervisors may explicitly tell trainees that they are using new skills in the right way, or provide trainees with information which lets them decide for themselves whether they are applying these skills in the way intended (see House, 1981). Appraisal support by the supervisor before training consists of behaviours such as indicating to trainees that they have been specifically chosen (from a large range of employees) to take part in the training programme, or promising rewards for completion of the training programme and for the subsequent use of learning at the workplace. Appraisal support by the supervisor during training is similarly made up of, for example, encouraging trainees to appreciate their upcoming use of knowledge, skills and attitudes on the job, and monitoring their attendance and attention during training sessions. Supervisors can provide appraisal support after training by openly informing others about the trainees' successful completion of the training programme and/or their successful transfer outcomes, and by providing these trainees with specific rewards for the achievement of certain transfer outcomes.

Den Ouden (1992) specifically refers to vicarious learning, in which trainees learn from the behaviour of others and the perceived consequences of that behaviour (see Bandura, 1986). Trainees who, for example, perceive that the use of new knowledge, skills and attitudes by peers after training leads to certain negative consequences will probably be less likely to transfer training.

It was mentioned earlier that the extent to which an action is to be considered supportive depends on its consequences. As such, the distinction between different kinds of support should also be dependent on their consequences. Feedback, for example, can be used as a way of expressing appraisal, resulting in increased feelings of self-efficacy, and therefore included as a kind of appraisal support. On the other hand, feedback might also concern information on how training is currently applied at the workplace, providing a trainee with

better indications of whether to change behaviour or continue in the same way. In this light, feedback can be considered as informational support.

The possibility that each of the periods of supervisor support differentially affect transfer outcomes implies another necessary distinction within its conceptualisation. A supervisor might, for example, arrange opportunities to use learning on the job before the respective trainee has actually participated in training, when the intended effects of provided opportunities - the application of new knowledge and or skills - will take place at the earliest after the start of training. However, as some supportive supervisor behaviours might not be recognised by either trainees or supervisors at their time of delivery, they will be identified at the period relative to training for which they are perceived to be supportive. Thus, the provision of opportunities to use learning at the workplace is considered - possibly - to be a supportive behaviour *after* training.

3.4.4 The Effects of Supervisor Support on Transfer Outcomes: How and Why?

The second issue that emerged from the review of supervisor support in Section 3.2 refers to the way in which this support affects transfer outcomes. Research on the relationship between supervisor support and transfer outcomes focuses mostly on direct relations, often including analyses of its direction (e.g. Xiao, 1996). To some extent, suggestions are also made regarding possible indirect relationships between supervisor support and transfer outcomes. Some researchers, for example, indicate a positive link between supervisor support and opportunities to use learning on the job (e.g. Ford et al., 1992; Gielen, 1995), while increased opportunities to use are believed to result in improved transfer outcomes. In order to get to know what support to provide, at what time and to what extent, it is important to know how support affects transfer outcomes. Moreover, viewing supervisor support as a multidimensional construct, in terms of its type and timing, might affect transfer outcomes differentially, depending on its specific composition.

With regard to the mechanisms or models underlying the effects of supervisor support on transfer outcomes, Richey (1992) distinguishes between direct and indirect effects. These correspond with the direct and indirect effects mentioned in the review of social support in general, and can thus also be referred to as the main effects of supervisor support on transfer outcomes. A direct effect of supervisor support suggests that it improves transfer outcomes under all circumstances, regardless of the influence of other variables. Encouragement of the use of learning can, for example, be considered a direct effect when it affects transfer outcomes, even when checking for other trainee, work environment, and training characteristics. Richey (1992) argues that supervisor support affecting transfer through its impact on employee attitudes comes under indirect effects, just as supervisor support influencing transfer outcomes by

means of other work environment characteristics. Reverting to the factors that have been identified to relate to transfer outcomes in Chapter 2, supervisor support might therefore indirectly affect transfer outcomes through trainees' attitudinal characteristics, such as their motivation to learn and transfer, their readiness for training and their job involvement. Bhanthumnavin (2003) argues that supervisor support might also enhance trainees' self-efficacy, and supervisors might be expected to have an impact on trainees' prior experience. Supervisor support could also enhance transfer outcomes by affecting transfer climate factors, such as the opportunities to use learning, the positive personal outcomes of transfer, and the extent of sanctioning of transfer at the workplace. Maurer et al. (2003), for example, indicate that work support - consisting of supervisor and co-worker support, and characteristics of policies and resources - increases perceptions of the intrinsic and extrinsic benefits of participation in developmental activities. Regarding the focus on transfer outcomes, supervisors might support these by affecting trainees' learning outcomes, for example, by providing them with sufficient time to prepare for training.

The above description of the indirect effects of supervisor support on transfer outcomes in fact indicates that these effects are mediated by other trainee and work environment characteristics. The effects of supervisor support on transfer outcomes might, for example, be mediated by the trainees' motivation to transfer, subsequently considering motivation to transfer a mediator variable of this relationship. A different conception of mediator effects models considers that supervisor support mediates the relationship between another variable and transfer outcomes, and thus acts as a mediator variable itself. Supervisors might, for example, provide more support to trainees when they perceive severe resistance to change at the trainees' workplace, with increased support improving transfer outcomes. Supervisor support then mediates the negative relationship between resistance to change and transfer outcomes, actually reducing it, as compared to its zero-order correlation.

The review of effect models of social support also showed suppressor effects models to be related to both direct and indirect effects. Suppressor effects models indicate that social support suppresses irrelevant variance within another variable, thus strengthening its relationship to a dependent variable. When applied to the concept of supervisor support and transfer outcomes, suppressor effects models would suggest supervisor support to suppress variance in, for example, trainees' motivation to transfer - as a predictor variable - increasing its influence on transfer outcomes. One specific feature of suppressor effects is that they also change the direct relationship between the suppressor and the dependent variable, for which several different possibilities are known (see Krus & Wilkinson, 1986). The previously mentioned study by Facteau et al. (1995) indicates that supervisor support acts as a suppressor of trainees'

motivation to learn, thus resulting in a larger regression weight of motivation to learn on transfer outcomes. The positive (zero-order) correlation between supervisor support and transfer outcomes at the same time changes into a negative regression weight, which is referred to as a negative net suppressor (Krus & Wilkinson, 1986).

Subsection 3.3.2 showed that another kind of model explaining the relationship between social support and, for example, health consists of interaction or moderating effects. Although these effects models are regularly considered very important in explaining the effects of general social support, they are hardly considered when it comes to explaining the effects of supervisor support on transfer outcomes. Still, a few indications exist that supervisor support indeed buffers or boosts relationships between transfer-influencing factors and transfer outcomes. Both the results of Den Ouden (1992) and Hoekstra (1998), for example, point out that the intention to transfer learning only has a significant effect on transfer outcomes for those trainees receiving more social support from their supervisors and peers, thus indicating a boosting effect of social support on the relationship between them. Similar boosting effects of supervisor support might, for example, exist for the relationship between learning out-comes and trainees' motivation to transfer, by means of supervisors emphasising the importance of training for the job.

Although no empirical evidence is known, the buffering effects of supervisor support on transfer outcomes might also be expected. The possible negative influence of resistance to change that may be experienced at the workplace on trainees' motivation to transfer might, for example, be reduced by supervisors advising trainees not to mind this resistance too much. Hence, the supervisor does not directly affect the perceived resistance to change or the trainees' motivation, but rather changes its relationship.

Fitzgerald and Kehrhahn (2003) implicitly point to a different conception of a moderator effects model, by concluding from their study that the impact of supervisor support on transfer outcomes might change - actually reduces - under the influence of the extent of job autonomy. In this case, job autonomy 'buffers' the influence of supervisor support on transfer outcomes, weakening its relationship. Yelon and Ford (1999) refer to the same moderating effects of autonomy, and subsequently use these when questioning whether it would be more appropriate to consider the differential effects of factors influencing transfer outcomes - depending on the specific situation.

3.4.5 The Effects of Supervisor Support on Transfer Outcomes Visualised

Considering both the large number of factors included in the Preliminary Transfer Framework and the subsequent great extent of the possible effects of supervisor support, the effects of supervisor support that will be examined have

to be limited. Firstly, this study will therefore focus on the main effects of supervisor support on transfer outcomes, i.e. its direct and indirect effects. Whereas moderating effects models might be expected to explain at least part of the effects of supervisor support, too little is known about which specific relationships they could affect. Secondly, the indirect effects of supervisor support will be limited to a possible mediating role of trainees' learning outcomes, their motivation both to learn and to transfer, and the separate components of the transfer climate, as previous research has indicated these to be the most important when considering the effects of supervisor support.

The components of different types and timing of supervisor support are depicted in Figure 3.1, in combination with their possible direct effects on transfer outcomes, as well as their possible indirect effects on transfer outcomes by means of trainees' learning outcomes, their motivation to learn and to transfer, and the transfer climate. Regarding the extent to which support should be provided, a separate component reflecting general preferred support has been included. Because it concerns support that is preferred in general with regard to the training programme - thus before, during and after training- , as well as that it is believed to affect trainee characteristics only, it has been conceptualised to relate to trainees' motivation to transfer and their transfer outcomes.
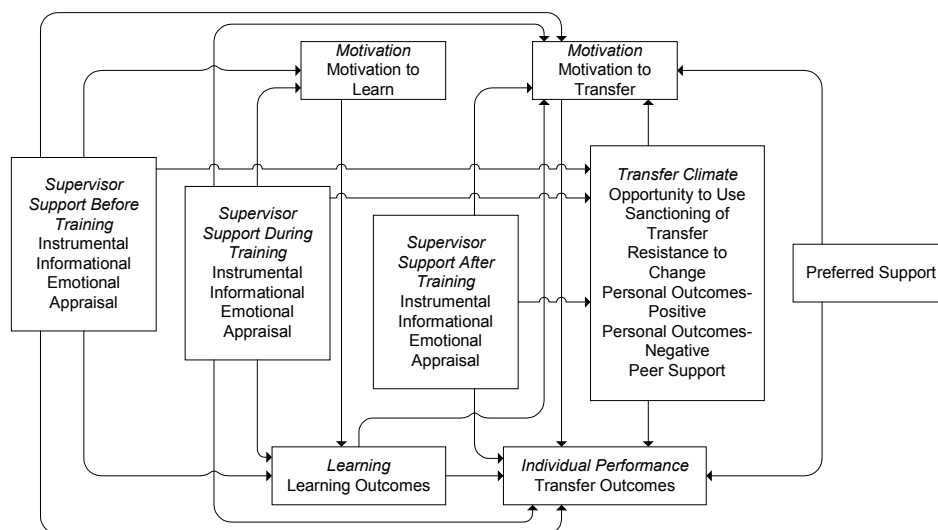
Figure 3.1 Separate Types and Times of Supervisor Support related to Training Outcomes, Trainee Motivation and Transfer Climate.

For the sake of clarity, the model depicted is simplified in that the separate types of supervisor support and the separate transfer climate characteristics have been put together. Thus, each of the separate components of supervisor support

is believed to possibly affect a separate characteristic of the transfer climate and subsequently to affect transfer outcomes. It is also important to note that only the components of supervisor support before and during training are believed to possibly relate to trainees' learning outcomes, and to their motivation to learn. As both learning outcomes and motivation to learn are limited to the training process itself, the extent of supervisor support provided after training could conceptually not predict changes in either of these two.

3.5 Supervisor Support within the Transfer Framework

Having conceptualised supervisor support for transfer outcomes in terms of types, timing and possibilities of causality, it is now possible to incorporate these into the Preliminary Transfer Framework. The adjusted Transfer Framework is depicted in Figure 3.2.
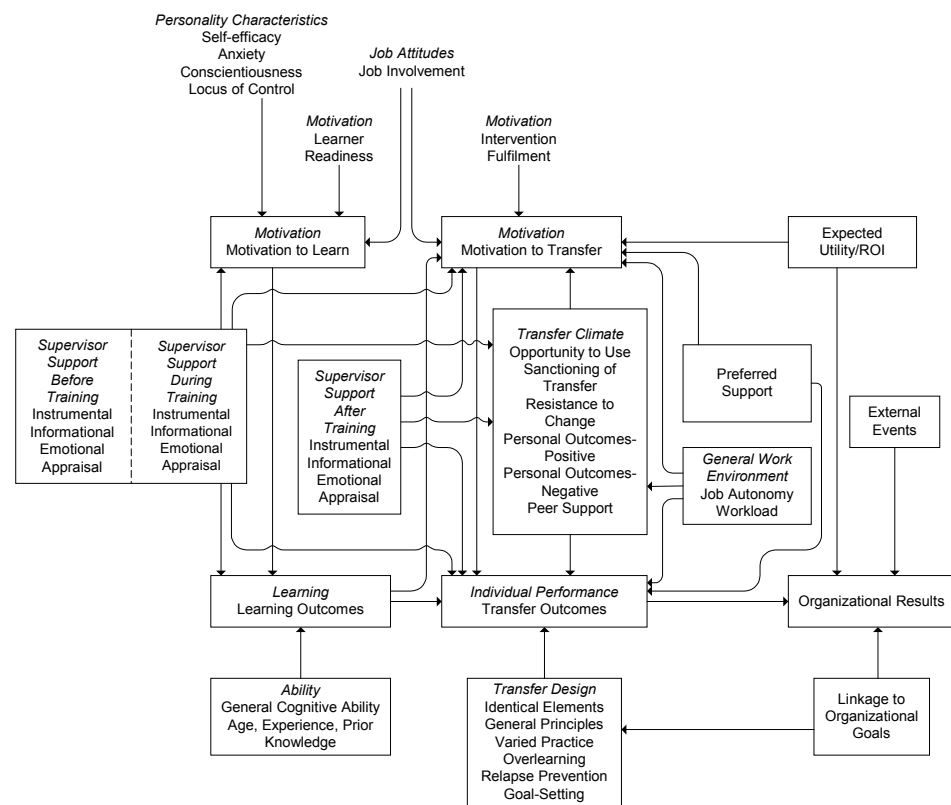
Figure 3.2 The Transfer Framework, including different Types and Timing of Supervisor Support.

This framework will be taken as the point of departure for the examination of the effects of supervisor support on transfer outcomes. The next chapter therefore focuses on the design and methodology that have been used to gather data in order to test the components and relationships within the framework.

Chapter 4

Research Design & Instrumentation

4.1 Introduction

Chapters 2 and 3 provided an overview of factors related to transfer outcomes, with a specific focus on the differential components of supervisor support. This led to the composition of a framework that incorporates these factors and components, labelled the Transfer Framework (Figure 3.2). The current chapter describes the procedure for testing the validity of this framework, including that of the different possible relationships of components of supervisor support to transfer outcomes. Section 4.2 therefore starts with a description of the research questions that emerged from the problem definition, after which Section 4.3 explains the design and methodology of the study in general. Section 4.4 examines a case study that has been conducted, and section 4.5 subsequently describes the construction of the instrumentation for the further parts of the study.

4.2 Research Questions

The rationale for this study stems from the ambiguity that has been observed with regard to the effects of supervisor support on transfer outcomes. The review in Chapters 2 and 3 made it clear that results from previous research indicate different effects, ranging from a strong positive relationship to none at all, and some even suggesting a negative relationship. If there is such a thing as a general overall relationship, it thus still has to be determined conclusively. The problem definition therefore concerns the strength and direction of the relationship between supervisor support and transfer outcomes. With regard to this problem definition, the research question directing this study is:

What is the effect of supervisor support on transfer outcomes?[1]

It was argued before that, to understand and predict transfer of training in terms of intended transfer outcomes, it is necessary to adopt a systemic approach to the transfer process. Such a systemic approach includes all the factors relevant to the achievement of transfer outcomes, and following Holton, Bates and Ruona (2000b), it can be referred to as the *Transfer System*. Chapter 2 subsequently provided a description of the actual development of a transfer system, which has been labelled the Transfer Framework. This Transfer Framework included a general and unidimensional concept of supervisor support, which has been further divided into twelve separate components in Chapter 3. In view of the suggested effects of supervisor support within the Transfer Framework, as depicted in Chapters 2 and 3, validation of the framework will provide an answer to the central research question.

The difference between supervisor support in general and the separate components of supervisor support reflects a distinction between the different points of departure for this study, compared to previous research. Testing the relationship between general supervisor support and transfer outcomes concerns a confirmative study of previously suggested relationships, whereas examining the effects of the different components of supervisor support can be considered relatively explorative. The differentiation between the separate components of supervisor support also implies differential effects, specifically with regard to the wider transfer climate. Hence, the different components of supervisor support might affect transfer outcomes in various ways, and, specifically, by means of different transfer climate variables. In the light of the distinction between research on the effects of general supervisor support and its separate components, the central research question is divided into two sub-questions:

1. What are the effects of general supervisor support on transfer outcomes, when taking into account the general elements in the Transfer Framework?

2. What combinations of types and timing of supervisor support affect transfer outcomes, when taking into account the specific elements in the Transfer Framework?

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[1] Note that the term 'transfer outcomes' is constantly used here, instead of the often quoted transfer of training. As mentioned in Chapter 2, this difference refers to the notion of transfer being a process rather than a product. Positive transfer outcomes have therefore been defined as the extent of effective (and continuing) application in the job environment of the knowledge, skills and attitudes gained in a training context, as measured at a certain point in time after training.

4.3 Research Design & Methodology

In order to answer the research questions, a subsequent design and methodology for research were developed. Subsection 4.3.1 describes the development of the research design, while Subsection 4.3.2 provides a view of the choice of research methodology. Subsection 4.3.3 points to the most important consequences of the design and methodology of the study for its reliability and validity.

4.3.1 Design

Examining the effects of supervisor support on transfer outcomes in a larger and comprehensive transfer system, as emphasised in Chapter 2, implies the practical necessity of research on training in actual organisational settings. Furthermore, because of the distinction between periods before, during and after training, the variables within each of these periods had to be measured separately. Due to the economic recession during the available time of research (mid 2002 until the beginning of 2004), it was expected that organisations that had potentially been willing to cooperate would be reluctant to allow longitudinal studies to be conducted. In addition, time restrictions limited the possibilities of conducting such longitudinal studies, and it was therefore decided to use post-test measures only. Within the subsequent design, the extent of supervisor support reflects the treatment situation, whereas transfer outcomes are considered the dependent variable. It thus signifies a focus on the variables present after training, while retrospectively reviewing variables from both periods before and during training. In this sense, the design best corresponds to a post-test-only design with non-equivalent groups (Cook & Campbell, 1979), in which the different types and times of supervisor support reflect different treatments.

The actual data gathering and testing were conducted in three parts, each containing its own objective (see Figure 4.1). The first part consisted of a case study, aimed at exploring the fit between the research methodology and the general outline of the Transfer Framework, and at exploring the relationship between supervisor support and transfer outcomes. This part will be discussed briefly in Section 4.4. The second part consisted of the construction of the instrumentation for the study, and of a pilot study of this instrumentation. This also included a first test of the relationship between the different components of supervisor support and transfer outcomes. The construction of the instrumentation will be described in Section 4.5, while the results of the pilot test will be discussed in Chapter 5. The third and final part of the study consisted of the gathering and analysing of the main data, in order to answer the research questions. This part will be discussed in Chapters 6 to 8.
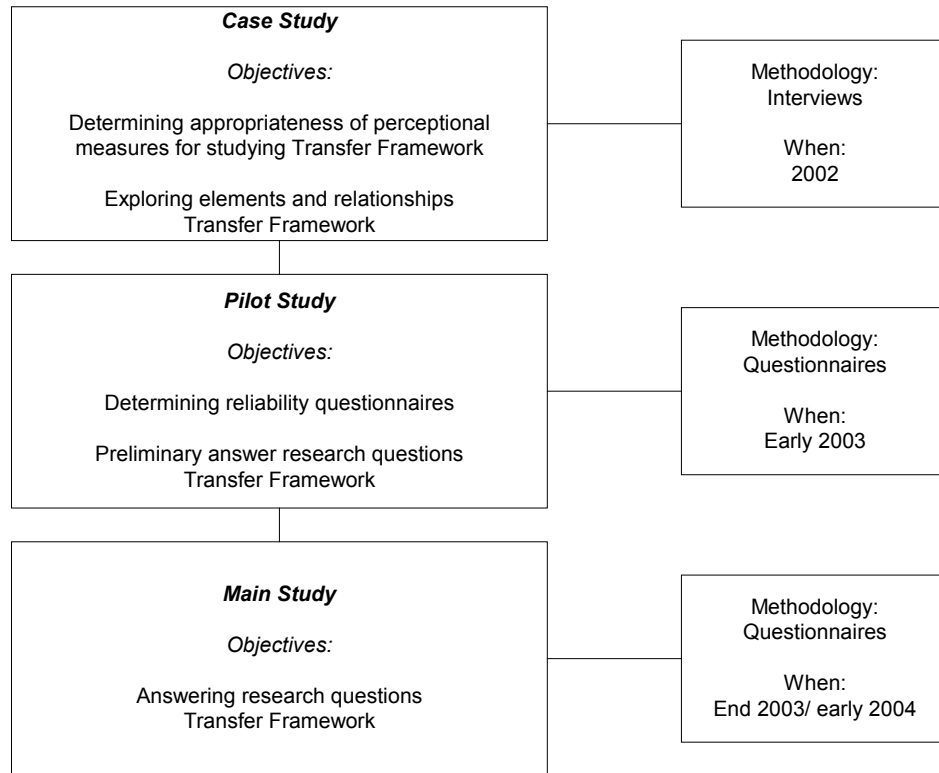
Figure 4.1 Different Related Stages of Research in the Study.

4.3.2 Methodology

The objective of this study is specifically directed at the testing of relationships as suggested within the Preliminary Transfer Framework. Consequently, the nature of the study implies that it focuses on quantitative research methods (e.g. Baarda & De Goede, 1995; Baarda, De Goede & Teunissen, 2001). Within quantitative empirical research, two main research typologies can be distinguished: experiments and survey research. Swanborn (1987) notes that survey research is particularly useful when addressing large samples of respondents, when measuring a large number of variables, when measuring attitudinal variables, or when, for example, measuring past behaviour. As all of these apply to this study, and since it was expected that experimental methodology would be too much of a burden to enable most organisations to cooperate, it was decided to conduct this study by means of survey research in the form of questionnaires. Questionnaires provide the opportunity to gather a large amount of structured information in a relatively short period of time (e.g. Baarda & De Goede, 1995). In view of the post-test-only design, these

questionnaires were meant to be administered at a given point in time after training.

Several researchers note that measuring the perceptions of supervisor support can be done by asking supervisors to report their supportive behaviours, or by asking subordinates (trainees) to report their perceptions of supervisors' supportive behaviours (Bhanthumnavin, 2003; House, 1981). With regard to measuring perceived subordinate performance, Bhanthumnavin (2003) comparably indicates that it can best be measured both by asking subordinates to rate themselves and by asking supervisors to rate their performance. Triangulation by means of several measures (or methods) to assess perceived performance can be beneficial, as results are more reliable when congruent ratings are found. Moreover, a more complete picture can be built up when different results from different types of measures assessing the same performance are found. Related to the objectives of Bhanthumnavin's study, the assessing of different perceptions of variables in the Transfer Framework can thus also be expected to result in a more reliable and complete view of these. In line with Gielen (1995), it was therefore decided to construct questionnaires for both trainees and their supervisors, and to gather data from both, in order to be able to compare perceptions.

4.3.3 Reliability and Validity

To provide for adequate measurement, both research design and instrumentation have to meet certain psychometric conditions of reliability and validity. Most of these conditions relate specifically to one of the three parts of the study, and will therefore be discussed in subsequent chapters. Some points can be made with regard to the study in general, however, and these will be dealt with briefly below.

Reliability refers to the accuracy or dependability of a measurement (Cronbach, 1951), for example, the extent of agreement between raters on their separate ratings of a variable. To estimate the reliability of instrumentation, the internal consistency of the questionnaire scales will be determined by means of Cronbach's α-coefficient (1951). Specific reliability estimates of the scales included in this study will, however, be presented separately in Chapters 5 and 6.

Validity refers to the extent to which people do as well on a measure as they do on independent measures that are presumed to measure the same concept (Shaughnessy, Zechmeister & Zechmeister, 2000), thus the extent to which the instrumentation measures what it is intended to measure (Baarda & De Goede, 1995). A distinction can be made between content validity, internal and external validity, and construct validity.

Content validity refers to the extent to which research instrumentation covers all the relevant aspects of the concept that it is intended to measure, while

excluding redundant or irrelevant aspects (Swanborn, 1987). Content validity is assessed before the actual process of data gathering. To ensure the content validity of the instrumentation of this study in general, a thorough analysis of literature was conducted, as described in Chapters 2 and 3. This led to a clear outlining and defining of the different concepts of variables to be measured. When constructing instrumentation, attempts were made to link up with existing instruments and descriptions, and, throughout the process of instrument development, its content and design have been regularly discussed with expert reviewers. Consequently, several adjustments to the content of instrumentation were made during the course of the study, although all this was done before the main data gathering.

Internal validity refers to the extent to which the presence or absence of causal relationships between variables in a study can be interpreted and justified unequivocally (Shaughnessy et al., 2000; Swanborn, 1987). In experimental designs, internal validity is in theory ensured (Baarda & De Goede, 1995), but current non-experimental design poses threats to internal validity. A major point of concern relates to the single moment of data gathering in all three parts of the study, with retrospective questions about the periods before and during training. The main threat to be distinguished refers to ambiguity about the direction of causal influence (Cook & Campbell, 1979). An example of ambiguity about the causal direction concerns trainees' motivation to learn, which is expected to affect their learning outcomes. When retrospectively measuring both at the same time, as is done within this study, it is also possible that a positive statistical relationship might actually indicate that learning outcomes predict trainees' motivation to learn. Similar ambiguity also concerns, among other things, the relationship between supervisor support and transfer outcomes. In order to check for internal validity in general, all instrumentation was designed to have respondents focus as much as possible on each of the periods before, during and after training separately. In addition, these periods have been adopted in chronological order within the instrumentation, so as to have respondents remember and 'relive' the training process as truthfully and accurately as possible.

External validity refers to the extent of the generalisability of results outside the realm of the study, in terms of more general concepts, other populations and different settings (Swanborn, 1987). With regard to the research question in this study, external validity thus reflects the extent to which the results of the relationship between supervisor support and transfer outcomes will also apply in different training contexts. Although there are no strict directives on how to ensure external validity, Cook and Campbell (1979) note that external validity itself is a matter of replication. This study has been designed to consist of different stages, all three including separate yet comparable tests of the relationship between supervisor support and transfer outcomes. Consequently, this general design provides a replication of this test itself. In addition, the use

of standardised questionnaires offers the opportunity to repeat similar studies in different contexts.

Construct validity reflects the extent to which a measure relates to other measures, in line with theoretical beliefs about their relationships, and, as such, refers to the theoretical foundations of the different concepts (Zeller, 1988). It thus indicates the relationship between a measure and its more abstract concept (Nunnally, 1967), and needs to be assessed within a theoretical context of variables. With regard to construct validity, questionnaire scales have been developed, based on an extensive review of literature, and have also been discussed with several expert reviewers. In addition, the general design of the study is directed at statistically examining the hypothesised relationships between constructs in the Transfer Framework, thus providing an indication of the construct validity of the instrumentation. Finally, triangulation of data gathering has been applied by including coupled measures of trainee and supervisor perceptions throughout the entire study, for all relevant variables.

4.4 Refining the Transfer Research Framework: Results of a Case Study

The first part of the study consisted of an explorative case study, conducted between March and May 2002. As this case study has been extensively described in an earlier report and paper (Nijman, 2002; Nijman, Nijhof, & Wognum, 2003), this section will focus mainly on its results and their consequences for the latter two parts of the study. Subsections 4.4.1 and 4.4.2 will therefore only briefly discuss the objectives, methodology and setting, while Subsection 4.4.3 will present the most important results and their implications.

4.4.1 Objectives

The objectives of this case study were twofold. The first objective was to explore the extent to which measures of perception provided a suitable methodology to test the different general variables that were to be incorporated within the Transfer Framework. Secondly, the study intended to explore the amount of support that is provided by supervisors in an actual organisational setting, and its direct relationship to intended transfer outcomes.

This case study ran partially parallel to the development of the Transfer Framework, as depicted in Figure 3.2. Since at this point of the study the specific variables of the Transfer Framework had not been conceptualised conclusively, it was decided to take the elements and description of Holton's (1996) HRD Evaluation Research and Measurement Model (see Figure 2.4) as the starting point. This model and its elements served as a foundation in the

latter construction phase of the Transfer Framework, which has also been described in Chapters 2 and 3.

4.4.2 Methodology and Context

Owing to the explorative nature of the objectives, as well as the focus on trainee and supervisor perceptions, it was decided to conduct semi-structured interviews within a restricted organisational setting. Based on the elements of the HRD Evaluation Research and Measurement Model, coupled interview schedules for trainees and supervisors were developed, as was a coding scheme for the interviews. The questions concerned perceptions of the last training programme a trainee had taken part in, differentiating between periods before, during and after that training. The analyses related to both quantitative and qualitative procedures, focusing here mainly on quantitative analyses. The extent to which interviewees spoke about the elements within the model was taken as a measure of the match between methodology and each element, while correlational analyses indicated the relationship between supervisor support and transfer outcomes.

Between October and December 2001, several organisations were contacted in order to determine opportunities to conduct the case study, resulting in the cooperation of a large Dutch tyre manufacturer. Referring to different training programmes, 23 useful interviews were held with production employees (trainees) who had taken part in one of these, while 16 supervisors were interviewed about these same trainees and their respective training programmes.

4.4.3 Results and Implications

Regarding the extent of support provided, qualitative analyses indicated that neither trainees nor their supervisors perceived significant support from supervisors. Although some supportive supervisor behaviours were mentioned frequently, almost all of these responses reflected a mere lack of support. The quantitative analyses revealed only 4 out of the 39 selected supportive behaviours to relate significantly to either trainees' specific use of learning, or their more general change in functioning after training. These behaviours referred to the provision of opportunities to use learning after training, informing trainees before training about, for example, its importance and content, speaking to trainees about training, and psychologically supporting learning during training.

With regard to the different general elements from the HRD Evaluation Research and Measurement Model (Holton, 1996), the main results indicated that trainees and their supervisors did not relate the expected utility or return on investment of training, the linkage of training to organisational goals and external effects to the effects of trainees' individual training programmes. In

other words, fewer than 25% of the respondents mentioned one of these in their interview. Thus, in conclusion, the case study indicated that neither trainees nor their supervisors considered trainees' training to relate to a larger organisational context. Employee training is considered to result in individual learning and changes in individual performance at the workplace; participants in this study do not link employee training to a broader and long-term organisational policy (Nijman et al., 2003). The methodology of using measures of perception for examining individual transfer outcomes and factors affecting these transfer outcomes was therefore considered inappropriate for determining the effects of individual trainee training at a wider scale organisational level.
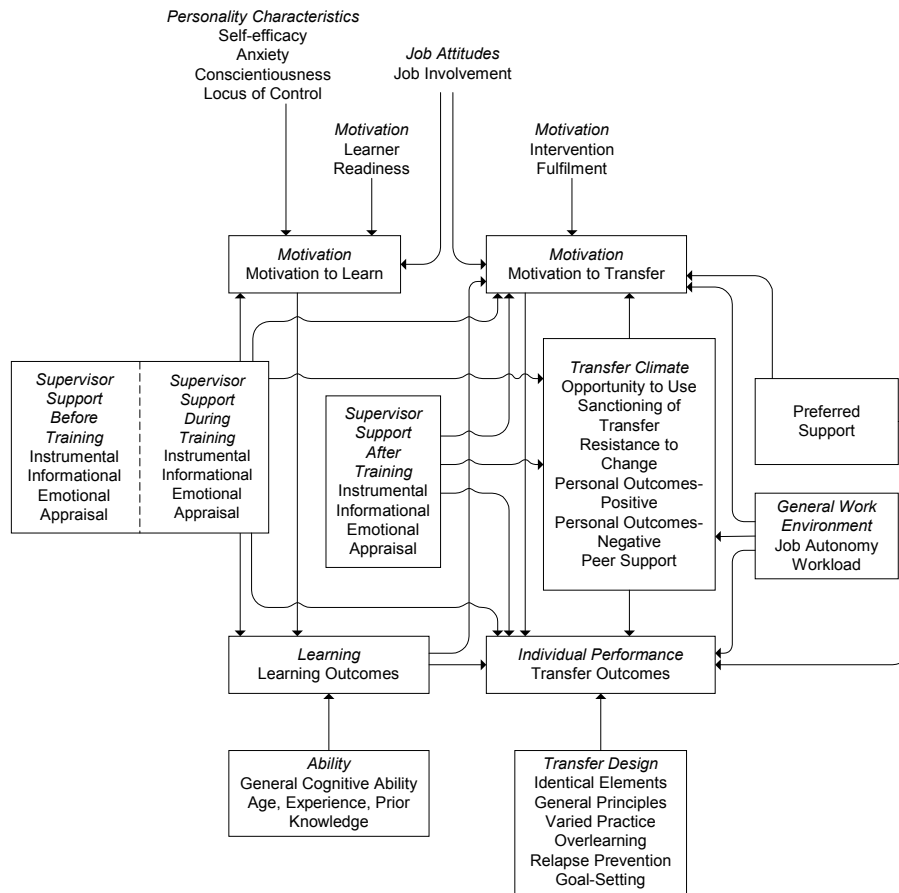
Figure 4.2 The Transfer Framework.

Although these results were derived from a single organisation, it was believed that similar results could be expected from studies in other organisational

settings. Moreover, in view of the main focus of this study being on the transfer process and the influence of the individual interaction between trainee and supervisor on it, it was decided to exclude the elements at organisational level from the further course of this study. Thus extending these results to the Transfer Framework, which largely emanates from the HRD Evaluation Research and Measurement Model, the resulting adjusted Transfer Framework is depicted in Figure 4.2. Consequently, the Transfer Framework and its variables presented in Figure 4.2 have been taken as point of reference in the development of instrumentation, which will be discussed in Section 4.5.

4.5 Instrumentation

This section focuses on the construction of the questionnaire scales that have been used in the pilot and the main study, providing insight into the background of the constructs and their operationalisation. The questionnaire scales that have been used in analyses in part three of the study - the main data collection - can be found in appendix 1.
As mentioned in earlier sections, coupled questionnaires for trainees and supervisor were constructed, in order to compare perceptions. These questionnaires were composed of propositions, in combination with a five-point Likert-type response scale, reflecting the extent of agreement (e.g. Pershing & Pershing, 2001). Response possibilities ranged from 1 ('strongly disagree') to 5 ('strongly agree'). In order to have respondents focus as much as possible on the respective timing of each of the variables, the questionnaires were chronologically divided into four parts: before, during and after training, and a general part. To be able to compare perceptions, propositions in both questionnaires were kept as similar as possible. Both questionnaires were originally formulated in Dutch.

Following the Transfer Framework in a top-down manner, the next sections will successively discuss scales reflecting the trainees' personality characteristics (4.5.1), their motivational and job attitudes (4.5.2), supervisor support (4.5.3), the transfer climate (4.5.4), the general work environment (4.5.5), learning and individual performance (4.5.6), trainees' ability (4.5.7) and the transfer design of training (4.5.8). Subsection 4.5.8 will conclude this chapter with a tabular overview of the scales and their items.

4.5.1 Personality Characteristics

With regard to trainees' personality, self-efficacy, anxiety, conscientiousness and locus of control have been included in the general part of the questionnaires. These personality characteristics have only been included in the trainee questionnaires, as it was expected that supervisors would have difficulties in answering the majority of the quite specifically personalised items. In addition, all four scales were directly derived from existing self-perception scales of personality, for which reason their reliable and valid use in supervisor questionnaires was considered doubtful.

Perceived *self-efficacy* refers to the judgments one makes regarding one's own capabilities to organise and execute the courses of action required to produce given attainments (Bandura, 1986). Van Woerkom (2003) used a six-item scale for self-efficacy related to job performance, consisting of items she had developed herself as well as items from other instruments. Study results showed an α-coefficient for internal consistency of .76, and for this reason the scale was considered suitable to include in the questionnaires for trainees in this study. All six original questions have been reformulated into propositions, an example of which is "In general, I have the feeling that I am successful in my work".

Anxiety refers to a personality characteristic or state expressing "a painful, emotional experience, representing a threat or danger to the organism" (Pervin, 1989, p. 91). In a way similar to self-efficacy, it was decided to focus on the trainees' level of anxiety regarding their job performance. In order to define items, several scales described on the International Personality Items Pool (IPIP) (*Anxiety*, n.d.) were studied. Subsequently, seven items for trainee questionnaires were formulated, one of which is "In general, I am often afraid I will do the wrong thing in my job".

The third personality characteristic, discussed in Chapter 2, concerns trainees' *conscientiousness*, including, for example, their showing of responsibility and perseverance (e.g. Colquitt & Simmering, 1998). Again regarding the relationship between transfer outcomes and job performance, it was decided to define items for conscientiousness in relation to general job performance. Sample items were derived from the International Personality Items Pool (*Conscientiousness*, n.d.), leading to the final construction of a scale containing seven items. One of these reads "In general, I get chores in my job done right away".

Finally, *locus of control* refers to the extent to which an individual is apt to make internal or external attributions regarding performances or outcomes, such as work outcomes (Noe, 1986). In view of the intention to keep scale and

questionnaire length as short as possible, given the reliability requirements, articles and scales by Ferguson (1993), Spector (1988), Hoff Macan, Trusty and Trimble (1996), Gupchup and Wolfgang (1997), and Sapp and Harrod (1993) were reviewed. Although the relationship between transfer outcomes and job performance originally led to the intention to focus on trainees' *work* locus of control (see Spector, 1988), pre-study discussions with both researchers and practitioners made it clear that several of the suggested items would be unacceptable for the cooperating organisations with regard to their proclaiming support for the study (e.g. *"*In order to get a salary raise I would have to know the right people", Gupchup & Wolfgang, 1997, p. 641). It was therefore decided to include a scale reflecting locus of control in general, for which Sapp and Harrod's (1993) brief version of Levenson's locus of control scale was selected. This scale contains three subscales, pointing to the attribution of control: Internal Control, Chance and Powerful Others, for which Sapp and Harrod (1993) reported moderate to acceptable α-coefficients of .59, .65 and .72 respectively. One example of an item is "In general, I am able to protect my personal interests" (Internal control).

4.5.2 Motivation and Job Attitudes

Trainees' training motivation consists of their readiness for training and the extent to which training has fulfilled needs and expectations, as well as their motivation both to learn and to transfer. With regard to trainees' job attitudes, job involvement has been included.

As indicated in Chapter 2, *learners' readiness* to participate in a training programme is believed to be predictive of their learning outcomes, and has therefore been included as a pre-training variable. Holton's (1996) description of intervention readiness was taken as a starting point, while studies by Baldwin and Magjuka (1991) and Colquitt et al. (2000) were also consulted for item construction. Six items were defined for both questionnaires, a trainee example of which is "Before I took part in this training programme, I felt I had complete freedom in choosing whether to take part in it".

Intervention Fulfilment refers to "the degree to which trainees' expectations about training are met" (Holton, 1996, p. 13). Five items were formulated for trainee and supervisor questionnaires, referring to the extent to which training met expectations and learning needs, and the extent to which it was considered relevant (Elangovan & Karakowsky, 1999; Tannenbaum, Mathieu, Salas & Cannon-Bowers, 1991; Van der Klink, 1999). One of these items is "During my participation in this training programme, the content of this programme was in line with my expectations".

Motivation to learn refers to the trainees' desire to learn the content of a training programme, and is therefore of specific importance before training and, to a certain extent, during training as well. Conceptualisations and suggestions from articles by Noe (1986) and Seyler et al. (1998) were taken as a guideline for scale construction, which led to the definition of seven items for trainees and supervisors. An example of a trainee item is "Before I took part in this training programme, I was strongly motivated to take part in it".

Trainees' *motivation to transfer* reflects their desire to use new knowledge, skills and attitudes on the job, and was thus included in the part of the questionnaire reflecting the period after training. To construct a scale reflecting trainee's motivation to transfer, the works of Hoekstra (1998), Holton (1996) and Noe (1986) were reviewed. Six items were subsequently formulated for trainee and supervisor questionnaires, an example of which is "Since I completed this training programme, I really feel like applying what I have learned in my job".

Job involvement reflects the only job attitude included, and refers to the degree to which a trainee identifies psychologically with his or her work (Noe, 1986). Van der Klink (1999) and Gielen (1995) used a (translated) six-item scale originating from Lodahl and Kejner (1965), with Gielen reporting an acceptable α-coefficient of .62. This scale was included in both questionnaires in this study, an example item of which is "I feel very much personally involved with my work".

4.5.3 Supervisor Support

Supervisor support has been conceptualised as consisting of twelve components: instrumental, informational, appraisal and emotional support - before, during or after training. Regarding appraisal support, a conceptual difference was made between direct and indirect appraisal in item selection. Direct appraisal refers to those managerial behaviours reflecting clear positive consequences of training completion or achievement of transfer outcomes. One example consists of promising a salary increase before training if the training programme is completed. Indirect appraisal refers to managerial behaviours which do not reflect actual positive consequences, but which are believed to be perceived by trainees as strongly related to these consequences. This includes, for example, managers' monitoring of trainee attendance and/or attention during training, which in itself represents no direct consequence of training completion, but is likely to be perceived as leading to specific consequences.
Similar versions of all the scales reflecting supervisor support were developed and included in trainee and supervisor questionnaires.

4.5.3.1 Supervisor Support before Training

The extent to which supervisors provide trainees with *instrumental support before training* refers to different kinds of practical help by supervisors before training. Four items were developed, an example of which is "Before I took part in this training programme, my supervisor involved me in planning the programme".

Informational supervisor support before training reflects the extent to which a trainee received information from his or her supervisor before taking part in the training programme. Information pertains to the training programme itself, and the relationship of training to the job. Three items were formulated, with one of the trainee examples being "Before I took part in this training programme, my supervisor informed me of the importance of the programme for my work".

Appraisal support by supervisor before training refers to the extent of appraisal a trainee receives - or expects to receive - for performing well on the training programme, both in terms of learning results and transfer results. Five items were formulated, one of which from the trainee questionnaire reads "Before I took part in this training programme, my supervisor promised me rewards if I completed it and started applying what I had learned (e.g. promotion, salary increase)".

Emotional support by supervisors before training refers to the extent to which trainees received emotional support from their supervisor regarding participation in the training programme and application of new knowledge, skills and attitudes after the programme. Three items were defined, one of the trainee items being "Before I took part in this training programme, my supervisor showed his confidence in my participation in this programme".

4.5.3.2 Supervisor Support during Training

Instrumental support provided by supervisors during training reflects the extent to which trainees receive instrumental help regarding successful participation in the programme and the application of new knowledge and skills on the job during trainees' participation in the training programme. Three items for both questionnaires were defined, one of which for trainees reads "During my participation in this training programme, my supervisor made sure my work would not interfere with my participation in this programme".

Informational supervisor support during training refers to the extent to which supervisors provide trainees with informational support during their participation in the training programme. Three items were developed, an example of which for trainees is "During my participation in this training

programme, I spoke with my supervisor about the connection between this programme and my job".

Appraisal support by supervisor during training refers to the extent to which supervisors provided trainees with some kind of appraisal during training participation (or an indication that some kind of appraisal might follow), related to this participation and/or to application of what was learned afterwards. Again three similar items were formulated, one of which for trainees reads "During my participation in this training programme, my supervisor showed his appreciation of my (successful) participation in this programme".

Emotional supervisor support during training refers to the extent to which trainees receive emotional support from supervisors regarding participation in the training programme and/or application of what was learned during their participation in the programme. Three items were defined. An example item from the trainee questionnaire is "During my participation in this training programme, my supervisor indicated his confidence in my successful completion of this programme".

4.5.3.3 Supervisor Support after Training
With regard to the extent of supervisor support after training, *instrumental supervisor support after training* refers to the extent to which supervisors provide trainees with instrumental help after training, in order to enhance the application of what was learned. Four items were formulated, an example of one for trainees is "Since I completed this training programme, my supervisor has provided me with opportunities to apply what I have learned".

Informational supervisor support after training refers to the extent to which supervisors provide trainees with information related to the application of new knowledge, skills and attitudes, after trainees' participation in the specific training programme. For measurement, three items were determined, one of which reads "Since I completed this training programme, my supervisor has made sure I get information about how to apply what I have learned (e.g. suggestions, exemplary others)".

Appraisal support by supervisor after training refers to the extent to which supervisors indicate appraisal (or forthcoming appraisal) to trainees after training, if new knowledge, skills and attitudes are to be applied on the job. Five items were subsequently formulated, one of which for trainees is "Since I completed this training programme, my supervisor has given me specific advantages/rewards if I apply on my job what I have learned (e.g. promotion, salary increase)".

Emotional supervisor support after training refers to the extent to which trainees receive emotional support from supervisors after training, with emotional support regarding the application of what has been learned. Three items were defined, an example of which from the supervisor questionnaire is "Since this employee completed this training programme, I have made it clear to him/her that I would always help him/her in case of problems/difficulties".

4.5.4 Transfer Climate

The transfer climate reflects the variables in trainees' work environment which by definition are meant to influence the transfer of a specific training programme. The transfer climate consists of the opportunity to use new knowledge, skills and attitudes on the job, the sanctioning of transfer by others, resistance to change at the workplace, both the positive and negative personal outcomes of transfer, and peer support. All of the scales reflecting the transfer climate were included in the 'after training' part of trainee and supervisor questionnaires, except for resistance to change, which was included in the general part of both, because of its more general nature. In addition, the extent of desired or preferred support was enclosed in the 'after training' part of trainee questionnaires. Although not considered to be part of the transfer climate, its construction will be discussed below as well.

The *opportunity to use* reflects the extent to which trainees have opportunities to use new knowledge, skills and attitudes on their jobs. For scale construction, the respective works of Ford et al. (1992), Gielen (1995), Holton et al. (1997), Van der Klink (1999) and Russ-Eft (2002) were consulted. Six items were formulated, an example of one from the trainee questionnaire is "Since I completed this training programme, I have had ample opportunities in my job to use what I have learned".

The *sanctioning of transfer* by others refers to the behaviours of others which are directed at impeding transfer. Studies by Holton et al. (1997), Seyler et al. (1998), Burke & Baldwin (1999) and Russ-Eft (2002) provided indications of items for a scale, which led to the formulation of six items. One of the items included in the scale for trainees is "Since I completed this training programme, my colleagues/supervisor have hardly noticed my use on the job of the knowledge, skills and attitudes gained in training".

Resistance to change represents prevailing group norms that are perceived to discourage the use of new knowledge, skills and attitudes on the job. It differs from the sanctioning of transfer in that it reflects a general opinion about changes or expected changes due to training, whereas the sanctioning-of-transfer scale measures actual opposition to the use of a specific training

programme. In order to construct a scale, the works of Holton et al. (1997), Burke & Baldwin (1999), and Donovan, Hannigan, & Crowe (2001) were reviewed. Sample items and their respective descriptions of the construct led to the definition of seven items reflecting resistance to change, with one from the trainee scale reading as "In general, my colleagues are sceptical about my knowledge, skills and attitudes gained in training".

According to Holton et al. (1997, p. 110), *personal outcomes-positive* "refers to the extent to which application of training on the job leads to positive outcomes or payoffs for the individual", such as a salary rise or chances of promotion. To define items, the studies by Burke & Baldwin (1999) and Holton et al. (1997) were consulted. Five items were formulated, a trainee example of which being "Since I completed this training programme, I have received more recognition for my functioning/performance if I use the knowledge, skills and attitudes gained in training on the job".

Personal outcomes-negative reflects the negative consequences of *not* applying what was learned. Different studies by Rouiller and Goldstein (1993), Holton et al. (1997) and Burke and Baldwin (1999) provided reference points which led to the defining of three items. One of the trainee items reads as "Since I completed this training programme, I have received less recognition for my functioning/performance if I do not use the knowledge, skills and attitudes gained in training on the job".

The last characteristic of the transfer climate, *peer support* indicates the extent to which peers or colleagues behave in a way that optimises trainees' use of new knowledge, skills and attitudes on the job. Following the conceptualisation of supervisor support, it is believed that peer support can also consist of instrumental, informational, emotional and appraisal support, before, during and after training. Twelve items were subsequently formulated, a trainee example of which is "Since I completed this training programme, my colleagues have offered me practical support for my use of knowledge, skills and attitudes gained in training".

The extent of *preferred support* was suggested to relate to the level of support that can best be given, in order to achieve intended transfer outcomes. The literature review in Chapter 3 showed that the influence of social support on transfer of training might be mediated by the extent to which support is actually wanted. Included in the trainees' questionnaires only, five items were formulated, based on examples provided by Hoekstra (1998). One of these reads "In general, I would have liked more support and assistance from others with regard to this training programme".

4.5.5 General Work Environment

Literature suggested that trainees' job autonomy and their workload are of importance regarding the transfer of training by trainees, both being part of the general work environment. Scales have been developed for the trainee as well as the supervisor questionnaires, and included in the general part of these questionnaires.

Job autonomy reflects the extent of autonomy a person has in his or her job. Van Woerkom (2003) used a six-item scale to measure task autonomy in her study, reporting an α-coefficient of .85. These items all reflect autonomy in general work activities, for which reason they are also expected to provide a valid measurement of job autonomy. All items have been reformulated to propositions, and references to tasks within items have been changed to references to the job in general. In addition, some items have been slightly adjusted. One of the items in the trainee questionnaire is "In general, I have a lot of freedom in carrying out my job".

Excessive *workload* refers to situations in which a trainee is faced with too much to do in the time that is available (Kirmeyer & Dougherty, 1988). Three items regarding trainees' workload were formulated, a trainee example of which is "In general, I have no time to use the knowledge, skills and attitudes gained in training on my job".

4.5.6 Learning and Individual Performance

With regard to the knowledge, skills and attitudes that the training programmes were intended to teach, a distinction was made between the extent to which learning outcomes were achieved and the extent to which trainees transferred new learning to the job. All the scales developed were included in both the trainee and the supervisor questionnaires.

Learning outcomes refer to the extent to which trainees have at their disposal directly after finishing training, the knowledge, skills and attitudes intended to be learned in training. The measuring of learning outcomes depended on the possible availability of information for each of the separate studies, such as that from post-training tests or examinations. If no such information was available, a separate scale, based on the actual training objectives, was constructed for the respective training programme included in the study. Items were placed in those parts of the questionnaires reflecting the periods during and after training. Reflecting a training programme on coaching skills for managers, an example of an item for trainees in the pilot study is "Since I completed this training

programme, the relationship between coaching and various leadership styles has been much clearer to me than before the training programme".

Transfer outcomes refer to the extent to which trainees apply knowledge, skills and attitudes gained in training on the job, as measured at a certain point in time after training. In a way similar to learning outcomes, the measurement of transfer outcomes depended on the availability of existing information from, for example, criteria of functioning. If no such information was available, a separate questionnaire scale measuring transfer outcomes was constructed, referring specifically to the transfer objectives of the training programme included. These scales were placed in those parts of the questionnaire reflecting the period after training. Referring to the pilot study of the training programme on coaching skills, an example of an item for trainees is "Since I completed this training programme, I have motivated subordinate employees considerably better than before the programme".

4.5.7 Ability

The trainees' ability was conceptualised as their general cognitive ability, as well as (a combination of) trainees' age, experience and prior knowledge. These variables were only included in trainee questionnaires, although similar questions were included in supervisor questionnaires measuring supervisors' age and job tenure.

In accordance with, for example, Gielen (1995), *General Cognitive Ability* was measured by means of the trainees' level of formal education. A single multiple choice item was included, with response possibilities representing the different levels of Dutch secondary and higher education, in addition to an open response category for other possibilities.

Trainees' *Age, Experience and Prior Knowledge* were measured by different measures. Both trainees' age and experience were determined by single open items asking them about their age and job tenure in years respectively. Prior knowledge relates specifically to knowledge, skills and attitudes to be learned in the training programme. Two general items were constructed, referring to the extent to which trainees already possessed the knowledge and skills intended to be learned before they entered training. These items were adjusted for each of the training programmes involved, similar to items reflecting learning and transfer outcomes. An example from the trainee questionnaire in the pilot study is "Before I took part in this training programme, I had ample knowledge of coaching".

4.5.8 Transfer Design

In Chapter 2, transfer design characteristics were divided into the extent of identical elements between training and job setting, the extent to which trainees are taught general principles in training, the kinds and extent of variation in practice, the extent of overlearning, relapse prevention during training and goal-setting. The transfer design scales were only included in trainee questionnaires. A distinction was made between information that had to be gathered individually from trainees, as it was expected to differ, and information that could be regarded as relatively similar for each trainee in the same training programme. The consequences of this distinction will be discussed for each of the relevant transfer design characteristics below.

Identical Elements refers to the extent of actual or perceived correspondence between the training and the job situation, and is believed to affect transfer outcomes directly. In order to keep questionnaires as short as possible, an examination of the study by Machin and Fogarty (2003) led to the definition of two items. One of these included in the part of the questionnaire on the period during training, is "During my participation in this training programme, it became clear to me how I could apply the new knowledge, skills and attitudes in my job".

The extent to which trainees were taught *general principles* was believed to be the same for all trainees in each of the separate training programmes in parts two and three of the study, and for this reason it was possible to determine it by means of general information about training. No separate scale reflecting the extent of general principles in training was therefore developed.

Chapter 2 showed that several *variations in practice* during training are believed to be related to the achievement of transfer outcomes, referring to the teaching and understanding of general principles regarding training content. Two multiple choice items reflecting the way in which trainees practised during training were included, based on Wognum (1999). These items, which contained different specified response categories, were included in a specific part of the questionnaire on training characteristics and reflected massed or spaced practice and different forms of practice. In addition, the extent of variation in practice was believed to be the same for trainees in the same training programmes; as a result, these could be retrieved through general training information. No further questions were therefore included.

As regards *overlearning* during training, it is expected that an increasing amount of overlearning will lead to higher transfer outcomes. To measure overlearning, two items were formulated which have been included in the part

of the questionnaire on the period during training. One of these reads as "The training took longer than I needed to master its content".

Relapse Prevention concerns the extent to which trainees were prepared for possible relapses and reversion to pre-training behaviour after training. In contrast to some other training design characteristics, relapse prevention is not believed to relate to learning outcomes, but to transfer outcomes only. Burke and Baldwin's (1999) scale reflecting the use of transfer strategies was taken as a starting point, after which two items for relapse prevention were formulated. These have also been included in the part of the questionnaire on the period during training, one of them reads "During my participation in this training programme, I became prepared for possible setbacks in my job as regards the use of new knowledge, skills and attitudes".

Finally, *Goal-Setting* here refers to the determining of goals in which the use of new knowledge, skills and attitudes is explicated. Two items were formulated, to be included in the part of the trainee questionnaires on the time during training. An example of these is "During my participation in this training programme I resolved to use new knowledge, skills and attitudes in my job".

4.5.9 An Overview of Scales

Table 4.1 provides an overview of all the scales to be adopted in the questionnaires. The table includes the number of items in these scales, as well as, if known, their reliability estimates based on original scale descriptions.
In order to test the feasibility, reliability and validity of the instrumentation, the second part of the study consisted of a pilot test of the questionnaires. Chapter 5 will describe the procedure and results of this pilot study.

Table 4.1 *Scales and Numbers of Items (#), including known α-coefficients (α)*

Element	Trainees		Supervisors	
	#	α	#	α
Personality Characteristics				
Self-efficacy	6	.76	-	-
Anxiety	7	-	-	-
Conscientiousness	7	-	-	-
Locus of control; Internal Control	3	.59	-	-
Locus of control; Chance	3	.65	-	-
Locus of control; Powerful Others	3	.72	-	-
Motivation and Job Attitudes				
Learner readiness	6	-	6	-
Intervention fulfilment	5	-	5	-
Motivation to Learn	7	-	7	-
Motivation to Transfer	6	-	6	-
Job involvement	6	.62	6	-
Supervisor Support				
Instrumental Support before Training	4	-	4	-
Informational Support before Training	3	-	3	-
Appraisal Support before Training	5	-	5	-
Emotional Support before Training	3	-	3	-
Instrumental Support during Training	3	-	3	-
Informational Support during Training	3	-	3	-
Appraisal Support during Training	3	-	3	-
Emotional Support during Training	3	-	3	-
Instrumental Support after Training	4	-	4	-
Informational Support after Training	3	-	3	-
Appraisal Support after Training	5	-	5	-
Emotional Support after Training	3	-	3	-

Transfer Climate				
Opportunity to use	6	-	6	-
Sanctioning of transfer	6	-	6	-
Resistance to change	7	-	7	-
Personal outcomes-positive	5	-	5	-
Personal outcomes-negative	3	-	3	-
Peer support	12	-	12	-
Preferred support	5	-	-	-
General Work Environment				
Job Autonomy	6	.85	6	-
Workload	3	-	3	-
Learning and Individual Performance				
Learning Outcomes	-*	-*	-*	-*
Transfer outcomes	-*	-*	-*	-*
Ability				
General Cognitive Ability	1	-	-	-
Age	1	-	1	-
Experience (job tenure)	1	-	1	-
Prior Knowledge	2	-*	2	-*
Transfer Design				
Identical Elements	2	-	-	-
General Principles	-	-	-	-
Variations in Practice	2	-	-	-
Overlearning	2	-	-	-
Relapse Prevention	2	-	-	-
Goal-Setting	2	-	-	-

Note: * Depending on the training programme involved

Chapter 5

Pilot Test

5.1 Introduction

In Chapter 4, a description of the design and methodology of the entire study was provided. The current chapter comprises the second part of this study, consisting of the results of the pilot test. This test was conducted both to assess the feasibility and the reliability of the scales used and to gain a first insight into possible answers to the research question and its sub-questions. Section 5.2 will start with a short description of the organisational context and the training programme involved in the pilot, while Section 5.3 focuses on the procedure and data collection in the pilot. The reliability estimates of the questionnaire scales are discussed in Section 5.4, and Section 5.5 will present the results of the pilot with regard to the sub-questions. Section 5.6 will conclude with a short outlook on this chapter.

5.2 Organisational Setting and Training Programme

This section describes the setting in which the pilot test was carried out. The first subsection, 5.2.1, presents an overview of the organisational context in which the study took place, while Subsection 5.2.2 provides a more detailed description of the selection procedure for the training programme that was included and the features of this procedure.

5.2.1 Organisational Context

Existing contacts with representatives from the training and development departments of several local organisations led to preliminary talks with the training department of the Dutch division of a foreign-based global electronics

company. This division's main activities consist of manufacturing and providing high-tech defence solutions for naval and ground-based environments, with a product range comprising systems suitable for all classes and types of naval vessels and weapon systems. The Dutch division consists of several different locations spread throughout the country, the main office being the one in which this study was conducted.

At the time of the study, the division in this specific location also accommodated the main national training department. A recent shift in organisational focus towards performance management had created increased interest in the effects and effectiveness of training programmes for employees, specifically regarding the extent to which new knowledge, skills and attitudes were being transferred to the job. In agreement with the training department, it was therefore decided to jointly carry out the pilot test on one or more of the organisation's training programmes.

5.2.2 Training Programme

The training and development department offers a wide range of training programmes for its Dutch employees, varying from, for example, specific job-related technical knowledge and skills to more general social and team skills. Training programmes are developed and conducted both internally and externally, while the number of employees participating in the different programmes also varies considerably. To select one or more suitable training programme for the study, three main criteria were taken into consideration. First, to ensure that trainees had had the opportunity to use their new knowledge, skills and attitudes on the job, it was decided that trainees should have finished training participation at least three months before receiving the questionnaire. Secondly, in order to make certain that trainees remembered as much as possible, especially of the periods before and during training, it was decided that the programme to be studied should not have been started earlier than two years before receiving the questionnaires. Finally, to ensure the possibility of sound quantitative analyses, as a rule of thumb, it was decided to focus on training programmes in which at least 50 employees had participated.

Bearing in mind these criteria, in close consultation with the training and development department, it was decided to focus the study on the transfer outcomes of a training programme on coaching knowledge and skills. This is considered one of the key programmes within the process of change towards performance management, and is intended for actual managers or employees who are expected to take up a managing role in the near future. With a set maximum of 10 employees per training programme, the programme had been carried out several times, most of which had taken place in 2002 and thus complied with the appointed time limits. The programme consisted of a one-and-a-half-day training course, in which the last half day mostly served to

determine progress and recall the most important issues of the course. It was held within the organisation itself, but off the employees' job. The objective of the training course was described as to acquire the ability to guide, facilitate and support subordinate employees towards the realisation of agreed targets, by having conversations with them, showing them appreciation, motivating them and providing them with constructive feedback. The methodology consisted of theoretical lectures, carrying out certain assignments, and participating in and watching role-plays. Trainees had to complete a home assignment about coaching before training participation, while the course concluded with the completion of an evaluation form. No examination or performance test was included during or after training, however.

5.3 Procedure and Data Collection

The design of the study in general was directed at collecting data by means of post-training questionnaires, the development of which was described in Chapter 4. The procedure for the pilot test is divided into three parts: a preparation and pre-test part, the actual data collection, and the data analysis and reporting results. Each of these parts and their respective characteristics or results will be discussed separately in the next subsections.

5.3.1 The Pre-Pilot Phase

One of the main motives of the training department for cooperating in the pilot study was to gain an insight into the transfer outcomes of one of its training programmes, as, up to that point, no substantial rating of transfer outcomes had been conducted. Consequently, no information on learning or transfer outcomes was available before the pilot test. Separate scales reflecting both constructs therefore had to be developed and incorporated into the questionnaires. In cooperation with the training department, documents on training objectives and training characteristics were collected and analysed, which led to the identification of several different components of knowledge and skills that are intended to be learned. Initial attempts to distinguish between separate specified scales reflecting pre-training and post-training knowledge, skills and attitudes, and behavioural changes after training turned out to lead to scales that were too large. Two scales were therefore constructed, measuring trainee and supervisor perceptions of the extent to which learning outcomes and transfer outcomes had been achieved. As mentioned in Chapter 4, a short separate scale reflecting trainees' prior knowledge was also developed and incorporated into the questionnaires.
The scales reflecting learning and transfer outcomes were both discussed with the external trainer of the programme, after which some small adjustments to

the formulation of a couple of items were made. The final scale reflecting trainees' learning outcomes consisted of 13 items; the scale reflecting transfer outcomes contained 17 items. One example of an item measuring learning outcomes in the trainee questionnaire is "Since I completed this training programme, the relationship between coaching and different leadership styles has become much clearer to me than before the programme". An example of an item from the scale for transfer outcomes in the supervisor questionnaire is "Since this trainee completed this training programme, he has expressed much more appreciation of his subordinates than before the programme". Both were included in the trainee and supervisor questionnaires, thus only differentiating between their references to the trainee. The trainee questionnaire subsequently consisted of 200 items; the supervisor questionnaire of 153 items.

From March to May 2003, the questionnaires were discussed extensively with representatives of the training department. With regard to the distinction between different periods of supervisor support, it was concluded that the short training duration provided no distinctly separate period during training for trainees and supervisors. It was therefore decided to exclude the scales reflecting supervisor support during training from the pilot study. In addition, several different issues concerning the content of the scales and items were reviewed, and various modifications made. Most of these modifications related to the presentation of the study being part of the organisational process of change to performance management, implying the training department's responsibility and accountability for the study. This accountability resulted in items referring, for example, to the provision of financial rewards by supervisors for transferring learning not being accepted, as this was not a familiar practice and might therefore cause discontent among trainees and supervisors. Similar modifications had to be made to scales reflecting personality characteristics, peer support, sanctioning of transfer and learner readiness.

In April 2003, a pre-test on the feasibility and face validity of the questionnaires was conducted, including the original questionnaire versions for trainees and their supervisors. Two trainees and two supervisors were approached by the training department to cooperate on a voluntary basis, to which they agreed. At the same time, the questionnaires were also submitted to the organisation's advisory council. The time needed to complete the questionnaires ranged from 20 to 35 minutes, and participants indicated that the items were clear and understandable. However, reactions from both volunteering participants and the advisory council indicated that the two questionnaires were considered too time-consuming. A few days before the planned data collection, the advisory council and the training department insisted that the trainee questionnaire be reduced to about 120 items, so as to be acceptable, with similar restrictions for the supervisor questionnaire. This imperative caused tension between the actual

possibility of examining the framework and the theoretical underpinning of the study. Because of the short time span left and the difficulty of finding organisations willing to cooperate, it was decided to adapt the questionnaires to meet the organisation's demands. To reduce scales, while keeping the Transfer Framework in mind, two main points were taken into consideration. Firstly, the position of the construct with regard to supervisor support in the Transfer Framework was considered, focusing on the constructs that were most directly related to supervisor support. Secondly, the specific content of the items in the scale was reviewed, in an attempt to protect its content validity as much as possible. For example, the relatively isolated position of the separate transfer design characteristics in the Transfer Framework implied that these were cut back to only one item each. With regard to content, the scale reflecting peer support was reduced from 12 to 4 items, by removing the differentiation between times of support. Similarly, the scales reflecting trainees' self-efficacy, anxiety, conscientiousness, motivation to learn, motivation to transfer, learner readiness, intervention fulfilment, preferred support, opportunity to use, sanctioning of transfer, resistance to change, personal outcomes-positive and negative, job autonomy and some supervisor support components were all shortened significantly. Because of the resemblance of its items to those of job autonomy, the scale reflecting trainees' workload was omitted from the questionnaires completely. The resulting difference in size between the original scales and the scales applied in the study can be seen in Tables 5.2 to 5.4 in Section 5.4.

The selection procedure of trainees and supervisors was carried out by the training department, and included all employees who had taken part in the training programme in 2002. This resulted in a sample of 217 trainees and 69 accompanying supervisors, thus indicating that most of these supervisors managed more than one trainee. The design of the study meant that these supervisors were supposed to fill in questionnaires about each separate subordinate who had taken part in the training programme, which would result in most supervisors also having to fill in and return two or more questionnaires. To limit the time investment and disturbances for supervisors, it was decided to ask each supervisor to complete questionnaires on a maximum of two pre-selected subordinate trainees. As a consequence, the 69 selected supervisors represented 115 of the total of 217 trainees.

5.3.2 The Data Collection

The data collection took place in May 2003, when all 217 trainees and 69 supervisors were sent a package by the training department through the internal mail. This package contained the questionnaire(s), an introductory letter from the training department, an introductory letter from the researcher, a short

reminder about the training programme, and a self-addressed return envelope. One week after the package, all respondents were sent a reminder e-mail by the training department, while the final date of return was set at two and a half weeks after the sending of the questionnaires. In addition, an extra week was taken into account before collecting the questionnaires from the training department.

Table 5.1 presents the number and percentage of questionnaires received from trainees and supervisors in the pilot.

Table 5.1 *Numbers and Percentages of Questionnaires Sent and Received*

Questionnaires	*Sent*	*Received*	*%*
Trainee	217	78	36
Supervisor	115	32	28

From the 115 questionnaires sent to 69 supervisors, a total of 32 questionnaires was returned by 26 (38%) of them. Thus, six supervisors returned two questionnaires. A comparison of the questionnaires, however, revealed that only 14 matching questionnaires of trainees and supervisors on the same trainee were collected. Due to this low number of matching questionnaires no correlations between trainee and supervisor responses could be determined, implying that the congruence as a measure of validity remained unclear.

Trainees' mean age was 45.79 years, with a standard deviation of 7.09 years, while 73 of them were male respondents. Their average job tenure was 4.92 years, with a standard deviation of 3.61. Supervisors' mean age was 44.71 years, with a standard deviation of 6.76 years. Only one of the responding supervisors was female, while their average job tenure was 3.59 years, with a standard deviation of 4.25 years. The large majority of male respondents actually matched the male-female ratio from the entire sample, while comparison of respondents and non-respondents on their organisational department led to the assumption that the sample was representative.

Although no specific study of non-response was conducted, the reactions of some trainees and supervisors provided an indication of the main reasons for not cooperating. The majority of reactions regarding the non-completion of the questionnaires referred to a lack of time, either through a heavy workload or the length of the questionnaire - even though it had been reduced. One supervisor refused because of the large number of earlier surveys he had cooperated in, while two others indicated that they did not consider themselves representative, for various reasons. One trainee and two supervisors returned blank questionnaires, with the remark that their new knowledge, skills and attitudes

had not been used, as a consequence of job changes, which would make cooperation not useful. The last supervisor argued that, since all the training programmes were part of the performance management change process, they should be included in the study. He therefore refused to cooperate.

5.3.3 The Data Analysis

Analyses of the data took place in June 2003, and consisted of both estimating the reliability of the scales as well as examining the relationships in the Transfer Framework in order to answer the sub-questions of the research question. These analyses and their results will be discussed in Sections 5.4 and 5.5 respectively.

5.4 Determination of Reliability Estimates Pilot Test

In order to estimate the reliability of the general and specific scales, Cronbach's α was determined for each. A minimum criterion for internal consistency of .60 was determined, with scales that did not meet this criterion being excluded from further analyses in the pilot.

The α-coefficients are presented below in the same order as the construction of the scales in Chapter 4, thus following the Transfer Framework from top to bottom. A distinction is made between the scales as originally planned, the scales as applied in the pilot after they had been shortened, and the scales after possible revision due to the pilot results. In case a scale has been adopted from an existing instrument and the original α-coefficient was known, this α-coefficient is presented in the 'original' column. Depending on the specific scale and its inclusion in the questionnaires, α-coefficients based only on trainee responses or on both trainee and supervisor responses are presented. For reasons of clarity, the coefficients for the different components of supervisor support and for the different components of the transfer climate and general work environment are presented separately in Tables 5.3 and 5.4 respectively. Table 5.2 subsequently depicts the α-coefficients and the number of items of general elements from the Transfer Framework.

As it was considered unclear how different personality characteristics would relate to each other with regard to their effects on trainees' motivation to learn, it was decided to include these separately in the analyses. Consequently, only separate α-coefficients have been determined for the scales measuring personality characteristics. With regard to trainees' ability, only prior knowledge is included in the table, as age, experience and formal education were measured by separate single items.

Table 5.2 *General Elements of the Transfer Framework: Trainee (T) and Supervisor (S) Scales, Number of items (#), Known α-coefficients of Original Scales, α-coefficients of Scales in Pilot, α-coefficients of Scales in Pilot after Revision*

Element / Scale		Original		Pilot		Revised	
		#	α	#	α	#	α
Self-efficacy	T	6	.76	4	.26	-	-
Anxiety	T	7	-	5	.61		
Conscientiousness	T	7	-	4	.37	-	-
Locus of Control: Powerful Others	T	3	.72	3	.59	-	-
Locus of Control: Chance	T	3	.65	3	.48	-	-
Locus of Control: Internal	T	3	.59	3	.65		
Learner Readiness	T	6	-	4	.49	-	-
	S	6	-	4	.70		
Intervention Fulfilment	T	5	-	4	.57	3	.68
	S	5	-	4	.22	3	.66
Motivation to Learn	T	7	-	4	.83		
	S	7	-	4	.72		
Motivation to Transfer	T	6	-	4	.73		
	S	6	-	4	.70		
Job Involvement	T	6	.62	6	.55	4	.62
	S	6	-	-	-		
General Supervisor Support	T	42	-	27	.96		
	S	42	-	27	.93		
Transfer Climate	T	39	-	21	.82		
	S	39	-	13	.71		
General Work Environment (Job Autonomy)	T	9	-	4	.62		
	S	9	-	-	-		
Learning Outcomes	T	-	-	13	.91		
	S	-	-	13	.93		
Transfer Outcomes	T	-	-	17	.90		
	S	-	-	17	.92		
Prior Knowledge	T	2	-	2	.81		
	S	2	-	2	.87		
Transfer Design	T	8	-	4	.25	-	-

N Trainees ≥ 75
N Supervisors ≥ 29

Whenever the reliability analysis indicated that a scale within the pilot did not meet the minimum criterion of .60, this scale was assessed on possible modifications to increase internal consistency. The 'revised' column in Table 5.2 shows these changes and their consequences, or otherwise shows that the scale was left out of further analyses. For example, the scale for self-efficacy in the pilot consisted of 4 items, for which an α-coefficient of .26 was determined. As deletion of items would only improve its internal consistency to .55, the scale was omitted from further analyses.

With regard to the other personality characteristics, Locus of Control: Chance (α = .48), Locus of Control: Powerful Others (α = .59), and Conscientiousness (α = .37) also did not meet the criterion. Similar to the trainee scales reflecting learner readiness and transfer design, inspection of the reliability analyses indicated that these could not be improved by removing or regrouping items. These scales have therefore all been left out of further analyses in the pilot. As a consequence, with regard to trainees personality only anxiety and internal locus of control have been included.

Neither of the four-item scales measuring perceived intervention fulfilment met the required criterion of .60, but removal of the same item in both scales led to α-coefficients of .68 and .66 respectively. In addition, the scale reflecting job involvement originally consisted of 6 items, indicating an α-coefficient of .55 as determined on the basis of trainees' responses, while the analogous scale for supervisors was omitted because of the length of the questionnaire. Further analyses showed that the removal of items 2 and 5 in the trainee version led to an improved internal consistency of .62. Although all of these removals might affect the content validity of the scales, comparison of the remaining items led to the expectation that these would still provide sound measurements of the constructs. They were therefore included in further analyses in the pilot in their revised formats.

Next, Table 5.3 presents the α-coefficients of the separate components of supervisor support. No coefficients for supervisor support during training are shown, as these were not included in the questionnaires.

The α-coefficients in Table 5.3 indicate the internal consistency of all the different scales reflecting supervisor support to be acceptable, except for the scale measuring supervisor perceptions of the extent of instrumental supervisor support before training. Because of the direct linkage between the trainee and supervisor scales and the low number of items in both scales, it was decided not to change these, and therefore not to include this supervisor scale in further pilot analyses.

Table 5.3 *Components of Supervisor Support: Trainee (T) and Supervisor (S) Scales, Number of items (#), Known α-coefficients of original Scales, α-coefficients of Scales in Pilot, α-coefficients of Scales in Pilot after Revision*

		Original		Pilot		Revised	
		#	α	#	α	#	α
General Supervisor Support							
Instrumental Support before Training	T	4	-	3	.68		
	S	4	-	3	.36	-	-
Informational Support before Training	T	3	-	3	.72		
	S	3	-	3	.67		
Appraisal Support before Training	T	5	-	3	.75		
	S	5	-	3	.76		
Emotional Support before Training	T	3	-	3	.83		
	S	3	-	3	.73		
Instrumental Support after Training	T	4	-	4	.83		
	S	4	-	4	.77		
Informational Support after Training	T	3	-	3	.81		
	S	3	-	3	.88		
Appraisal Support after Training	T	5	-	5	.79		
	S	5	-	5	.77		
Emotional Support after Training	T	3	-	3	.86		
	S	3	-	3	.82		

N Trainees ≥ 77
N Supervisors = 30

Lastly, Table 5.4 presents the α-coefficients for each of the separate transfer climate and general work environment variables.

The α-coefficient of trainee perceptions of the opportunity to use learning on the job indicated an internal consistency of .57. After removal of one negatively formulated item, the internal consistency increased to .69. Removal of the same item from the supervisor questionnaire led to an increase in the internal consistency of the supervisor scale from .47 to .48, for which reason this scale was removed from further analyses. Neither of the scales measuring sanctioning of transfer and resistance to change were included in supervisor questionnaires, while all other scales met the minimum α-criterion of .60.

The scales reflecting personal outcomes-negative and preferred support both consisted of only one items in the final pilot questionnaire(-s), for which no α-coefficients could be determined. Similarly, due to the imperative to shorten the questionnaires, the scales measuring the characteristics of the transfer design were also each reduced to single items. Therefore, no estimates of the reliability

of these separate scales could be determined either. Although this reduction in items and the consequential lack of reliability estimates without a doubt negatively affected both the validity and the reliability of these measures, it is assumed that the remaining items still present a valuable representation of the transfer design. These items were therefore included in the analyses of the pilot data.

Table 5.4 *Elements of Transfer Climate, Preferred Support and General Work Environment: Trainee (T) and Supervisor (S) Scales, Number of items (#), Known α-coefficients of original Scales, α-coefficients of Scales in Pilot, α-coefficients of Scales in Pilot after Revision*

		Original		Pilot		Revised	
		#	α	#	α	#	α
Transfer Climate							
Opportunity to Use	T	6	-	4	.57	3	.69
	S	6	-	4	.47	-	-
Sanctioning of Transfer	T	6	-	4	.61		
	S	6	-	-	-		
Resistance to Change	T	7	-	4	.60		
	S	7	-	-	-		
Personal Outcomes-Positive	T	5	-	4	.63		
	S	5	-	4	.61		
Personal Outcomes-Negative	T	3	-	1	-		
	S	3	-	1	-		
Peer Support	T	12	-	4	.79		
	S	12	-	4	.89		
Preferred Support	T	5	-	1	-		
	S	-	-	-	-		
General Work Environment							
Job Autonomy	T	6	.85	4	.62		
	S	6	-	-	-		
Workload	T	3	-	-	-		
	S	3	-	-	-		

N Trainees ≥76
N Supervisors ≥ 30

In general, the imperative to shorten the questionnaires in the pilot has had implications for the resulting data. With regard to the Transfer Framework, not all elements depicted were included. Although it was intended to follow the

Transfer Framework completely, choices had to be made regarding the inclusion of all elements versus the size of each of these. Because of the extent of agreement between the scales reflecting workload and job autonomy, the scale reflecting workload was removed from both questionnaires. Similarly, the scales for job involvement, sanctioning of transfer and resistance to change were omitted from the supervisor questionnaires. The reliability analyses also showed that six scales did not meet the required minimum internal consistency of .60, and for this reason they were omitted from further analyses too. This exclusion of scales thus implies that the Transfer Framework was not measured as originally intended, and that the elements measured differ slightly between trainees and supervisors.

In addition to the removal of scales, both the necessity of shortening them, and the deficient internal consistency of some scales also led to the removal of several individual items. As the α-coefficient for internal consistency partly depends on the length of a test, this initially forced removal might well have negatively affected the internal consistency of the scales (e.g. Crocker & Algina, 1986). It might also have impaired the content validity of the scales, by not measuring certain parts of a construct. Although the exclusion of scales and items thus might have affected reliability and validity, the process of removal was directed as much as possible to retaining both. During this process the content of scales was closely discussed with expert reviewers and representatives of the training department, which led to the conviction that the remaining scales do present a valid measurement of the intended constructs. By focusing on supervisor support and its most directly related other variables, the scales reflecting the main part of the framework with regard to the research question were kept rather similar. In other words, learning and transfer outcomes, motivation to learn and transfer, and the transfer climate were kept relatively intact. These data could therefore be analysed on most of the suggested relationships. The main variables affected concerned trainees' personality characteristics and the transfer design, as well as learner readiness. Although some of these could not be included, it was still assumed that even the remainder of these scales still provided a valid and reliable measurement. Thus, though impeding examination of some relationships, the majority of variables and relationships in the Transfer Framework could be included in the analyses of the pilot data.

Because of the attempts to examine all the variables and relationships within the Transfer Framework, it was, however, decided to review, and possibly revise, the scales before the main data collection of the study. This second assessment of the scales will be described in Chapter 6. Section 5.5 subsequently focuses on the results of the analyses performed on the data from the pilot study.

5.5 Results of the Pilot Test

After the testing of the internal consistency of the scales by means of their α-coefficients, both sub-questions of the research question were addressed. The results will be discussed separately in Subsections 5.5.1 and 5.5.2, focusing on sub-question 1 and sub-question 2 respectively.

5.5.1 Supervisor Support and General Elements of the Transfer Framework

5.5.1.1 Mean Scores on General Elements Transfer Framework
The first of the two sub-questions concerned the effects of general supervisor support on transfer outcomes, while also taking into account the presence and influence of the other general elements in the Transfer Framework. Before determining the actual effects, both the mean scores as given by trainees and supervisors and a comparison of these mean scores are presented in Table 5.5 on page 116.
The mean scores indicate that trainees experience little anxiety, and have a considerable internal locus of control. They were rather motivated to learn, and reasonably motivated to transfer new knowledge, skills and attitudes. The transfer climate and trainees' learning outcomes were considered somewhat positive, while both trainees' transfer outcomes and their prior knowledge received scores that only very slightly differed from the impartial middle. In general, trainees experience a considerable extent of autonomy in their job. Supervisors rated trainees' readiness for the training also as almost impartial, while trainees indicated that they were reasonably involved with their jobs.
Two pairs of mean scores stand out: the ratings for intervention fulfilment and for general supervisor support. While supervisors perceive the training to have fulfilled trainees' needs and expectations to a slightly positive extent, trainees rate the extent of intervention fulfilment as rather negative, and significantly different (t = -6.011, p = .000). Since trainees are the ones to decide whether to transfer training, their perceptions are taken as the more important point of reference. This result thus indicates that supervisors overestimate the extent to which training fulfilled trainees' needs and expectations.
Similarly, supervisors indicate that they have provided trainees with a moderately positive extent of support, while trainees differ by reporting that they have experienced little support from their supervisors (t = -6.550, p = .000). Supervisors thus believe that they support subordinate trainees more than these trainees actually experience.

Table 5.5 *Means for General Elements Transfer Framework, based on Trainees (T) and Supervisors (S), including t-tests comparing the Means (1 = strongly disagree; 3 = neutral; 5 = strongly agree)*

Variable		N	Mean	t	Df	p-value (2-tailed)
Anxiety	T	78	2.59	-	-	-
	S	-²	-			
Locus of Control: Internal	T	77	3.65	-	-	-
	S	-²	-			
Learner Readiness	T	-¹	-	-	-	-
	S	31	2.94			
Intervention Fulfilment	T	78	2.58	-6.011	106	.000*
	S	30	3.16			
Motivation to Learn	T	78	3.85	0.979	106	.330
	S	30	3.71			
Motivation to Transfer	T	77	3.47	0.117	105	.907
	S	30	3.46			
Job Involvement	T	78	3.43	-	-	-
	S	-²	-			
General Supervisor Support	T	74	2.40	-6.550	102	.000*
	S	30	3.16			
Transfer Climate	T	75	3.23	-1.445	103	.151
	S	30	3.34			
General Work Environment (Job Autonomy)	T	78	3.63	-	-	-
	S	-	-			
Learning outcomes	T	76	3.35	1.538	103	.127
	S	29	3.17			
Transfer outcomes	T	76	3.12	0.500	103	.618
	S	29	3.07			
Prior Knowledge	T	78	3.01	-0.186	108	.853
	S	32	3.05			

*p < .05.; (¹) Insufficient internal scale consistency, therefore not included in analyses; (²) Not measured; Note that in order to determine the mean score of the *Transfer Climate* (positive), its sub-variables *Sanctioning of Transfer* and *Resistance to Change* had to be recoded, as both these variables are considered to contribute to a positive transfer climate to the extent that they are perceived less

5.5.1.2 Trainee Questionnaires: Causal Relationships between General Elements Transfer Framework

To test the causal relationships depicted in the Transfer Framework, STEPWISE regression analyses were conducted. Referring to sub-question 1, these analyses were first carried out on the general elements in the framework. Table 5.6 presents the results of these analyses performed on trainee questionnaires, while considering consecutively motivation to learn, motivation to transfer, transfer climate, learning outcomes and transfer outcomes as dependent variables. The table shows the final stages of these analyses, thus the stages after which no further significant predictors remained. These stages include all the significant predictors in the sequence that these have been included.

Table 5.6 *Trainee Questionnaires: Significant Regression Weights (p < .05) of Regression Analyses Predicting Motivation to Learn, Motivation to Transfer, Transfer Climate, Learning Outcomes and Transfer Outcomes*

Dependent Variable	R^2	Independent Variable(s)	B	SE B	β
Motivation to Learn (N=76)	.17	Locus of Control: Internal	.48	0.12	.41
Motivation to Transfer (N=69)	.33	Learning Outcomes	.36	0.09	.40
		General Supervisor Support	.35	0.10	.36
Transfer Climate (N=71)	.54	General Supervisor Support	.37	0.06	.58
		Job Autonomy	.23	0.06	.32
Learning Outcomes (N=66)	.28	Prior Knowledge	-.30	0.08	-
		Motivation to Learn	.26	0.09	.32
Transfer Outcomes (N=68)	.58	Learning Outcomes	.49	0.08	.55
		Motivation to Transfer	.34	0.09	.34

Trainees are more motivated to learn when they have a more internal locus of control, which explains 17% of its variance. Neither trainees' anxiety nor their job involvement significantly adds to this variance.

Trainees' self-report of their learning outcomes is the first variable to predict their motivation to transfer, accounting for 20% of its variance. The second variable concerns trainee perceptions of general supervisor support, which explains an additional 13%. Thus, trainees became more motivated to transfer new knowledge, skills and attitudes when they experienced higher learning outcomes and more general supervisor support.

With regard to the transfer climate, general supervisor support is seen to account for 45% of its variance, while experienced job autonomy adds another 9%. Both are positive predictors of trainees' perceptions of the transfer climate.

In the multiple stepwise regression analysis of learning outcomes, prior knowledge was the first variable to be included, explaining 18% of its variance. Prior knowledge turns out to be a strongly negative predictor, indicating that trainees with better coaching knowledge and skills before training have learned less from training than those who did not. The second variable, trainees' motivation to learn, explains an additional 10% of the variance, with more motivated trainees achieving higher learning outcomes.

Transfer outcomes firstly depend on trainees' learning outcomes, which account for 49% of the variance in transfer outcomes. Trainees' motivation to transfer, the second positive predictor included, explains a further 9% of its variance. Thus, trainee perceptions indicate that transfer outcomes strongly depend on achieved learning outcomes, and, to a lesser extent, on motivation to transfer.

The different stages of the regression analysis of transfer outcomes indicate the effect of perceived general supervisor support on reported transfer outcomes to be mediated by trainees' motivation to transfer. In other words, supervisor support only significantly predicts transfer outcomes when motivation to transfer is not accounted for, while general supervisor support also significantly predicts this motivation to transfer. To test for these mediating effects, a Sobel test was conducted on the respective regression weights (see Preacher & Hayes, in press). Results indeed indicate the suggested mediated effect to be significant (test statistic = 2.57, p = .01), showing that the positive effect of perceived supervisor support on the transfer outcomes is, at least partly, significantly mediated by trainees' motivation to transfer.

5.5.1.3 Supervisor Questionnaires: Causal Relationships between General Elements Transfer Framework

Analogous to the analyses conducted on trainee questionnaires, multiple stepwise regression analyses were also carried out on the general elements in supervisor questionnaires. Table 5.7 on page 119 presents the results of these, thus again including perceived motivation to learn, motivation to transfer, transfer climate, learning outcomes and transfer outcomes as dependent variables. The independent variables included differ slightly from those in the analyses of trainee questionnaires, as a result of the differences in questionnaires.

Supervisor perceptions show no significant predictor of trainees' motivation to learn, but it has to be noted that no personality characteristics of the trainee were included in supervisor questionnaires. Supervisor perceptions do indicate that general supervisor support for trainees increases trainees' motivation to transfer as well as improving the transfer climate, accounting for 37% and 48% respectively of their variances.

Table 5.7 *Supervisor Questionnaires: Significant (p < .05) Regression Weights of Regression Analyses Predicting Learning Outcomes, Transfer Outcomes, Motivation to Learn, Motivation to Transfer and Transfer Climate*

Dependent Variable	R^2	Independent Variable(s)	B	SE B	B
Motivation to Learn (N=-)	-	-	-	-	-
Motivation to Transfer (N=26)	.37	General Supervisor Support	0.61	0.16	.61
Transfer Climate (N=29)	.48	General Supervisor Support	0.50	0.10	.69
Learning Outcomes (N=26)	.20	Prior Knowledge	-0.17	0.07	-.45
Transfer Outcomes (N=26)	.66	Learning Outcomes	0.61	0.14	.58
		Motivation to Transfer	0.52	0.14	.59
		General Supervisor Support	-0.30	0.14	-.33

Similar to trainee responses, supervisor perceptions indicate that prior knowledge is a negative predictor of trainees' learning outcomes, accounting for 20% of its variance. No other significant predictors were included, however.

With regard to factors directly affecting transfer outcomes, supervisors perceive trainees to transfer more when higher learning outcomes are achieved, when trainees are believed to be more motivated to transfer, and when *less* general supervisor support is provided. Learning outcomes explain 44% of the variance in transfer outcomes, while motivation to transfer and general supervisor support add 15% and 7% respectively.

Further inspection of the results of the regression analyses on transfer outcomes shows a positive zero-order correlation between general supervisor support and transfer outcomes, leading to a negative regression coefficient after the inclusion of motivation to transfer. In addition, when including supervisor support, the positive regression weight of motivation to transfer on transfer outcomes increases, which indicates that general supervisor support acts as a suppressor variable of motivation to transfer (see Krus & Wilkinson, 1986). In other words, general supervisor support reduces variance in motivation to transfer, which is irrelevant to the relationship between motivation to transfer and transfer outcomes, thereby strengthening this relationship.

5.5.1.4 Concluding the Causal Relationships between General Elements Transfer Framework
The results of the regression analyses of the general elements of the Transfer Framework are depicted in Figure 5.1, with a distinction being made between regression weights based on trainee and supervisor questionnaires.
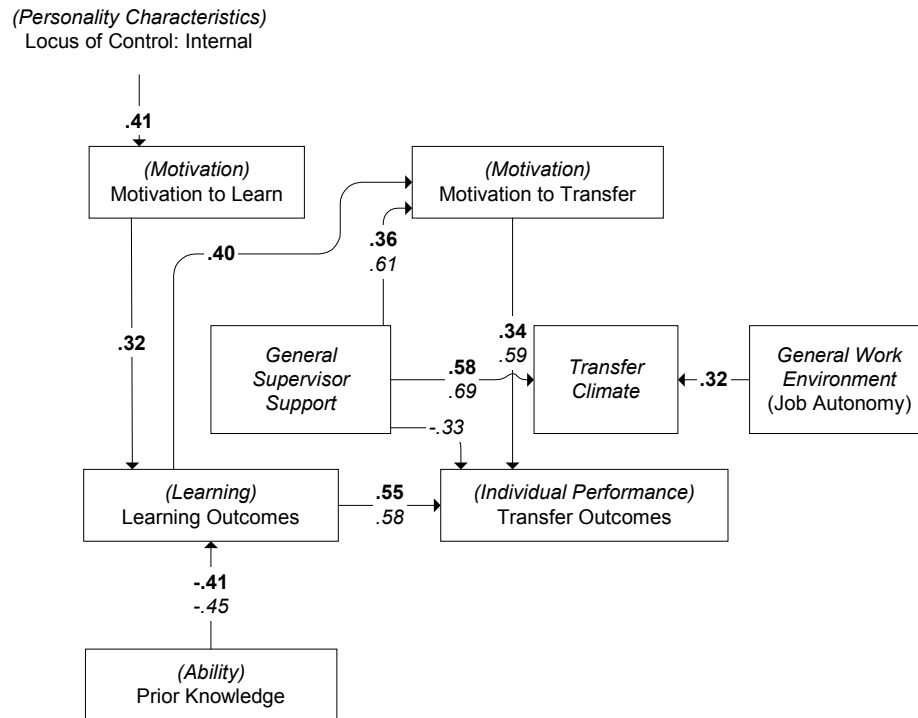
Figure 5.1 Significant Regression Weights between General Elements of the Transfer Framework, as based on Trainees (Bold) and Supervisors (*Italics*).

In general, the results point out that trainees' learning outcomes and their motivation to transfer are direct positive predictors of their transfer outcomes. General supervisor support was also seen to lead to increased transfer outcomes, although these positive effects resulted from mediation by trainees' motivation to transfer, or from the suppression of any irrelevant variance in trainees' motivation to transfer. In other words, the positive effect of supervisor support on transfer outcomes seems indirect, by means of trainees' motivation to transfer.

The most important other results indicate that supervisor support is an important predictor of a positive transfer climate, i.e. those who experience more supervisor support also perceive the climate to be more facilitative to transfer. This also applies to the extent of experienced job autonomy. Prior knowledge is seen to have a negative effect on learning outcomes, which can be explained by the fact that those who had relevant knowledge, skills and attitudes before training had little to learn. While trainees' motivation to learn predicts their learning outcomes, higher learning outcomes result in stronger motivation to transfer.

5.5.2 Specific Components of Supervisor Support and the Specific Elements of the Transfer Framework

5.5.2.1 Mean Scores on Specific Elements Transfer Framework
Subsection 5.5.2 describes the results of the analyses carried out on each of the separate components of supervisor support and the transfer climate, thus referring to the second sub-question. Table 5.8 first presents the mean scores of all the different components of supervisor support included in the pilot study, as well as a comparison of mean scores derived from trainees and supervisors.

Table 5.8 *Means for Different Elements Supervisor Support, based on Trainees (T) and Supervisors (S), including t-tests comparing the Means (1 = strongly disagree; 3 = neutral; 5 = strongly agree)*

Variable		N	Mean	t	Df	p-value (2-tailed)
Instrumental Support before Training	T	78	2.87	-	-	-
	S	-[1]	-			
Informational Support before Training	T	77	2.61	-2.434	105	.017*
	S	30	3.01			
Appraisal Support before Training	T	77	2.72	-2.324	105	.022*
	S	30	3.13			
Emotional Support before Training	T	77	3.09	-2.250	105	.027*
	S	30	3.49			
Instrumental Support after Training	T	77	2.64	-1.805	105	.074
	S	30	2.90			
Informational Support after Training	T	77	2.55	-3.183	105	.002*
	S	30	3.04			
Appraisal Support after Training	T	77	2.67	-3.789	105	.003*
	S	30	3.18			
Emotional Support after Training	T	77	3.16	-2.996	105	.003*
	S	30	3.64			

*$p < .05$; ([1]) Insufficient internal scale consistency, therefore not included in analyses

Similar to the mean scores on general supervisor support, the scores in Table 5.8 indicate that supervisors rate the extent of support provided significantly higher than do trainees, with the exception of the extent of instrumental supervisor support after training. Trainees in general indicate that they received modest to little supervisor support, only rating the extent of received emotional support as impartial. Similarly, supervisor ratings show impartial levels of instrumental, informational and appraisal support provided, while their mean

scores indicate reasonable levels of emotional support. If supervisor support is indeed to affect transfer outcomes, this discrepancy should be taken into account with regard to possible ways to enhance transfer. It indicates either that trainees do not perceive support as being provided, or that supervisors report levels of support that differ from the extent to which they actually provide it. While trainees make the ultimate decision to use new knowledge, skills and attitudes, it is their perception, however, that seems to be the main point of reference.

Table 5.9 provides the mean scores of trainees and supervisors on each of the separate elements of the transfer climate, also including a comparison of these mean scores. The scales reflecting sanctioning of transfer, resistance to change and preferred support were not included in supervisor questionnaires. The supervisor scale measuring perceived opportunities to use learning did not meet the minimum criterion of internal consistency.

The scores in Table 5.9 show that trainees experience ample opportunities to use learning on the job, and experience little sanctioning of transfer or resistance to change. Trainees and supervisors similarly indicate that the use of new knowledge, skills and attitudes on the job has reasonably positive consequences for trainees, but differ strongly in their perceptions of the negative consequences of not using these. Whereas trainees experience very few negative consequences of not using what has been learned, supervisors believe that this actually does have significantly negative consequences. Both trainees and supervisors perceive little support from peers for trainees, although supervisors rate it significantly higher than do trainees. In short, these results indicate that the transfer climate is considered open to transfer of training, but does not really actively stimulate transfer by means of, for example, peer support or certain consequences. Trainees also indicated not to have wanted more support from others with regard to their training participation and their transfer outcomes.

Table 5.9 *Means for Different Elements Transfer Climate and for Preferred Support, based on Trainees (T) and Supervisors (S), including t-tests comparing the Means*
(1 = strongly disagree; 3 = neutral; 5 = strongly agree)

Variable		N	Mean	t	Df	p-value (2-tailed)
Opportunity to Use	T	77	3.74	-	-	-
	S	-[1]	-			
Sanctioning of Transfer	T	77	2.08	-	-	-
	S	-[2]	-			
Resistance to change	T	76	2.67	-	-	-
	S	-[2]	-			
Personal Outcomes-Positive	T	77	3.36	-0.032	107	.975
	S	32	3.37			
Personal Outcomes-Negative	T	78	2.44	-5.781	108	.000*
	S	32	3.38			
Peer Support	T	78	2.46	-2.748	106	.007*
	S	30	2.81			
Preferred Support	T	78	2.54	-	-	-
	S	-[2]	-			

*$p < .05$; ([1]) Insufficient internal scale consistency, therefore not included in analyses; ([2]) Not measured

5.5.2.2 Trainee Questionnaires: Causal Relationships between Specific Elements Transfer Framework

To examine the effects of the separate components of supervisor support, STEPWISE regression analyses were carried out again. Table 5.10 provides the results of the analyses conducted on the five general dependent variables in the Transfer Framework, when differentiating between the separate components of supervisor support and the transfer climate in the independent variables. As the other independent variables included in these analyses are the same as those in Subsection 5.5.2 (see Table 5.6), the description of the results will focus on these separate supervisor support and transfer climate variables, and on important changes in comparison to earlier results.

Trainee perceptions of appraisal support by the supervisor before training positively predict their motivation to learn, accounting for a further 7% of the variance, besides the 17% already explained by internal locus of control. Thus, trainees who have a more internal locus of control and receive more appraisal support from supervisors before training will be more motivated to learn.

Table 5.10 *Trainee Questionnaires: Significant (p < .05.) Regression Weights of Regression Analyses Predicting Motivation to Learn, Motivation to Transfer, Transfer Climate, Learning Outcomes and Transfer Outcomes by Separate Components Supervisor Support and Transfer Climate*

Dependent Variable	R^2	Independent Variable(s)	B	SE B	β
Motivation to Learn (N=75)	.24	Locus of Control: Internal	0.42	0.12	.35
		Appraisal Support before Training	0.24	0.09	27
Motivation to Transfer (N=69)	.61	Personal Outcomes-Positive	0.35	0.10	.33
		Learning Outcomes	0.38	0.07	.43
		Emotional Support before Training	0.36	0.07	.58
		Instrumental Support after Training	-0.30	0.08	-.38
Transfer Climate (N=70)	.55	Instrumental Support after Training	0.21	0.05	.41
		Job Autonomy	0.20	0.06	.27
		Instrumental Support before Training	0.12	0.04	.29
Learning Outcomes (N=65)	.27	Prior Knowledge	-0.30	0.08	-.40
		Motivation to Learn	0.26	0.09	.32
Transfer Outcomes (N=68)	.61	Learning Outcomes	0.50	0.08	.55
		Motivation to Transfer	0.26	0.10	.25
		Appraisal Support before Training	0.12	0.06	.18

With regard to trainees' motivation to transfer, the regression results clearly differ from those in Subsection 5.5.2. The first predictor of motivation to transfer here consists of the personal outcomes-positive that trainees experience, explaining 33% of the variance. Learning outcomes, emotional supervisor support before training and instrumental support after training are the other variables included sequentially, adding 12%, 8% and 8% respectively to the explained variance. Contrary to expectations, however, instrumental supervisor support after training negatively predicts motivation to transfer. Trainee responses thus indicate that when transfer of learning is expected to have positive consequences, when the extent of experienced learning outcomes increases, and when experienced emotional supervisor support before training increases, trainees will be more motivated to transfer. The negative effects of instrumental supervisor support will be discussed briefly below.

Trainee perceptions of a positive transfer climate increase when they perceive more instrumental supervisor support after training, more job autonomy and more instrumental supervisor support before training. In the same order, these explain 41%, 9% and 5% respectively of the variance in trainee perceptions of the transfer climate. Thus, perceived instrumental support from supervisors and perceived autonomy on the job lead to perceptions of a more facilitative transfer climate.

The final stage of the regression analysis of trainee perceptions of learning outcomes shows almost the same results as in Table 5.6. This suggests that the inclusion of the separate kinds of supervisor support before training has no direct impact on trainees' learning outcomes, when checking for trainees' prior knowledge and motivation to learn.

Finally, with regard to transfer outcomes, the extent of perceived appraisal support by the supervisor before training explains an additional 3% of the variance, in addition to trainees' learning outcomes and their motivation to transfer. Consequently, trainee perceptions indicate that appraisal support by the supervisor before training has a direct positive effect on transfer outcomes.

In addition to the above, the stages of the regression analysis of learning outcomes show appraisal support by the supervisor before training to positively predict learning outcomes until the inclusion of trainees' motivation to learn. The significant regression weight of this appraisal support by the supervisor before training on motivation to learn suggests that the positive effect of appraisal support on learning outcomes is mediated by trainees' motivation to learn. A Sobel test, however, indicates that this suggested mediated effect is just non-significant (test value = 1.96, p = .05).

Further examination of the stages of the regression analysis of transfer outcomes indicates that all the different components of supervisor support positively predict transfer outcomes, except for instrumental support, and only until trainees' motivation to transfer is included in the regression equation. After the effects of motivation to transfer are taken into account, only appraisal support by the supervisor before training remains a significant direct predictor of transfer outcomes.

What is noticeable within the stages of the regression on trainees' motivation to transfer is the inclusion of instrumental supervisor support after training, which strongly increases the positive effects of emotional supervisor support before training. While instrumental supervisor support after training itself has a positive but non-significant zero-order correlation with motivation to transfer, its regression weight turns significantly negative with the inclusion of emotional supervisor support before training. Hence instrumental supervisor support after training seems to act as a suppressor variable of emotional supervisor support before training. It increases the positive causality between emotional supervisor support before training and trainees' motivation to transfer, but, as a

consequence, its own positive correlation with motivation to transfer changes into negative causality.

In addition to the influence of the separate components of supervisor support and job autonomy on the general transfer climate, their influence on each of the separate elements of the transfer climate was also examined. Table 5.11 presents the results of these regression analyses of trainee questionnaires. In addition to the possible influence of the different components of supervisor support, separate transfer climate variables have also been included as independent variables whenever applicable. In short, job autonomy has been included in each of the separate analyses. Peer support and the different kinds of supervisor support have been included in all analyses except the one predicting peer support itself, as neither supervisor support nor other transfer climate variables were expected to predict this. Sanctioning of transfer and resistance to change, both reflecting behavioural elements, have also been included as independent variables in the analyses predicting opportunity to use, personal outcomes-positive and personal outcomes-negative. These last three have therefore only been included as dependent variables.

Table 5.11 *Trainee Questionnaires: Significant Regression Weights (p < .05.) of Regression Analyses Predicting Opportunity to Use, Sanctioning of Transfer, Resistance to Change, Personal Outcomes-Positive, Personal Outcomes-Negative and Peer Support by Separate Components Supervisor Support and Transfer Climate*

Dependent Variable	R^2	Independent Variable(s)	B	SE B	β
Opportunity to Use (N=71)	.45	Appraisal Support after Training	0.33	0.10	.35
		Sanctioning of Transfer	-0.35	0.12	-.29
		Job Autonomy	0.34	0.12	.26
Sanctioning of Transfer (N=71)	.29	Instrumental Support before Training	-0.33	0.06	-.54
Resistance to Change (N=71)	.16	Job Autonomy	-0.39	0.11	-.40
Personal Outcomes-Positive (N=71)	.42	Sanctioning of Transfer	-0.29	0.10	-.30
		Job Autonomy	0.35	0.10	.34
		Appraisal Support before Training	0.18	0.06	.29
Personal Outcomes-Negative (N=71)	.13	Peer Support	0.44	0.14	.36
Peer Support (N= -)	-	-	-	-	-

Perceived appraisal support by the supervisor after training is included in the first step of the regression analysis of perceived opportunities to use, explaining 29% of its variance. Perceived sanctioning of transfer and job autonomy are included in the second and third steps, adding 8% and 6% respectively to the explained variance. Whereas these trainee perceptions indicate that appraisal support after training and job autonomy increase perceived opportunities to use learning, the sanctioning of transfer by others, however, leads to fewer of these opportunities.

The more instrumental support trainees experience from supervisors after training, the less they perceive that others sanction transfer. This explains 29% of its variance. Trainee experiences of job autonomy negatively predict the extent of experienced resistance to change, accounting for 16% of the variance. Thus, perceived instrumental supervisor support after training decreases experienced sanctioning of transfer, while job autonomy reduces feelings of general resistance to change at the workplace.

In the first step of the regression analysis on trainee perceptions of personal outcomes-positive, the inclusion of sanctioning of transfer explains 22% of the variance. In the second and third steps, job autonomy and appraisal support by the supervisor before training add 12% and 8% respectively. Consequently, trainees who perceive others to sanction transfer also believe transfer to have less positive personal outcomes, while experienced job autonomy and appraisal support by the supervisor before training lead to increased perceptions of personal outcomes-positive.

Personal outcomes-negative is predicted by the extent of experienced peer support, accounting for 13% of its variance. In other words, trainees who feel that their peers support them also believe that not using new knowledge, skills or attitudes on the job will have more negative consequences. Finally, the table shows that job autonomy is no significant predictor of peer support in this pilot study.

5.5.2.3 Supervisor Questionnaires: Causal Relationships between Specific Elements Transfer Framework

Table 5.12 presents the results of the same regression analyses conducted on supervisor questionnaires, thus also differentiating between the effects of separate components of supervisor support on the general elements in the Transfer Framework.

While the regression analyses of general elements in the supervisor questionnaires indicated no predictor of trainees' motivation to learn (Table 5.7), the current analyses show informational supervisor support before training to increase trainees' perceived motivation to learn. It accounts for 33% of the variance in supervisor perceptions of trainees' motivation to learn. While personality characteristics of trainees were not included here, supervisor

perceptions thus indicate that informational support before training increases trainees' motivation to learn.

Table 5.12 *Supervisor Questionnaires: Significant Regression Weights (p < .05.) of Regression Analyses Predicting Motivation to Learn, Motivation to Transfer, Transfer Climate, Learning Outcomes and Transfer Outcomes by Separate Components Supervisor Support and Transfer Climate*

Dependent Variable	R^2	Independent Variable(s)	B	SE B	β
Motivation to Learn (N=28)	.33	Informational Support before Training	0.46	0.13	.57
Motivation to Transfer (N=26)	.44	Emotional Support after Training	0.48	0.11	.67
Transfer Climate (N=29)	.58	Instrumental Support after Training	0.34	0.08	.55
		Informational Support before Training	0.19	0.06	.39
Learning Outcomes (N=26)	.20	Prior Knowledge	-0.17	0.07	-.45
Transfer Outcomes (N=26)	.73	Learning Outcomes	0.52	0.12	.49
		Motivation to Transfer	0.53	0.11	.60
		Appraisal Support after Training	-0.39	0.11	-.42

Supervisor perceptions of emotional supervisor support after training can be seen to be a positive predictor of trainees' perceived motivation to transfer, explaining 44% of the variance. This specific kind of support thus increases the explained variance in motivation to transfer by 7%, compared to the general supervisor support included in Table 5.7. As such, supervisor perceptions indicate that, specifically, emotional support after training increases trainees' motivation to transfer.

Regarding the general transfer climate, the results in Table 5.12 show instrumental supervisor support after training and informational supervisor support before training to be significant predictors, accounting for 44% and 14% respectively of its variance. While job autonomy was not included in these supervisor questionnaires, these results indicate that informational support before training and instrumental support after training increase perceptions of a climate that is open to and facilitative of transfer.

It should be noted that supervisors were not asked about trainees' age, formal education or job tenure, for which reason these variables were not included in the regression analysis of learning outcomes. In a way similar to the regression analyses of the general elements of the framework (see Table 5.7), supervisor

perceptions of trainees' prior knowledge negatively predict perceived learning outcomes.

Regarding transfer outcomes, regression analyses based on supervisor perceptions now indicate learning outcomes, motivation to transfer and appraisal support by the supervisor after training to be significant direct predictors. These account for sequentially 44%, 15% and 14% of its variance. In contrast to trainee perceptions, perceived appraisal support by the supervisor negatively predicts transfer outcomes, although this specifically concerns appraisal support *after* training. As the zero-order correlation between perceived appraisal support after training and transfer outcomes is negative but non-significant, its main effect on transfer outcomes was seen to relate to the inclusion of trainees' motivation to transfer. These supervisor perceptions thus indicate that trainees who have achieved higher learning outcomes and are more motivated to transfer will achieve higher transfer outcomes. However, they also indicate that the more appraisal support supervisors give after training, the lower transfer outcomes trainees will achieve.

Table 5.13 presents the results of the regression analyses carried out on supervisor questionnaires, reflecting the separate transfer climate variables personal outcomes-positive and personal outcomes-negative. Although peer support was also included in supervisor questionnaires, it has been left out of the table as the only possible predicting variable (job autonomy) was not measured among supervisors. In line with earlier regression analyses, the table presents the final stage of each regression analysis, i.e. the stage after which no further significant predictors were left or included.

Table 5.13 *Supervisor Questionnaires: Significant Regression Weights (p < .05.) of Regression Analyses Predicting Personal Outcomes-Positive and Personal Outcomes-Negative by Separate Components Supervisor Support and Transfer Climate*

Dependent Variable	R^2	Independent Variable(s)	B	SE B	β
Personal Outcomes-Positive (N=29)	.25	Instrumental Support after Training	0.47	0.16	.50
Personal Outcomes-Negative (N=29)	.54	Peer Support	0.65	0.20	.49
		Informational Support before Training	0.35	0.16	.34

The only predictor of supervisor perceptions of personal outcomes-positive is instrumental supervisor support after training, which explains 25% of the variance. Supervisor perceptions thus indicate that trainees who receive more

instrumental support after training will also experience more positive consequences of using new knowledge, skills and attitudes.

Similar to the results of the regression analyses of trainee questionnaires, supervisor perceptions indicate that peer support is a strong positive predictor of personal outcomes-negative. In the second step of the analysis, informational supervisor support before training also increases supervisors' perceptions of personal outcomes-negative. While peer support explains 46% of the variance, informational supervisor support before training adds another 8%.

5.5.2.4 Concluding the Causal Relationships between Specific Elements Transfer Framework

In general, the regression analyses in Subsection 5.5.2 provided indications of several differential effects of the separate components of supervisor support. Neither trainee nor supervisor perceptions, however, indicate that these separate components predict trainees' learning outcomes. Both trainees' and supervisors' perceptions point to the effects of appraisal support by the supervisor on transfer outcomes, but the suggested effects do seem contradictory. In other words, trainee perceptions indicate that appraisal support *before* training *enhances* transfer outcomes, while supervisor perceptions point out that appraisal support by the supervisor *after* training actually leads to *lower* transfer outcomes. One explanation for the negative causality between appraisal support by the supervisor after training and transfer outcomes might be that supervisors who perceive that trainees have difficulty transferring provide these trainees with more appraisal support after training. Alternatively, supervisors might do the same for trainees who have achieved lower learning outcomes, or for trainees who are less motivated to transfer.

With regard to trainees' motivation to learn, trainees again show appraisal support before training to be a positive predictor, while supervisors refer to informational support before training as increasing this motivation. Both seem applicable with regard to trainees' motivation, as expected and perceived appraisal from supervisors of learning and transfer is likely to affect trainees' motivation to learn, whereas relevant information about, for example, the relevance of a training programme is also believed to enhance trainees' motivation. Trainee perceptions indicate trainees' motivation to transfer to increase when more positive outcomes are expected, which is the only separate variable of the transfer climate to be included in these regression analyses. Both trainees' and supervisors' perceptions refer to the positive impact of emotional supervisor support on motivation to transfer, although they differ in its specific timing. Analysis of trainee perceptions also includes instrumental support after training, which in itself was seen not to predict motivation to transfer. This indicates significant interrelatedness between the different kinds of support.

As a last point, regression analyses of trainee and supervisor questionnaires indicate that especially the extent of instrumental support after training leads to

perceptions of a more positive transfer climate. In addition, both instrumental and informational support before training appear as positive predictors, while trainee responses also show job autonomy to improve the perceived transfer climate. These results clearly indicate that supervisors are perceived to improve the transfer climate by providing the right instrumental help to trainees after training.

With regard to the separate variables of the transfer climate, job autonomy is seen to have an important positive influence. Trainee perceptions indicate that job autonomy increases perceived opportunities to use learning and positive personal outcomes, while decreasing experiences of resistance to change at the workplace. Experienced sanctioning of transfer, however, decreases both perceived opportunities to use and perceived personal positive outcomes.

As might be expected, appraisal support before training leads to more perceptions of positive personal outcomes of transfer. In other words, trainees whose supervisors pointed out the positive consequences of the training programme also believe this programme will have more positive consequences. Appraisal support after training enhances perceived opportunities to use learning, which might be explained by trainees extended willingness and efforts to find these opportunities, as a result of the expected positive consequences of transfer.

Finally, both trainee and supervisor responses indicate that support from peers enhances perceptions of negative consequences when not using new knowledge, skills or attitudes on the job. This seems to reflect a kind of social control, with more supportive peers also reacting more negatively when training is not applied on the job. As none of the different kinds of supervisor support is included here, this suggests that peer support has a specific and separate role with regard to the characteristics of the transfer climate.

5.6 Outlook

Concluding this chapter, the pilot test described here served primarily to determine the reliability of the scales that are included in the questionnaires, as well as to gain a preliminary insight into the answers to the sub-questions of the research question. Due to the considerable limitations imposed by the organisational setting, the number of items and scales in the questionnaires had to be reduced significantly. Consequently, not all the different relationships depicted in the Transfer Framework could be examined, thus impeding the validation of the entire framework and its examination. Although initial tests on the main parts of the Transfer Framework could be performed, it is aimed for, of course, to test all the relationships depicted in the framework, by using reliable scales. It was therefore decided to take a second look at the items and

reliability coefficients of the questionnaire scales, before the part of the study consisting of the main data collection. In addition to a focus on the characteristics of the main studies conducted, the next chapter will therefore also present a second review and revision of the instrumentation.

Chapter 6

Instrumentation Review and Case Selection

6.1 Introduction

Chapters 6, 7 and 8 together comprise the main part of the study, containing the procedure and results of the main data collection. The current chapter consists of the selection of the cases and the procedure for this main data collection. Due to the restrictions imposed on the questionnaires in the pilot test, several adjustments had to be made to the scales. As these adjustments affected both the validity and the reliability of these scales in the pilot, it was decided to review and, when necessary, revise them before the main data collection. This review and revision will be described in Section 6.2. After this, Section 6.3 will provide a description of the cases that are included in this main data collection. Section 6.4 presents an overview of the reliability estimates of the scales as used in the final questionnaires, while Section 6.5 finalises this chapter by providing conclusions.

6.2 Alteration of Scales

Due to the limitations in the pilot test, a large part of the original questionnaire scales had to be revised in order to be accepted. The main consequence of this was that a number of scales were shortened significantly, resulting in several scales consisting of three or four items only. The results of the pilot test subsequently indicated that several of the scales did not meet the required minimum internal consistency of .60, whereas some scales were completely omitted from the questionnaires. As the α-coefficient for internal consistency depends on both test length and the average correlation among items (Nunnally, 1967), it was therefore decided to review all the scales again, and, if necessary,

to revise and/or lengthen them before the main data collection. Although this process offered the opportunity to revert to the scales as originally planned (see Section 4.5), initial contacts with organisations in the main data collection indicated that these organisations also preferred short questionnaires. Similar to respondents in the pilot, it was expected that the original scales would also be considered too time-consuming by respondents in other organisations, and for this reason it was decided to limit additions and the subsequent test length. With regard to the research question, it was decided to focus the main study primarily on reliable measurement of supervisor support and the elements which are assumed to be directly related: trainees' learning and transfer outcomes, their motivation to learn and to transfer, and the transfer climate.

The pilot test was designed to obtain as much information as possible from trainees and supervisors about trainees' training participation and training outcomes. As supervisors often managed two or more trainees, these supervisors were asked to fill in questionnaires about a maximum of two trainees. In order to keep the total time investment for supervisors limited, some scales in the pilot were subsequently removed from the supervisor questionnaire. It was thus decided to collect as many supervisor questionnaires as possible, thereby possibly impeding the measurement of the entire Transfer Framework as intended. However, the response to the pilot indicated that few supervisors actually returned two questionnaires, the reason for which seemed to be that most supervisors did not feel like completing the same questionnaire twice. It was therefore decided to change the design of the data collection from supervisors, and focus on collecting supervisor data that represented the Transfer Framework as much as possible. Consequently, in the third part of the study, supervisors were asked to complete a questionnaire about one trainee only.

Subsections 6.2.1 to 6.2.8 briefly describe the alterations made to the scales after the pilot, distinguishing them by the general element they are part of. Elements and scales that have not been changed will not be described again. The numbers of items and the final reliability estimates of the scales in the main study can be seen in the respective tables in Section 6.4.

6.2.1 Personality Characteristics

The results of the pilot indicated that the scales reflecting trainees' self-efficacy and conscientiousness did not meet the lower α-boundary of .60. Both these scales were therefore restored to their original composition, thus consisting of six and seven items respectively. The subscale reflecting locus of control (internal control) was found to be sufficiently consistent, but the subscales for locus of control (chance) and locus of control (powerful others) were not. As the complete scale was translated from an instrument as suggested by Sapp and

Harrod (1993), it was decided to review the translations. Some small adjustments were subsequently made to their formulation, which, it was believed, would improve the clarity and coherence of the items. The complete nine-item scale for locus of control was again included in trainee questionnaires.

Although the scale measuring trainees' anxiety was shown just to meet the required internal consistency of .60 in the pilot, it was expected that extension of the scale would improve its internal consistency. It was therefore decided to re-include one of the original items, for which reason the final scale measuring trainees' anxiety included in trainee questionnaires consists of six items.

6.2.2 Learner Readiness

The trainee and supervisor scales reflecting learner readiness originally consisted of six items, two of which were removed from the questionnaires before the pilot. As the remaining four-item scale for trainees was seen not to be sufficiently consistent, one of the original items was added to both the trainee and the supervisor questionnaire. In addition, three items were formulated slightly differently, thus leading to a five-item scale that was included in trainee and supervisor questionnaires.

6.2.3 Job Attitudes (Job Involvement)

The theoretical review in Chapter 2 indicates that trainees' job attitudes are believed to relate to training effectiveness, specifically by means of affecting trainees' motivation to learn and transfer. The only scale reflecting job attitudes in this study concerned trainees' job involvement, which was included in the trainee questionnaires. Although the scale was seen to be internally consistent after the removal of two items in the pilot, the results of the analyses indicated that trainees' job involvement was not predictive of either trainees' motivation to learn or their motivation to transfer. To compare these results with similar research, several different studies were reviewed. Mathieu et al. (1992) also indicate that job involvement does not predict training motivation within their study, while Cheng similarly notes that job involvement does not predict trainees' motivation to learn. The meta-analysis conducted by Colquitt et al. (2000) shows no significant effect of trainees' job involvement on their motivation to learn, nor on their training outcomes. Some studies do indicate positive correlations between job involvement and motivational elements (e.g. Kontoghiorghes, 2001a; Naquin & Holton, 2002), but they do not lead to evidence of actual positive causality. In summary, the research results as yet provide no clear evidence for the assumption of job involvement predicting trainee motivation, making this causality seem disputable. One explanation might be found in the influence of other related attitudinal factors, such as

trainees' work commitment (e.g. Naquin & Holton, 2002), but research on these is still limited. Regarding the results of the pilot and other studies, however, this advanced understanding thus also makes the inclusion of job involvement in the Transfer Framework debatable. With regard to the length of the questionnaires, it was therefore decided not to include trainees' job involvement in the questionnaires for the main data collection. As a consequence, no trainee attitudes were measured in the main part of the study.

6.2.4 Intervention Fulfilment

To measure the extent of trainees' experience of intervention fulfilment, analogous scales were included in trainee and supervisor questionnaires. The original scales consisted of five items each, one of which was removed in order to shorten the scales in the pilot test. The reliability analyses in the pilot indicated that the further removal of one item led to internally consistent scales, resulting in three-item scales for both trainees and supervisors. Regarding the small scale size, however, it was decided also to include the first original item again for the main data collection, resulting in two four-item scales for intervention fulfilment.

6.2.5 Learning and Transfer Outcomes

Because the learning and transfer outcomes depend on specific training objectives and therefore differ between training programmes, new scales had to be developed for each of the separate training programmes. These processes and the resulting scales will be discussed briefly in the subsections describing the cases: Subsections 6.3.1.1, 6.3.1.2 and 6.3.1.3.

6.2.6 Transfer Climate

With regard to the transfer climate, changes were made to the scales reflecting opportunity to use, sanctioning of transfer, resistance to change and personal outcomes-negative.
Due to the inadequate internal consistency of both scales measuring trainees' opportunities to use learning in the pilot, one of their four items was removed. As the supervisor scale was still seen not to meet the α-criterion of .60, one of the original six items was added to the scales for the main data collection. Both scales measuring opportunity to use therefore consisted of four items again.
Both the scales measuring sanctioning of transfer and resistance to change were reduced to four items in the pilot, but showed acceptable estimates of reliability. While, during the pilot, these were not included in supervisor questionnaires in consideration of their total time investment, the decision to ask supervisors in the main study about one trainee only implied the possibility to include these

scales again. Analogous scales measuring sanctioning of transfer and resistance to change were therefore included in trainee and supervisor questionnaires in the main part of the study.

Finally, the last part of the questionnaires reflecting the transfer climate to be changed after the pilot concerns the scales measuring personal outcomes-negative. This scale was reduced to only one item in both trainee and supervisor questionnaires in the pilot, but was restored to the three originally formulated items in the remaining part of the study.

6.2.7 General Work Environment

In relation to transfer outcomes, the general work environment was claimed to consist of trainees' job autonomy and their workload. The imperative to shorten the questionnaires, as well as the great similarity between the items in the two scales, led to the decision to remove the scale that measured workload from the questionnaires in the pilot. Regarding the objective to keep the questionnaires as short as possible, and as thus no pilot test had been conducted on the scale for workload, it was decided not to include workload in the questionnaires for the main data collection either.

The original scale measuring trainees' job autonomy consisted of six items, two of which were left out of questionnaires in the pilot test. While the remaining four-item scale was only included in trainee questionnaires, it was shown to be moderately internally consistent. For the questionnaires in the main part of the study, one of the original items was added, however, while an analogous five-item scale for supervisors was included in their respective questionnaires.

6.2.8 Transfer Design

With regard to the transfer design of the training programmes, eight multiple choice items were developed for trainee questionnaires initially. Due to the imperative to shorten these questionnaires in the pilot, four of these items were omitted. This implied that the experienced identical elements, overlearning, relapse prevention, and goal setting were all measured by only one item each. Although they could therefore not be assessed on their separate internal consistency, it was expected that the transfer design interpreted as one single scale would also show internal consistency. The pilot results, however, indicated that its α-coefficient did not meet .60, for which reason the separate items measuring its characteristics were reviewed. The item for overlearning was subsequently reformulated, while an additional item for the extent of experienced identical elements was included. The overall scale reflecting the transfer design of training thus consisted of five items.

6.3 Description of Data Gathering and Sample

The main data collection was planned to take place between August and December 2003. In order to provide for a large selection of trainees and their supervisors in the study, as well as to optimise the generalisability of the results of the study, it was decided to select samples from different organisational settings and training programmes. Two general strategies were followed to select these different samples. The first of these - initial contacts with an external training organisation - led to the objective to approach trainees who had taken part in one of this organisation's training programmes on social skills, and ask them and their supervisors to cooperate. The training organisation provided the names and addresses of 75 trainees from different external organisations nationwide who had participated in training between June 2002 and July 2003. All these trainees were approached by means of an e-mail or letter in October 2003, depending on the availability of an e-mail address, and asked to cooperate in the study. Only two of them responded positively, however, which seemed attributable to a lack of commitment to the study on the part of the respondents. It was therefore decided to cancel the study on this training programme, and concentrate on the second strategy for the main data collection.

As a second strategy, it was decided to contact medium-sized and large organisations containing an internal training department, with a request for cooperation in the study. The objective of including these organisations was to focus on internal trainees and supervisors, and thus have organisational bodies, such as the training department, emphasise the importance of the study. Considering the difficulties with regard to the responsibility for some questionnaire items in the pilot test (see Subsection 5.3.1), it was, however, decided not to introduce training departments as designers or initiators of the study. The objective was therefore to introduce the study as external scientific research, with great organisational importance emphasised by relevant internal organisational bodies.

From May to July 2003, about 25 organisations were approached by telephone or e-mail and a request for organisations willing to cooperate was made on the Dutch internet site of Investors In People (IIP). This resulted in preliminary talks with seven organisations about the possibility of examining the outcomes of one or more of their training programmes. Similar to the selection procedure for organisations and training programmes in the pilot test, three criteria were taken into account during these talks. First, to ensure that trainees had had the opportunity to transfer new knowledge, skills and attitudes to their jobs, it was determined that a period of at least two months had to separate the finalisation of training and the subsequent completion of the questionnaires. Second, to ensure that trainees were able to remember the periods before, during and after training, it was decided not to include training programmes that had run more

than two years before the study. Finally, to ensure reliable analyses, it was taken as a rule of thumb only to include training programmes in which at least 50 trainees had participated.

To be able to combine the final data for analysis, it was considered necessary to focus on comparable organisations and training programmes. The talks made it clear that three of the seven organisations could provide training programmes that matched the above criteria, with these training programmes all referring to the development of comparable social and/or managerial skills. These three organisations were all in the service industry - at least partly - and were also willing to cooperate. The main data collection was therefore carried out in these three organisations.

6.3.1 Description of Cases

The organisations and their respective training programmes are described as cases, discussed separately in Subsections 6.3.1.1, 6.3.1.2 and 6.3.1.3. Each of these subsections also provides insight into the procedures of data collection as well as in the response rates from trainees and supervisors.

6.3.1.1 Case 1

The first case was carried out in cooperation with the training department of the Dutch division of a foreign multinational electronics manufacturer. Both the foreign parent company and the Dutch subdivision are active in a broad area of electrical engineering and electronics, delivering products and services in domains such as Information & Communication Technology, Lighting, Transportation, Medical Systems, and Power/energy (supply). The Dutch division consists of about 3,600 employees, spread over seven locations.

The training department provides training programmes for both external clients and the organisation's own employees, the latter in consultation with other organisational divisions. Its training programmes range from specific technically-oriented training modules to personal skills training, and are delivered in several different formats, such as classical and web-based training. In consultation with the training department, it was decided to focus this study on a personal/social skills training programme for employees, referred to as 'Professional Presentation and Communication' (PPC). This training programme was carried out between June 2002 and July 2003, thereby providing a sample of trainees who had been working for at least four months since finishing their training. Although it was intended to approach at least 50 trainees, the final selection by the training department, however, revealed 42 trainees and 32 supervisors to be suitable for the study.

The PPC training consisted of three consecutive training days at an external location. It was oriented towards employees at all levels who were in regular contact with people from external organisations, and was especially

recommended for those who provided external presentations. Its main objectives were to have trainees learn how to prepare and put together lectures and presentations, to have them learn how to use audiovisual aids during lectures and presentations, and to be more self-assured during lectures and presentations. The content of the training programme concerned methods and processes for preparing and giving presentations, verbal and non-verbal communication, acquiring a feeling for and responding to audiences, and practical exercises to enhance self-confidence. In addition, it comprised specific company guidelines for the design of presentations. Several specific training objectives were identified, based on an analysis of the training materials provided by the training department. These objectives mostly corresponded to Bloom's (1956) levels of knowledge, comprehension and application in the cognitive domain of learning. The training objectives subsequently led to the construction of a ten-item questionnaire scale measuring learning outcomes, and an eight-item scale for transfer outcomes. An example of a trainee item measuring learning outcomes is "Since I completed this training programme, I know much more about how to prepare for presentations in a professional way". One example of a supervisor item measuring transfer outcomes is "Since this trainee completed this training programme, he has made better use of audiovisual aids during presentations". Both scales were similarly included in trainee and supervisor questionnaires.

The final data collection took place in November 2003. One week before the start of data collection, the training department sent all trainees and supervisors an e-mail, emphasising the organisational importance of the study. As requested by the training department, all data were subsequently collected by means of internet questionnaires. These were developed and delivered through the internet site www.surveymonkey.com. Each of the 42 trainees and 32 supervisors received an automatically generated e-mail, including a description of research objectives and - once again - the importance of cooperation, as well as a personal URL link to the internet questionnaire. In addition, respondents were assured of the privacy of personal information and of the fact that no data would be used for purposes other than the research mentioned in the e-mail. The questionnaire consisted of nine pages, which could be operated by means of mouse or keyboard. Respondents had the possibility of changing answers and of completing the questionnaire in different sessions, as long as it was completed before the close of the study. One week after the initial e-mail, the researcher sent non-respondents another e-mail, including their personal link to the questionnaire, reminding them of the study. A second e-mail reminder was sent on the last day of the research study, informing respondents of this final opportunity to complete the questionnaire.

Website results revealed that 33 trainees and 22 supervisors had opened their relevant questionnaire, 28 and 15 respectively of whom had also completed it. The response percentages of these last numbers can be found in Table 6.1 in

Subsection 6.3.2. Ultimately, eleven matching couples of trainee and supervisor questionnaires could be retrieved. Trainees' mean age was 32.91 years (SD = 6.49 years, N = 33), while 28 of the 33 were male respondents. Their average job tenure was 2.52 years (SD = 0.99 years, N = 23), and 69% had received higher vocational education or university as their highest formal education. Supervisors' mean age was 42.60 years (SD = 9.65 years, N = 20), while their average job tenure as supervisor was 6.35 years (SD = 7.02 years, N = 20). Eighteen of the 20 responding supervisors were men.

No specific study of non-response could be conducted, but e-mail replies indicated that four respondents were out of the office during the study. One supervisor would not cooperate because of time restrictions, while another indicated that he no longer managed the trainee concerned. Three e-mail addresses were found to be incorrect. These responses provide an indication that the main reasons not to cooperate were not related to the study itself.

6.3.1.2 Case 2
The second case was conducted within the Dutch branch of an internationally operating ICT service-provider, in cooperation with the human resource department of its sales & client management division. The organisation's main activities consist of advising, designing, delivering and maintaining innovative ICT solutions for a broad range of companies in over 50 countries. Of the 50,000 employees worldwide, about 9,000 are employed at different locations in the Netherlands, where the organisation is the market leader in its field.

In consultation with the human resource department, it was decided to focus on the 'Sales & Client Management 2003' development programme (hereafter referred to as SCM), which had been carried out between April and September 2003. This development programme fits into a larger organisational programme aimed at shifting the general focus on financial results only towards a focus on results, necessary actions, as well as the competences required to perform these actions. The SCM development programme consisted of three subtraining programmes:
- a one-day external sales programme to learn about - and practise - conversational techniques;
- an external training programme on two consecutive days to learn about - and practise - interpersonal sensitivity and flexibility skills; and
- a training programme on two consecutive days to learn about - and practise - negotiation skills.

All the selected trainees had taken part in at least one of these, but most had followed two or all three of them. Information about these subprogrammes provided by the human resource department led to the identification of several different training objectives, from which a thirteen-item scale measuring learning outcomes was developed. Similarly, a thirteen-item scale for transfer outcomes was developed, both of which were included in trainee and supervisor

questionnaires. These training objectives mainly referred to the levels of comprehension and application in the domain of cognitive learning goals, in terms of Bloom's taxonomy (1956). An example of an item measuring learning outcomes in the supervisor questionnaire is "Since this trainee completed this training programme, he is much better able to prepare for negotiations". One example of an item measuring transfer outcomes in the trainee questionnaire is "Since I completed this training programme, I have made better use of the different conversational positions during negotiations". It should be noted that the number of questions about training outcomes that respondents were expected to answer depended on the subprogrammes the trainee had taken part in. Each of the supervisors involved in the study managed two or more trainees, for which reason the researcher randomly selected one trainee per supervisor before the data collection.

Due to specific end-of-year activities within the organisation, the final data collection had to be postponed to January 2004. In December 2003, the human resource department sent all trainees and supervisors involved an introductory e-mail containing information about the study, and about the organisational importance of their cooperation in it. The final data collection took place by means of internet questionnaires, as requested by the organisation. The procedure for this was similar to the one described for case 1 in Subsection 6.3.1.1, also using www.surveymonkey.com for the placing of the questionnaires and for collecting the data. All 71 selected trainees and 13 supervisors thus received an automatically generated e-mail, containing a personal link to the questionnaire, as well as information about research purposes, design (time to complete questionnaire), privacy assurance and contact possibilities. One week after the first e-mail, non-respondents were sent a reminder e-mail, again comprising the personal link to the questionnaire, and on the last day, the remaining non-respondents were sent a final e-mail reminder, indicating this last opportunity to fill in the questionnaire.

Ratings indicated that 58 trainees and eight supervisors had opened the questionnaire. Fifty-three trainees and seven supervisors filled in all or almost all of the questions, which can also be seen in Table 6.1. However, only five matching pairs of trainee and supervisor questionnaires remained. The trainees' mean age was 43.55 years (SD = 6.41, N = 56), while over 89% of them had received either higher vocational education or university as formal education. The trainees' average job tenure was 5.73 years (SD = 4.32, N = 52), and only one of the 57 respondents was female. The supervisors' mean age was 52.13 years (SD = 4.70, N = 8), with a mean job tenure of 2.00 years (SD = 1.77, N = 8). All responding supervisors were male.

Although no specific non-response study was carried out, responses to the researcher and the human resource department indicated that the main reason for not cooperating consisted of time restrictions.

6.3.1.3 Case 3

The third and final case was carried out within an international manufacturer of copiers and faxes, which originated in the Netherlands. Its range of products comprises software, copying and printing systems, and accompanying materials. In addition, the company also offers services in the area of consultancy, outsourcing and finance. At the time of the study, the organisation employed about 21,000 people in over 80 countries, about 4,000 of whom worked in one of two Dutch locations.

The organisation's education & development support department offers training programmes for both external clients and internal employees, and the complete range of programmes contains much technical training, as well as, for example, communicative training programmes and programmes aimed at improving social skills. In cooperation with the education & development support department, it was decided to focus the study on two different training programmes for internal employees; *Working Together in Groups (WTG)* and *Software Process Improvement (SPI)*. These will be described separately below. The final data collection for both training programmes took place in November 2003 by means of written questionnaires, at the request of the organisation. Questionnaires were sent out by internal mail, and could be returned by external mail (stamped envelopes). One and a half week after sending the questionnaires, an e-mail reminder was sent to those whose questionnaires had not yet been returned, and a last e-mail reminder was sent on the final day of the study - two and a half weeks after the start of the data collection.

Training WTG

The WTG training programme was conducted between February 2002 and September 2003 at an external location, and consisted of a training course on six consecutive days. It aimed at improving the personal effectiveness of employees in working with others, and optimising their cooperative relationships with others. By making employees aware of several external influences on teamwork and other cooperative processes, and by informing them how to exercise initiative and responsibility, it was assumed that these employees would become better able to communicate and cooperate effectively. This training programme was specifically developed for the organisation's own employees, 94 of whom were considered suitable for the study. In addition, 18 of these trainees' supervisors were selected. Based on training materials provided by the education department, several training objectives were identified. Similar to the other cases, these objectives referred to cognitive learning goals, making reference to different levels of comprehension and application (Bloom, 1956). They subsequently led to the formulation of seven items for the measurement of the learning outcomes of the training programme, and seven items for the measurement of its transfer outcomes. Both scales were included in the trainee and supervisor questionnaires. An example of a trainee

item measuring learning outcomes is "Since I completed this training programme, I have become much more aware of the way in which I can exercise initiative and responsibility". One example of a trainee item measuring transfer outcomes is "Since I completed this training programme, I have become better at communicating and cooperating".

The final WTG response consisted of 59 trainee questionnaires, and nine from their supervisors. Six of these concerned matching questionnaires. The WTG trainees' mean age was 30.47 years (SD = 3.85, N = 57), while 52 of the 59 were male respondents. All but one had received either higher vocational education or university as formal education, and their mean job tenure was 4.67 years (SD = 2.17, N= 57). The WTG supervisors' mean age was 49.33 years (SD = 5.79, N = 9), while the mean job tenure of these all-male supervisors was 10.22 years (SD = 8.63, N = 9).

Training SPI

The SPI training programme consisted of several different training modules, directed at acquiring an awareness and understanding of the developmental process and the lifecycle of software. The modules included a workshop on the lifecycle of software and one on project management, and included lectures and practical assignments. These modules were offered at internal locations between September 2002 and August 2003, providing suitable samples of 74 trainees and two supervisors. The small number of supervisors is due to the fact that most supervisors managed two or more trainees from both training programmes, whereas each supervisor was asked to fill in only one questionnaire. Although the primary focus of the training programme was on mere procedural aspects of the software process, the inclusion of modules on project management and planning and tracking procedures in teams led to the assumption that the programme could be combined with the other cases in this part of the study. Written training materials, together with advice from the education department, resulted in the specification of several training objectives, which were adapted into an eight-item scale for learning outcomes, and an eight-item scale for transfer outcomes. These objectives all referred to cognitive learning objectives, specifically pointing to the levels of comprehension and application and, to a lesser extent, analysis (Bloom, 1956). Slightly differing in their formulation of the items, both scales were included in trainee and supervisor questionnaires. An example of a trainee item from the learning scale is "Since I completed this training programme, I have become much better at recognising and describing elements of the software lifecycle". One example of a supervisor item measuring trainees' transfer outcomes is "Since this trainee completed this training programme, he has applied the requirement process in his own project/software team much better".

During the process of data collection, it became clear that about 12 trainees had only recently finished the SPI training programme. To ensure that these trainees

had the opportunity to transfer their new knowledge, skills and attitudes to the job, they were asked to return their questionnaire in the first week of 2004.

Of the 74 SPI trainees, 39 returned their questionnaire, while only one of the two SPI supervisors did so. No matching trainee-supervisor couple remained, unfortunately, while the corresponding response rates can be seen in Table 6.1. The SPI trainees' mean age was 32.21 years (SD = 6.60, N = 39) - all of them men. Their mean job tenure was 4.26 years (SD = 4.26, N = 38), and 38 of the 39 had received higher vocational education or university as formal education. As only one supervisor responded, no descriptive supervisor data were determined for the SPI training programme.

6.3.2 Overall Response

In general, questionnaires were sent to 281 trainees and 65 supervisors. Trainees returned 179 questionnaires, representing a response rate of 64%, while 32 (49%) supervisor questionnaires were received. In Table 6.1, a schematic overview of the response rates of all the studies is presented.

Table 6.1 *Numbers and Percentages of Questionnaires Sent to and Received from Trainees (T) and Supervisors (S)*

Case and Training Programme		Sent	Received	%
Case 1 Training PPC	T	42	28	67
	S	32	15	47
Case 2 Training SCM	T	71	53	75
	S	13	7	54
Case 3 Training WTG	T	94	59	63
	S	18	9	50
Case 3 Training SPI	T	74	39	53
	S	2	1	50
All	T	281	179	64
	S	65	32	49

The response rates depicted in Table 6.1 indicate the rate of case 3 for trainees to be somewhat lower than those of the other two cases. No specific non-response study was conducted in any of the cases, but reactions of trainees and supervisors in case 3 indicated that the main reasons for some not cooperating were time restrictions and the large number of surveys that they had cooperated in before. Joint reflection on both groups of respondents and non-respondents with the education department in case 3, however, revealed no clear differences between the two. It was therefore concluded that the final sample provided a

valid representation of the population of trainees. One possible explanation for the differences in response rates might be that the use of internet questionnaires in cases 1 and 2 had a slight positive effect on the respondents' response.

Regarding this use of internet questionnaires, it should also be noted that the response rates of cases 1 and 2 represent respondents who answered all or almost all of the questions in the questionnaire. The reliability estimates described in Subsection 6.4.1 are based on all the respondents who answered all the questions in a respective scale, for which reason these reliability estimates might occasionally be based on larger samples of respondents than described above.

6.4 Determination of Reliability Estimates Main Data

The current section provides an overview of the reliability estimates of the scales, as based on the main data. In order to determine whether these scales provided reliable measurements of the latent variables intended to be measured, Cronbach's (1951) coefficient alpha (α) was again computed for each scale. For evaluation of the α-coefficients, the following criteria were taken as a point of reference (Crocker & Algina, 1986):

* Good internal consistency $\alpha \geq .80$
* Reasonable internal consistency $.70 \leq \alpha \leq .79$
* Moderate internal consistency $.60 \leq \alpha \leq .69$

Analogous to the determination of internal consistency in the pilot, a scale is only considered to provide a sufficiently reliable measurement if its α-coefficient is equal to or exceeds .60. Scales that do not meet this criterion were therefore not included in further analyses.

6.4.1 Reliability Estimates of the Main Data

The α-coefficients of the different variables are presented in the tables below, again following the Transfer Framework (see Figure 4.2) in top-down order. Table 6.2 will thus start with an overview of the reliability estimates of the general elements of the Transfer Framework, also including the separate personality characteristics. Because different scales for learning and transfer outcomes were developed within each of the separate cases, separate reliability estimates for these will be presented in Table 6.3. The reliability estimate of the general supervisor support is part of Table 6.2, while those of the separate components of supervisor support are presented in Table 6.4. And, finally, the reliability estimates of the separate components of the transfer climate will be shown in Table 6.5.

Table 6.2 *General Elements of the Transfer Framework: Trainee (T) and Supervisor (S) Scales, Number of items (#), α-coefficients of Scales, and α-coefficients of Scales after Revision*

		Questionnaire		Revised	
		#	α	#	α
Self-efficacy	T	6	.72		
Anxiety	T	6	.61		
Conscientiousness	T	7	.70		
Locus of Control: Internal	T	3	.58	-	-
Locus of Control: Chance	T	3	.31	-	-
Locus of Control: Powerful Others	T	3	.45	-	-
Learner Readiness	T	5	.48	-	-
	S	5	.42	-	-
Intervention Fulfilment	T	4	.59	3	.63
	S	4	.52	3	.60
Motivation to Learn	T	5	.81		
	S	5	.83		
Motivation to Transfer	T	4	.82		
	S	4	.61		
General Supervisor Support	T	42	.96		
	S	42	.97		
Transfer Climate	T	23	.87		
	S	23	.79		
General Work Environment (Job Autonomy)	T	5	.61	4	.64
	S	5	.59	4	.72
Prior Knowledge	T	2	.41	-	-
	S	2	.57	-	-
Transfer Design	T	5	.70		

N Trainees ≥ 168, except General Supervisor Support, for which N Trainees = 80
N Supervisors ≥ 32, except General Supervisor Support, for which N Supervisors = 7

The results in Table 6.2 show that most of the scales meet the required internal consistency of .60. Somewhat comparable to the results of the pilot, however, none of the three subscales measuring locus of control reaches the .60 boundary. As these scales are translated replications of the largely reliable and valid scales proposed by Sapp and Harrod (1993), and the subscales are relatively small, the removal of items would be difficult. An alternative

explanation for the lack of internal consistency might be that the items in fact reflect different dimensions of locus of control in this sample, which will be examined separately in Subsection 6.4.2.

The four items reflecting intervention fulfilment can be seen to be inconsistent in both trainee and supervisor questionnaires, yet removal of the same item in both scales has their internal consistency exceed .60. The remaining three-item scale was therefore used in the analyses. Neither trainee nor supervisor scales that were intended to measure learner readiness and prior knowledge actually meet the required level of internal consistency. As removal of items does not lead to their achieving this level, these were not included in the further analyses.

Table 6.3 presents the α-coefficients of the scales for learning and transfer outcomes in the different training programmes.

Table 6.3 *Learning and Transfer Outcomes: Trainee (T) and Supervisor (S) Scales, Number of items (#), α-coefficients of Scales, and α-coefficients of Scales after Revision*

| | | Questionnaire | | Revised | |
		#	α	#	α
Learning Outcomes PPC	T	10	.70		
	S	10	.92		
Learning Outcomes SCM	T	13	.90		
	S	12*	.89		
Learning Outcomes WTG	T	7	.78		
	S	7	.58		
Learning Outcomes SPI	T	8	.82		
	S	8	-		
Transfer Outcomes PPC	T	8	.64		
	S	8	.82		
Transfer Outcomes SCM	T	13	.80		
	S	13	.87		
Transfer Outcomes WTG	T	7	.92		
	S	7	.81		
Transfer Outcomes SPI	T	8	.84		
	S	8	-		

* One item with zero variance was removed from reliability analysis
N Trainees/Supervisors Training PPC ≥ 26/13
N Trainees/Supervisors Training SPI = 29/1
N Trainees/Supervisors Training WTG = 58/9
N Trainees/Supervisors Training SCM = 21/6

Table 6.3 shows the different scales measuring learning and transfer outcomes to be internally consistent, as required, except for the supervisor scale measuring trainees' learning outcomes from the WTG training programme. Although this scale did not meet the required minimum, it reflected all the learning objectives of the programme, and thus also matched exactly the analogous scale for trainees. It was therefore decided to retain this scale in this composition, and include it as such in the analyses.
Only one supervisor questionnaire was returned with regard to the SPI programme, for which reason no reliability estimate could be determined.

Table 6.4 presents the reliability estimates of the separate components of supervisor support.
The results in this table indicate that all scales measuring separate components of supervisor support among trainees exceed the minimally required α-coefficient of .60. Remarkably, however, as these are the same scales as used earlier in the pilot, seven of the separate scales for supervisors do not meet this criterion. The supervisor scale measuring appraisal support during training actually shows a large negative α-coefficient. This lack of internal consistency is likely to be caused by the small sample size, in which case sampling error can even produce a negative average covariance between items (e.g. Nichols, 1999). A review of the α-coefficients for these scales reveals that removal of items does not increase them to acceptable levels of internal consistency, next to the fact that the connection between trainee and supervisor scales would imply the removal of the same items in trainee questionnaires. No items were removed therefore, and these separate supervisor scales were left out of further analyses.

Finally, Table 6.5 shows the α-coefficients of the separate variables within the transfer climate, as well as the α-coefficient for the scale measuring trainees' extent of preferred support. The table shows all the scales from trainee questionnaires to be internally consistent, although three of the supervisor scales do not meet the lower α-boundary of .60. Further inspection of their reliability analyses indicates that it is not possible to increase their internal consistency by removing the same items from trainee and supervisor scales. For this reason, the supervisor scales measuring trainees' opportunity to use, the sanctioning of transfer and the extent of personal outcomes-negative were not included in further analyses.

Table 6.4 *Separate Components of Supervisor Support: Trainee (T) and Supervisor (S) Scales, Number of items (#), α-coefficients of Scales, and α-coefficients of Scales after Revision*

| | | Questionnaire | | Revised | |
		#	α	#	α
Instrumental Support before	T	4	.69		
Training	S	4	.65		
Informational Support before	T	3	.70		
Training	S	3	.19	-	-
Appraisal Support before	T	5	.70		
Training	S	5	.35	-	-
Emotional Support before	T	3	.67		
Training	S	3	.51	-	-
Instrumental Support during	T	3	.79		
Training	S	3	.77		
Informational Support during	T	3	.80		
Training	S	3	.79		
Appraisal Support during	T	3	.68		
Training	S	3	-.71	-	-
Emotional Support during	T	3	.79		
Training	S	3	.92		
Instrumental Support after	T	4	.82		
Training	S	4	.58	-	-
Informational Support after	T	3	.84		
Training	S	3	.76		
Appraisal Support after	T	5	.77		
Training	S	5	.57	-	-
Emotional Support after	T	3	.80		
Training	S	3	.24	-	-

N Trainees ≥ 171, except for Support during Training, for which N Trainees ≥ 90
N Supervisors ≥ 31, except for Support during Training, for which N Supervisors = 8

Table 6.5 *Separate Variables of the Transfer Climate: Trainee (T) and Supervisor (S) Scales, Number of items (#), α-coefficients of Scales, and α-coefficients of Scales after Revision*

| | | Questionnaire | | Revised | |
		#	α	#	α
Opportunity to Use	T	4	.64		
	S	4	.38	-	-
Sanctioning of Transfer	T	4	.65		
	S	4	.15	-	-
Resistance to Change	T	4	.68		
	S	4	.77		
Personal Outcomes-Positive	T	4	.73		
	S	4	.72		
Personal Outcomes-Negative	T	3	.60		
	S	3	.47	-	-
Peer Support	T	4	.78		
	S	4	.79		
Preferred Support	T	2	.69		

N Trainees ≥ 170
N Supervisors ≥ 31

6.4.2 Redividing Locus of Control

To determine trainees' Locus of Control, Sapp and Harrod's (1993) proposed brief version of Levenson's locus of control scale was included in trainee questionnaires. This nine-item scale consists of three subscales, believed to measure locus of control in terms of the dimension of internal control (IC), chance (C) and powerful others (PO). The reliability analyses conducted on these separate subscales, however, indicated that none of them meets the required α-coefficient of .60. Considering the similar low α-coefficients of these scales in the pilot as well, this raises the question of whether the translated items actually do reflect these suggested dimensions in the current sample. To test for a possible different interpretable substructure of locus of control, a Principal Components (PCA) factor analysis was conducted on the item responses from the main data. Selecting factors with an eigenvalue larger than one, a two-factor solution appears. As these two factors are believed to be interrelated, an oblique rotation was applied. The results of this analysis are presented in Table 6.6.

Table 6.6 *Two-factor structure after oblique rotation on Trainee responses on Locus of Control*

Item	Factor 1	Factor 2
In general..		
…I can determine what will happen in my life (IC: Determine)	**-.73**	
…I determine my life by my own actions (IC: Own Actions)	**-.69**	
…I feel that what happens in my life is mostly determined by powerful people (P: Powerful People)	**.62**	
…my life is determined by important others (P: Powerful Others)	**.58**	
…I need some luck to get what I want (C: Lucky)	**.53**	.17
…the course of my life coincides to a great extent with accidental happenings (C: Accidental Happenings)	**.38**	
…people like myself have little chance of protecting personal interests where these conflict with the interests of groups (P: Pressure Groups)		**-.79**
…I am able to protect my personal interests (IC: Protect)		**.78**
…there's often no chance of protecting my personal interests against unfavourable happenings (C: Bad Happenings)	.13	**-.69**
Eigenvalue factor 1: 2.78 (31% explained variance; before rotation)		
Eigenvalue factor 2: 1.22 (14% explained variance; before rotation)		

Original subscales: IC = Internal Control / C = Chance / P = Powerful Others
Including original item descriptions

It should be noted that the items as given in Table 6.6 differ to some extent from those suggested by Sapp and Harrod (1993). The reason for this is that the original items were translated into Dutch, during which some small adjustments were also made. The items in the table reflect the English translations of these Dutch items.

Factor loadings below .10 were omitted from the table. The results indicate a clear two-component structure, while the components consist of six and three

items. The positive and negative loadings indicate a distinction between internal and external locus of control, in which factor 1 reflects external locus of control. In addition to this distinction, the content of the items shows factor 1 in a way to refer to the active regulation and changing of the course of one's own life, while factor 2 seems to refer to more defensive protection and maintenance of personal interests. These factors can therefore be described as *others actively determining one's course of life* (1) and *personal ability to protect one's own interests* (2). Table 6.7 presents the results of the reliability analyses that were subsequently conducted on these scales.

Table 6.7 *Locus of Control: Trainee Subscales, Number of items (#), α-coefficients of Scales*

	Questionnaire*	
	#	α
Factor 1: External Locus of Control: others actively determining one's course of life	6	.61
Factor 2: Internal Locus of Control: personal ability to protect one's own interests	3	.64

*N Trainees = 170

Both reliability estimates exceed the minimum required α-coefficient of .60, and are thus considered acceptable. These subscales were therefore used in further analyses on the effects of trainees' locus of control.

6.5 Conclusions

Summarising this chapter, several modifications had to be made to the scales after the pilot test, which led to slightly adapted questionnaires for trainees and supervisors. Subsequently, talks with several organisations resulted in the distribution of the questionnaires in three organisations, surveying the processes and outcomes of four different training programmes. A final sample of 189 trainees and 40 supervisors resulted, 22 of whom actually matched. The final analyses of internal consistency revealed that not all the elements of the Transfer Framework were measured reliably. As a result, learner readiness and prior knowledge were excluded from further analyses overall. For the same reason, the supervisor scales measuring appraisal support before, during and after training, emotional support before and after training, instrumental support after training, opportunity to use, sanctioning of transfer and personal outcomes-negative were excluded from further analyses.

The case selection and the above described changes have implications for the testing of the Transfer Framework, and for the subsequent answering of the two sub-questions of the research question. First of all, the three cases were conducted in organisations in similar fields of industry, while the four training programmes all consisted of comparable combinations of classroom training and practical assignments. In addition, over 90% of the main sample consisted of male respondents. This restricts the generalisation of the results to, for example, different kinds of training programmes or more balanced samples of male and female respondents, and therefore limits the external validity of the study.

Secondly, the overall removal of the scales measuring learner readiness, prior knowledge and workload implied that not all the relationships depicted in the Transfer Framework could be examined. However, as these three factors are all considered independent variables only in the framework, it was believed that their omission still holds the possibility of conducting valid analyses.

As a third, the lack of internal consistency for several supervisor scales measuring separate components of supervisor support and the transfer climate meant that these scales could not be included in further analyses either. Because of the large number of factors that needed to be omitted, it was believed that valid analyses with regard to these separate factors were no longer possible. Hence analyses of supervisor questionnaires could only be conducted on the general elements measured, thus implying that sub-question 2 could not be answered by means of supervisor data from the main data collection.

Finally, the low number of matching trainee and supervisor couples implied that a direct examination of their coupled perceptions was not possible. This meant that the degree of congruence between trainee and supervisor perceptions could not be determined, which does not affect the answering of the sub-questions of the research question, however. The further analyses and their results will subsequently be described in Chapters 7 and 8.

Chapter 7

The Effects of
General Supervisor Support

7.1 Introduction

In previous chapters the Transfer Framework has been introduced and worked out. This framework is developed to assist in examining the effects of supervisor support on trainees' transfer outcomes. The focus in Chapter 7 is on answering the first sub-question, thus examining the effects of general supervisor support on these transfer outcomes. In other words, do the perceptions of trainees and supervisors confirm the assumed relationships between the general elements in the Transfer Framework?

The composition of this chapter is as follows. In Section 7.2 the means and standard deviations of trainee and supervisor perceptions are presented, including t-tests of any possible differences. Section 7.3 provides a description of the regression analyses that were carried out on trainee responses (Subsection 7.3.1) and on supervisor responses (Subsection 7.3.2), corresponding to the causal relations suggested in the Transfer Framework. In Subsection 7.3.3, the results of regression analyses of trainee and supervisor data will becompared. Section 7.4 concludes this chapter with a summary of and conclusions on the results.

7.2 Descriptive Statistics for General Elements of the Transfer Framework

The results of the construction and validation processes as described in Chapter 6 have produced a couple of restrictions to the utilisation of the Transfer Framework in order to answer the sub-questions of the research question. First,

no sound scales reflecting learner readiness and prior knowledge could be developed, implying that these elements could not be included in further analyses. Second, it proved difficult to combine several different personality characteristics into a single comprehensive element, and for this reason all four personality characteristics distinguished are included separately in the analyses. As regards the general elements of the Transfer Framework, analyses will therefore be carried out of self-efficacy, anxiety, conscientiousness, locus of control (internal and external), intervention fulfilment, motivation to learn and motivation to transfer, general supervisor support, the transfer climate, job autonomy, learning outcomes, transfer outcomes, general cognitive ability, age, experience and transfer design. The Transfer Framework to be examined is depicted in Figure 7.1.
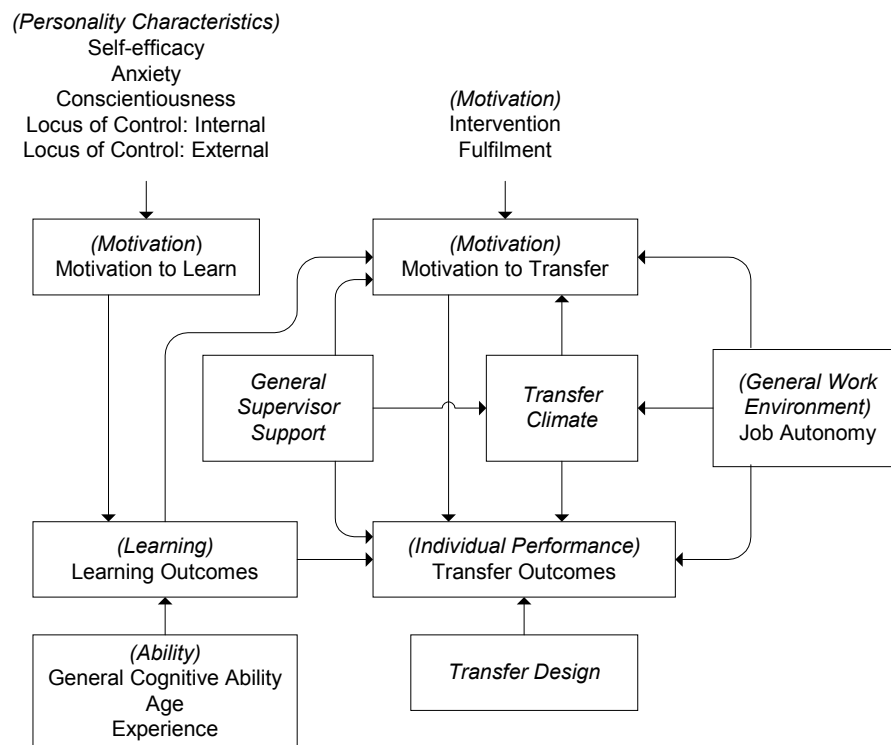
Figure 7.1 General Elements within the Transfer Framework.

Trainee ability was measured by means of the trainees' level of formal education (cognitive ability), as well their age and job tenure. All other elements were measured using 5-point Likert-type scales, ranging from 1 (strongly disagree) to 5 (strongly agree). To examine both trainees' and

supervisors' general opinions of each of the elements, their mean scores were determined. With the aid of t-tests, these mean scores were compared with each other, the results of which are shown in Table 7.1.

Following the Transfer Framework in a top-down manner, the first mean scores refer to trainees' separate personality characteristics. The mean score for Self-efficacy reveals trainees to consider themselves quite efficacious in carrying out their tasks and job. Perceptions of Anxiety show a mean score slightly below impartial, which indicates only a slight experience of anxiety by trainees. Trainees consider themselves quite conscientious in performing their job, judging by their high mean score on the Conscientiousness scale. Finally, both Locus of Control scales indicate that trainees in general experience reasonable control over the protection of their own interests, while hardly feeling that the course of their lives is determined externally.

According to both trainees and supervisors, the training programmes fulfil training needs to a reasonable extent, as indicated by their perceptions of Intervention Fulfilment.

Trainees and supervisors perceive trainees' motivation to learn as high, and trainees indicate their motivation to transfer to be high as well. Supervisors also perceive trainees to be rather motivated to transfer, but slightly less than trainees themselves. This difference is not significant, however.

The perceptions of supervisor support refer either to support before and after training participation, or to support before, *during* and after training participation. This depends on the possibility of giving/receiving support during training. In other words, if trainees had the opportunity to be in contact with their supervisor during their participation in the training programme, their overall perception of supervisor support is based on perceptions of support before, during and after that training. If trainees did not have the opportunity to be in contact with their supervisor, their overall perception of supervisor support is based only on support before and after training. In addition, five trainees skipped one or more items reflecting support during training, even though they had had opportunities to be in touch with their supervisors in that period. Their overall perception of supervisor support is therefore only determined by their assessment of support before and after training. The current chapter concerns the perceptions and analyses of supervisor support in general, but separate analyses regarding each of these different periods of supervisor support will be presented in Chapter 8.

Table 7.1 *Means for General Elements Transfer Framework, based on Trainees (T) and Supervisors (S), including t-tests comparing the Means (1 = strongly disagree; 3 = neutral; 5 = strongly agree)*

Variable		N	Mean	t	Df	p-value (2-tailed)
Self-efficacy	T	171	3.98	-	-	-
	S	-[1]	-			
Anxiety	T	171	2.81	-	-	-
	S	-[1]	-			
Conscientiousness	T	170	3.72	-	-	-
	S	-[1]	-			
Locus of Control: External	T	170	2.38	-	-	-
	S	-[1]	-			
Locus of Control: Internal	T	170	3.50	-	-	-
	S	-[1]	-			
Intervention Fulfilment	T	182	3.45	-1.462[3]	63	.149
	S	34	3.59			
Motivation to Learn	T	183	3.92	0.740	215	.460
	S	34	3.84			
Motivation to Transfer	T	173	3.80	1.786	203	.076
	S	32	3.61			
General Supervisor Support[2]	T	166	2.61	-9.584[3]	63	.000*
	S	28	3.38			
Transfer Climate	T	168	3.25	-2.580	197	.011*
	S	31	3.46			
General Work Environment (Job Autonomy)	T	170	4.03	1.609	200	.109
	S	32	3.90			
Learning outcomes[2]	T	167	3.76	0.686	194	.494
	S	29	3.70			
Transfer outcomes[2]	T	167	3.60	0.848	196	.397
	S	31	3.51			
Transfer Design	T	182	3.83	-	-	-
	S	-	-			

*$p < .05$; ([1]) Not measured; ([2]) Number of items differs depending on training programme; ([3]) Equal variances not assumed, based on Levene's test for Equality of Variances

The results in Table 7.1 show that trainees perceive only slight support from supervisors regarding training participation, whereas supervisors indicate that they provided trainees with a moderate yet positive amount of support in the

same period. The results of the t-test reveal that this difference is significant, meaning that supervisors feel that they support trainees considerably more than these trainees perceive that they do.

Trainees' perceptions of the transfer climate are only slightly positive, while supervisors perceive the transfer climate to be reasonably positive. The results of the t-test comparing these perceptions show a significant difference, implying that supervisors perceive the transfer climate to be more positive than do trainees. Trainees and supervisors further indicate that trainees have a large extent of autonomy in their job, on which they also agree.

Finally, the analyses reveal that both trainees and supervisors perceive fairly good learning outcomes as well as a reasonably good transfer outcomes, with mean scores all above 3.50. This indicates that trainees and supervisors consider trainees' training outcomes to be quite positive. Additional *t*-tests of the differences, however, reveal that both trainees and supervisors assess learning outcomes to be slightly but significantly higher than transfer outcomes ($t(163) = 7.010$, $p < .05$, and $t(28) = 3.154$, $p < .05$).

Trainees perceive the respective training programmes to be designed in a way that facilitates transfer of learning afterwards, as shows their mean score on Transfer Design.

In summary, trainees and supervisors perceive similar positive learning and transfer outcomes after the different training programmes. They differ significantly, however, in their perceptions of the environmental favourability to transfer: supervisors indicate a rather positive transfer climate and reasonable levels of supervisor support provided, whereas trainees perceive a moderately positive transfer climate and very little support from supervisors. Both agree largely on trainees' high levels of motivation to learn and transfer, as well as on the satisfactory levels of intervention fulfilment. Trainees turn out to feel rather efficacious and conscientious in performing their jobs, while they experience slight to moderate anxiety at the workplace. They also show that they feel able to protect their personal interests, while not having the idea that the course of their lives is determined externally. In addition, trainees indicate the training programmes to be designed to positively facilitate transfer.

7.3 Causality within the Transfer Framework

7.3.1 Trainees' Transfer Framework

In order to test the relationships in the Transfer Framework, STEPWISE regression analyses were performed. This subsection features the results of the regression analyses which were conducted on trainee data only; regression analyses of supervisor data will be presented in Subsection 7.3.2.
Following the Transfer Framework in a top-down manner, Table 7.2 presents the significant regression weights of the regression analyses when motivation to learn, motivation to transfer, transfer climate, learning outcomes and transfer outcomes are included as dependent variables.

Table 7.2 *Trainee Questionnaires: Significant Regression Weights (p < .05) of Regression Analyses Predicting Motivation to Learn, Motivation to Transfer, Transfer Climate, Learning Outcomes and Transfer Outcomes*

Dependent Variable	R^2	Independent Variable(s)	B	SE B	β
Motivation to Learn (N=167)	.05	Locus of Control: External	-0.29	0.10	-.22
Motivation to Transfer (N=154)	.62	Learning Outcomes	0.46	0.08	.40
		Transfer Design	0.49	0.09	.41
		Transfer Climate	0.33	0.09	.24
		Supervisor Support	-0.19	0.05	-.20
		Intervention Fulfilment	-0.11	0.05	-.13
Transfer Climate (N = 161)	.19	Supervisor Support	0.29	0.05	.43
Learning Outcomes (N=147)	.34	Motivation to Learn	0.48	0.06	.59
Transfer Outcomes (N=153)	.79	Learning Outcomes	0.74	0.06	.65
		Motivation to Transfer	0.24	0.05	.25
		Transfer Climate	0.14	0.06	.10

It was hypothesised in the Transfer Framework that trainees are more motivated to learn when they feel more self-efficacious and conscientious, less anxious, and when they feel more able to defend their personal interests, while not having the feeling that the course of their lives is determined externally. The results of the regression analysis show that only the extent of external locus of control negatively predicts trainees' motivation to learn, explaining a small 5% of its variance. This means that trainees who perceive the course of their lives to be mostly determined by external entities or events are generally less motivated to learn. Contrary to what was expected, none of the other personality

characteristics significantly explained the variance within trainee's motivation to learn. Further examination of the results does indicate internal locus of control and self-efficacy to be positively related to trainees' motivation to learn, but to fall out of the equation because of their negative correlations with external locus of control.

Trainees' motivation to transfer was believed to be affected by their learning outcomes, the transfer climate, supervisor support and the extent to which the training fulfilled their needs and expectations. In addition, the transfer design of training was included as an independent variable, as further analyses indicated that this transfer design might affect transfer by means of trainees' motivation to transfer (see page 163).

The analysis reveals that all five of these dependent variables together significantly explain 62% of the variance in trainees' motivation to transfer. Perceived learning outcomes (46%), the transfer design of training (9%) and the transfer climate (2%) all positively contribute to this motivation, suggesting that better learning outcomes, a training design aimed at transferring learning to the job and a more facilitative transfer climate increase trainees' intention to apply new knowledge and skills on the job.

Contrary to what was expected, both the extent of experienced general supervisor support (1%) and intervention fulfilment (4%) emerge as negatively predictive of trainees' motivation to transfer. The original positive correlation of intervention fulfilment becomes a significant negative regression weight after the inclusion of the transfer design of the training programme, indicating that they possibly explain part of the same variance in trainee's motivation to transfer. Moreover, the inclusion of intervention fulfilment in the equation results in an increased standardised regression weight of the transfer design ($\Delta\beta = .04$), thus suggesting that intervention fulfilment acts as a suppressor variable (Nunnally, 1967). A suppressor variable is a variable that increases the regression weights of other variables and therefore increases the predictive power of these other variables in a regression equation, by suppressing 'irrelevant' variance in these variables (Krus & Wilkinson, 1986; Nunnally, 1967). Regarding their content, the transfer design reflects both practical preparation of transfer and the perceived relevancy of the training programme (content validity), whereas intervention fulfilment refers to the extent to which the training meets expectations and needs. A possible explanation of a negative relationship between intervention fulfilment and motivation to transfer might then be the undesirable expectations of the training being confirmed, which, in turn, will lead to reduced motivation to transfer. For example, trainees may have been obliged to take part in a training programme which they expected to interfere with their daily job performance. Even when this training programme is perceived to be relevant with regard to job performance (transfer design), and

therefore considered necessary (intervention fulfilment), the confirmation of negative expectations might lead to a reduced motivation to transfer.

In addition, results show that more general supervisor support leads to a decrease in trainees' motivation to transfer new knowledge, skills and attitudes to the job, although their zero-order correlation is positive. One possible explanation for a negative effect of support on motivation to transfer might be that trainees perceive supportive supervisors as coercive and/or redundant, evoking negative reactions, which may in some way decrease their motivation. In a similar way, Deelstra, Peeters, Schaufeli, Stroebe, Zijlstra, and Van Doornen (2003) found that employees reacted more negatively to imposed instrumental support at the workplace than to no support at all, although these negative reactions appeared to be moderated by the extent to which support was needed. They concluded that imposed instrumental support might restrict employees' perceptions of freedom of choice to perform, but, at the same time, questioned the generalisability of these findings to other types of supervisor support.

The conceptual distinction between supervisor support and the transfer climate in this study might provide an additional point of reference to explain this result. It was expected that general supervisor support would positively affect the transfer climate, for example, by supervisors improving opportunities for trainees to use new knowledge and skills in the workplace. Regression analysis of variables predicting the transfer climate indeed shows supervisor support to explain a small but significant 19% of the variance of transfer climate, as displayed in Table 7.2.

Considering the positive influence of the transfer climate on trainees' motivation to transfer, general supervisor support might then indirectly enhance trainees' motivation to transfer. Indeed, a post-hoc regression analysis leaving the transfer climate out of the equation revealed that the direct negative effects of supervisor support on motivation to transfer became smaller and non-significant ($\beta = -.08$, $p = .22$.). In addition, a second post-hoc regression analysis leaving supervisor support out of the equation showed that the influence of the transfer climate on motivation to transfer diminished, yet remained positive and significant ($\beta = .25$, $p < .05$.). A post-hoc Sobel test (see Preacher & Hayes, in press) indicates that the positive influence of general supervisor support on motivation to transfer as mediated by transfer climate is significant (test value = 3.10, $p = .00$). These results thus show that general supervisor support reduces trainees' motivation to transfer in a direct way, but improves trainee motivation to transfer indirectly - through improvement in the transfer climate. In other words, when checking for the positive effects of supervisor support on the transfer climate, trainees might feel pressured or underrated when perceiving 'support', resulting in a reduced willingness to apply new knowledge and skills. To summarise, the influence of general

supervisor support on trainees' motivation to transfer is partially mediated by the prevailing transfer climate.

Trainees' learning outcomes were expected to be higher for trainees who were more motivated to learn, who had received higher levels of formal education (cognitive ability), who were younger and who had more working experience. The results show only that trainees' motivation to learn positively predicts learning outcomes, accounting for a reasonable 34% of its variance. This means that the more trainees are motivated to learn, the higher the learning outcomes they will achieve. Trainees' age, formal education and working experience do not significantly affect their learning outcomes beyond the influence of motivation. One possible explanation for the fact that formal education has no influence might be found in that the trainees in this sample all have relatively high levels of formal education, thus restricting its variance. In fact, over 90% of all trainees included in these four training programmes have received either professional or academic education.

Finally, the extent of trainees' transfer outcomes was expected to be positively influenced by trainees' learning outcomes, their motivation to transfer, the transfer climate, general supervisor support and perceptions of the transfer design of the training programme. The results of the regression analysis show trainees' learning outcomes, their motivation to transfer, and the transfer climate to significantly explain a substantial 79% of the variance in transfer, with perceived learning outcomes alone accounting for 74%. Neither support by supervisors nor the transfer design of the training programme significantly augments the explained variance in transfer results, and these have therefore been omitted from the table. Thus, trainee perceptions indicate that transfer outcomes will be increased when higher learning outcomes are achieved, when trainees are more motivated to transfer (4%) what they have learned, and when the transfer climate (1%) at the workplace is more facilitative of transfer. Overall supervisor support, however, has no direct influence on transfer outcomes here, nor does the extent to which the training programme is designed to transfer training.

Secondary reflection on the standardised beta-weights of supervisor support on transfer shows that supervisor support produces only a significant effect on transfer ($\beta = .33$, $p < .05$, $R^2 = .11$) when none of the other independent variables is included. This suggests the existence of an indirect relationship between perceived general supervisor support and transfer outcomes, in which supervisor support shares at least part of the variance in transfer outcomes explained by these other variables. From these results it is concluded, however, that perceived general supervisor support is not directly related to perceived transfer outcomes.

Further inspection of the regression analysis results reveals that the transfer design of training only falls out of the regression equation after including trainees' motivation to transfer. In other words, the transfer design indeed positively predicts transfer outcomes of training - as expected - when trainees' motivation to transfer is not taken into account. When considering the influence of trainees' motivation to transfer, however, the transfer design of the training does not significantly explain any variance in trainees' transfer of training. It is therefore suspected that a possible positive relationship between transfer design and transfer of training is completely mediated by trainees' motivation to transfer in this study. The transfer design of training programmes has therefore also been hypothesised to predict trainees' motivation to transfer in the analyses. A post-hoc Sobel test confirms the significance of the indirect effect of transfer design on transfer outcomes (test value = 3.60, p = .00). Thus, a positive transfer design of training positively predicts trainees' motivation to transfer, which, in turn, leads to improved transfer itself.

Further examination of the regression weights also shows that the positive regression weight of learning outcomes on transfer outcomes decreases ($\Delta\beta$ = .19) when including motivation to transfer in the equation. This suggests that part of the positive relationship between learning outcomes and transfer outcomes is mediated by trainees' motivation to transfer, which' significance is confirmed by a Sobel test (test value = 3.68, p = .00). Thus, higher learning outcomes directly lead to higher transfer outcomes, and indirectly lead to higher transfer outcomes by increasing trainees' motivation to transfer.

The implementation of supervisor support as a single construct within the Transfer Framework provides little opportunity for further analysis of its relation to transfer in this chapter. The mentioned example of instrumental support indicates, however, that a more detailed look at different types and moments of supervisor support could offer a better insight into its actual influence. It might, for example, be the case that instrumental support after training enhances trainees' opportunities to transfer (transfer climate), while bearing no direct relation to their motivation to transfer. Similarly, emotional support before training participation is not related to the transfer climate, but might improve trainees' motivation to learn. Chapter 8 will therefore cover more detailed analyses of the different types and moments of support.

The combined results of the regression analyses of trainee questionnaires were applied to the Transfer Framework, as depicted in Figure 7.2. Elements which could not be related to any other elements in the framework were omitted from the figure.
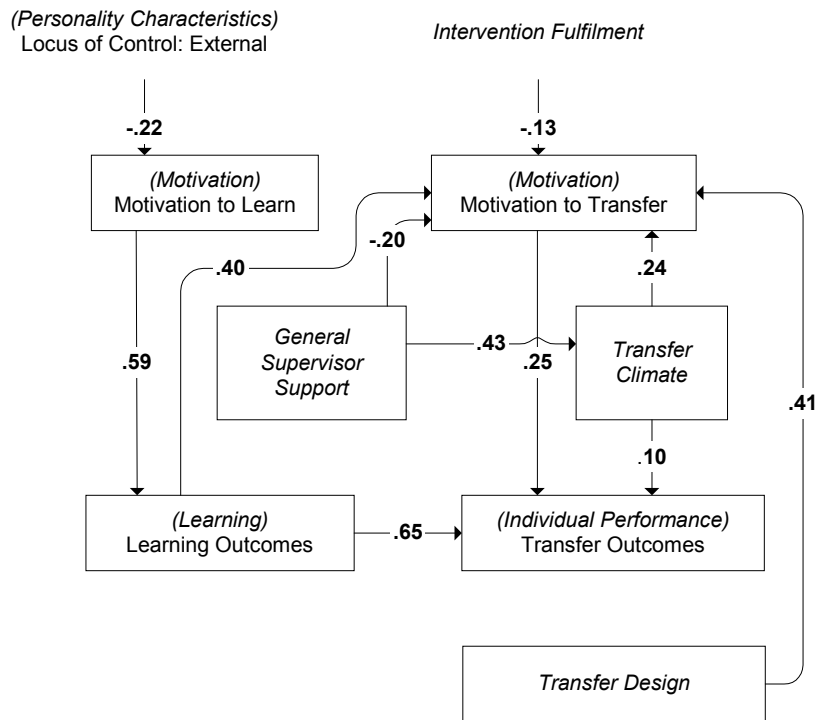
Figure 7.2 Significant Standardised Regression Weights (β) of Trainee Questionnaires applied to the Transfer Framework.

In concluding the analyses of trainee questionnaires, trainees' motivation to learn is shown to be a strong predictor of perceived learning outcomes. The smaller their external locus of control, the more these trainees are motivated to learn. The learning outcomes turn out to be strongly predictive of the extent to which knowledge and skills are transferred to the job, next to positive effects of trainees' motivation to transfer and the perceived transfer climate. Perceptions of higher learning outcomes, a more facilitative transfer climate and the transfer design result in increased motivation to transfer, while supervisor support and intervention fulfilment actually lead to a decrease in trainees' motivation to transfer - even though both are positively correlated to motivation to transfer. Perceptions of supervisor support are found to be positively predictive of perceptions of a positive transfer climate.

7.3.2 Supervisors' Transfer Framework

In accordance with the analyses conducted on trainee questionnaires, STEPWISE regression analyses were also carried out on supervisor responses

in order to test the suggested relations in the Transfer Framework. Since supervisors were not asked to rate trainees' personality characteristics, trainees' motivation to learn was not included as a dependent variable. The dependent variables are therefore supervisor perceptions of trainees' motivation to transfer, the transfer climate, trainees' learning outcomes and their transfer outcomes. The results of these regression analyses are presented in Table 7.3.

Table 7.3 *Supervisor Questionnaires: Significant Regression Weights (p < .05) of Regression Analyses Predicting Motivation to Transfer, Transfer Climate, Learning Outcomes and Transfer Outcomes*

Dependent Variable	R²	Independent Variable(s)	B	SE B	β
Motivation to Transfer (N=27)	.59	Learning Outcomes	0.65	0.11	.77*
Transfer Climate (N=27)	.25	Supervisor Support	0.44	0.15	.50*
Learning Outcomes (N=29)	.49	Motivation to Learn	0.50	0.10	.70*
Transfer Outcomes (N=27)	.60	Learning Outcomes	0.70	0.12	.77*

The table shows only four of the assumed relationships to be confirmed, all based on a sample size ranging from 27 to 29 supervisors. In the first place, it was expected that trainees would be more motivated to transfer when higher learning outcomes were achieved, when a more facilitative transfer climate was perceived, when more supervisor support was experienced, when more job autonomy was experienced and when the training programme was perceived to have better fulfilled needs and expectations. In addition, analyses in Subsection 7.3.1 indicated that trainees' motivation to transfer might also be affected by the transfer design of the training programme. The transfer design was therefore also included in this regression analysis.
The results of the regression analysis of supervisor responses indicate that only trainees' learning outcomes predict their motivation to transfer, explaining a considerable 59% of its variance, however. None of the other dependent variables significantly increased the explained variance in trainees' motivation to transfer.

Second, it was believed that general supervisor support would result in a more positive transfer climate. Regression analysis of supervisor questionnaires indeed indicate that supervisors who felt that they had provided trainees with support also felt that these trainees worked in a more favourable transfer climate, explaining 25% of its variance.

Third, it was expected that learning outcomes of training are affected by trainees' ability and their motivation to learn. As supervisors were not asked to rate trainees' ability, only motivation to learn was included as an independent variable in the regression analysis. The results of the analysis show supervisor perceptions of trainees' motivation to learn to be a strong positive predictor of perceptions of learning outcomes, explaining 49% of its variance.

Finally, the extent of transfer outcomes was expected to increase when trainees have achieved higher learning outcomes, are more motivated to transfer, work in a more facilitative transfer climate, receive more general supervisor support, experience more job autonomy and follow training programmes which are designed to facilitate transfer. The results of the regression analysis show only supervisor perceptions of trainees' learning outcomes to be predictive of their perceptions of trainees' transfer outcomes, although explaining a substantial 60% of its variance. In short, it is therefore concluded that supervisor ratings indicate the extent of learning outcomes to be the only predictor - but a strong one - of subsequent transfer outcomes.

All significant results of regression analyses performed on supervisor data are displayed in Figure 7.3.
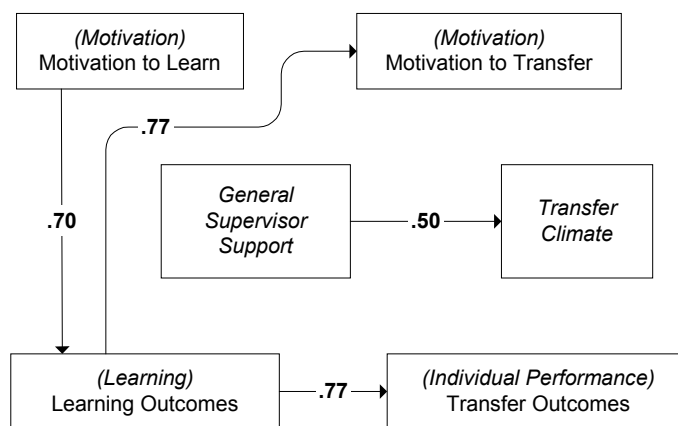
Figure 7.3 Significant Standardised Regression Weights (β) of Supervisor Questionnaires applied to the Transfer Framework.

In conclusion, the analyses of supervisor perceptions show trainees' learning outcomes to be a strong predictor of trainees' transfer outcomes, while trainees who are more motivated to learn achieve higher learning outcomes. As expected, supervisors also consider trainees with higher learning outcomes to be more motivated to transfer what has been learned. Finally, supervisors indicate

that trainees work in more facilitative transfer climates when they provide them with more general support.

7.3.3 Comparing Trainees' and Supervisors' Transfer Framework

The preceding two subsections showed causal relationships between elements of the Transfer Framework, as based on separate trainee and supervisor data. Both trainees and supervisors were included in order to provide for different views of the actual training processes, offering the opportunity to compare these views. Such comparison will provide further indications of both the reliability and validity of the relationships that were expected and tested. Table 7.4 therefore presents an overview of the standardised regression weights (β) for all elements of which at least one suggested relationship with another element was confirmed, although limited to the relationships that have been determined by both trainee and supervisor responses.

Table 7.4 *Comparison of Trainee and Supervisor Standardised Regression Weights (β) reflecting Causal Relationships in the Transfer Framework*

	β-weight	
Influence of Independent Variable on Dependent	*trainees*	*supervisors*
Motivation to Learn on Learning Outcomes	.58*	.70*
Learning Outcomes on Transfer Outcomes	.65*	.77*
Learning Outcomes on Motivation to Transfer	.40*	.77*
General Supervisor Support on Transfer Climate	.44*	.50*
Motivation to Transfer on Transfer Outcomes	.25*	.18
Transfer Climate on Transfer Outcomes	.09*	.10
Transfer Climate on Motivation to Transfer	.24*	.09
Intervention Fulfilment on Motivation to Transfer	-.13*	-.11
General Supervisor Support on Transfer Outcomes	.05	.11
General Supervisor Support on Motivation to Transfer	-.20*	.22
Job Autonomy on Motivation to Transfer	.03	-.03
Job Autonomy on Transfer Climate	.01	-.34
Job Autonomy on Transfer Outcomes	.00	-.02

Note: *$p < .05$

As already seen in Subsection 7.3.2, only four significant regression weights based on supervisor data were found. All four of these largely correspond to

strong positive regression weights retrieved from trainee data. More specifically, both trainee and supervisor data indicate learning outcomes to be the most important predictor of both trainees' transfer outcomes and trainees' motivation to transfer. They also both indicate that trainees' motivation to learn determines trainees' learning outcomes to a large extent, while the extent of perceived general supervisor support positively predicts a facilitative transfer climate. These results provide strong evidence for the expected relatedness between learning and transfer outcomes, and for the relationships between learning outcomes and motivational elements. In addition, they clearly indicate the importance of general supervisor support with regard to the extent to which the transfer climate facilitates transfer.

Four of the expected relationships are confirmed by trainee responses, while supervisor responses provide quite similar but non-significant results. First of all, both trainee and supervisor opinions indicate that trainees' motivation to transfer moderately predicts their transfer outcomes. Second, both trainees and supervisors indicate slight positive causality between the perceived transfer climate and transfer outcomes. Third, both point out that the transfer climate positively predicts trainees' motivation to transfer, although this relationship as based on trainee responses is somewhat stronger. And finally, both trainee and supervisor responses indicate a slight negative causality between experienced intervention fulfilment and the motivation to transfer. The similarity of these regression weights can be interpreted as an indication of their reliability, taking the regression weights based on trainee responses as decisive. In fact, the sample of supervisors might have been too small to detect significant causal effects. In other words, the small sample size of supervisors might have made it difficult to detect small but actually significant regression weights, such as those determined by trainee data.

Neither trainee nor supervisor data confirm the expected relationship between general supervisor support and transfer of training. Thus, the direct causal relationship between perceived general supervisor support and transfer of training does not apply within this study, comparable to the results of other research (e.g. Gielen & Van der Klink, 1995). The most important distinction between trainee and supervisor data is found with regard to the suspected influence of general supervisor support on trainees' motivation to transfer. Whereas trainee responses indicate a significant negative relationship between general supervisor support and their motivation to transfer, supervisor responses point to a positive (though non-significant) relationship between their general support and trainees' motivation to transfer. Inspection of the regression weights of trainee responses revealed an initial positive regression weight to turn significantly negative after the inclusion of especially the transfer climate. As such, general supervisor support seems positively related to trainees' motivation to transfer, but the way in which they are related differs. Regression analyses of supervisor responses do not provide any explanation of the

relationship between general supervisor support and motivation to transfer, as neither supervisor support itself nor the transfer climate significantly predicts perceived motivation to transfer. Trainee responses, on the other hand, indicate that supervisor support might enhance trainees' motivation to transfer by improving the transfer climate, but diminish motivation to transfer in a direct way. Finally, trainees' general work environment - as measured by their job autonomy - is not found to have any significant effect in either trainee or supervisor responses.

7.4 Conclusions and Discussion

The focus in this chapter has been on the effects of general supervisor support, by means of examining the relationships in the Transfer Framework. In the preceding sections, both trainee and supervisor perceptions on elements of the Transfer Framework have been examined and all the relationships from the framework have been studied through regression analyses.

The results do not confirm the entire Transfer Framework as hypothesised. In general, however, the analyses in this chapter provide clear evidence of the expected strong relatedness of learning outcomes, transfer outcomes and trainee motivation. Most importantly, the extent of learning outcomes achieved is found to be a very strong predictor of transfer outcomes, in accordance with other research (Colquitt, LePine, & Noe, 2000; Xiao, 1996). In other words, trainees who are perceived to have achieved higher learning outcomes in general are perceived to transfer learning more to their jobs.

The results further provide evidence for the supposed relationship between trainees' motivation to learn and their learning outcomes; trainees who are motivated to learn in general achieve higher learning outcomes. Hence this again stresses the importance of motivated trainees with regard to training effectiveness, also in line with the results of several other studies (e.g. Cheng, 2000; Guerrero & Sire, 2001). Trainees' motivation to learn was, however, shown to be the only predictor of their learning outcomes, whereas their ability, unexpectedly, did not have any effect on perceived learning outcomes. It was suggested that the sample of trainees in this study contained a range of formal education (the measurement of cognitive ability) that is too restricted to detect significant causality, with over 90% of them having received either professional or academic education. A possible explanation for the lack of influence of both trainees' age and work experience on learning outcomes could be that these have a mere indirect effect, by means of trainees' motivation to learn. This has been indicated in other studies (e.g. Colquitt et al., 2000), but the regression analyses in this study provided no indications in that direction.

Whereas it was expected that trainees' personality characteristics would affect their motivation to learn, the results showed that their personality made very little difference with regard to their motivation to learn in this study. Comparable to the findings of the meta-analysis conducted by Colquitt et al. (2000), trainees who indicate a more external locus of control show less motivation to learn, although the explained part of the variance is small. Contrary to several other studies (Axtell, Maitlis, & Yearta, 1997; Colquitt et al., 2000; Colquitt & Simmering, 1998), neither trainees' extent of self-efficacy, anxiety or conscientiousness, nor internal locus of control predicts their motivation to learn in this study. Results did indicate, however, that internal locus of control and self-efficacy are positively related to trainees' motivation to learn. One explanation might be that external locus of control is the strongest predictor of motivation to learn, predicting part of the same variance as internal locus of control and self-efficacy.

Another possible explanation might be found in the research methodology of this study. All personality characteristics were considered to be relatively stable over time, and were subsequently measured a considerable time after training. Trainees' motivation to learn was measured retrospectively, and specifically related to trainees' motivation before (and partly during) training participation. As several authors indicated that personality characteristics such as self-efficacy change under the influence of, for example, training participation and supervisor support (e.g. Gielen, 1995), this implies that trainees' personality might have changed since the start of training. It might therefore be the case that the measured personality characteristics differ from those before trainees' training participation, which might have had consequences for their regression weights. In general, however, it can be concluded that, besides the influence of external locus of control, the personality characteristics of trainees are not predictive of their motivation to learn in this study.

Perceived learning outcomes were expected to result in increased motivation to transfer, as the expectancy theory suggests that more successful learners would feel better able to perform, and thus be more motivated (Holton, 1996). In addition, trainees who feel they have learned little probably have difficulties in determining what exactly to transfer to their jobs, which, in turn, might also result in reduced motivation to transfer. The results indeed confirm these expectations, indicating that trainees' learning outcomes are a positive predictor of their motivation to transfer this new knowledge and skills to their jobs. Moreover, the results also indicate that part of the positive relationship between learning and transfer is mediated by motivation to transfer. Trainees who have learned new knowledge, skills and attitudes not only have more to transfer than trainees who did not, but they are also more motivated to do so, which has an additional positive effect on transfer outcomes.

The results showed perceptions of a facilitative transfer climate to be moderately predictive of perceived transfer outcomes, as well as of motivation to transfer. In other words, the extent to which the climate at the workplace is perceived to facilitate transfer partly determines the extent of transfer directly, and partly determines the extent to which trainees are motivated to transfer.

Differences were found with regard to trainee and supervisor opinions about environmental elements. Whereas trainees indicated that the workplace climate was only moderately facilitative of transfer, supervisors rated this climate as significantly more facilitative. Although both perceived the transfer climate to be positive, it can be concluded that supervisors' perceptions exceeded the experiences of trainees. Even greater differences were found with regard to perceived general supervisor support: trainees experienced rather insufficient levels of supervisor support, while supervisors differed significantly by indicating that they had provided these trainees with a considerable and sufficient extent of support. These results are comparable to those of Gielen (1995), who also found differences between separate ratings of supervisor support. She referred to Farh and Dobbins (Gielen, 1995) when indicating several possible explanations for these differences between raters: systematic rater biases, different perspectives and focuses on diverse facets of, for example, supervisor support, or differences in basic psychological processes.

Finally, the results show general supervisor support to be related to transfer of training, but, contrary to expectations, the extent of overall supervisor support was not found to predict transfer outcomes directly. Although this last result was unexpected, it does correspond with the results mentioned by, for example, Gielen and Van der Klink (1995). Gielen and Van der Klink provided two possible explanations, which both might also apply here. First, trainees perceived little support from supervisors, which might have been too little to detect any positive causality between support and transfer. They suggest that more powerful support interventions might result in clearer direct effects of supervisor support on transfer.

Second, if no direct causality exists, supervisor support might affect transfer of training in an indirect way. The results of this study indeed provide indications of the indirect causal effects of supervisor support. Specifically, general supervisor support was found to contribute to a facilitative transfer climate, which, in turn, leads to more transfer. At the same time, general supervisor support was, unexpectedly, seen to diminish trainees' motivation to transfer, after checking for the transfer climate. In other words, supervisor support might indirectly reduce transfer through trainees' motivation to transfer. One possible explanation might be that trainees feel deprived of freedom of choice in the way they perform on the job, in addition to feelings of, for example, being pressured or underrated.

In short, it can be concluded that overall supervisor support relates positively to transfer outcomes, but that this causality is indirect. The question arises as to whether supervisor support should, in fact, be expected to directly predict transfer outcomes. In other words, in what way should supervisors directly support transfer? It also remains unclear why supervisor support would be negatively predictive of trainees' motivation to transfer, while at the same time leading to a more positive transfer climate. Further analyses are therefore needed to provide insight into which components of supervisor support and the transfer climate relate to transfer, in addition to the differences caused by specific training and organisational characteristics. Chapter 8 will provide the results of the analyses when distinguishing between different types and times of supervisor support.

Chapter 8

The Effects of
Differential Supervisor Support

8.1 Introduction

The theoretical exploration of the relationship between supervisor support and transfer of training led to a distinction between two sub-questions regarding the influence of supervisor support. The first of these concerned the effects of general supervisor support on trainees' transfer outcomes, the results of which' examination were presented in Chapter 7. These results indicated no direct causal relationship between perceived general supervisor support and experienced transfer outcomes, but it was shown that general supervisor support might indirectly affect transfer outcomes through trainees' motivation to transfer and the transfer climate. Furthermore, the results mainly confirmed the expected strong relatedness of motivational elements, learning outcomes and transfer outcomes.

This chapter describes the results of the second sub-question, which concerns the effects of different kinds of supervisor support on transfer outcomes. Thus, the question in this chapter is what the effects of supervisor support on transfer are, when distinguishing between different types and times of supervisor support. The analyses to answer this question will be presented in two parts. First, Section 8.2 will start with an overview of descriptive statistics of supervisor support, as well as of the sub-variables of the transfer climate. Second, Section 8.3 will concern the effects of the different components of supervisor support on transfer outcomes, by presenting the results of the regression analyses. Section 8.4 ends this chapter with a summary and a discussion of the conclusions on the second sub-question.

8.2 Descriptive Statistics of Sub-Variables of the Work Environment

To examine the effects of different kinds of supervisor support, a distinction was made between two ways of classifying supervisor support. First, with regard to timing, supervisors were considered to be able to support trainees before, during and after training. And secondly, with regard to type, supervisors were considered to be able to provide trainees with instrumental, informational, appraisal and emotional support. Both timing and types of support were combined, resulting in twelve specific components of supervisor support. These twelve components of supervisor support were subsequently integrated into the Transfer Framework.

As it was also believed that the transfer climate in fact is a multi-dimensional construct, it was also assumed that its separate components could be differentially affected by supervisor support. The general transfer climate was therefore further subdivided in the opportunity to use learning on the job, the sanctioning of transfer by others, general resistance to change at the workplace, positive personal outcomes of transferring learning to the workplace, negative personal outcomes of not transferring learning to the workplace, and peer support. In addition, as it was believed that the effects of supervisor support might actually depend on the extent to which this support is preferred by trainees, a separate variable reflecting trainees' extent of preferred support was included. Figure 8.1 presents the separate components of supervisor support and those of the transfer climate, together with their assumed relationships with the other independent variables in the Transfer Framework.
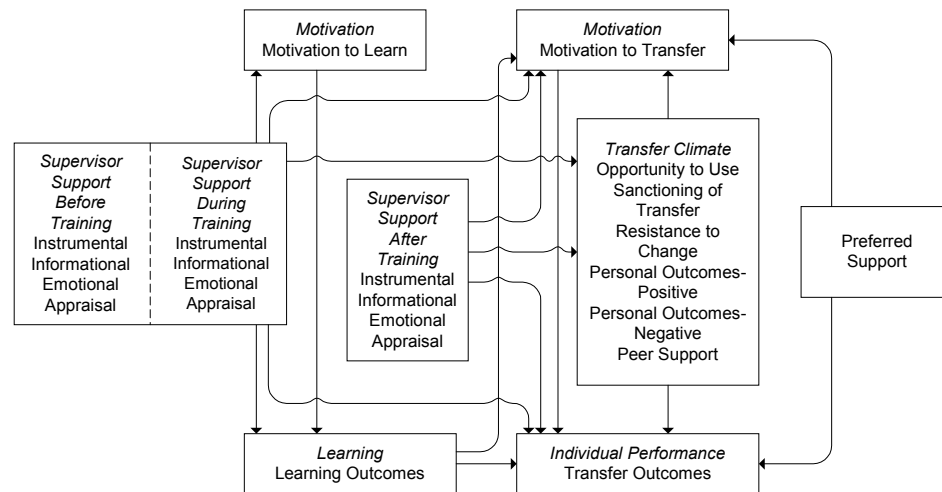
Figure 8.1 Theoretical Relationships between Components of Supervisor Support, Components of the Transfer Climate and Independent Variables of the Transfer Framework.

In short, Figure 8.1 shows that each of the separate components of supervisor support might affect transfer directly, or indirectly by affecting the components of the transfer climate or trainees' motivation to transfer. In addition, the separate components of support before and during training might conceptually also affect transfer indirectly, either by means of trainees' motivation to learn or their learning outcomes. Figure 8.1 thus reflects the changes made to the Transfer Framework as depicted in Figure 7.1, in order to answer the second sub-question.

Before examining the effects of the different components described above, their mean scores will be analysed first. Subsection 8.2.1 presents the descriptive statistics of relevant components of the transfer climate, while 8.2.2 covers these statistics with regard to different times and types of supervisor support.

8.2.1 Descriptive Statistics of Sub-Variables of the Transfer Climate

Table 8.1 shows the mean scores of trainees and supervisors that could be determined for each of the subvariables of the transfer climate, also including the mean score for trainees' extent of preferred support. In addition, the table provides the results of t-tests comparing the mean scores of trainees and supervisors.

The results show that trainees experience reasonable opportunities to use new knowledge and skills at their workplace, while they do not perceive others to sanction or impede their use of learning. Both trainees and their supervisors perceive little general resistance to change at trainees' workplaces. Trainees do not really give either a positive or negative judgement of perceived positive outcomes resulting from transferring new knowledge or skills to the job; supervisors, however, differ significantly by indicating that using new knowledge and skills on the job results in moderately positive outcomes for trainees. A mean score of 2.45 indicates that trainees perceive very few negative consequences when not using new knowledge or skills on the job, and both trainees and supervisors comparably assess the extent of support by peers as impartial. Trainees also indicate not to have preferred or desired more support from others at the workplace, as far as concerns their training participation and their transfer outcomes.

Table 8.1 *Means for Different Elements Transfer Climate and for Preferred Support, based on Trainees (T) and Supervisors (S), including t-tests comparing the Means (1 = strongly disagree; 3 = neutral; 5 = strongly agree)*

Variable		N	Mean	t	Df	p-value (2-tailed)
Opportunity to Use	T	171	3.68	-	-	-
	S	-[1]	-			
Sanctioning of Transfer	T	173	2.25	-	-	-
	S	-[1]	-			
Resistance to Change	T	170	2.50	1.345	200	.180
	S	32	2.36			
Personal Outcomes-Positive	T	172	2.98	-2.570	202	.011*
	S	32	3.32			
Personal Outcomes-Negative	T	172	2.45	-	-	-
	S	-[1]	-			
Peer Support	T	172	2.92	-1.313	202	.191
	S	32	3.08			
Preferred Support	T	171	2.54	-	-	-
	S	-[2]	-			

*$p < .05$.; ([1]) Insufficient internal scale consistency, therefore not included in analyses; ([2]) Not measured

8.2.2 Descriptive Statistics of Sub-Variables of Supervisor Support

In order to determine differences in perceptions of either timing or type of supervisor support separately, their mean scores will be examined first. Table 8.2 therefore displays the mean scores of trainees and supervisors for each of the separate times of supervisor support, as well as the results of t-tests comparing these mean scores.

With regard to Table 8.2, it is important to note that the means of supervisor support at different moments are based on divergent samples. More specifically, the means of support before and after training are based on all the samples of trainees and supervisors (corrected for missing cases), while the mean of support during training is based on the samples of trainees and supervisors who had opportunities to be in touch during trainees' training participation. As a result, the sample sizes on which mean scores of supervisor support during training participation are determined differ considerably from those before and after training, and the mean supervisor score of supervisor support during training is actually based on eight supervisors only.

Table 8.2 *Means for Different Times of Supervisor Support, based on Trainees (T) and Supervisors (S), including t-tests comparing the Means (1 = strongly disagree; 3 = neutral; 5 = strongly agree)*

Variable		N	Mean	t	Df	p-value (2-tailed)
Supervisor Support Before Training	T	185	2.72	-8.316^1	70	.000[*]
	S	34	3.44			
Supervisor Support during Training	T	88	2.60	-3.381	94	.001[*]
	S	8	3.48			
Supervisor Support after Training	T	168	2.50	-8.747^1	64	.000[*]
	S	30	3.26			

*$p < .05$.; ([1]) Equal variances not assumed, based on Levene's test for Equality of Variances

In general, trainees rate the extent to which they receive support from their supervisors before, during and after training as somewhat to rather negative. A significant difference between perceived supervisor support before and after training indicates that trainees perceive the extent of supervisor support to decline in this period ($t(165) = 4.963$, $p < .05$), although perceived differences between support before and during, on the one hand, and support during and after, on the other, are not significant. Supervisors indicate that they provided their trainees with a moderate to reasonable extent of support before and during training, but assess their support after training as moderate. The difference between supervisor perceptions of support before and after training is also significant ($t(27) = 2.267$, $p < .05$), confirming a reduction in supervisor support in the period from before until after trainees' training participation. Moreover, trainees assess the extent of supervisor support received before, during and after training significantly lower than do their supervisors, which again corresponds to the results of other research (e.g. Gielen, 1995).

In Table 8.3 the mean scores of trainees and supervisors for each of the separate types of supervisor support are presented, including the results of t-tests comparing these mean scores.
The results show that trainees perceive little instrumental, informational or emotional support, while very low appraisal support is experienced. All of these differ significantly, however, indicating that trainees perceive relatively more emotional than instrumental support ($t(167) = -5.190$, $p < .05$), more instrumental than informational support ($t(167) = 2.977$, $p < .05$), and more informational than appraisal support ($t(162) = 6.546$, $p < .05$) from their supervisors.

Table 8.3 *Means for Different Types of Supervisor Support, based on Trainees*
(T) and Supervisors (S), including t-tests comparing the Means
(1 = strongly disagree; 3 = neutral; 5 = strongly agree)

Variable		N	Mean	t	Df	p-value (2-tailed)
Instrumental Supervisor Support	T	170	2.70	-8.241[1]	53	.000[*]
	S	29	3.45			
Informational Supervisor Support	T	169	2.59	-10.490[1]	64	.000[*]
	S	30	3.56			
Appraisal Support by the Supervisor	T	166	2.38	-7.448[1]	60	.000[*]
	S	30	3.03			
Emotional Supervisor Support	T	170	2.88	-8.906[1]	85	.000[*]
	S	29	3.65			

*p < .05.; ([1]) Equal variances not assumed, based on Levene's test for Equality of Variances

Supervisors, however, indicate that they provided trainees with reasonable levels of emotional, informational and instrumental support. Their self-reported level of appraisal support is impartial. T-tests reveal that supervisors feel they provided trainees with more emotional than instrumental ($t(27)$ = -2.654, p < .05) and appraisal support ($t(28)$ = -10.038, p < .05), and that they feel they provided trainees with more informational ($t(29)$ = 9.769, p < .05) and instrumental support ($t(28)$ = 6.665, p < .05) than appraisal support. Again, supervisors also feel that they provided their trainees with significantly more of each of the different types of support than trainees indicate they received.

Table 8.4, finally, shows the mean scores of trainees and supervisors on each of the twelve separate components of supervisor support, thus distinguishing between both its timing and its type. The table also shows the results of the t-tests comparing these means, in case both means could be determined.
The table shows several of the supervisor means to be missing, as a result of insufficient internal scale consistency (see Chapter 6). In general, however, supervisors again rate the extent to which they provided trainees with support considerably higher than trainees experienced this extent of support. Trainees indicate that they experienced an impartial extent of emotional supervisor support before training, while they rate most other forms of support as rather low, with means between 2.50 and 2.90. Both instrumental supervisor support during training and appraisal support by the supervisor after training are considered very low, according to trainees.

The means of supervisor responses show that they feel they provided trainees with an impartial extent of instrumental support during training participation (3.08), while they indicate that they gave trainees moderate to reasonable other forms of support.

Table 8.4 *Means for Different Times and Types of Supervisor Support, based on Trainees (T) and Supervisors (S), including t-tests comparing the Means (1 = strongly disagree; 3 = neutral; 5 = strongly agree)*

Variable		N	Mean	t	Df	p-value (2-tailed)
Instrumental Supervisor	T	186	2.75	-4.648	219	.000*
Support Before Training	S	35	3.37	-	-	
Informational Supervisor	T	187	2.69	-	-	-
Support Before Training	S	-	$-^2$			
Appraisal Supervisor	T	185	2.51	-	-	-
Support Before Training	S	-	$-^2$			
Emotional Supervisor	T	187	3.06	-	-	-
Support Before Training	S	-	$-^2$			
Instrumental Supervisor	T	92	2.36	-2.627	98	.010*
Support During Training	S	8	3.08			
Informational Supervisor	T	90	2.65	-2.942	96	.004*
Support During Training	S	8	3.63			
Appraisal Supervisor	T	90	2.53	-	-	-
Support During Training	S	-	$-^2$			
Emotional Supervisor	T	92	2.87	-2.790	98	.006*
Support During Training	S	8	3.75			
Instrumental Supervisor	T	172	2.73	-	-	-
Support After Training	S	-	$-^2$			
Informational Supervisor	T	172	2.50	-8.506^1	59	.000*
Support After Training	S	32	3.48			
Appraisal Supervisor	T	171	2.19	-	-	-
Support After Training	S	-	$-^2$			
Emotional Supervisor	T	171	2.73	-	-	-
Support After Training	S	-	$-^2$			

*$p < .05$.; ([1]) Equal variances not assumed, based on Levene's test for Equality of Variances; ([2]) Insufficient internal scale consistency, therefore not included in analyses

Summarising the results in Subsections 8.2.1 and 8.2.2, the mean scores indicate that trainees experience little support from their supervisors regarding the training, support which actually even declines in the period from before until after training participation. The transfer climate seems to be perceived as receptive and open to the use of new knowledge and skills, but the lack of consequences, sanctioning, resistance and support indicates that it does not really stimulate or discourage transfer. Together with the large extent of job autonomy (see Section 7.2) and the little need of support, trainees in this study in general seem to have relative freedom to decide whether or not to use the new knowledge and skills in their jobs, and experience little interference from others in this - either positive or negative.

8.3 Differential Effects of Combined Moments and Types of Supervisor Support

This section concerns the effects of timing and types of supervisor support on the transfer outcomes. More specifically, what are the effects of supervisor support on transfer outcomes when differentiating between support before, during and after training, and when differentiating between instrumental, informational, appraisal and emotional support? The validation of the questionnaire scales in Chapter 6 showed that a large part of these specified support scales, as well as the majority of the scales reflecting sub-variables of the transfer climate, were not sufficiently internally consistent, when determined on the basis of supervisor responses. It was therefore decided to examine the effects of combined timing and types of supervisor support only on trainee responses.

The supervisors included in this study were believed to be able to provide support when in contact with trainees during daily work. As all of the four training programmes included in the study comprised several full training days on locations away from the actual workplace, it was assumed that supervisors could not have supported trainees on these training days themselves. In other words, supervisor support could only have been given on trainees' regular working days. As two of the four training programmes in this study consisted of consecutive training days only, supervisors from trainees in these training programmes were subsequently considered not to be able to provide these trainees with support during training participation. It was therefore decided not to ask these trainees to rate the extent of support received during their training participation. Thus, trainees who took part in one of the training programmes consisting of consecutive training days only, were considered not to have received support during their training participation. As a substitution, ratings of

these trainees' experiences of supervisor support during training were automatically assigned the lowest possible score.

This automatic assigning of scores might have led to an underestimation of the correlations between support during training on the one hand and support before and after on the other, as well as to an overestimation of the correlations between different types of supervisor support during training. To check for the negative effects of this assigning of scores, as well as for the effects of relatedness between different kinds of supervisor support in general, the data were analysed in three ways. First, the multicollinearity (e.g. Cohen & Cohen, 1975) between the different components of supervisor support was determined. This multicollinearity will be discussed briefly in Subsection 8.3.1, in order to provide insight into the effects of relatedness between the different times and types of support, and to indicate the possible consequences of the extent of relatedness. Secondly, stepwise regression analyses were conducted for each of the dependent variables from the Transfer Framework, as well as for each of the dependent subvariables from the transfer climate. In these analyses, all twelve different components of supervisor support were included simultaneously. Finally, the same stepwise regression analyses were conducted, including each of these twelve components of supervisor support separately. Both of these processes of regression analyses provide insight into the possible causality between supervisor support and transfer, as well as into the possible shared effects of the different components of supervisor support. The regression analyses predicting the general elements of the Transfer Framework (Transfer Outcomes, Learning Outcomes, Motivation to Learn, Motivation to Transfer and Transfer Climate) will be presented in Subsection 8.3.2, while the regression analyses predicting the subvariables of the transfer climate will be presented in Subsection 8.3.3.

8.3.1 Relatedness of Different Times and Types of Supervisor Support

A point of attention concerning possible high correlations between variables relates to the risk of multicollinearity. In the case of multicollinearity, the independent variables are so highly correlated that it becomes difficult to distinguish their individual influence on the dependent variable, resulting in unstable and uninterpretable regression weights (so-called 'bouncing betas'). The relatedness between the different types of supervisor support in this study might cause multicollinearity, affecting both the selection and inclusion of specific types of support and their relative regression weights. In order to inspect for multicollinearity, the Variance Inflation Factors (VIF) included in the collinearity diagnostics in each of the separate regression analyses were examined. The results reveal that no VIF of the independent variables was greater than value 7, whereas, in general, multicollinearity is assumed when VIF values exceed 10. It is therefore concluded that no multicollinearity

between the different types of supervisor support exists in this study. In addition, to check for deviant selection effects as a consequence of the high correlations, the different stages of the regression analyses were examined and regression analyses were conducted, in which each of the different kinds of supervisor support was included separately.

8.3.2 Regression Analyses of General Elements of the Transfer Framework

Table 8.5 presents the results of the regression analyses of all the different support possibilities on each of the relevant general elements of the Transfer Framework: motivation to learn, motivation to transfer, the overall transfer climate, learning outcomes and transfer outcomes. The components of support significantly affecting transfer outcomes represent the direct effects of support on transfer, while significant regression weights of supervisor support on the other dependent variables reflect possible indirect effects on transfer outcomes.
The significant independent variables are displayed in the order of their inclusion in the equation, with the variable accounting for the largest part of variance ranked first. With regard to the transfer climate, perceptions of the overall transfer climate were included as a dependent variable. However, when determining the effects of the transfer climate on either trainees' motivation to transfer or their transfer outcomes, the subvariables of the transfer climate were included as independent variables. The influence of the overall transfer climate on both trainees' motivation to transfer and their transfer outcomes was already determined in Chapter 7. The effects of the different types of supervisor support on each of the subvariables of the transfer climate will be presented in Subsection 8.3.3 (Table 8.6).
Regarding indirect effects of supervisor support, the Transfer Framework thus suggested that supervisor support possibly enhances transfer by increasing trainees' motivation to learn and transfer, by improving the transfer climate, or by increasing trainees' learning outcomes. Trainees' motivation to learn increases by means of appraisal and emotional supervisor support before training, while instrumental supervisor support during training on the other hand is seen to decrease this motivation. Together with trainees' external locus of control, 21% of the variance in trainee reports of their motivation to learn is explained, which indicates that these kinds of supervisor support explain an additional 16% of the variance in motivation to learn (see Subsection 7.3.1). When including each of the components of supervisor support separately (Appendix 2), all four kinds of support before training enhance trainees' motivation to learn, while instrumental, appraisal and emotional support during training actually reduce this motivation. Thus these results indicate that supervisor support before training increases trainees' motivation to learn, with both appraisal (12%) and emotional support (3%) being the most important predictors. By increasing trainees' motivation to learn, these kinds of support

might also indirectly enhance trainees' learning outcomes, and subsequently their transfer outcomes. On the other hand, instrumental supervisor support during training (3%) especially results in reduced motivation to learn. This kind of support might therefore indirectly reduce trainees' learning and transfer outcomes.

Table 8.5 *Trainee Questionnaires: Significant Regression Weights (p < .05) of Regression Analyses Predicting Motivation to Learn, Motivation to Transfer, Transfer Climate, Learning Outcomes and Transfer Outcomes*

Dependent Variable	R²	Independent Variable(s)	B	SE B	β
Motivation to Learn (N=161)	.21	Appraisal Supervisor Support Before Training	0.16	0.08	.19
		Locus of Control: External	-0.26	0.10	-.20
		Instrumental Supervisor Support During Training	-0.14	0.05	-.20
		Emotional Supervisor Support Before Training	0.17	0.08	.22
Motivation to Transfer (N=150)	.65	Learning Outcomes	0.41	0.08	.35
		Transfer Design	0.46	0.09	.38
		Opportunity to Use	0.20	0.06	.18
		Appraisal Supervisor Support During Training	-0.09	0.03	-.15
		Intervention Fulfilment	-0.12	0.05	-.13
		Emotional Supervisor Support Before Training	-0.10	0.04	-.14
		Personal Outcomes Positive	0.11	0.05	.12
Transfer Climate (N=156)	.30	Informational Supervisor Support After Training	0.21	0.05	.41
		Instrumental Supervisor Support After Training	0.17	0.06	.30
		Emotional Supervisor Support Before Training	-0.10	0.04	-.19
Learning Outcomes (N=158)	.37	Motivation to Learn	0.45	0.06	.54
		Informational Supervisor Support Before Training	0.09	0.04	.15
Transfer Outcomes (N=150)	.80	Learning Outcomes	0.69	0.06	.61
		Motivation to Transfer	0.25	0.05	.26
		Appraisal Supervisor Support After Training	0.12	0.03	.13
		Sanctioning of Transfer	-0.11	0.05	-.10

The distinction between the different kinds of supervisor support and the different elements of the transfer climate results in 65% of the variance in trainees' motivation to transfer being accounted for, an increase of a slight 3% as compared to the variance explained by the general elements (Chapter 7). Both appraisal support by the supervisor during training (2%) and emotional support before training (1%) slightly decrease trainees' motivation to transfer. However, when including all the components of supervisor support separately, the extent of appraisal support before, instrumental, appraisal and emotional support during, and instrumental support after training negatively predict trainees' motivation to transfer as well (Appendix 2). Further analysis of these β-weights shows that all supervisor support during training reduces trainees' motivation to transfer, regardless of other variables, while both support before and after training turn negative when including learning outcomes, transfer design or factors from the transfer climate. Thus, supervisor support during training seems to reduce trainees' motivation to transfer, while emotional and appraisal support especially seem to lead to reduced motivation when checking for the influence of learning outcomes, transfer design and transfer climate. By reducing trainees' motivation to transfer, supervisor support is believed to indirectly decrease their transfer outcomes. Both specific perceptions of opportunities to use learning and positive personal outcomes of the use of learning, however, enhance trainees' motivation to transfer.

Thirdly, the variance in perceptions of the overall transfer climate was examined. Both informational (25%) and instrumental supervisor support after training (3%) are shown to lead to perceptions of a more facilitative transfer climate, whereas emotional supervisor support received before training (2%) on the other hand results in a less facilitative transfer climate. Jointly, these explain 30% of the variance in perceptions of the overall transfer climate, which is a considerable increase, as compared to the 19% explained by the overall extent of supervisor support (see Subsection 7.3.1). When the different components of support are included in the regression analyses separately, all supervisor support before and after training, as well as emotional support during training, positively predict perceptions of a facilitative transfer climate (Appendix 2). As such, supervisor support in general is positively related to the perceived transfer climate, with informational and instrumental supervisor support after training especially leading to a more facilitative transfer climate. Emotional supervisor support before training is seen to result in perceptions of a less facilitative transfer climate, at the same time strengthening the regression weights of informational and instrumental support after training, however. This indicates emotional support before training to act as a suppressor variable, suppressing irrelevant variance in both these other kinds of supervisor support (see Krus & Wilkinson, 1986). An explanation for the remaining negative influence of emotional support before training might be that trainees feel this kind of support

as restricting within their relative autonomous work environment, leading them to perceive the transfer climate as less positive to transfer. To conclude, informational and instrumental support after training especially lead to perceptions of a more facilitative transfer climate, indicating that these might indirectly enhance trainees' transfer outcomes.

The results show that trainees achieve higher learning outcomes when they are more motivated to learn and when they perceive more informational support from supervisors before the training, which is confirmed by the regression analyses including each of the components of supervisor support separately (Appendix 2). The informational supervisor support received before training increases the explained variance of learning outcomes by 3% to 37%. Thus, trainee perceptions indicate that the extent of information provided by supervisors before training moderately predicts the learning outcomes these trainees will achieve. By increasing trainees' learning outcomes, informational supervisor support before training might therefore indirectly result in higher transfer outcomes, as well as in stronger motivation to transfer.

Finally, considering the direct effects of supervisor support, the results show that experienced appraisal support from supervisors after training contributes slightly to perceived transfer outcomes. Both informational and emotional supervisor support after training initially also show significant positive β-weights (Appendix 2), but these turn non-significant after appraisal support is included in the equation. Whereas the overall transfer climate in Chapter 7 was also seen to contribute a little to transfer, the current distinction between its subvariables reveals experienced sanctioning of transfer to lessen transfer outcomes. None of the other subvariables of the transfer climate is included.
Inspection of the variance reveals that neither appraisal supervisor support after training (1%) nor sanctioning of transfer (1%) lead to a considerable increase in the variance of transfer explained, probably because experienced learning outcomes (74%) and motivation to transfer (4%) already explain a massive 78%. This indicates that supervisor support after training in general has a slight positive direct effect on transfer outcomes, with appraisal support seemingly the most important type of support. The extent to which others at the workplace are perceived to sanction transfer has a slight negative direct effect on transfer outcomes.

8.3.3 Regression Analyses of Sub-Variables of the Transfer Climate

The results of the analyses in Subsection 8.3.2 showed that subvariables of the transfer climate produce differential effects on transfer outcomes. In other words, perceived sanctioning of transfer is seen to slightly reduce transfer outcomes, while both perceived opportunities to use and perceived positive

outcomes of transfer could indirectly enhance transfer, by increasing trainees' motivation to transfer. Considering the relatedness of supervisor support and the transfer climate, supervisor support might subsequently affect transfer outcomes indirectly by means of the separate components of the transfer climate. Whereas the regression analyses in Subsection 8.3.2 examined only the effects of supervisor support on the overall transfer climate, this subsection will therefore present regression analyses of supervisor support predicting the separate sub-variables of the transfer climate.

The dependent variables successively consist of perceived opportunities to use learning, the sanctioning of transfer by others, resistance to change at the workplace, the personal outcomes-positive of transfer, the personal-outcomes negative of transfer and peer support. Job autonomy was included as independent variable for all of these dependent variables. Peer support and the separate components of supervisor support were included as independent variable in all regression analyses except the one predicting peer support itself. And finally, reflecting behavioural elements as well, sanctioning of transfer and resistance to change were included as independent variables in the regression analyses predicting the opportunities to use, personal outcomes-positive and personal outcomes-negative. Table 8.6 displays the results of these regression analyses.

In general, the table shows peer support to be the most important predictor within the transfer climate, except for the extent of perceived opportunities to use learning. Trainee perceptions of instrumental supervisor support after training are shown to positively explain 5% of the 34% of variance in perceived opportunities to use learning on the job that is accounted for, whereas emotional support after training (3%) negatively predicts perceived opportunities. Secondary examination of the regression analysis indicates that this emotional support only turns negative and significant after including instrumental supervisor support after training, at the same time strengthening the effect of this instrumental support on the opportunities to use learning ($\Delta\beta = .15$). This suggests emotional supervisor support before training to act as a suppressor variable, suppressing variance in instrumental supervisor support after training which has no significance for the relationship between instrumental support and the opportunities to use learning. Similar to the explanation for the negative effect of emotional support before training in Subsection 8.3.1, perceived emotional support before training might give trainees the impression of being restricted in their opportunities to use new knowledge, skills and attitudes.

When including the different components of supervisor support separately, emotional supervisor support *before* as well as instrumental support after training both increase perceived opportunities to use learning (Appendix 2). In conclusion, both instrumental support from supervisors after training and experienced job autonomy (3%) lead to more perceived opportunities to use new knowledge and skills on the job, while the emotional supervisor support

before training and the sanctioning of transfer (23%) by others reduce these opportunities.

Table 8.6 *Trainee Questionnaires: Significant Regression Weights (p < .05) of Regression Analyses Predicting Opportunity to Use, Sanctioning of Transfer, Resistance to Change, Personal Outcomes-Positive, Personal Outcomes-Negative and Peer Support*

Dependent Variable	R²	Independent Variable(s)	B	SE B	β
Opportunity to Use (N=156)	.34	Sanctioning of Transfer	-0.49	0.07	-.48
		Instrumental Supervisor Support After Training	0.30	0.07	.39
		Emotional Supervisor Support After Training	-0.15	0.06	-.23
		Job Autonomy	0.22	0.09	.16
Sanctioning of Transfer (N=157)	.09	Peer Support	-0.25	0.06	-.31
Resistance to Change (N=156)	.16	Peer Support	-0.25	0.07	-.30
		Emotional Supervisor Support Before Training	0.15	0.05	.22
		Job Autonomy	-0.26	0.11	-.18
		Appraisal Supervisor Support During Training	-0.10	0.04	-.17
Personal Outcomes Positive (N=156)	.55	Peer Support	0.36	0.07	.36
		Sanctioning of Transfer	-0.40	0.07	-.33
		Appraisal Supervisor Support Before Training	0.16	0.07	.18
		Informational Supervisor Support During Training	-0.10	0.04	-.16
		Appraisal Supervisor Support After Training	0.22	0.08	.22
Personal Outcomes Negative (N=156)	.49	Peer Support	0.43	0.07	.46
		Informational Supervisor Support After Training	0.23	0.07	.28
		Emotional Supervisor Support Before Training	-0.17	0.06	-.22
		Instrumental Supervisor Support After Training	0.16	0.07	.18
Peer Support	-	-	-	-	-

The only variable predicting trainees' perceptions of the extent of experienced sanctioning of transfer by others is peer support, accounting for a moderate 9% of its variance. Thus, this result indicates that support from peers reduces the extent of experienced sanctioning of transfer.

Experienced resistance to change is seen to decrease under the influence of peer support (6%), job autonomy (3%) and appraisal support by the supervisor during training (3%), while emotional supervisor support received before training (4%), on the contrary, increases feelings of resistance. These four, however, account for only a moderate 16% of its variance. The inclusion of each of the separate support scales reveals that appraisal and emotional support during training reduce perceptions of resistance at the workplace, while emotional support before training in this case only has a non-significant positive regression weight. It is therefore considered that peer support, job autonomy and appraisal support received during training lead to less experienced resistance to change at the workplace.

The personal outcomes-positive trainees perceive for using new knowledge and skills on the job are seen to increase when more peer support (34%) and appraisal supervisor support before (8%) and after (2%) training is experienced. However, the extent of informational supervisor support received during training (9%), as well as experienced sanctioning of transfer (2%), results in perceptions of less positive personal outcomes. All five independent variables together explain a considerable 55% of the variance in personal outcomes-positive. The results of regression analyses including each of the support components separately shows that all types of supervisor support before and after lead to more perceptions of positive personal outcomes, while only the extent of informational support during training has a slight negative effect. These results indicate that supervisor support before and after training in general results in more perceptions of positive outcomes of transfer, with appraisal support being the most important predictor. Peer support also leads to perceptions of more positive consequences, while others sanctioning transfer reduces these, however.

The extent to which trainees perceive personal outcomes-negative for *not* using new knowledge and skills in their jobs is found to increase when more peer support (41%), as well as informational (5%) and instrumental (1%) support from supervisors after training, are experienced. Perceived emotional supervisor support during training (2%) on the other hand leads to fewer perceived personal outcomes-negative. Jointly, these variables explain 49% of the variance in perceived personal outcomes-negative. The separate inclusion of each of the supervisor support components reveals that all types of support after training lead to perceptions of more negative outcomes when not using new

knowledge and skills on the job, whereas no other type of support individually produces significant effects. As emotional support before training increases the regression weights of both informational and instrumental support after training, it is believed to act as a suppressor of these. One explanation for its negative effect might be that emotional support actually indicates to trainees that mistakes are accepted, and that not transferring learning in that sense has few negative consequences. All in all, peer support and supervisor support after training - especially informational and instrumental support - seem to indicate to trainees that persisting with the use of 'old' behaviour at the workplace will have negative consequences, such as negative reactions from others.

Finally, job autonomy was included as the only independent variable possibly predicting peer support. The results, however, show no significant influence of job autonomy on the extent of peer support.

8.4 Conclusions and Discussion

8.4.1 The Ratings of Supervisor Support and the Transfer Climate

The mean scores indicated that trainees within this study experience little support from their supervisors, regardless of differences in timing or type of support. In line with other studies (e.g. Nijman, Nijhof, & Wognum, 2003; Van der Waals, 2001), supervisors hardly promote trainees' use of new knowledge and skills on the job. Trainees also indicated that the extent of support from their supervisors declined in the period from before until after their training participation, which was confirmed by supervisor responses. This indicates that most attention from supervisors with regard to trainees' training participation takes place before training, and, as such, seems mainly directed at attaining certain learning outcomes.

In general, trainees in this study perceive their work environment to offer ample opportunities to use new knowledge and skills. They experience little general or specific opposition to this use of learning, and the extent of support from peers is considered impartial. As the intended behavioural changes are not considered to lead to significant consequences, the climate in general seems open but passive with regard to trainees' use of learning.

The mean scores of all the components of supervisor support distinguished also showed that trainees experience less support than their supervisors indicated they provided them with - results similar to those found in Chapter 7 and in line with other research (e.g. Gielen, 1995). Although this difference in itself has no implications for the relationship between supervisor support and transfer, it does imply that either trainees or supervisors, or both, have invalid perceptions of the

actual levels of supervisor support provided. In other words, trainees underestimate the actual level of support received, or supervisors overestimate the level of support provided. Considering trainee perceptions to be crucial with regard to the final decision as to whether to use new knowledge and skills on the job or not, it is therefore logical to conclude that supervisors either overestimate their provision of support, or do not make their support clear enough to trainees.

8.4.2 The Effects of Supervisor Support on Transfer Outcomes

The focus in this chapter was on whether the composition of supervisor support produces differential effects on transfer of training, and whether these effects are mainly direct or indirect. The examination of direct effects showed that the extent of appraisal support from supervisors after training results in somewhat higher transfer outcomes. Contrary to the finding that the overall extent of supervisor support has no direct effect on transfer (Chapter 7), this indicates that supervisors who, for example, reward trainees for using new knowledge and skills on the job might slightly enhance transfer. The distinction between the sub-variables of the transfer climate also reveals that the extent of perceived sanctioning of transfer by others slightly decreases transfer ratings. Thus, when distinguishing between more specific components of supervisor support and the transfer climate, appraisal support after training slightly increases transfer outcomes, while others sanctioning transfer at the workplace slightly decreases these transfer outcomes.

Following the suggested causality in the Transfer Framework, it was assumed that separate components of supervisor support might indirectly affect transfer, by means of trainees' motivation to learn, their learning outcomes, their motivation to transfer and the transfer climate. The results indeed showed trainees' learning outcomes to increase when trainees receive more informational support before training from their supervisors, in addition to the influence of their motivation to learn. More specifically, trainees whose supervisors inform them before training about, for example, the importance of the training for their jobs, in general achieve higher learning outcomes. As learning outcomes were shown to be the strongest predictor of transfer outcomes, the extent of informational supervisor support before training is suggested to enhance transfer outcomes indirectly by means of trainees' learning outcomes.
An examination of trainees' motivation to learn indicated that support provided by supervisors to trainees before training results in higher motivation to learn. It was specifically shown that both appraisal and emotional support before training enhance trainees' motivation to learn. The conceptualisation of appraisal support before training, by means of promised extrinsic rewards, such

as a salary increase or promotion, and intrinsic rewards, such as the positive feeling of being specifically selected to take part in training, seems to confirm common assumptions regarding the positive effects of extrinsic and intrinsic rewards on training motivation (Noe, 1986). In line with expectancy theory (Vroom, 1964), the extent to which supervisors provide appraisal support, increasing trainees' expectations of positive extrinsic and intrinsic outcomes, at least partly determines trainees' motivation to learn. Emotional supervisor support before training consists of, for example, letting employees know that they will always be given support when facing problems with training. The results show that this emotional support before training increases trainees' motivation to learn, thus indicating that trainees who experience things like trust and empathy from others at the workplace are more willing to learn. By increasing trainees' motivation to learn, both these kinds of supervisor support might indirectly enhance learning outcomes, thereby also increasing chances of positive transfer outcomes.

It was seen earlier that learning outcomes, the transfer design of the training, and the transfer climate together provided opportunities for quite accurate prediction of trainees' motivation to transfer. The distinction between different kinds of support and between subvariables of the transfer climate hardly improved the ability to explain trainees' motivation to transfer, but does provide more insight into their influence. From the transfer climate, both perceived opportunities to use new knowledge, skills and attitudes, and the expected positive outcomes of this use, enhance trainees' motivation to transfer. Thus, trainees are more motivated to transfer when they feel to have learned new knowledge, skills and attitudes (learning outcomes), when they feel these to be relevant and applicable with regard to the job (transfer design), when they perceive opportunities to use them on the job (opportunities to use) and when they expect positive outcomes from their use (personal outcomes-positive).

When taking these positive effects into account, contrary to expectations, emotional supervisor support before training and appraisal supervisor support during training result in reduced motivation to transfer. It is not quite clear why exactly support before and during training would decrease motivation to transfer, but one possible explanation might be that emotional and appraisal support at these times could be considered pointless and most undesirable. More specifically, when trainees feel to have learned, experience a positive transfer design, and feel the transfer climate to facilitate transfer, these kinds of transfer might be experienced as rather imposed and redundant. Both emotional and appraisal supervisor might then have effects that are opposed to those as intended.

The Transfer Framework also suggested that support from supervisors might enhance transfer outcomes through improvement of the transfer climate. It was

concluded, however, that this direct effect of the transfer climate was limited to a slight negative effect of the sanctioning of transfer by others. Peer support was seen to be the most important predictor within the transfer climate, although it had no effects on either transfer outcomes or trainees' motivation to transfer. This does indicate, however, that support from peers has an important positive effect on the extent to which the transfer climate facilitates transfer.

Supervisor support was also seen to positively predict a more facilitative transfer climate, with instrumental and informational support after training especially producing an effect. Both of these specifically lead to greater expectations of negative consequences when not using new knowledge and skills on the job. From this it is assumed that trainees who perceive their supervisors to actively provide information and instrumental help for the use of new knowledge and skills expect more negative outcomes if they do not use them. Instrumental support after training also increases the opportunities to use learning, indicating that supervisors can determine to a certain extent whether trainees have the opportunity to transfer new knowledge, skills and attitudes. Both appraisal supervisor support before and after training increase perceptions of personal outcomes positive, from which it is concluded that trainees expect more positive consequences of transfer if their supervisor provides them with appraisal. Considering the positive influence of opportunities to use and personal outcomes positive on motivation to transfer, it is also concluded that these kinds of supervisor support indirectly increase trainees' motivation to transfer, which, on its turn, might lead to higher transfer outcomes.

In general, the effects of supervisor support during training were seen to be mostly negative, while this support was hardly related to support before and after training. It is believed that the inclusion of lowest scores for trainees who had no contact with their supervisor during training might have distorted these effects. The results do indicate, however, that supervisor support during training might have negative effects on trainees' motivation to learn and transfer, as well as on the personal outcomes-positive.

Similarly, the effects of the different times of emotional supervisor support seem to depend mostly upon the effects of the other three kinds of support, which indicates that emotional supervisor support is less related to transfer than these others. It is therefore believed that emotional supervisor support can merely be seen as an indication of the extent of support a supervisor provides, while the other kinds of support are more important with regard to transfer. In fact, the results also indicate that when checking for these other kinds of support and, for example, achieved learning outcomes, emotional support can have negative effects.

Chapter 9

Conclusions and Discussion

9.1 Introduction

One of the best-known and most widely used ways to improve employee performance in organisations is the use of corporate training. As a consequence, the effects of training are of major interest to both scholars and scientists in the field of human resource development. The results of research indicate, however, that the actual levels of transfer of training programmes to the workplace often do not match those intended. An important part of research on transfer has been carried out on the influence of trainees' work environment, with one of the main assumptions being that supervisory behaviour significantly affects trainees' transfer outcomes. Little evidence-based knowledge exists, however, about the relationship between supervisor behaviour and transfer outcomes. In order to gain a more empirical insight into the relationship between supervisor support at the workplace and subordinate trainees' transfer outcomes, it was decided to carry out this study.

Chapter 2 started with a refinement of the concept of transfer of training. It was argued that, to understand and examine the effects of intervening variables - such as supervisor support - on transfer outcomes, a systemic view of the transfer process has to be adopted. Such systemic views have previously been referred to as the transfer system or the transfer framework (e.g. Holton, Bates, & Ruona, 2000b; Kontoghiorghes, 2004). To design a systemic representation of the transfer process, a subsequent examination of research on transfer outcomes was conducted. This led to the identification of factors that were shown to relate to transfer outcomes - either directly or indirectly - or for the effects of which strong indications existed. These factors and their suggested effects culminated in the design of a Transfer Framework, which was intended

to provide a solid underpinning for the examination of the effects of supervisor support.

Chapter 3 then dealt with supervisor support and its characteristics. A review of research on supervisor support and transfer outcomes made it clear that the assumption of positive effects of supervisor support on transfer outcomes was not confirmed unequivocally. Further analysis brought two main points of incompleteness to light. First, it was shown that the suggested way in which supervisor support affects transfer outcomes varies between studies, and is therefore unclear. If supervisor support does affect transfer outcomes, it remains to be determined in what way these effects occur.

The second point reflects the actual composition of supervisor support. The review showed that this support has been conceptualised in different ways, ranging in content from, for example, the provision of time to prepare for training to advising trainees how to use new knowledge, skills and attitudes. It also indicated a differentiation between moments of supervisor support, with the possibility of support before, during and after training. Finally, the review pointed to differences in the extent of supervisor support, with its suggested effects depending on the actual amount of support provided. The second comment thus relates to the way in which supervisor support should be conceptualised in order to have optimal effects on transfer outcomes, distinguishing between dimensions of content, timing and extent.

A review of social support in general in Chapter 3 led to the identification of four types of social support: instrumental, informational, emotional and appraisal. When these were applied to the concept of supervisor support for transfer of training, they were believed possibly to be provided at three different times: before, during and after training. To test the effects of supervisor support on transfer outcomes, the resulting twelve components were subsequently incorporated into the Transfer Framework.

Chapter 4 provided a description of the two sub-questions of the research question that were formulated to test these effects, respectively:

1. What are the effects of general supervisor support on transfer outcomes, when taking into account the general elements in the Transfer Framework?

2. What combinations of types and timing of supervisor support affect transfer outcomes, when taking into account the specific elements in the Transfer Framework?

To answer these questions, it was decided to conduct a survey of different training programmes by means of questionnaires. These questionnaires retrospectively assessed the periods before, during and after a training course, making use of analogous versions for trainees and supervisors. Chapter 5 described the procedure and results of a pilot test conducted on them, while

Chapters 6, 7 and 8 discussed the procedure and results of the final data collection.

The structure of Chapter 9 is as follows. After this introduction, Section 9.2 will discuss some methodological comments on the study. The main conclusions will be described and discussed in Section 9.3. Section 9.4 provides a description of the implications of the results, and Section 9.5 finalises the study, by providing a look at a possible future for supervisor support for human resource development.

9.2 Methodological Issues

Although the ensuring of validity has been a main priority throughout this study, some remarks can be made with regard to the methodology and design of the study. These refer to the examination of causality within the Transfer Framework, the use of perceptional measures and the design of the study itself.

Examining Causality
The Transfer Framework indicates that several of its variables act as both dependent and independent variable at the same time. An appropriate way of examining such complex relationships is by structural equation modelling, in which a model can be tested statistically in a simultaneous analysis of the entire system of variables, to determine the extent to which it corresponds with the data (Gielen, 1995). Initial attempts to use structural equation modelling by means of LISREL (LInear Structural RELations) indicated the sample size of the main data to be insufficient, as a consequence of which it was decided to carry out the analyses by means of separate multiple regression analyses. Although this limited the possibility of examining the Transfer Framework as one entity, in addition to the fact that no explorative examination of - possibly more suitable - causal connections had been carried out, it was assumed that these regression analyses would provide a valid reflection of the causal relationships as depicted in the Transfer Framework.

Perceptional Measures
A second point of attention refers to the objectivity of the measures in this study. To measure the different variables that were conceptualised in the Transfer Framework, a survey was carried out by means of questionnaires. This use of perceptional measures implies the risk of certain response tendencies, such as social desirability. Social desirability might especially occur with variables to which certain responses might be believed to be beneficial, for example, in the case of performance-related variables, such as trainees' learning and transfer outcomes. No objective data were available on the learning and transfer outcomes of trainees in this study, however, and time restrictions

prevented their separate collection. As perceptional measures are the main source of measuring variables in this kind of research (Gielen, 1995), and they also provide both the easiest and the most appropriate way to measure social support (House, 1981), it was decided to measure all the variables in the study by means of trainee and supervisor perceptions.

Design of the Study

All the variables in this study were measured once, at one specific moment after the respective training programme. This implies that the assumed (timely) causality cannot be determined beyond doubt. Regarding the effects of supervisor support, for example, it might also be the case that trainees' motivation to transfer in a way 'triggered' supervisors to provide support, thus reversing causality. To minimise the risk of reversed causality, the questionnaires were designed to have respondents focus as much as possible on the specific time of interest; before, during or after training. The possibility of reversed causality cannot be ruled out completely, however, and has to be borne in mind when interpreting the results of this study.

Related to the above, a second point of attention concerns the single measurement of certain variables. This single measurement meant that variables that did not specifically relate to one of the periods identified, such as personality characteristics, were conceptualised as stable constructs, measured at a specific moment after training. Several studies, however, indicate that self-efficacy, for example, might change over time. Mathieu et al. (1993) in fact suggest a form of a positive, reinforcing feedback cycle that occurs between self-efficacy and performance. Thus, the conceptualisation of personality characteristics especially as stable constructs might have affected the results, by, for example, altering their relationship to trainees' motivation to learn.

A last comment can be made with regard to the consequences of the design for the external validity of its results. The training programmes that are included in the study were selected on their similarity of training objectives and on their provision of suitable samples of trainees and supervisors. They turned out to be relatively similar programmes, best described as forms of classical off-the-job classroom training with practical assignments. In addition, all three organisations relate to the service industry in the comparable fields of technology and information technology, and over 90% of the respondents were men. This final sample is therefore limited, with regard both to the possible variation in different forms of corporate training within different organisational settings and to the representativeness of the gender of the sample of training participants. It therefore poses a restriction to the external validity of the results, and, for this reason, these results cannot be generalised to different settings indiscriminately.

9.3 Conclusions and Discussion

The conclusions and discussion are described in two subsections, referring to each of the sub-questions of the research question. Subsection 9.3.1 therefore deals with the effects of general supervisor support on trainees' transfer outcomes, while Subsection 9.3.2 describes the conclusions and discussion of the effects of the separate kinds of supervisor support.

9.3.1 The Effects of General Supervisor Support on Transfer Outcomes

Conclusions
Sub-question 1 concerns the effects of general supervisor support on transfer outcomes, when taking into account the general elements of the Transfer Framework. Since supervisor support as a one-dimensional general construct also implies the inclusion of supportive behaviour after training, its indirect effects could only be determined on variables after training. The analyses therefore examined the direct effects of general supervisor support on transfer outcomes; the indirect effects of general supervisor support by means of trainees' motivation to transfer and the transfer climate were also examined.
The results show that trainees perceive only slight general support from their supervisors. This general supervisor support is positively related to transfer outcomes, but does not predict these outcomes directly. Transfer outcomes depend greatly, however, on the level of achieved learning outcomes, and, to a lesser extent, on trainees' motivation to transfer and the transfer climate. The first conclusion from this study therefore is that general supervisor support has no direct effect on trainees' transfer outcomes, when taking into account the positive influence of learning, motivation to transfer and the prevailing transfer climate.

Supervisors often have control over the work environment, and can in fact be considered part of the transfer climate (e.g. Rouiller & Goldstein, 1993). A second assumption therefore was that general supervisor support leads to a more facilitative transfer climate, while this transfer climate is believed to increase trainees' transfer outcomes. The results indeed show that general supervisor support has a moderately positive effect on the transfer climate, and the transfer climate has a slight positive effect on trainees' transfer outcomes. It is concluded that general supervisor support has a slight positive indirect effect on trainees' transfer outcomes through its influence on the transfer climate.

The last assumption about the effects of general supervisor support was that it has a positive indirect effect on transfer outcomes, by means of trainees' motivation to transfer. Thus, general supervisor support is believed to increase trainees' motivation to transfer, while increased motivation to transfer is

expected to lead to increased transfer outcomes. What is contrary to expectations, therefore, is the finding that general supervisor support has a negative direct effect on trainees' motivation to transfer. The results showed this negative effect to be related to the influence of achieved learning outcomes, the transfer design and the transfer climate. Most importantly, if the transfer climate is considered similar for all trainees, an increase in general supervisor support directly leads to a decrease in motivation to transfer.

At the same time, however, general supervisor support does increase trainees' motivation to transfer indirectly, by improving the transfer climate. Supervisors can thus care for a more supportive climate for transfer at trainees' workplace, which will increase trainees' motivation to transfer. The conclusion therefore is that general supervisor support positively affects trainees' motivation to transfer, by improving the transfer climate, while at the same time decreasing motivation to transfer directly. However, as the overall relationship between general supervisor support and trainees' motivation to transfer is positive, on balance, the effect of general supervisor support on motivation to transfer is also considered positive. It is therefore also concluded that general supervisor support has positive effects on trainees' transfer outcomes, by means of their motivation to transfer.

Discussion

This study does not confirm the often suggested strong effects of support (e.g. Baldwin & Ford, 1988; Elangovan & Karakowsky, 1999), but rather indicates that general supervisor support has a slight positive indirect effect on trainees' transfer outcomes. This casts doubt on the strength of the effects of supervisor support on transfer outcomes, at least indicating that the assumed positive effects of supervisor support are not unequivocal between different studies. One possible explanation for these different findings might be found in the assumption that there is no single steady model of transfer, but rather that the configuration of a transfer model depends on the specific organisational or workplace setting (e.g. Fitzgerald & Kehrhahn, 2003; Yelon & Ford, 1999). The influence of, for example, supervisor support and the transfer climate on transfer outcomes might vary, depending on other factors relating to the transfer process, such as trainees' job autonomy or the support trainees receive from peers. This study itself points in that direction, in that the results from the pilot test do not quite correspond to those of the main data. This pilot test was carried out among trained managers, who mentioned that there was relatively little contact with peers or their supervisors, in that sense differing from the participants in the main data.

A second explanation for the differences in effect sizes of supervisor support might be found in the inclusion of different variables in the transfer models in separate studies. Trainees' learning outcomes are seen to be the most important predictor of both their transfer outcomes and their motivation to transfer in this

study, whereas other studies did not include learning outcomes (e.g. Kontoghiorghes, 2004). Differences in the design of models for transfer of training have therefore probably led to different estimations of the strength of relationships, which advocates the continuing process of designing a valid and reliable model of transfer.

Considering the fact that general supervisor support only has indirect effects on transfer outcomes, the question arises whether direct effects of supervisor support on transfer outcomes should in fact be expected. If supervisors can improve trainees' work environment and motivate trainees to transfer, what else can they do that will directly enhance trainees' application of new knowledge, skills and attitudes? In this light, it might be rather naive to suppose that supervisors directly affect transfer outcomes by means of their support. Assumed direct effects of supervisor support on transfer outcomes could merely be an effect of the absence of certain - essential - other variables, whereas the actual effects might in fact be only indirect.

Contrary to what was expected, general supervisor support directly decreases trainees' motivation to transfer. Similar results, however, have been mentioned before. Deelstra et al. (2003) note, for example, that instrumental support at work can have negative effects, in terms of employees' reactions to this support. They indicate that imposed social support might pose a threat to the recipients' self-esteem, which - according to Duffy and Wong (2000) - might specifically be the case if it implies superiority-inferiority positions for the provider and the recipient of the support. This relates to the belief that the timing of support is important, which is confirmed by studies of social support in different fields of research that indicate that support at the wrong time can have detrimental effects (Duffy & Wong, 2000). One explanation might therefore be that, even though general supervisor support increases trainees' motivation to transfer, by improving the transfer climate, this support itself is perceived by trainees as redundant and/or unwanted. Trainees might, for example, experience support as constraining, and react to it in a negative way.

9.3.2 The Effects of Differential Supervisor Support on Transfer Outcomes

Conclusions
Sub-question 2 concerns the effects of different combinations of types and timing of supervisor support on transfer outcomes, when taking into account the specific elements in the Transfer Framework. In contrast to the examination of the effects of general supervisor support, the different times of support also made it possible to examine their indirect effects on transfer outcomes, by means of trainees' learning outcomes and motivation to learn.

The results show that supervisors provide support to a general extent. Even though slight differences between the extent of the separate types and times of

supervisor support exist, the most important differences occur between supervisors, instead of kinds of support. It can be concluded that supervisors differ in the overall extent to which they support trainees, but make little difference in the specific kind or timing of support that they individually provide. Consequently, several of these different kinds of support 'share' in their direct and indirect effects on transfer outcomes. To a certain extent, the separate kinds of supervisor support therefore have similar effects on transfer outcomes.

Although the different types and times of supervisor support are thus related, the results do point to differential effects. First, the effects of emotional support often change or disappear under the influence of the other types of support. This leads to the conclusion that emotional support is less influential on, or less directly related to, transfer outcomes than these other types of support.

Secondly, several of the separate types of support during training have negative effects on trainees' motivation to learn and transfer, as well as on the general transfer climate and some separate elements of the transfer climate. From these analyses - contrary to expectations - it is therefore concluded that the separate types of supervisor support during training negatively affect the transfer climate and trainees' motivation to learn and transfer.

One remarkable finding concerns the direct effect of appraisal support by supervisors after training. In contrast with earlier findings, appraisal supervisor support after training has a slight but positive direct effect on transfer outcomes. Thus, a certain extent of appraisal by supervisors after training directly leads to higher transfer outcomes by trainees.

The study also indicates that the more appraisal support trainees receive from supervisors before training, the more these trainees are motivated to learn. Even though the effects are relatively small, this indicates that supervisors can motivate trainees to learn by indicating the positive consequences that learning and training participation will have. Supervisors might therefore indirectly enhance trainees' learning and transfer outcomes, by informing trainees before training about the positive consequences of training participation and the transfer of new knowledge, skills and attitudes.

Indirect effects were also found for informational and instrumental support by supervisors. Informational support by supervisors before training slightly increases trainees' learning outcomes, and has subsequent positive indirect effects on trainees' transfer outcomes and their motivation to transfer. Instrumental and, to a lesser extent, informational support by supervisors after training have slight positive effects on the transfer climate. Supervisors thus improve the transfer climate through instrumental help, such as the provision of sufficient time and resources, as well as providing information that leads trainees to assess the transfer climate as more facilitative of transfer. More precisely, instrumental support after training specifically enhances trainees'

opportunities to use new knowledge, skills and attitudes, while informational support and instrumental support lead to greater negative personal outcomes of not using new knowledge, skills and attitudes in the job.

With regard to the complex relationship between supervisor support and trainees' motivation to transfer, emotional supervisor support before training and appraisal supervisor support during training were found to decrease this motivation. On the other hand, both instrumental and informational supervisor support after training seem to reflect the indirect relationship with motivation to transfer through the transfer climate, by increasing trainees' opportunities to use learning, and by affecting the personal outcomes that transfer of training has for trainees. It can be concluded that instrumental and informational supervisor support after training improve the perceived transfer climate, and indirectly increase trainees' motivation to transfer, while emotional support before and appraisal support during training directly reduce trainees' motivation to transfer.

Finally, the results show neither direct nor indirect effects of the extent of desired support. This indicates that the effects of supervisor support on transfer outcomes have little to do with trainees' desire for or rejection of support. It can be concluded that the effects of supervisor support are only due to the extent to which support is perceived to be provided, regardless of trainees' actual preference for support.

Discussion
The results of analyses of specific kinds of supervisor support indicate that supervisors who direct and adapt their support to trainees' motivation to learn or transfer, their learning and transfer outcomes, or the transfer climate have a slight but positive effect on trainees' transfer outcomes. The relative smallness of these effects again indicates - similar to general supervisor support - that the effects of supervisor support on trainees' transfer outcomes are slight. The main advantage of distinguishing between different kinds of supervisor support therefore consists of gaining a better insight into what kind of support affects transfer outcomes, and in what way.

A good example of this relates to the influence of supervisor support on trainees' motivation to transfer. While instrumental and informational support after training improve the transfer climate, and, indirectly, trainees' motivation to transfer, trainees' experience of emotional support before and appraisal support during training decrease their motivation to transfer. This indicates that supervisors could better focus on improving the transfer climate after training, and restrict their provision of the above-mentioned emotional and appraisal support. One explanation might be that trainees relate their motivation to transfer to the 'facilitativeness' and 'encouragement' they perceive from their work environment. On the other hand, these trainees might, for example, perceive emotional and appraisal support as redundant and badly timed. The

kinds of supervisor support that can be considered less functional with regard to transfer might then pose a threat to trainees' self-esteem, and evoke negative reactions (see Duffy & Wong, 2000).

Supervisors who indicate to trainees that the use of new knowledge, skills and attitudes will have positive consequences, slightly but directly increase trainees' application of these. It is not clear why specifically appraisal support after training would enhance these transfer outcomes, but a possible explanation might be that trainees who perceive or expect positive consequences of training and transfer directly invest more time and energy in their use of new knowledge, skills and attitudes.

It is also concluded that trainees who receive information about, for example, the importance and the course of training from their supervisors before the training, in general achieve higher learning outcomes. This positive effect of informational support by supervisors before training also indirectly increases trainees' transfer outcomes and their motivation to transfer. One explanation might be that this pre-training information acts as an advance organiser, providing trainees with a mental framework or schema for the training programme that facilitates their learning (see Russ-Eft, 2002). It might also be interpreted as a kind of pre-training learning, thus lengthening the extent of learning by trainees, which can be expected to result in higher learning outcomes.

An explanation for the fact that emotional supervisor support seems less related to trainees' transfer outcomes than the other types of support - regardless of their timing - might be found in their different content. The conceptualisation of instrumental, informational and appraisal support implies that these relate only and specifically to the training and its transfer outcomes. Emotional support, on the other hand, is a more general kind of support, referring to training as well as general job performance, and even to trainees' general psychological well-being. Thus, supportive supervisors might provide all kinds of support to a similar extent, whereas emotional support is somewhat less related to transfer outcomes than the others.

Supervisor support provided during training has mainly negative effects, when directly or indirectly related to transfer outcomes. This is contrary to what was expected, especially as both support before and after training do have mostly positive effects. A likely explanation can be found in the artificial inclusion of the lowest possible scores for trainees who had no contact with their supervisors during training. This meant that about half the final data consisted of trainees who were assumed to have received no support from their supervisor during training, which might have created a sort of artificial variance that affected the validity of its examination. The results of the effects of supervisor support during training therefore need to be interpreted with great caution.

Finally, supervisors do not really differentiate between the kinds of support, which is believed to be the main reason for the large correspondence between the effects of the kinds of support. Although the results indicate that this differentiation provides more insight into the relationship between supervisor support and transfer outcomes, these results can best be interpreted as indicative of what might be the best type or timing of support to provide, bearing in mind that other kinds of supervisor support might have comparable effects.

9.4 Implications

Theoretical Implications
What are the implications of the results of this study? With regard to the development of a theory on the effects of supervisor support on transfer outcomes, these results indicate that the effects of supervisor support might not be as strong as often suggested, and that these effects are merely indirect. Other variables, such as learning achievements and motivational elements, might be more important, as well as the fact that the effects of supervisor support depend on the specific setting in which it is provided. This also means that the effects of supervisor support on transfer outcomes cannot be seen separately from other trainee, work environment and training characteristics. The results also indicate that the differentiation between different types and times of supervisor support is useful, providing further insight into the relationship between supervisor support and transfer outcomes.

Research Implications
With regard to further research, three main implications are identified. The first of these is that future research should consider the main as well as the moderating effects of supervisor support. Whereas the results of this study indicate that the effects of supervisor support are merely indirect, the theoretical review indicated that it might also be expected that supervisor support would buffer or boost the effects of other variables, or that the effects of supervisor support itself would be moderated. One example concerns the effects of the transfer design of training programmes. If trainees do not need to prepare for a training programme, and if it takes place off the job, it might well be that instrumental support by supervisors before and during training has no effect on trainees' learning outcomes. This reasoning thus suggests that the possible effects of instrumental supervisor support before and during training could be moderated by the characteristics of the training programme, ie. the transfer design. If the transfer design implies that trainees have to prepare for the training, or if regular work activities may interfere with the learning process during training, instrumental supervisor support before and during training will probably have a greater effect on learning outcomes than with different transfer

designs. Similar to the theoretical implication described above, this also implies that future research on the effects of supervisor support should examine these effects within a larger systemic setting.

Secondly, the description of transfer of training in Chapter 2 indicated that it is a multidimensional construct, consisting of at least the dimensions of generalisability and time. Although it was not possible in this study to distinguish between the separate dimensions of transfer outcomes, it might be expected that the effects of supervisor support would differ when making this distinction. It might, for example, be the case that supervisor support has a greater impact on transfer outcomes in the initial stages of transfer - when trainees do not know exactly when to use new knowledge, skills and attitudes - than at the moment that trainees have reached the stage of optimal and unconscious transfer (see Foxon, 1993). Similarly, the difference between near and far transfer might well have consequences for the impact of supervisor support, possibly leading to different configurations of kinds of support that are best provided to achieve intended transfer outcomes. Future research should therefore take the multidimensionality of transfer of training into account.

A final implication for future research refers to the difference between experimental and non-experimental research. The results in this study showed that neither trainees nor supervisors perceived supervisors to be really supportive, even though their perceptions differed. In addition, it was seen to be difficult to differentiate between the effects of the separate kinds of support, as supervisors, roughly speaking, provided none or all of these different kinds. Analyses in non-experimental studies such as this are subsequently often carried out on samples with a restricted range in their variables, thus limiting the validity of their results. The recommendation therefore is to conduct similar studies in experimental settings, in which, for example, the range of supportive behaviours can be controlled intentionally (see also Gielen, 1995; Gielen & Van der Klink, 1995).

Practical Implications
With regard to practice, the main implication of the results is that supervisor support seems best directed at increasing trainees' motivation to transfer and the transfer climate. However, the fact that support might decrease trainees' motivation to transfer also needs to be taken into account. The relatively explorative nature of the examination of the effects of different kinds of support, as well as the relatedness of these kinds, implies that it is difficult to point out the valid implications of these. It does, however, seem important to distinguish between the different times of support, as both informational and appraisal supervisor support before training are seen to increase trainees' learning outcomes. In addition, both instrumental and informational supervisor support after training lead to perceptions of an improved transfer climate, which could both enhance trainees' transfer outcomes and their motivation to transfer.

9.5 The Future of Supervisor Support for Training and Development

When questioning whether support by supervisors will 'have a future' with regard to transfer of training, arguments both in favour and against can be found. Fitzgerald and Kehrhahn (2003), finding a negative correlation between supervisor support and transfer, suggest that job autonomy might interfere with the effects of support. They state that views of future work suggest employees' job autonomy will only increase, thereby reconsidering the importance of supervisor support regarding transfer of training. On the other hand, Stinglhamber & Vandenberghe (2003) suggest that supervisors will become more important in change systems between organisations and employees, because of current transformations in most companies around the world. A consequence of these changes, such as mergers and acquisitions, is that it has become harder than ever for employees to identify who their employer is. They indicate that, as a consequence of this, the supervisor's role might change from being just an organisational representative into a sort of replacement of the organisation in keeping employees motivated and willing to stay. It is plausible that - in such a context - the role of immediate supervisors is strengthened, and that employees may expect more of them, in order to guide their behaviour (p.264). In addition, as organisations are becoming more decentralised, supervisors may have some room for developing their own exchange relationships with subordinates.

Not only does the changing nature of work and organisations impact the future of supervisor support, more important consequences might perhaps be expected from changing concepts of learning and transfer in organisations. A focus on learning at the workplace implies that supervisors will have a different - probably larger - role in the entire developmental process of employees (e.g. Bryans & Smith, 2000), redirecting their influence from mostly transfer of learning to the entire - intertwined - learning and transfer process. Ellinger, Watkins and Bostrom (1999) refer to the concept of facilitative leadership with regard to supervisors' influence on employee learning at the workplace, indicating a change from facilitating specific training transfer to facilitating continuous learning at the workplace (see e.g. Evans & Rainbird, 2002). Notwithstanding these and the above developments and possibilities, however, there is no question that supervisors and their support will have a place in the future processes and practices of employee learning and transfer.

Summary

Introduction
One of the best-known and most widely used ways to improve employee performance in organisations is the use of corporate training. As a consequence, the effects of training are of major interest to both scholars and scientists in the field of human resource development. The results of research indicate, however, that the actual levels of transfer of training programmes to the workplace often do not match those intended. An important part of research on transfer has been carried out on the influence of trainees' work environment, with one of the main assumptions being that support from supervisors significantly affects trainees' transfer outcomes. Little evidence-based knowledge exists, however, about the relationship between supervisor support and transfer outcomes. In order to gain a deeper empirical insight into the relationship between supervisor support at the workplace and subordinate trainees' transfer outcomes, it was decided to carry out this study. The main question of the study therefore is: What is the effect of supervisor support on transfer of training?

Towards a Framework for Transfer
To answer this question, Chapter 2 starts with a refinement of the concept of transfer of training. Positive transfer outcomes of training are defined as the effective and continuing application in the job environment of the knowledge, skills and attitudes gained in a training context, as measured at a certain point in time after training. It is argued that, to understand and examine the effects of intervening variables - such as supervisor support - on transfer outcomes, a systemic view of the transfer process has to be adopted. Such systemic views have previously been described as the transfer system (eg. Holton et al., 2000b). To design a systemic representation of the transfer process, a subsequent examination of research on transfer outcomes is conducted in Chapter 2. This results in the identification of several factors that are shown to relate to transfer outcomes - either directly or indirectly - or for the effects of which strong indications exist. These factors are divided into three main categories: work environment characteristics, trainee characteristics and training characteristics.

Within the work environment a distinction is made between the general work environment and the transfer climate. Factors affecting transfer outcomes in the general work environment are trainees' job autonomy and workload, while the transfer climate is believed to consist of the opportunities to transfer training on the job, the sanctioning of transfer by others, general resistance to change at the workplace, positive personal outcomes of transfer and negative personal outcomes of not transferring training, and peer and supervisor support.

Trainee characteristics are divided into categories of factors referring to ability, training motivation, personality and attitudes. Factors referring to ability are trainees' general cognitive ability and their age, experience and prior knowledge. Training motivation is comprised of trainees' motivation to learn, motivation to transfer, learner readiness and intervention fulfilment. Trainees' personality characteristics that have been shown to relate to transfer of training are self-efficacy, conscientiousness, anxiety and locus of control, while trainees' job involvement is the only trainee attitude distinguished with regard to transfer outcomes. Finally, certain characteristics of the training design affect transfer of training. The review of research indicates that the inclusion of general principles, variation in practice, overlearning, relapse prevention and goal-setting in training programmes can enhance transfer outcomes.

All of these identified factors and their suggested effects can be combined in a model that can be used to examine the effects of supervisor support on transfer outcomes. In order to create such a model, Holton's 'HRD Evaluation Research and Measurement Model' (1996, p. 17) is taken as a frame of reference. Integrating the factors into this evaluation model, a preliminary framework for transfer emerges, which is intended to provide a solid and comprehensive underpinning for the examination of the effects of supervisor support.

Supervisor Support and Transfer

Subsequently, Chapter 3 specifically deals with the construct of supervisor support, its characteristics and its relationship to transfer outcomes. With regard to transfer of training, supervisor support is defined as the extent to which supervisors optimise employees' use on the job of the knowledge, skills and attitudes gained in training. A review of research on supervisor support and transfer outcomes makes clear that the assumption of positive effects of supervisor support on transfer outcomes is not confirmed unequivocally. Different studies point to positive as well as negative effects, and some studies indicate no effect of supervisor support on transfer outcomes. Further analysis brings two main points of concern to light. The first of these, the suggested way in which supervisor support affects transfer outcomes, differs, and is therefore unclear. Some results refer to a direct effect, while, for example, other results indicate the effect of supervisor support to be mediated by trainees' motivation. Thus, if supervisor support does affect transfer outcomes, it remains to be determined in what way these effects occur.

The second point reflects the actual composition of supervisor support. The review shows that this support has been conceptualised in different ways, ranging from, for example, the provision of time to prepare for training to advising trainees how to use new knowledge, skills and attitudes. It also indicates a differentiation in timing, with the possibility of support before, during and after training. Finally, the review points to differences in the extent of supervisor support, with its suggested effects depending on the actual amount of support provided. The second comment thus relates to the way in which supervisor support should be conceptualised in order to have optimal effects on transfer outcomes, distinguishing between dimensions of content, timing and extent.

To examine the effects of supervisor support on transfer outcomes it is therefore necessary to determine what kind of support can be given, and how it might affect transfer outcomes. A subsequent review of social support in other fields of research leads to the identification of four different types of social support: instrumental, informational, emotional and appraisal. When these are applied to the concept of supervisor support for transfer of training, they are believed possibly to be provided at three different times: before, during and after training. To test the effects of supervisor support on transfer outcomes, the resulting twelve components are incorporated into the Transfer Framework. From other studies on the relationship between supervisor support and transfer outcomes, they are believed to possibly affect transfer outcomes directly, or indirectly by means of the transfer climate, trainees' learning outcomes, trainees' motivation to learn or trainees' motivation to transfer. Finally, to study the extent to which supervisor support can best be provided, a separate factor reflecting the extent of preferred support is included in the Transfer Framework.

Design and Instrumentation
The inclusion of the different factors in the Transfer Framework implies that several of its general elements are further divided into these separate factors. Considering the difference between the effects of general supervisor support and those of its specific components, the main question of the study is divided into two subquestions in Chapter 4. These subquestions are respectively:

1. What are the effects of general supervisor support on transfer outcomes, when taking into account the general elements in the Transfer Framework?

2. What combinations of types and timing of supervisor support affect transfer outcomes, when taking into account the specific elements in the Transfer Framework?

The difference between the general elements and the specific elements in the Transfer Framework refers to the overall transfer climate and its specific components.

To answer the subquestions, a research design on gathering data from different training programmes in different organisations was developed. The data gathering was carried out by means of a survey of past training programmes, and consists of three main parts. The first part concerns an explorative case study of the effectiveness of training programmes for production employees in a car tyre factory, and was conducted through post-training interviews with trainees and their supervisors. This case study is meant to explore the match between the research methodology and the Transfer Framework, and is discussed briefly in Chapter 4 as well. The results of this case study indicate that trainees and their supervisors do not relate individual training programmes to a larger organisational context, such as organisational goals. For this reason, the Transfer Framework is limited to elements related to training effectiveness at individual trainee level in the second and third part of the study, as depicted in Figure 1.

The second and third part of the data gathering were carried out by post-training questionnaires among trainees and their supervisors in different organisational settings, and consist of both a pilot test on the questionnaires and the main data gathering respectively. Chapter 4 concludes with a description of the construction of the questionnaires that used in the second and third part of the study. These questionnaires retrospectively assess the periods before, during and after a training course, with comparable versions for trainees and supervisors being constructed. The trainee questionnaire contains scales reflecting the trainee characteristics ability, personality characteristics, motivation and job attitudes. Regarding trainees' work environment, the questionnaires contain scales reflecting the extent of supervisor support experienced, the transfer climate and the general work environment. And finally, the trainee questionnaires contain scales measuring training characteristics and training outcomes.
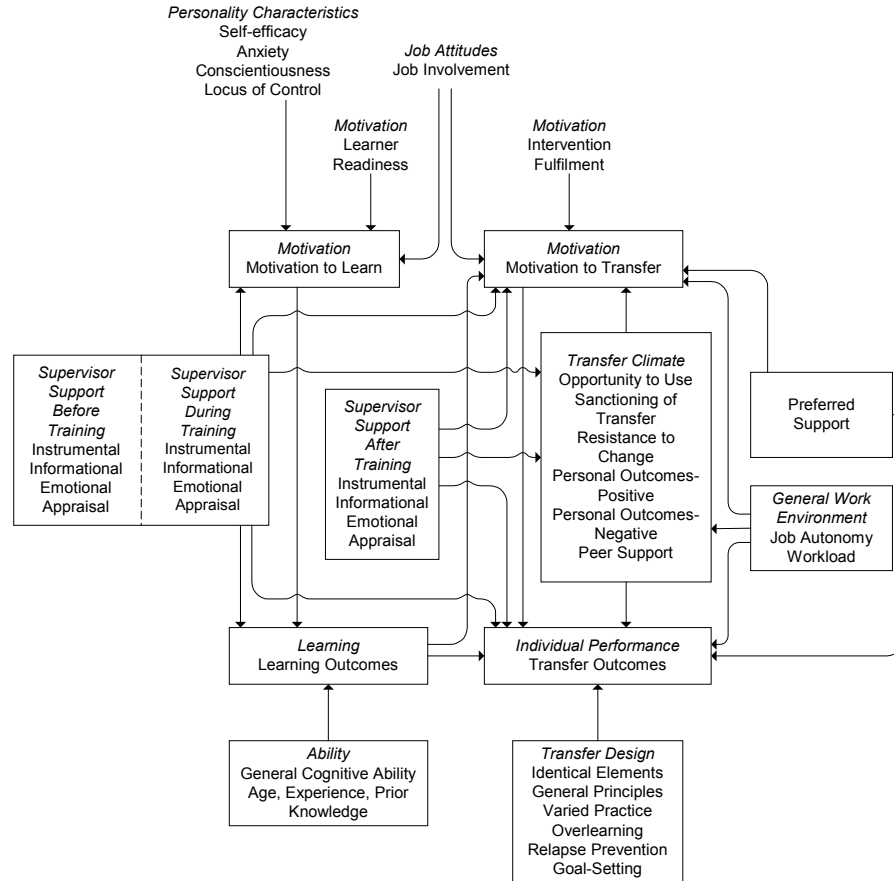
Figure 1 The Transfer Framework.

Pilot test and reviewing instrumentation

Chapters 5 and 6 concern the process of testing and adjusting the questionnaires, and of the selection of organisations and training programmes for the main data gathering. In Chapter 5, the procedure and results of the pilot test are described. This pilot was carried out in cooperation with an international manufacturer of high-tech electronics, among trainees who had taken part in a training programme on coaching skills. When also including their supervisors, the results of the questionnaires indicate learning outcomes and trainees' motivation to transfer to be the strongest predictors of transfer outcomes. General supervisor support has a slight positive effect on transfer outcomes, but mostly indirect by means of trainees' motivation to transfer. Regarding the effects of different types of supervisor support, the results of the pilot indicate that appraisal support from supervisors has a slight direct effect on transfer

outcomes. However, whereas trainees indicate appraisal support before training to have a positive effect, supervisor perceptions of appraisal support after training show a negative direct effect on transfer outcomes. Both appraisal and instrumental support before training are shown to affect trainees' motivation to learn, while instrumental support after training has a clear positive effect on the perceived transfer climate.

Due to limitations caused by the organisational setting of the pilot test, several of the scales in the questionnaires had to be shortened or even removed. Consequently, a number of scales were found not to meet the required level of internal consistency. With regard to the main data gathering all of the scales were therefore reviewed and, if necessary, adjusted in Chapter 6. The most important consequences are that several scales were extended, while scales reflecting trainees' workload and job involvement are not included in further questionnaires. Chapter 6 also describes the selection procedure for organisations and their training programmes for the main data gathering. Three organisations were selected, representing four different training programmes. All three organisations provide products and services in the fields of advanced technology, while the selected training programmes all concern comparable programmes on the development of social and/or managerial skills. The complete final sample for the main analyses consisted of responses from 179 trainees and 32 supervisors.

The Effects of General Supervisor Support
Chapters 7, 8 and 9 provide the main results and the conclusions of the study, as well as a discussion of these. With regard to subquestion 1, it is shown that trainees perceive only slight general support from their supervisors. This general supervisor support is positively related to transfer outcomes, but does not predict these outcomes directly. The results do show that general supervisor support has a moderate positive effect on the transfer climate, and the transfer climate has a slight positive effect on trainees' transfer outcomes. Contrary to expectations is the finding that general supervisor support has a negative direct effect on trainees' motivation to transfer. The results show this negative effect to be related to the influence of achieved learning outcomes, the transfer design and the transfer climate. Most importantly, if the transfer climate is considered similar for all trainees, an increase in general supervisor support directly leads to a decrease in motivation to transfer. At the same time, however, general supervisor support increases trainees' motivation to transfer indirectly, by improving the transfer climate.

Considering the effects of general supervisor support it is therefore concluded that it has no direct effect on trainees' transfer outcomes, when taking into account the positive influence of learning, motivation to transfer and the prevailing transfer climate. General supervisor support does have a slight positive indirect effect on trainees' transfer outcomes through its influence on

the transfer climate. In addition, general supervisor support positively affects trainees' motivation to transfer, by improving the transfer climate, while at the same time decreasing motivation to transfer directly. Overall, this effect on trainees' motivation to transfer is positive.

The Differential Effects of Types of Supervisor Support
Regarding subquestion 2, the results show that supervisors provide support to a general extent. Thus, supervisors differ in the overall extent to which they support trainees, but make little difference in the specific kind or timing of support that they provide. These specific kinds or timing of support are seen to lead to differential effects, however. Firstly, emotional support is less influential on, or less directly related to, transfer outcomes than the other types of support. In addition, the results indicate that the separate types of supervisor support during training negatively affect the transfer climate and trainees' motivation to learn and transfer.

Whereas general supervisor support has no direct effect on transfer outcomes, specific appraisal supervisor support after training is seen to have a slight but positive direct effect on transfer outcomes. The results also show that the more appraisal support trainees receive from supervisors before training, the more these trainees are motivated to learn. Supervisors might therefore directly and indirectly enhance trainees' transfer outcomes, by informing trainees about the positive consequences of training participation and the transfer of new knowledge, skills and attitudes.

A second result is that informational support by supervisors before training slightly increases trainees' learning outcomes. In addition, instrumental and, to a lesser extent, informational support by supervisors after training have slight positive effects on the transfer climate. Supervisors thus improve the transfer climate through instrumental help, such as the provision of sufficient time and resources, as well as providing information that leads trainees to assess the transfer climate as more facilitative of transfer.

Emotional supervisor support before training and appraisal supervisor support during training were found to decrease trainees' motivation to transfer. On the other hand, both instrumental and informational supervisor support after training were believed to reflect the indirect relationship to motivation to transfer through the transfer climate, by increasing trainees' opportunities to use learning, and by affecting the personal outcomes that transfer of training has for trainees. It is therefore concluded that instrumental and informational supervisor support after training improve the perceived transfer climate, and indirectly increase trainees' motivation to transfer, while emotional support before and appraisal support during training directly reduce trainees' motivation to transfer. In general, it is concluded that the distinction between different types and times of supervisor support provides more insight into the relationship between supervisor support and transfer outcomes.

Implications of the Study

The main theoretical implication of this study is that the effects of supervisor support on transfer outcomes are relatively slight and merely indirect, whereas learning outcomes and motivational elements are seen to have stronger effects. The effects of supervisor support can therefore not be considered separately from the influence of other work environment, trainee and training characteristics. The differentiation between different types and timing of supervisor support indicates differential effects, which provides further insight into the relationship between supervisor support and transfer outcomes.

With regard to future research on this relationship, three implications are described. First, research should take into account the different kinds of indirect effects that supervisor support might have. In addition to the finding that the effects of supervisor support on transfer outcomes are mediated by, for example, trainees' motivation to transfer, the relationship between supervisor support and transfer outcomes might be changed by other factors, or supervisor support itself might also alter the effects of other variables on transfer outcomes. Secondly, future research on the effects of supervisor support should consider transfer of training a multidimensional construct, consisting of at least the dimensions of generalisability and time. In other words, the effects of supervisor support on transfer of training might differ, depending on the conceptualisation of transfer. And finally, in order to be able to study a wider extent of supervisor support, future research should also comprise experimental studies of its effects. In these experimental studies the extent of support can be intentionally altered so as to provide a clearer difference between supervisors who provide support and those who do not.

Regarding practical implications, the results of the study indicate that supervisor support should best be directed at the transfer climate, and in that way also at trainees' motivation to transfer. In addition, both informational and appraisal supervisor support before training lead to higher learning outcomes, while specifically instrumental and informational supervisor support after training improve the perceived transfer climate.

Samenvatting
(Dutch Summary)

Inleiding

Een van de bekendste en meest toegepaste manieren om het functioneren van personeel in organisaties te verbeteren bestaat uit het gebruik van bedrijfs-trainingen of -opleidingen, hier verder aangeduid als trainingen. Een logisch gevolg hiervan is dat zowel mensen uit de praktijk als wetenschappers op het gebied van Human Resource Development zeer geïnteresseerd zijn in de effecten van deze trainingen. Resultaten van onderzoek naar de effectiviteit van trainingen laten echter zien dat het daadwerkelijk gebruik van het geleerde op de werkplek door medewerkers, de zogenaamde transfer van trainingen, vaak niet voldoet aan de verwachtingen. In het zoeken naar mogelijke verklaringen is een aanzienlijke hoeveelheid onderzoek verricht naar de invloed die de werk-omgeving van medewerkers mogelijk heeft op de mate waarin zij het geleerde transfereren, waarbij een van de belangrijkste aannames is dat hulp en ondersteuning van leidinggevenden een positief effect hebben op deze transfer. Er bestaat echter weinig empirisch bewijs voor deze veronderstelde positieve relatie. Om hierin beter inzicht te krijgen is besloten onderhavige studie uit te voeren. De centrale vraag die in dit onderzoek aan de orde komt luidt zodoende: Wat is het effect van ondersteuning door leidinggevenden op de transfer van trainingen door medewerkers?

Naar een Model voor Transfer van Bedrijfsopleidingen

Om de centrale vraag te kunnen beantwoorden wordt in hoofdstuk 2 gestart met een aanscherping van het concept transfer van training. Positieve transfer-uitkomsten van een training worden daarin gedefinieerd als de effectieve en continue toepassing in het werk van wat tijdens die training is geleerd, zoals vastgesteld op een bepaald moment na de training. Vervolgens wordt aangegeven dat, om de effecten van bepaalde factoren op transfer uitkomsten te kunnen onderzoeken en begrijpen, een systeembenadering van het gehele proces van transfer dient te worden gehanteerd. Dergelijke systeembenaderingen zijn eerder beschreven als het transfer systeem (eg. Holton et al., 2000b), en

bevatten een zo compleet mogelijk overzicht van invloedrijke factoren en hun relaties met transfer. Om een *systemisch* model van het transfer proces te kunnen ontwerpen wordt daarom eerst een overzicht gegeven van eerder onderzoek naar transfer uitkomsten. Dit resulteert in de identificatie van factoren die direct of indirect met transferuitkomsten samenhangen, of van welke effecten sterke indicaties bestaan. Deze factoren kunnen worden inge-deeld in drie categorieën: kenmerken van de werkomgeving, kenmerken van de medewerker die de training volgt of heeft gevolgd (verder aangeduid als de trainee), en kenmerken van de training. Binnen de werkomgeving wordt een verder onderscheid gemaakt tussen de algemene werkomgeving en het meer op de training gerichte werkklimaat voor transfer. Factoren die vanuit de algemene werkomgeving transfer-uitkomsten kunnen beïnvloeden zijn de mate van autonomie die een medewerker heeft in diens werk, en de werkbelasting. Factoren die in het transfer klimaat worden onderscheiden zijn de mogelijkheden die medewerkers hebben om te transfereren, de mate waarin anderen transfer sanctioneren, algemene weerstand tegen veranderingen door training op de werkplek, de positieve gevolgen die transfer heeft voor de medewerker, en anderzijds de negatieve gevolgen die het *niet* transfereren voor de medewerker heeft, en tenslotte de mate van ondersteuning door collega's en de leidinggevende.

Kenmerken van de trainee worden onderverdeeld in categorieën die refereren aan het vermogen van de trainee, diens motivatie, persoonlijkheid en attitudes. Met betrekking tot het vermogen van de medewerker blijken algemene intelligentie en een combinatie van leeftijd, ervaring en eerdere kennis uit eerder onderzoek van belang. De categorie die motivatie voor training weergeeft bestaat uit de motivatie van de trainee om te leren, diens motivatie om het geleerde te transfereren, de mate waarin de trainee vooraf gereed is om aan de training deel te nemen, en de mate waarin de training achteraf gezien aan de verwachtingen heeft voldaan. Als persoonlijkheidskenmerken worden genoemd de mate van self-efficacy, consciëntieusheid (conscientiousness), angst (anxiety), en toewijzing van controle (locus of control) van of door de trainee. Als belangrijke attitude ten aanzien van transfer komt de betrokkenheid bij het werk uit eerder onderzoek naar voren.

Als laatste wordt een beschrijving gegeven van kenmerken van de training die van invloed zijn op transferuitkomsten. Het overzicht van eerder onderzoek laat zien dat het in de training opnemen van elementen die overeenkomen met de werksituatie, algemene principes van de leerstof, variatie in oefening, overleren, het stellen van specifieke doelen ten aanzien van transfer, en relapse prevention modules de transferuitkomsten kunnen verbeteren.

Al deze factoren en de in onderzoek gevonden relaties met transferuitkomsten kunnen worden gecombineerd in een model met behulp van welke de effecten van ondersteuning door leidinggevenden op transferuitkomsten kunnen worden onderzocht. Om een dergelijk model te ontwerpen is het 'HRD Evaluation

Research and Measurement Model' (Holton, 1996) als basis gebruikt. Dit model biedt een omvangrijk en systemisch overzicht van het transfer proces, maar blijft beperkt tot een aantal algemene elementen. Door de verschillende onderscheiden factoren in dit raamwerk in te passen ontstaat een specifieker eerste model van transfer, dat bedoeld is om een solide en complete basis te bieden voor het onderzoeken van de effecten van ondersteuning door leidinggevenden. Dit model wordt omschreven als het Transfer Framework,

Ondersteuning door Leidinggevenden en Transfer
In hoofdstuk 3 wordt vervolgens verder ingegaan op ondersteuning door leidinggevenden, de kenmerken van dergelijke ondersteuning, en de relatie tussen ondersteuning en transferuitkomsten. Ondersteuning door leiding-gevenden met betrekking tot transferuitkomsten van trainees wordt gedefinieerd als de mate waarin leidinggevenden de transfer van kennis, vaardigheden en attitudes die trainees in training hebben opgedaan te optimaliseren. Een overzicht van eerder onderzoek naar de relatie tussen ondersteuning door leidinggevenden en transferuitkomsten laat zien dat aanname van een positief effect van ondersteuning door leidinggevenden niet eenduidig wordt bevestigd. Afzonderlijke onderzoeken wijzen zowel op positieve als negatieve effecten, terwijl sommige studies geen enkel effect aantonen. Nadere bestudering van deze onderzoeken duidt op twee belangrijke aspecten. Ten eerste blijkt dat de manier waarop ondersteuning door leidinggevenden transferuitkomsten beïnvloedt verschilt tussen onderzoeken. Een deel van de resultaten duidt op een direct effect, terwijl andere resultaten bijvoorbeeld aangeven dat het effect van ondersteuning via de motivatie van medewerkers verloopt. Geconcludeerd wordt dat als ondersteuning door leidinggevenden inderdaad van invloed is op transferuitkomsten, de manier waarop dit effect plaatsvindt onduidelijk is.
Het tweede aspect refereert aan de invulling van ondersteuning door leidinggevenden. Het overzicht laat zien dat deze ondersteuning op verschillende manieren is opgevat, variërend van bijvoorbeeld het zorgen voor de nodige voorbereidingstijd voor training tot het adviseren van medewerkers hoe zij nieuwe kennis, vaardigheden en attitudes in hun werk kunnen gebruiken. Het overzicht toont ook verschillende opvattingen over het tijdstip van ondersteuning aan, waarbij een onderscheid wordt gemaakt tussen ondersteuning voor, tijdens en na de training. Tenslotte wijst eerder onderzoek ook op verschillen in de mate waarin leidinggevenden ondersteuning bieden, waarbij ervan wordt uitgegaan dat deze mate ondersteuning het effect bepaalt.
Om de effecten van ondersteuning door leidinggevenden op transferuitkomsten te kunnen vaststellen is het zodoende noodzakelijk om te bepalen wat voor ondersteuning kan worden geboden, en hoe deze ondersteuning transferuitkomsten kan beïnvloeden. Een overzicht van onderzoek naar sociale ondersteuning in andere onderzoeksgebieden leidt tot het onderscheid tussen vier verschillende vormen: instrumentele-, informationele-, emotionele- en

waarderingssteun. Met betrekking tot trainingen wordt verondersteld dat deze vier vormen op drie verschillende momenten kunnen worden geboden: voor, tijdens en na training. Om de effecten van ondersteuning door leidinggevenden op transferuitkomsten te kunnen bepalen zijn de twaalf resulterende combinaties van vorm en tijdstip van ondersteuning ingepast in het Transfer Framework. Op basis van eerder onderzoek wordt verondersteld dat deze componenten van ondersteuning transferuitkomsten direct kunnen beïnvloeden, of indirect via het transfer klimaat, de leeruitkomsten van medewerkers, of de motivatie van medewerkers om te leren en/of te transfereren. Tenslotte is, om de optimale mate van ondersteuning door leidinggevenden te kunnen bepalen, een aparte factor in het model opgenomen die de mate van gewenste ondersteuning weerspiegelt. Deze factor wordt ook omschreven als gewenste ondersteuning.

Ontwerp en Instrumentatie
Door het opnemen van de specifieke factoren die boven zijn beschreven kan het Transfer Framework worden onderscheiden in algemene elementen, en de specifieke factoren in een aantal van deze elementen (zie figuur 1 op pagina 222). Dit onderscheid tussen algemene elementen en specifieke factoren binnen die elementen komt overeen met het onderscheid tussen algemene ondersteuning en de specifieke componenten van ondersteuning door leidinggevenden. Dit biedt de mogelijkheid in dit onderzoek te kijken naar de effecten van algemene ondersteuning door leidinggevenden zoals i eerder onderzoek, en op vernieuwende wijze naar de effecten van verschillende componenten van ondersteuning. Met het oog op een mogelijk verschil tussen de effecten van algemene ondersteuning en de effecten van de verschillende afzonderlijke componenten van ondersteuning is de centrale vraag van het onderzoek in hoofdstuk 4 daarom gesplitst in twee subvragen. Deze luiden respectievelijk:

1. Wat zijn de effecten van algemene ondersteuning door leidinggevenden op transferuitkomsten, als rekening wordt gehouden met de algemene elementen die in het Transfer Framework onderscheiden zijn?
2. Welke combinaties van typen en tijdstippen van ondersteuning door leidinggevenden beïnvloeden transferuitkomsten, als rekening wordt gehouden met de specifieke factoren die in het Transfer Framework onderscheiden zijn?

Naast de ondersteuning door leidinggevenden refereert het verschil tussen de algemene en de specifieke elementen in het Transfer Framework met name aan het transfer klimaat.
Om de subvragen te kunnen beantwoorden is een onderzoeksopzet ontwikkeld waarin gegevens over verschillende trainingen in verschillende organisaties worden verzameld. De verzameling van gegevens is verricht aan de hand van

een survey van eerdere trainingen, en is opgebouwd uit drie delen. Het eerste deel bestaat uit een exploratieve case studie naar de effectiviteit van trainingen voor productiemedewerkers in een bandenfabriek, en is uitgevoerd aan de hand van interviews met trainees en hun leidinggevenden na de trainingen. Deze case studie was met name bedoeld om na te gaan in hoeverre met de gekozen onderzoeksopzet het Transfer Framework kon worden onderzocht, en de resultaten ervan worden ook in hoofdstuk 4 toegelicht. Deze resultaten wijzen uit dat trainees en hun leidinggevenden in deze organisatie de individuele trainingen van medewerkers niet in relatie zien tot een bredere organisatie context, bijvoorbeeld in de vorm van organisatiedoelen. Om deze reden is besloten het Transfer Framework in het tweede en derde deel van het onderzoek te beperken tot de elementen en factoren van welke verwacht werd dat ze wel samen hangen met de effectiviteit van training op individueel niveau, zoals afgebeeld in figuur 1.

Het tweede en derde deel van de gegevens verzameling zijn uitgevoerd door middel van post-training vragenlijsten voor trainees en hun leidinggevenden in verschillende organisaties, en bestaan uit zowel een pilot test van de vragenlijsten als de definitieve gegevensverzameling. Hoofdstuk 4 wordt besloten met een beschrijving van het samenstellen van de vragenlijsten die in het tweede en derde deel van het onderzoek zijn gebruikt. Deze vragenlijsten hebben betrekking op respectievelijk de periodes voor, tijdens en na de training, waarbij analoge versies voor trainees en hun leidinggevenden zijn ontwikkeld. De vragenlijst voor trainees die aan een bepaalde training hebben deelgenomen bevat schalen met betrekking tot het vermogen van de trainee, diens persoonlijkheidskenmerken, motivatie en werkhouding. De vragenlijsten bevatten vervolgens schalen over de werkomgeving van de trainee, waarin de ondersteuning door de leidinggevende, het transfer klimaat en de algemene werkomgeving zijn te onderscheiden. Tenslotte bevat de vragenlijst voor trainees schalen die bepaalde kenmerken van de training en de trainings-uitkomsten meten.
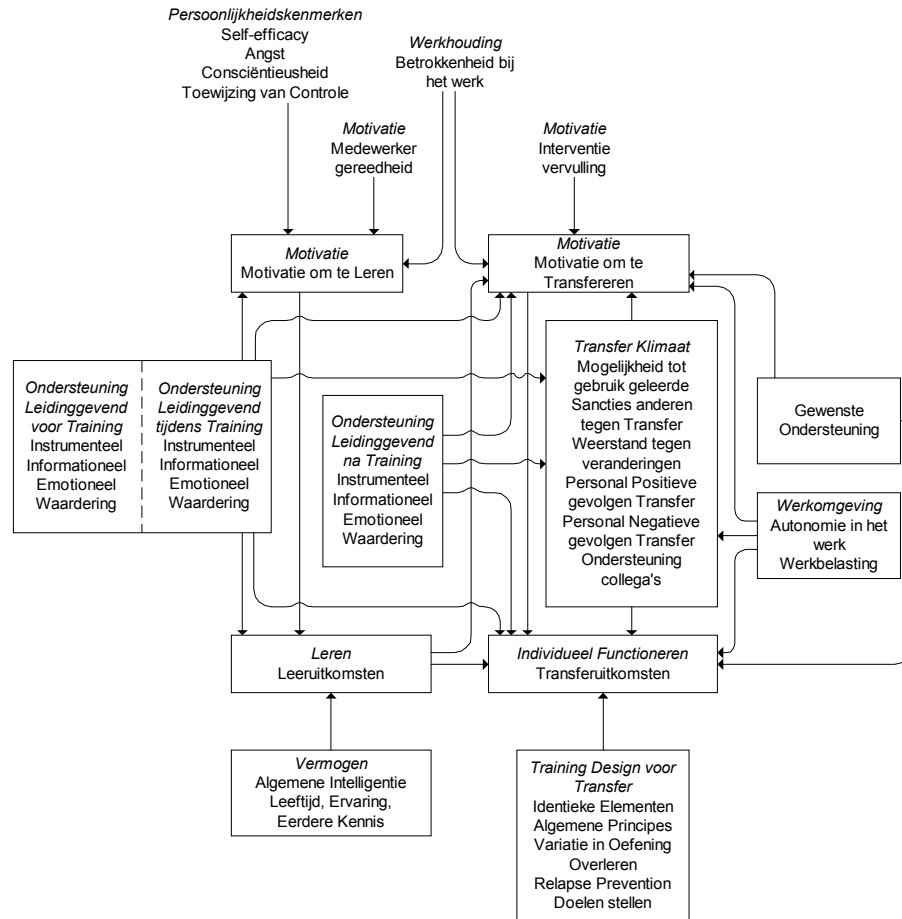
Figuur 1 Het Transfer Framework.

Pilot onderzoek en herziening instrumentatie

De hoofdstukken 5 en 6 gaan in op het testen en bijstellen van de vragenlijsten, en op de selectie van organisaties en trainingen voor de definitieve data verzameling. In hoofdstuk 5 worden de procedure en de resultaten van de pilot test beschreven, het tweede deel van de data verzameling. Deze pilot test is uitgevoerd in samenwerking met de trainingsafdeling van een internationale fabrikant van high-tech electronische producten, waarbij het onderzoek is gericht op trainees die aan een training voor coachingsvaardigheden hadden deelgenomen. De resultaten van de vragenlijsten voor trainees en hun leidinggevenden laten zien dat behaalde leeruitkomsten en de motivatie van trainees om te transfereren de belangrijkste voorspellers zijn van de latere transferuitkomsten. Algemene ondersteuning door leidinggevenden heeft een

licht positief effect op de transferuitkomsten, maar voornamelijk indirect door de motivatie van trainees te verbeteren. Met betrekking tot de verschillende componenten van ondersteuning door leidinggevenden laten de resultaten zien dat waarderingssteun een klein direct effect heeft op de transferuitkomsten. Waar antwoorden van trainees echter aanduiden dat waarderingssteun voor de training een positief effect heeft, geven antwoorden van leidinggevenden aan dat de door hen gegeven waardering na de training en negatief direct effect heeft op transferuitkomsten. Zowel waarderingssteun als instrumentele ondersteuning door leidinggevenden vóór de training blijken positief van invloed op de motivatie van trainees om te leren, terwijl instrumentele ondersteuning na de training een duidelijk positief effect heeft op het waargenomen transfer klimaat.

Als gevolg van beperkingen door de organisationele context zijn verschillende schalen van de vragenlijsten in de pilot ingekort of zelfs verwijderd. Uiteindelijk blijken een aantal schalen dan ook niet te voldoen aan de gestelde ondergrens voor de interne consistentie van schalen. Met het oog op de definitieve data verzameling zijn alle schalen daarom opnieuw doorgenomen en, indien nodig, aangepast. De belangrijkste consequenties hiervan zijn dat verschillende schalen zijn verlengd, terwijl de schalen voor de werkbelasting van medewerkers en hun betrokkenheid bij het werk zijn verwijderd. In hoofdstuk 6 wordt ook de selectie procedure van organisaties en trainingen voor de definitieve data verzameling beschreven, waarin uiteindelijk drie organisaties met in totaal vier trainingen zijn geselecteerd. Al deze organisaties leveren producten en diensten op het gebied van geavanceerde technologie, terwijl de geselecteerde trainingen allemaal gericht zijn op het ontwikkelen van sociale en/of management vaardigheden. De uiteindelijke bruikbare totale steekproef bestaat uit 179 trainees die aan een van de trainingen hebben deelgenomen, en 32 van hun leidinggevenden.

De effecten van algemene ondersteuning door leidinggevenden
In de hoofdstukken 7, 8 en 9 worden de uiteindelijke resultaten en conclusies van het onderzoek beschreven. Met betrekking tot onderzoeksvraag 1, de effecten van algemene ondersteuning door leidinggevenden, blijkt dat trainees weinig ondersteuning van hun leidinggevenden ervaren rondom de trainingen. Deze algemene ondersteuning door leidinggevenden is wel positief gerelateerd aan transferuitkomsten, maar heeft hier geen directe invloed op. Verder wijzen de resultaten uit dat algemene ondersteuning door leidinggevenden een licht positief effect heeft op het transfer klimaat, en dat dit transfer klimaat vervolgens een klein positief effect op de transferuitkomsten van medewerkers uitoefent. In tegenstelling tot de verwachtingen blijkt dat algemene ondersteuning door leidinggevenden een direct negatief effect heeft op de motivatie van trainees om nieuwe kennis, vaardigheden en attitudes te transfereren naar het werk. Uit de resultaten komt naar voren dat dit negatieve

effect samenhangt met de invloed van behaalde leeruitkomsten, het transfer design van de training en het transfer klimaat. Met name blijkt dat, als voor de invloed van het transfer klimaat wordt gecontroleerd, een toename in algemene ondersteuning door leidinggevenden leidt tot een lagere motivatie van trainees om te transfereren. Tegelijkertijd blijkt echter dat deze algemene ondersteuning door leidinggevenden wel een indirect positief effect heeft op de motivatie om te transfereren, door middel van het verbeteren van het transfer klimaat.

Uit deze resultaten wordt geconcludeerd dat algemene ondersteuning door leidinggevenden geen direct effect heeft op de transferuitkomsten van trainees na een training, als daarbij tenminste rekening wordt gehouden met de positieve invloed van leeruitkomsten, de motivatie om te transfereren en het transfer klimaat. Algemene ondersteuning door leidinggevenden heeft wel een klein indirect positief effect op de transferuitkomsten door het transfer klimaat te beïnvloeden. Ook wordt geconcludeerd dat algemene ondersteuning door leidinggevenden de motivatie van trainees om te transfereren verbetert door te zorgen voor een beter transfer klimaat, hoewel deze ondersteuning tegelijkertijd ook een direct negatief effect heeft op deze motivatie. Het uiteindelijke effect van algemene ondersteuning door leidinggevenden op de motivatie om te transfereren is echter positief.

De differentiële effecten van de componenten van ondersteuning door leidinggevenden

Met betrekking tot onderzoeksvraag 2, de effecten van de afzonderlijke componenten van ondersteuning, blijkt dat leidinggevenden met name algemene ondersteuning bieden. Zij variëren in de mate waarin ondersteuning wordt geboden, maar maken weinig onderscheid tussen de verschillende typen of tijden van ondersteuning. Deze verschillende componenten van ondersteuning blijken daarentegen wel differentiële effecten te hebben. Als eerste wijzen de resultaten uit dat emotionele ondersteuning door leidinggevenden minder invloed heeft op transferuitkomsten dan de andere typen van ondersteuning, of minder direct gerelateerd is aan deze transferuitkomsten. Ook blijkt uit de resultaten dat de typen van ondersteuning tijdens de trainingen negatieve effecten hebben op het transfer klimaat, en op de motivatie van trainees om te leren en het geleerde te transfereren.

Waar algemene ondersteuning door leidinggevenden geen direct effect op transferuitkomsten heeft, blijkt uit de resultaten dat specifiek waarderingssteun door leidinggevenden na de training een klein positief direct effect heeft op transferuitkomsten. Ook blijkt dat waarderingssteun door leidinggevenden voor de training een positief effect heeft op de motivatie van trainees om te leren tijdens de training. Leidinggevenden kunnen zodoende de transferuitkomsten van trainees direct en indirect positief beïnvloeden, door deze trainees voor en na de opleiding te duiden op de waardering die ze krijgen voor het leren en transfereren van de trainingsinhoud.

Een tweede resultaat van de afzonderlijke componenten van ondersteuning is dat informationele steun door leidinggevenden voor de training een licht positief effect heeft op de leeruitkomsten van trainees. Hoe meer informatie leidinggevenden voor de training aan trainees geven, des te beter de leeruitkomsten van deze trainees. Daarnaast heeft instrumentele en, in iets mindere mate, informationele ondersteuning door leidinggevenden na de training een klein positief effect op het waargenomen transfer klimaat. Hieruit kan geconcludeerd worden dat leidinggevenden door middel van instrumentele hulp het transfer klimaat verbeteren, bijvoorbeeld door de benodigde tijd en middelen beschikbaar te stellen, en dat zij door het geven van informatie aan trainees het transfer klimaat als beter kunnen laten waarderen.

Emotionele ondersteuning gegeven voor de training en waarderingssteun tijdens de training blijken de motivatie van trainees om te transfereren te verminderen. Aan de andere kant blijken instrumentele en informationele ondersteuning na de training het indirecte positieve effect via het transfer klimaat te verklaren, met name door een positief effect op de mogelijkheden die trainees hebben om te transfereren en op de positieve gevolgen die transfer voor hen heeft. Geconcludeerd wordt zodoende dat instrumentele en informationele ondersteuning na de training het waargenomen transfer klimaat verbeteren, en daarmee indirect de motivatie van trainees om te transfereren verhogen, terwijl emotionele ondersteuning voor en waarderingssteun tijdens training deze motivatie direct verminderen. Als verklaring voor deze negatieve effecten van emotionele en waarderingssteun wordt aangemerkt dat trainees deze vormen van ondersteuning mogelijk als dwingend en overbodig ervaren, wat een mogelijk averechts effect heeft.

Op basis van bovenstaande resultaten en conclusies wordt als laatste in het algemeen geconcludeerd dat het onderscheid tussen de verschillende componenten van ondersteuning door leidinggevenden meer inzicht verschaft in de relatie tussen ondersteuning door leidinggevenden en transferuitkomsten.

Implicaties van het onderzoek
De belangrijkste theoretische implicatie van het onderzoek is dat de effecten van ondersteuning door leidinggevenden op transferuitkomsten relatief klein en voornamelijk indirect zijn, waar leeruitkomsten en motivationele componenten sterkere effecten blijken te hebben. De effecten van ondersteuning door leidinggevenden kunnen daarom niet los worden gezien van de invloed van andere werkomgevings-, trainee- en trainingskenmerken. Het onderscheid tussen verschillende typen en tijdstippen van ondersteuning wijst op differentiële effecten, waardoor verder inzicht in de relatie tussen ondersteuning door leidinggevenden en transferuitkomsten is verkregen.

Met betrekking tot toekomstig onderzoek naar deze relatie kunnen drie implicaties worden onderscheiden. Ten eerste dient in toekomstig onderzoek rekening te worden houden met de verschillende indirecte effecten die

ondersteuning door leidinggevenden mogelijk heeft op transferuitkomsten. Naast de bevinding dat de effecten van deze ondersteuning verlopen via bijvoorbeeld de motivatie van trainees om te transfereren kan de relatie tussen ondersteuning en transferuitkomsten ook veranderen onder invloed van andere factoren, en bestaat de mogelijkheid dat ondersteuning door leidinggevenden de relatie van andere factoren met transferuitkomsten verandert. Ten tweede verdient het aanbeveling transfer van training in verder onderzoek op te vatten als een multidimensioneel construct, waarin tenminste de dimensies van generaliseerbaarheid en tijd kunnen worden onderscheiden. Deze dimensionaliteit maakt dat de effecten van ondersteuning door leidinggevenden op transferuitkomsten kunnen verschillen, afhankelijk van de conceptualisatie van transfer. Als laatste is het aanbevelenswaardig ook experimenteel onderzoek naar de relatie tussen ondersteuning door leidinggevenden en transferuitkomsten uit te voeren om op die manier beter te kunnen variëren in met name de mate van geboden ondersteuning.

Als praktische implicatie van het onderzoek kan gesteld worden dat ondersteuning door leidinggevenden het best gericht kan worden op het transfer klimaat, en op die manier indirect op de motivatie van trainees om het geleerde te transfereren. Daarnaast kan het geven van informatie en het aanduiden van waardering voor trainingsdeelname bij trainees leiden betere leeruitkomsten, terwijl met name instrumentele en informationele steun na de training belangrijk zijn om tot een beter transfer klimaat te komen.

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Appendix 1

Trainee Questionnaire Scales
Main Data Collection

As the questionnaires only contained items in Dutch, and as translation of items might affect the reliability and validity of scales, the items used in the questionnaires will only be described in Dutch here.

Persoonlijkheidskenmerken (Personality Characteristics)

Zelf-effectiviteit (Self-efficacy)
In het algemeen…
…geloof ik dat anderen mij waarderen voor mijn professionele capaciteiten …heb ik het gevoel dat ik steeds beter word in mijn werk …heb ik het gevoel dat ik in staat ben mijn werk op effectieve wijze uit te voeren …ben ik tevreden met de kwaliteit van mijn werk …heb ik het gevoel dat ik succesvol ben in mijn werk …heb ik voldoende zelfvertrouwen om mijn mening over mijn werk te verdedigen

Angstigheid (Anxiety)
In het algemeen…
…ben ik soms bang dat ik het verkeerde doe op mijn werk …voel ik me soms schuldig als ik 'nee' moet zeggen …maak ik me soms zorgen over dingen op mijn werk …laat ik me niet snel ontmoedigen door tegenslagen in mijn werk (negatief) …blijf ik ontspannen onder de druk van mijn werk (negatief) …blijf ik nooit lang piekeren over problemen op mijn werk (negatief)

**Conscientieusheid
(Conscientiousness)**

In het algemeen…

…werk ik hard om mijn ambities te verwezenlijken
…denk ik meestal goed na voordat ik iets doe
…doe ik de vervelendste werkzaamheden meestal eerst
…heb ik een grote mate van zelf-discipline
…plan ik mijn werk graag vooruit
…maak ik mijn werk niet altijd naar behoren af (negatief)
…neem ik mijn werkzaamheden nogal eens te licht op (negatief)

**External Locus of Control:
Bewuste invloed van anderen op verloop eigen leven
(External Locus of Control:
Others actively determining one's Course of Life)**

In het algemeen…

…kan ik zelf bepalen wat er in mijn leven gebeurt (negatief)
…bepaal ik door mijn gedrag zelf hoe mijn leven verloopt (negatief)
…heb ik het idee dat wat in mijn leven plaatsvindt voornamelijk bepaald wordt door de mensen met macht
…wordt mijn leven bepaald door belangrijke anderen
…heb ik wat geluk nodig om te bereiken wat ik wil
…hangt het verloop van mijn leven grotendeels samen met toevallige gebeurtenissen

**Interne Locus of Control:
Vermogen om eigen belangen te beschermen
(Internal Locus of Control:
Personal Ability to protect one's own Interests)**

In het algemeen…

…hebben mensen als ik weinig kans eigen belangen veilig te stellen als die bijvoorbeeld in gaan tegen groepsbelangen (negatief)
…ben ik goed in staat mijn eigen belangen veilig te stellen
…is het vaak niet mogelijk mijn eigen belangen veilig te stellen tegen nadelige gebeurtenissen (negatief)

Motivatie (Motivation)

Interventievervulling **(Intervention Fulfilment)**
Tijdens mijn deelname aan de … training(-en)…
…heb ik lang niet alles geleerd wat ik wilde leren (negatief) …kwam de inhoud ervan overeen met mijn verwachtingen …was het verloop van de training helemaal niet zoals ik had verwacht (negatief)

Motivatie om te Leren **(Motivation to Learn)**
Voordat ik aan de … training(-en) deelnam…
…was ik sterk gemotiveerd om eraan deel te nemen …was ik heel enthousiast om eraan te beginnen …wilde ik de inhoud ervan graag leren kennen …had ik helemaal geen zin om eraan deel te nemen (negatief)
Tijdens mijn deelname aan de … training(-en)…
…wilde ik de training koste wat kost met goed resultaat afronden

Motivatie om te Transfereren **(Motivation to Transfer)**
Sinds ik aan de … training(-en) heb deelgenomen…
…kon ik niet wachten om het geleerde in mijn werk toe te gaan passen …vind ik dat de training me helpt mijn werk beter te doen …wil ik het geleerde graag toepassen in mijn werk …ben ik zeker van plan het geleerde te gaan toepassen in mijn werk, voor zover ik dat nog niet doe

Ondersteuning door Leidinggevende (Supervisor Support)

*The scales reflecting different kinds of supervisor support below together constitute the construct of **general supervisor support.***

Instrumentele steun leidinggevende voor training
(Instrumental Supervisor Support before Training)

Voordat ik aan de … training(-en) deelnam…

…heeft mijn leidinggevende me betrokken bij het plannen ervan
…heeft mijn leidinggevende me de tijd gegeven die nodig was om me er goed op voor te bereiden
…heeft mijn leidinggevende me de benodigde hulp gegeven bij de voorbereiding
…heeft mijn leidinggevende de noodzakelijke praktische maatregelen genomen om het trainingsprogramma goed te laten verlopen

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Informationele steun leidinggevende voor training
(Informational Supervisor Support before Training)

Voordat ik aan de … training(-en) deelnam…

…heeft mijn leidinggevende me ingelicht over het belang ervan voor mijn werk
…heeft mijn leidinggevende me ingelicht over de inhoud en het verloop van training en trainingsprogramma
…heeft mijn leidinggevende me betrokken bij het bepalen of ik dit trainingsprogramma wel nodig heb

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Waarderingssteun leidinggevende voor training
(Appraisal Supervisor Support before Training)

Voordat ik aan de … training(-en) deelnam…

…heeft mijn leidinggevende beloningen (bv. promotie, salaris) toegezegd voor afronding ervan en/of voor toepassing van het geleerde
…heeft mijn leidinggevende waardering aangegeven voor mijn deelname aan en afronding van het trainingsprogramma
…heeft mijn leidinggevende laten blijken juist mij voor deze training/ trainingsprogramma te hebben gekozen
…heb ik met mijn leidinggevende afspraken gemaakt over mijn deelname aan het trainingsprogramma
…heeft mijn leidinggevende mij aangemoedigd aan alle trainingsbijeenkomsten deel te nemen

Emotionele steun leidinggevende voor training
(Emotional Supervisor Support before Training)

Voordat ik aan de … training(-en) deelnam…

…heeft mijn leidinggevende laten blijken vertrouwen te hebben in mijn deelname aan de training/trainingsprogramma
…heeft mijn leidinggevende aangegeven begrip te hebben voor eventuele moeilijkheden door de combinatie werk-training
…heeft mijn leidinggevende laten blijken altijd voor me klaar te staan in geval van problemen

Instrumentele steun leidinggevende tijdens training
(Instrumental Supervisor Support during Training)

Tijdens mijn deelname aan de … training(-en)…

…heeft mijn leidinggevende ervoor gezorgd dat de training niet door mijn werk in het gedrang kwam
…heeft mijn leidinggevende mij geholpen bij het plannen van het gebruik van de training in mijn werk
…heeft mijn leidinggevende me de nodige praktische hulp gegeven om de training succesvol te laten verlopen

Informationele steun leidinggevende tijdens training
(Informational Supervisor Support during Training)

Tijdens mijn deelname aan de … training(-en)…

…heb ik met mijn leidinggevende gesproken over de relatie van de training met mijn werk
…heb ik met mijn leidinggevende gesproken over hoe het geleerde toe te passen in mijn werk
…heb ik met mijn leidinggevende gesproken over mogelijkheden en moeilijkheden in mijn werk om het geleerde toe te passen

Waarderingssteun leidinggevende tijdens training
(Appraisal Supervisor Support during Training)

Tijdens mijn deelname aan de … training(-en)…

…heeft mijn leidinggevende zijn waardering aangegeven voor mijn (goede) deelname aan de training
…heeft mijn leidinggevende laten blijken het te waarderen als ik het geleerde in mijn werk ga toepassen
…heeft mijn leidinggevende mijn deelname danwel inzet aan de training gecontroleerd

**Emotionele steun leidinggevende tijdens training
(Emotional Supervisor Support during Training)**

Tijdens mijn deelname aan de … training(-en)…

…heeft mijn leidinggevende laten blijken erin te vertrouwen dat ik de training succesvol zou afronden

…heeft mijn leidinggevende laten blijken vertrouwen te hebben in mijn toepassing van het geleerde

…heeft mijn leidinggevende aangegeven dat ik bij moeilijkheden op hem/haar kan rekenen

**Instrumentele steun leidinggevende na training
(Instrumental Supervisor Support after Training)**

Sinds ik aan de … training(-en) heb deelgenomen…

…zorgt mijn leidinggevende voor mogelijkheden om het geleerde in mijn werk toe te passen

…zorgt mijn leidinggevende voor praktische middelen die nodig zijn om het geleerde in mijn werk toe te kunnen passen

…zorgt mijn leidinggevende voor mogelijkheden om het geleerde nog eens te oefenen

…geeft mijn leidinggevende de nodige praktische hulp bij mijn toepassing van het geleerde

**Informationele steun leidinggevende na training
(Informational Supervisor Support after Training)**

Sinds ik aan de … training(-en) heb deelgenomen…

…zorgt mijn leidinggevende voor informatie over hoe ik het geleerde in mijn werk toe kan passen (bv. suggesties, anderen als voorbeeld)

…geeft mijn leidinggevende me nuttige feedback over mijn toepassing van het geleerde in mijn werk

…wijst mijn leidinggevende me op mogelijkheden of moeilijkheden in mijn werk om het geleerde toe te passen

Waarderingssteun leidinggevende na training
(Appraisal Supervisor Support after Training)

Sinds ik aan de … training(-en) heb deelgenomen…

…laat mijn leidinggevende blijken mijn toepassing van het geleerde zeer te waarderen (bv. complimenten)
…voorziet mijn leidinggevende mij van specifieke voordelen/beloningen als ik het geleerde in mijn werk toepas (bv. promotie, salaris)
…heeft mijn leidinggevende anderen ingelicht over mijn afronding van de training en/of mijn toepassing van het geleerde
...heeft mijn leidinggevende mij aan anderen verslag laten doen van de training en/of mijn toepassing van het geleerde
…heb ik met mijn leidinggevende gesproken over wederzijdse verwachtingen van mijn toepassing van het geleerde

Emotionele steun leidinggevende na training
(Emotional Supervisor Support after Training)

Sinds ik aan de … training(-en) heb deelgenomen…

…heeft mijn leidinggevende aangegeven dat hij/zij me in geval van problemen bij toepassing van het geleerde altijd hulp zou bieden
…heeft mijn leidinggevende laten blijken erin te geloven dat ik het geleerde goed ga toepassen
…heeft mijn leidinggevende laten blijken mogelijke moeilijkheden bij toepassing van het geleerde te begrijpen

Transfer Klimaat (Transfer Climate)

*The scales reflecting different elements of the transfer climate described below together constitute the construct of the general **transfer climate.** In order to determine scores on the general transfer climate, the scales reflecting sanctioning of transfer and resistance to change were recoded.*

Mogelijkheid tot gebruik geleerde
(Opportunity to Use)

Sinds ik aan de … training(-en) heb deelgenomen…

…heb ik in mijn werk ruime mogelijkheden om het geleerde toe te passen
…beschik ik in mijn werk over alle middelen en materialen die nodig zijn om het geleerde toe te passen
…biedt mijn werk me alle gelegenheid het geleerde toe te gaan passen
…is het moeilijk de middelen en materialen te krijgen die nodig zijn om het geleerde in mijn werk toe te passen (negatief)

Sancties anderen tegen transfer

(Sanctioning of Transfer)

Sinds ik aan de … training(-en) heb deelgenomen…

…merken mijn collega's/leidinggevende mijn toepassing van het geleerde in mijn werk eigenlijk niet op

…maken mijn collega's/leidinggevende bezwaar als ik het geleerde in mijn werk toepas

…zijn mijn collega's/leidinggevende tegen mijn toepassing van het geleerde in mijn werk

…geloven mijn collega's/leidinggevende niet dat deze training mijn werk ten goede komt

Weerstand tegen veranderingen
(Resistance to Change)

In het algemeen…

…staan mijn collega's sceptisch tegenover nieuwe kennis en vaardigheden uit trainingen

…vinden mijn collega's deelname aan trainingen heel waardevol (negatief)

…doen mijn collega's hun werk liever op de gebruikelijke manier dan dat ze daarvoor nieuwe kennis/vaardigheden gaan toepassen

…staan mijn collega's open voor veranderingen ten aanzien van de manier waarop we werken (negatief)

Persoonlijke positieve gevolgen transfer
(Personal Outcomes-Positive)

Sinds ik aan de … training(-en) heb deelgenomen…

…kan ik zeker een bepaalde erkenning of beloning verwachten als ik het geleerde in mijn werk toepas

…krijg ik meer waardering voor mijn functioneren als ik het geleerde in mijn werk toepas

…stellen mijn collega's het op prijs als ik het geleerde in mijn werk toepas

…interesseert het collega's eigenlijk niet uit of ik het geleerde toepas in mijn werk (negatief)

Persoonlijke negatieve gevolgen geen transfer
(Personal Outcomes-Negative)

Sinds ik aan de … training(-en) heb deelgenomen…

…krijg ik negatieve reacties van collega's als ik het geleerde niet toepas in mijn werk

…krijg ik minder waardering voor mijn functioneren als ik het geleerde niet in mijn werk toepas

…merken collega's het wel op als ik het geleerde niet in mijn werk toepas

Ondersteuning collega's **(Peer Support)**
Sinds ik aan de … training(-en) heb deelgenomen…
…bieden mijn collega's praktische hulp bij toepassing van het geleerde (bv. tijd/middelen)   …geven mijn collega's informatie ten aanzien van toepassing van het geleerde   …laten mijn collega's blijken mijn toepassing van het geleerde te waarderen   …laten mijn collega's blijken vertrouwen te hebben in mijn toepassing van het geleerde

Gewenste ondersteuning **(Preferred Support)**
In het algemeen…
…had ik graag meer steun en hulp van anderen gehad bij mijn training   …had ik graag meer steun en hulp van anderen gehad bij het toepassen van wat ik in de training heb geleerd

Werkomgeving (General Work Environment)

Autonomie in het werk **(Job Autonomy)**
In het algemeen…
…heb ik veel vrijheid in de uitvoering van mijn werk   …heb ik veel invloed op de planning van mijn werk   …kan ik zelf bepalen hoe ik mijn werk uitvoer   …kan ik zelf bepalen hoeveel tijd ik besteed aan een bepaalde taak op mijn werk

Transfer bevorderende kenmerken opleiding (Transfer Design)

Transfer bevorderende kenmerken opleiding (Transfer Design)
Tijdens mijn deelname aan de … training(-en)…
…ben ik voorbereid op mogelijke tegenslagen in mijn werk bij toepassing van het geleerde (relapse prevention) …heb ik mij voorgenomen het geleerde toe te passen in mijn werk (goal setting) …werd mij duidelijk hoe ik het geleerde kan gaan toepassen in mijn werk (identical elements) …duurde de training langer dan ik nodig had om de stof onder de knie te krijgen (overlearning) …vond ik de inhoud van de opleiding overeenkomen met mijn dagelijks werk (identical elements)

Voorbeelditems trainingsuitkomsten
(Item Examples Training Outcomes)

Leeruitkomsten (Learning Outcomes)
Tijdens mijn deelname aan de … training(-en)…
…heb ik de leereffecten die werden beoogd ook gerealiseerd …heb ik geleerd wat de bedoeling was
Sinds ik aan de … training(-en) heb deelgenomen…
…weet ik veel meer over het inspelen op toehoorders …weet ik veel beter hoe ik voordrachten en presentaties op (des-)kundige/professionele wijze kan voorbereiden

Transferuitkomsten (Transfer Outcomes)
Sinds ik aan de … training(-en) heb deelgenomen…
…bereid ik me veel beter voor op voordrachten en presentaties …stel ik voordrachten en presentaties veel beter samen …maak ik veel beter gebruik van audiovisuele hulpmiddelen bij voordrachten en presentaties

Appendix 2

Separate Regression Analyses
on Different Components of
Supervisor Support

The figures below show the effects of each of the separate components of supervisor support on motivation to learn, motivation to transfer, the general transfer climate as well as its separate components, learning outcomes and transfer outcomes, when checking for the influence of other independent variables.

| Motivation to Learn | | Motivation to Transfer |

```
Transfer Climate

Opportunity to Use

Sanctioning of Transfer

Resistance against Change

Peer Support

Personal Outcomes Positive

Personal Outcomes Negative
```

.28

Instrumental Supervisor Support before Training   .21

.19

Learning Outcomes   Transfer Outcomes

| Motivation to Learn | | Motivation to Transfer |

```
Transfer Climate

Opportunity to Use

Sanctioning of Transfer

Resistance against Change

Peer Support

Personal Outcomes Positive

Personal Outcomes Negative
```

.33   -.11

Appraisal Supervisor Support before Training   .27

.29

Learning Outcomes   Transfer Outcomes

Motivation to Learn

Motivation to Transfer

Transfer Climate

Opportunity to Use

Sanctioning of Transfer

Resistance against Change

Peer Support

Personal Outcomes Positive

Personal Outcomes Negative

Instrumental Supervisor Support after Training

-.16

.21

.46

.26

.17

Learning Outcomes

Transfer Outcomes

Motivation to Learn

Motivation to Transfer

Transfer Climate

Opportunity to Use

Sanctioning of Transfer

Resistance against Change

Peer Support

Personal Outcomes Positive

Personal Outcomes Negative

Appraisal Supervisor Support after Training

.45

.31

.15

.11

Learning Outcomes

Transfer Outcomes