Getting the most of management training: the role of identical elements for training transfer

Martijn van der Locht
HRM and Psychology Department, Fontys University of Applied Sciences, Eindhoven, The Netherlands

Karen van Dam
Faculty of Psychology, Open University, Heerlen, The Netherlands, and

Dan S. Chiaburu
Mays School of Business, Texas A&M University, College Station, Texas, USA

Abstract

Purpose – Focusing on management training, the purpose of this paper is to establish whether identical elements in a training program (i.e. aspects resembling participants' work situation) can improve training transfer and whether they do so beyond the contribution of two well-established predictors – motivation to learn and expected utility. In an effort to establish mechanisms connecting identical elements with training transfer, the authors aim to propose and test motivation to transfer as a mediator.

Design/methodology/approach – Data were collected online from 595 managers who participated in a management training program. Structural equation modeling was used to test the model.

Findings – Identical elements, expected utility and motivation to learn, each had a unique contribution to the prediction of training transfer. Whereas motivation to learn partially mediated these relationships, identical elements and expected utility also showed direct associations with training transfer.

Research limitations/implications – Identical elements represent a relevant predictor of training transfer. In future research, a longitudinal analysis from different perspectives would be useful to better understand the process of training transfer.

Practical implications – Participants may profit more from management training programs when the training better resembles participants' work situation. Organisations and trainers should therefore apply the concept of identical elements in their training, to increase its value and impact.

Originality/value – This study contributes to the training literature by showing the relevance of identical elements for transfer, over and above established predictors.

Keywords Employees behaviour, Management training, Transfer, Motivation, Identical elements, Managers

Paper type Research paper

In this era of economic crises and globalisation of markets, effective leadership is crucial for organisational effectiveness. Whereas good leadership can inspire, transform and provide meaning and purpose, poor leadership can by contrast lead to disengagement,

disappointment and distress (MacKie, 2008). Owing to the rapid changes in their environment, managers constantly need to acquire new knowledge or skills (Aguinis and Kraiger, 2009). Evidence indicates that management training can substantially improve managerial competence (Collins and Holton, 2004) and thus enhance individual and organisational productivity (Arthur *et al.*, 2003). Over the years, management training programs have become increasingly popular, with organisations spending large amounts of money on management development (Saks and Belcourt, 2006).

Although managers can learn on-the-job, through challenging work assignments (McCauley *et al.*, 1994), management training typically occurs off-the-job, in separate training environments. Training transfer, defined as the generalisation and application of new knowledge and skills to the work setting becomes, in such instances, crucial (Baldwin and Ford, 1988). Research indicates that different factors can play a role in successful training transfer including characteristics of the individual (i.e. motivation) and the organisation (i.e. transfer climate) (e.g. Cheng and Ho, 2001; Colquitt *et al.*, 2000). Moreover, aspects of the training itself can affect how well learning transfers to the work environment (Baldwin and Ford, 1988). Previous studies have focused on several design features, such as overlearning, practice and other instructional strategies (Blume *et al.*, 2010; Burke and Hutchins, 2007).

One aspect that is quasi-absent from current transfer research is identical elements, defined as the extent to which the stimuli and responses in the training setting are identical to those in the actual performance environment (Saks and Belcourt, 2006). Yet, especially in a transfer of management training, identical elements should be a crucial training aspect. For example, when management training programs are outsourced to external training providers (Hale, 2006), training delivery may disproportionately rely on standardised training programs. In such situations, the training program may lack sufficient stimuli identical to the job. Training may, as a result, be less effective in affecting on-the-job behaviour, precisely because design and delivery modes lack identical elements. Except for studies on specific tasks (e.g. DeVoge and Bass, 2007), research examining the effect of identical elements on training transfer in a managerial context has been limited. Although researchers (e.g. Spector, 2006a) as well as the American Society for Training and Development (2008) emphasise the importance of identical elements, studies investigating training content have mostly focused on its relevance, and therefore on determining whether the training materials are relevant to the transfer task (e.g. Burke and Hutchins, 2007). Overall, current research has not focused in any detail on the extent to which the stimuli provided in training and trainees' responses are perceived as identical. More importantly, as far as we know, the impact of identical elements in management training – a domain where training transfer is crucial for organisational effectiveness – has not been adequately addressed.

Accordingly, our objective is to investigate the relevance of identical elements for training transfer in a management training context. Because management and leadership can be largely conceptualised as a social process (Day, 2000), the focus of the study was on the transfer of social skills training for managers. In particular, we aimed to establish whether identical elements add to the prediction of training transfer beyond well-established antecedents, including motivation to learn and expected utility (e.g. Blume *et al.*, 2010). Responding to calls for research on establishing processes (Taylor *et al.*, 2005), we also examined intervening mechanisms, and therefore included motivation to transfer as mediator. Overall, this study aimed to

contribute to the current knowledge base by focusing on identical elements as an important yet under-researched aspect of management training. The research model is presented in Figure 1.

Transfer of management training

Managers are considered a crucial factor for organisational performance and success. One of the most important aspects of management concerns leadership, which is defined as "the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives" (Yukl, 2010, p. 26). This definition elucidates that managers operate in social contexts, and that, therefore, managers' social skills are especially important for effective leadership (Day, 2000). Accordingly, management training is often focused on developing skills to increase managers' influence over their social environment.

Although transfer of learning from the learning environment back to the workplace is a crucial training outcome, research indicates that only a small part of participants' learned skills and knowledge are applied to the job (Burke and Hutchins, 2007). Saks and Belcourt (2006) for instance found that only 34 per cent of trainees used the newly-learned skills one year after training.

Yet, a positive balance in the transfer of training is considered important because it should lead to meaningful changes in work performance (Blume *et al.*, 2010; Colquitt *et al.*, 2000). There is an increasing concern in organisations that the investment made in training should be justified in terms of improved organisational performance, such as higher productivity, profit, safety, reduced error, and enhanced market share (Salas and Cannon-Bowers, 2001). For various reasons, organisations outsource management training to external providers (Hale, 2006). Based on the assumption that successful management is rooted in a number of general skills and that it is useful for managers to acquire these skills (Avolio *et al.*, 2010), training providers may focus primarily on standardised training programs that are thought to serve all. Standardised programs are also more cost effective than tailor-made training programs accounting for individual manager's situation (Burke and Hutchins, 2008).
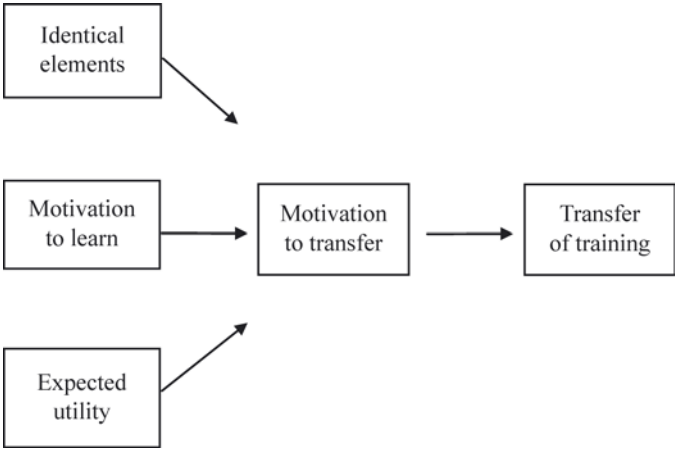

Figure 1.
Research model

Another challenge for management training is that demands on managers are evolving, owing to fast changing environmental and organisational demands (Yukl, 2010). Training providers should take these changing demands and managers' unique work context into consideration (Salas *et al.*, 2009). Salas and colleagues argue that traditional methods for training managers may fail to meet the demands of work environments in modern organisations. Thus, they propose to provide trainees with the opportunity to practise in environments that replicate important features of the "real world" environment.

Identical elements

Identical elements refers to the extent to which the stimuli and responses in the training setting are identical to those in the actual performance environment (Saks and Belcourt, 2006). The concept of identical elements was originally introduced by Thorndike and Woodworth (1901), who noticed that learning is a specific instance of mental adaptation which does not always generalise. Their identical elements theory implies that training transfer depends on the degree to which the stimuli and responses in the training are identical to those in the transfer situation. From this theoretical standpoint, it will be easier for trainees to apply what has been learned in the training to the job setting when the stimuli and responses in these two settings match well. Similarity in stimuli is important since it increases the relevance of the training situation; moreover, back at work, it will help trigger managers' effective responses, matching those developed in the training. Similarity in response is important because it guarantees that the skills that are practiced are relevant and necessary for successful performance at work. Owing to the complex nature of managers' work situation, full physical similarity might be difficult to obtain. Yet it is important for the training situation to have high psychological fidelity (Salas *et al.*, 1998), implying that trainees attach similar meanings to stimuli in the training and in the organisational context, and that the training stimuli elicit similar responses, emotions, and decision-making processes in real-life management situations (Baldwin and Ford, 1988; Ford *et al.*, 1998). When the stimuli and responses that trainees are subjected to in training are too different from those in real work tasks, the training can have only negligible or even a negative effect on trainees' job performance (Blume *et al.*, 2010; Holding, 1965; Taylor *et al.*, 2005).

The inclusion of identical elements is especially important in management training which often addresses open as opposed to closed skills. In closed skills training, trainees learn to respond in one particular way on the job, according to a set of rules implemented in a precise fashion (Blume *et al.*, 2010). Management training focuses on more variable, open skills, such as interpersonal skills or supervisory competencies – relevant for many different situations and not specifying a single correct way to act. Because the application of these open skills is less straightforward, trainers may be inclined to develop a general training environment instead of a training program that resembles trainees' work situation. Even though it may be difficult and time-consuming to include identical elements in open management training, their absence may pose a risk for training transfer.

The idea of identical elements has been consistently emphasised as an important component of instructional design (Baldwin and Ford, 1988; Burke and Hutchins, 2007). Despite its importance, it has only recently been applied to training programs,

such as software computer training (Kluge *et al.*, 2010), simulation-based training in health care (Libin *et al.*, 2010), aviation (DeVoge and Bass, 2007), language learning (Hilte and Reitsma, 2011), and even football kicking (Young and Rath, 2011). Research generally indicates that learning situations that better resemble real-life events improve the transfer of training (Goldstein and Gilliam, 1990). While in some studies, the effect of identical elements has been examined with a measure of perceived content match (Lim and Morris, 2006), perceived content relevance (Axtell *et al.*, 1997) or the extent to which learning aids (i.e. scenarios) were generated by the trainees or the trainers (Taylor *et al.*, 2005), more evidence, using a precisely-designed identical elements construct, is needed to show how training similarity contributes to training transfer. Extending prior findings to a managerial training, we thus formally propose:

H1a. The use of identical elements is positively related to training transfer.

Motivation to transfer

Essential for the transfer of training is trainees' motivation to transfer. Motivation to transfer refers to trainees' intended effort to utilize skills and knowledge learned in a training setting to a real world work situation (Noe, 1986). Findings indicate that motivation to transfer directly affects training outcomes (Axtell *et al.*, 1997; Chiaburu and Lindsay, 2008; Chiaburu *et al.*, 2010b). For instance, Chiaburu and Lindsay (2008) observed a strong, positive relationship between motivation to transfer and training transfer.

In turn, motivation to transfer is predicted by individual characteristics, such as work motivation and self-efficacy, and workplace characteristic, such as supervisor support and perceptions of organisational support (Chiaburu *et al.*, 2010b; Noe and Schmitt, 1986). Moreover, motivation to transfer appears to be affected by factors that are related to the training, such as trainees' perceptions of the relevance of the training content for job performance, expectations that the new skills and knowledge can be used back on the job and will lead to performance improvement (Burke and Hutchins, 2007; Noe, 1986). These perceptions and expectations will be higher when trainees experience a training setting with more identical elements. Based on this evidence, we expect that motivation to transfer will mediate the identical elements – training transfer relationship:

H1b. The relationship between the use of identical elements and training transfer is mediated by motivation to transfer.

Motivation to learn and expected utility

Design aspects (e.g. identical elements) are not the only drivers of training transfer. Individual differences among trainees in motivation and attitudes are considered important factors for both learning and transfer (Baldwin and Ford, 1988; Noe, 1986). Successful implementation of management training depends on several individual dimensions, such as motivation to learn and expected utility (Blume *et al.*, 2010), discussed next.

Motivation to learn

Trainees' motivation to learn refers to their desire to learn the content of a training program (Noe, 1986). Individuals' motivation to learn is considered a key determinant

of the choices individuals make to engage in, attend to, and persist in learning activities. Thus, trainees with a high learning motivation are concerned with developing competence through training, and are more likely to take on challenging tasks that will further support learning acquisition (Chiaburu *et al.*, 2010b). Moreover, learning motivation has been related to need for achievement, perceptions of control, and the setting of challenging goals (Colquitt *et al.*, 2000).

Motivation to learn can have important implications for training outcomes. Research indicates that motivation to learn is a predictor of training performance (Fisher and Ford, 1998), skill acquisition, post-training self-efficacy (Chiaburu and Lindsay, 2008), and training transfer (Silver *et al.*, 2006). Delobbe (2007), for instance, found that learning motivation contributed to the work application of knowledge and behaviours acquired during training, regardless of the features of the work context to which learning needed to transfer. Generally, evidence suggests that a learning orientation contributes positively to learning and performance in work settings (Payne *et al.*, 2007). Therefore, we formally propose:

H2a. Motivation to learn is positively related to training transfer.

H2b. The relationship between motivation to learn and training transfer is mediated by motivation to transfer.

Expected utility
Employees who participate in a training program usually have some expectations about the training's benefits. This pre-existing belief about training effectiveness and relevance is referred to as its expected utility (Facteau *et al.*, 1995). Expected utility is related to expectancy theory, which claims that individuals will be more motivated to pursue choices and make an effort when they perceive the utility or value of that choice. Applied to a training context, training participants will be more motivated to use new knowledge and skills on the job when they expect that the material they learn is useful for achieving valued outcomes back on the job, such as improved job performance or career progression (Clark *et al.*, 1993).

Extant empirical evidence supports this notion. Lieberman and Hoffmann (2008) noted that utility expectations exerted a strong influence on transfer. Moreover, Alliger *et al.* (1997) found in their meta-analytic study that trainees' training utility perceptions were a stronger predictor of training transfer than trainees' affective responses to the training. Accordingly, we posit the following hypotheses:

H3a. Expected utility is positively related to training transfer.

H3b. The relationship between expected utility and training transfer is mediated by motivation to transfer.

Relative importance of identical elements
In what follows, we place identical elements in a theoretical context that includes the other two major predictors discussed: motivation to learn and expected utility (Blume *et al.*, 2010; Facteau *et al.*, 1995). As noted, it is likely that trainees will be more motivated to transfer newly learned skills and knowledge when they perceive the training stimuli and responses to be more (as opposed to less) identical to their work setting. According to Burke and Hutchins (2007), trainees must see a close relationship

between training content and work tasks to transfer skills to work. Likewise, Taylor *et al.* (2005) meta-analytically substantiate the importance of trainees' being able to practice using their own work-based scenarios, as opposed to scenarios provided by trainers. Conversely, when the training shows little resemblance with the daily work situation, trainees will be less motivated to apply the newly learned skills and knowledge to their jobs, due to this mismatch and of the resulting lack of perceived relevance.

Given that motivation to transfer and expected utility are themselves influenced by the extent to which training encompasses identical elements, we suggest that identical elements will exert a strong and direct effect on training transfer. Overall, therefore, we propose the following:

> *H4.* Identical elements will predict training transfer over and above trainees' motivation to learn and expected utility.

Method
Procedure and participants
The study focused on managers who participated in an open management training program (in 2008 and 2009) to improve their social skills. The courses were provided by two certified training companies, considered market leaders in The Netherlands. Open training implies that the training is accessible to employees from different companies (contrary to an in-company training, available only for employees in the focal organisation) and that therefore a general training program is used. Of the 2,314 participants who were invited to complete an online questionnaire, 595 questionnaires were returned (response rate = 25.7 per cent). Participant mean age was 39 years (SD = 8.9); average tenure was 10.8 years (SD = 8.9); and 56 per cent of the participants were male. Most participants (79 per cent) had a higher vocational training or university degree; the others had a degree at a lower level (21 per cent).

The duration of the trainings ranged from two to ten days, with a mean of 3.54 days. In terms of content, trainees learned leadership skills, influence techniques, and general communication skills. The courses were organised according to provisions of the national training association Vetron, following Dutch ISO-9001 standards.

Measures
Unless otherwise indicated, a seven-point Likert-scale was used ranging from strongly disagree (1) to strongly agree (7). Cronbach's alpha (α) was calculated as an estimate of the scales' internal consistency.

Identical elements. To measure the degree in which the training situation was identical to the work situation, both in stimuli and responses that were practiced, an eight-item scale was developed based both on the available literature (Axtell *et al.*, 1997; Lim and Morris, 2006) and on extensive discussions with the trainees and trainers. We used a pilot study to determine the scale's psychometric properties. Specifically, we obtained responses from 194 managers (mean age = 39.9, SD = 8.6; 53 per cent male) who participated in a management training. The findings showed adequate internal consistency ($\alpha = 0.91$) and meaningful relationships with theoretically-relevant constructs (e.g. transfer motivation, $r = 0.45$; training transfer, $r = 0.49$). A sample item was "The training situations mimicked my work". In the present study, Cronbach's alpha was 0.92.

Motivation to learn. Trainees' motivation to learn was assessed with eight items from Noe and Wilk's (1993) scale. Noe and Wilk provided evidence for the validity and reliability ($\alpha = 0.81$). In the present study, Cronbach's alpha was 0.89. A sample item was "I try to learn as much as I can from training programs".

Expected utility. We measured trainees' expectations concerning the utility of the training with a five-item scale that had shown validity and reliability ($\alpha = 0.88$) in a study by Mathieu *et al.* (1992). In the present study, Cronbach's alpha was 0.90. A sample item was "Successful completion of this training course will help me improve the quality of my work".

Motivation to transfer. Five items, developed by Noe and Schmitt's (1986), were used to measure trainees' motivation to transfer. This scale has shown adequate reliability in Noe and Schmitt's study ($\alpha = 0.95$), and has been used in subsequent research (e.g. Tai, 2006). In the present study, Cronbach's alpha was 0.84. An illustrative item is, "I am highly motivated to apply the skills I learned in this training to my daily work".

Training transfer. The degree to which trainees had been able to apply their new knowledge and skills to the work setting was assessed with eight items derived from Velada *et al.*'s (2007) scale, which had shown adequate reliability ($\alpha = 0.87$). In the present study, Cronbach's alpha was 0.94. A sample item was "I have been using the skills presented in the training course to help improve my performance".

Background variables. Gender, age, tenure, education, voluntary participation (Hurtz and Williams, 2009), and training company were included as control variables.

Confirmatory factor analysis

Confirmatory factor analyses were conducted to investigate whether the scales measured distinct constructs using the AMOS 18.0 software package (Arbuckle, 2010). Two nested models were investigated, a single-factor model that treated all items as indicators of a single latent variable, and a five-factor model representing the five scales in this study. An examination of the fit indices suggested that the single-factor model did not fit the data well ($\chi^2/df = 11.09$, $p < 0.001$; TLI $= 0.60$; CFI $= 0.62$; RMSEA $= 0.13$ [0.127-0.133]), and that the five-factor model showed good fit ($\chi^2/df = 2.82$; TLI $= 0.927$; CFI $= 0.933$; RMSEA $= 0.056$ [0.052-0.059]). A chi-square difference test (Anderson and Gerbing, 1988) indicated a significantly better fit for the five-factor model ($\Delta\chi^2 = 4120.96$, $\Delta df = 10$; $p < 0.001$). The estimated factor loadings varied between 0.52 and 0.90 and were statistically significant. In sum, the confirmatory factor analyses supported the hypothesised measurement model.

Main analyses

To test the hypotheses and the fit of the overarching model, structural equations modelling with maximum likelihood estimation was conducted. Multiple goodness-of-fit-indices were used to assess the adequacy of the estimated model. The comparative-fit index (CFI) (Hu and Bentler, 1999) and Tucker-Lewis index (TLI) (Kline, 2005) indicate sufficient fit when they exceed 0.90. The root mean squared error of approximation (RMSEA) indicates sufficient fit when values are smaller than 0.08 (Kline, 2005). To compare the fit of alternative models, chi-square difference tests were performed (Anderson and Gerbing, 1988). Sobel's (1982) test for mediation was used to establish the significance of the mediating effect.

Results

As Table I shows, the study variables were moderately correlated. The tolerance and VIF scores of the model however showed that the level of multicollinearity (VIF < 6) is acceptable (Cohen, 2003). A preliminary analysis showed that the control variables (training company, tenure, age, gender, education, and voluntary participation) were not significantly related to training transfer ($F_{(6,588)} = 1.98$, ns). Therefore, these variables were not included in the tables.

The hypothesised model, including control variables, achieved poor fit (χ^2(df =7, $N = 595$) = 224.52, $p < 0.001$; χ^2/df =32.07; CFI = 0.83; TLI = 0.11; RMSEA = 0.23). The standardised residuals suggested that model fit could be improved by including direct relationships of identical elements and expected utility with training transfer. The fit indices of the adjusted model indicated good fit ($\chi^2_{(df=5)} = 13.05$, $p = 0.02$; χ^2/df = 2.61; GFI = 0.99; TLI = 0.95; CFI = 0.99; RMSEA = 0.05). A chi-square difference test showed that the adjusted model provided a significantly better fit than the original model ($\Delta\chi^2 = 211.47$; Δdf = 2; $p < 0.001$). Table II presents the standardised path coefficients for the revised model, and shows that the model variables explained 54 per cent in the variance of motivation to transfer, and 48 per cent of the variance in training transfer.

H1, proposing a positive relationship between identical elements and training transfer that would be mediated by transfer motivation, was supported. Identical elements was significantly related to motivation to transfer ($\beta = 0.11$, $p < 0.01$) and motivation to transfer was significantly related to training transfer ($\beta = 0.15$,

Variable	Mean	SD	1	2	3	4	5
1. Identical elements	4.63	0.91	(0.92)				
2. Motivation to learn	5.16	0.71	0.40**	(0.89)			
3. Expected utility	4.80	0.98	0.43**	0.47**	(0.90)		
4. Motivation to transfer	5.21	0.97	0.42**	0.69**	0.53**	(0.84)	
5. Training transfer	4.83	0.98	0.53**	0.42**	0.57**	0.49**	(0.94)

Notes: $n = 595$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table I.
Means, standard deviations, intercorrelations, and reliabilities of the study variables

Predictors	Motivation to transfer β	Training transfer β
Gender[a]		−0.05
Age		0.05
Education		0.04
Voluntary participation[b]		−0.03
Training provider		−0.01
Identical elements	0.11**	0.29***
Motivation to learn	0.52***	0.08*
Expected utility	0.25***	0.40***
Motivation to transfer		0.15**
R^2	0.54	0.48

Notes: $n = 595$; [a]0 = male, 1 = female; [b]0 = no, 1 = yes; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table II.
Outcomes of structural equations modelling

$p < 0.01$). Mediation was only partial, however, because identical elements was also directly related to training transfer ($\beta = 0.29$, $p < 0.001$). Sobel's test for mediation showed that the partial mediating effect was significant ($Z = 2.16$, $p < 0.05$).

H2, proposing a positive relationship between motivation to learn and training transfer that would be mediated by transfer motivation, was also fully supported. Motivation to learn was strongly related to motivation to transfer ($\beta = 0.52$, $p < 0.001$), and modestly albeit significantly related to training transfer ($\beta = 0.08$, $p < 0.05$). Sobel's (1982) test showed that the mediating effect was significant ($Z = 3.08$, $p < 0.001$).

Similarly, H3, proposing a positive relationship of expected utility with training transfer that would be mediated by transfer motivation, was supported. Expected utility contributed to the prediction of both motivation to transfer ($\beta = 0.25$, $p < 0.001$), and training transfer ($\beta = 0.40$, $p < 0.001$). Sobel's (1982) test indicated that the mediating effect was significant ($Z = 2.88$, $p < 0.001$). Again, the mediating effect was partial because there was also a direct relationship of expected utility with training transfer ($\beta = 0.40$, $p < 0.001$).

H4, concerning the additional contribution of critical elements to the prediction of training transfer, was also supported. Including identical elements in the regression analyses significantly improved the prediction over and above motivation to learn and expected utility ($\Delta R^2 = 0.07$, $F_{(1,587)} = 73.30$, $p < 0.001$).

Discussion
The findings of the current study provided evidence for the relevance of identical stimuli for the transfer of management training. Managers who had participated in a management training program reported more transfer of the new skills and knowledge obtained in the training when the training's tasks and practiced skills were more identical to their daily work situation. Although the hypothesised indirect relationship through transfer motivation was modest, the findings showed a substantial direct relationship of identical elements with training transfer. These relationships support Thorndike and Woodworth's identical elements theory, and Giangreco et al.'s (2010) notion that trainings should be aligned with what is actually taking place on the job. In other words, effective training should address management situations and include work processes and skills that are similar to those in a manager's actual performance environment. Moreover, the present study suggests that identical elements represent valuable predictors of training transfer, and their effect is comparable with the impact of other important transfer predictors found across studies (Gegenfurtner, 2011). Specifically, we compared identical elements with "strong competitors" from a theoretical standpoint. Across studies, motivation to learn, expectancy, and instrumentality are strong predictors of training transfer, exhibiting effect sizes of 0.28 (for motivation to learn), 0.40 (instrumentality), and 0.52 (expectancy; Gegenfurtner, 2011; see Table I). Against this background, we believe that the effect sizes obtained in our study warrant some attention.

The findings also showed that motivation to learn and expected utility contributed to training transfer, extending previous research (Blume et al., 2010; Chiaburu et al., 2010b). Specifically, expected utility contributed strongly and directly to the prediction of training transfer. This indicates that while trainees need to be motivated to learn in order to be motivated to transfer, they in particular need to perceive that the training is

instrumental for obtaining valued outcomes. Perceptions of the training's instrumentality may be especially important for managers, as included in our study, since they usually experience high work pressure, competing demands, as well as limited time for offsite training experiences (Clark *et al.*, 1993).

As was predicted, motivation to transfer mediated the relationships of the three predictors with training transfer. It should be noted however that motivation to transfer was only modestly related to training transfer, and that identical elements and expected utility each showed an additional direct and strong relationship with training transfer. In other words, perceptions of the trainings' features (i.e. similarity and utility) contributed more to the prediction of training transfer than managers' learning and transfer motivations. This finding again stresses the importance of a carefully developed training program that resembles managers' work context and focuses on developing skills and knowledge that will be valuable in this context. As such, these findings are in line with previous meta-analyses (Alliger *et al.*, 1997; Blume *et al.*, 2010) showing that trainees' utility perceptions were associated with training transfer more than trainees' affective or emotional reactions. Similarly, Chiaburu and Lindsay (2008) found a direct relationship between expected utility and training transfer, in addition to the indirect relationship that was mediated by training motivation.

In sum, our findings indicate that there should be a close relationship between training and work for skills to transfer to the work setting (Burke and Hutchins, 2007). Yet, trainers and training providers may not be fully aware of the relevance of this match. For example, in Burke and Hutchins' (2008) study of trainers' perceptions of training transfer, only 5 per cent of the trainers mentioned that the training content should match actual job duties, although most training professionals did emphasise the importance of training design and delivery. This indicates, in the light of our findings, that training providers should become more aware that training transfer is enhanced by identical elements, and that they should develop training situations that trigger cognitive, emotional and behavioural processes and responses that are identical with (or at least closely matched to) those in the actual performance environment.

Strengths and limitations
An important strength concerns the research setting. Having managers from multiple organisations providing data on management training increases the external validity of our findings and provides organisations and training professionals with relevant information about training transfer pertaining to managers. In addition, the current study accounted for both alternative predictors and attempted to clarify processes (in the form of mediators).

At the same time, several limitations are worth noting. First, we collected data from one source: managers (trainees) attending the training reported on training characteristics, their motivation, as well as training transfer. Yet, the measures of the predictors and training transfer were separated by other variables, not used in this study. As indicated by Podsakoff *et al.* (2003), such procedural remedies can reduce response bias by decreasing the salience, relevance, and availability of responses provided previously. Moreover, single-source bias may be less problematic than commonly believed (see Doty and Glick, 1998; Spector, 2006b). More importantly, observers are not necessarily more accurate in providing information about training transfer than are trainees (Chiaburu *et al.*, 2010a). Still, we cannot rule out that

single-source bias could be responsible, at least in part, for the observed relationships. In future studies, researchers may consider sources other than self-reported data, such as colleagues and supervisors.

As another limitation, the study was cross-sectional; data were collected at one point in time. Although this is a relatively common practice in training transfer research (Blume *et al.*, 2010), we still have to be careful with drawing causal inferences from the present data. In future research, it may be advantageous to use either an experimental design with low- and high-identical element conditions (see DeVoge and Bass, 2007), or a longitudinal design to further support the findings of this study and improve our understanding of how training and personal characteristics contribute to the process of transferring trained content to the organisational context.

Future research
The concept of identical elements in management training has received only limited research attention. The present study can therefore be considered a first step of a new research agenda. Future studies are necessary to further establish the concept of identical elements in the training transfer literature. The findings of our study suggest a number of implications for future research. For instance, future studies could investigate how the match between training and work situations can be enhanced. From a design standpoint, studies may establish in greater detail what types of stimuli should be included for trainees to attach similar meanings in the training and organisational context. Diary studies could also be conducted to gain more insight into the match between both situations, the applicability of new competencies, and the amount and variety of learning that is transferred over time (Saks and Belcourt, 2006). Since learning and transfer environments will never be fully similar, future research could also establish the role of post-training supplements for transfer and further skill development (Tews and Tracey, 2008). Further, research is needed on when specific instructional design strategies (e.g. automatisation vs schematisation; Jelsma *et al.*, 1990) can be concretely used for optimal identical elements design. From another direction, researchers have noted that it is "the similarity of the *information processing* between training and transfer tasks that is most important" (Ford *et al.*, 1998, p. 221, italics added). Finally, because some managers may more easily perceive a similarity between the training and work environment, future research could additionally focus on trainee characteristics that possibly underlie this similarity perception, such as cognitive competencies (Blume *et al.*, 2010) and meta-cognitive awareness (Schraw and Dennisson, 1994).

Practical implications
The current study has several practical implications. Most importantly, the study's outcomes emphasise the relevance of training design features for training transfer. The findings indicate that trainers (i.e. training professionals, training organisations, and HRD departments) can improve training transfer by paying more attention to the alignment of the training stimuli and responses to those in trainees' work situation. Although transfer of training has been conceptualised predominantly as a post-training process, it is crucial for trainers to acquire and use information about trainees' work situation. Trainers should be therefore aware of the unique tasks, issues and aspects requiring the attention of each trainee. In fact, Goldstein and Gilliam (1990) presented the need for an organisation-level analysis in the training needs assessment

phase, noting the possibility of supervisors "who might require that the job be performed differently than as taught in training" (p. 135). We add, and empirically substantiate, the need for assessing identical elements. Thus, a careful and structured assessment of participants' work situation can be used to help trainers and designers identify specific individual training needs, and training goals. Subsequently, when designing the training, training materials should be developed and tailored, such that the training situation is similar to what trainees encounter in the work setting. Feedback from trainees and organisations, obtained during and after the training, can serve to increase and maintain similarity.

This procedure may be more difficult to implement in open trainings, with trainees from different companies participating in a program. Yet, especially in open management training, increasing identical elements requires preliminary situation and needs assessment and subsequent tailoring of the training for specific trainees or groups of trainees. This can be done in several ways, including modular forms of training delivery, and varying some parts of the instructional content or its specifics, providing trainees with scenarios or situations specific to their organisation (Taylor *et al.*, 2005), in alignment with the identical elements principle. Besides trainers and trainees, the sponsor of the training (e.g. the organisation or HRD department) should monitor the quality of the training's content by evaluating the training with the participating manager, by assessing training transfer, and by contracting only with those training providers that have been proven to use identical elements in their trainings.

In addition to emphasising the relevance of identical elements, the findings also show the role of expected utility and transfer motivation for training transfer. Expected utility of the training can be enhanced by providing more information about the training, and by showing how the training relates to daily work situations and how it can improve managers' performance (e.g. Van Eerde *et al.*, 2008). Managers' motivation to transfer can be addressed in several ways, through enhancing managers' motivation to learn and providing them with support and opportunities necessary to apply what has been learned in the training. Generally, this implies that organisations can increase transfer motivation and training transfer by developing a climate for learning or becoming a learning organisation (Senge, 1990), where employees are motivated to learn and transfer, and are supported when trying to do so. Furthermore, trainers might enhance transfer motivation by assisting trainees afterwards, motivating them to apply what has been learned, helping them to improve their skills in individual coaching sessions, and by organising peer meetings where managers can share their experiences and training transfer efforts.

It is important that organisations and trainees are able to make well-informed choices about the time and money invested in training interventions. Having managers attend training programs featuring few identical elements and low utility can be considered a triple loss: there will be little or no return on investment owing to limited transfer, managers will have spent precious time outside their work environment, and managers' motivation to participate in future training might decline.

Conclusion
Given the importance and potential impact of management training for organisational effectiveness, and the costs associated with training, it is important for both

researchers and practitioners to develop a better understanding of critical design features that can increase training transfer (Arthur *et al.*, 2003; Baldwin and Ford, 1988). Although the literature and the American Society for Training and Development (2008, p. 86) emphasise the importance of identical elements for training transfer, there still is a need for studies to clarify the mechanism(s) through which training design features can lead to increased training transfer (Taylor *et al.*, 2005). The current study started to address this need by:

- explicitly measuring trainees' perceptions of identical elements;
- assessing the extent to which identical elements predict training transfer over and above two well-established antecedents;
- clarifying possible mechanisms, in the form of motivation to transfer; and
- establishing these relationships in a managerial sample.

With identical elements more firmly established as predictor of training transfer, more research is necessary to establish when identical elements are most influential. In the end, when managers find common ground between training situations and newly trained skills, their flexibility, sociability and versatility will be enhanced, contributing to job satisfaction and organisational performance.

References

Aguinis, H. and Kraiger, K. (2009), "Benefits of training and development for individuals and teams, organizations, and society", *Annual Review of Psychology*, Vol. 60, pp. 451-474.

Alliger, G.M., Tannenbaum, S.I., Bennett, W. Jr, Traver, H. and Shotland, A. (1997), "A meta-analysis of the relations among training criteria", *Personnel Psychology*, Vol. 50 No. 2, pp. 341-358.

American Society for Training and Development (2008), *Train the Trainer: Foundations and Delivery*, Vol. 1, ASTD, Alexandria, VA.

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modelling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, pp. 411-423.

Arbuckle, J.L. (2010), "Amos 18 user's guide", available at: http://top-pdf.com/manual-amos-18-spss.html (accessed 29 April 2011).

Arthur, W., Bennett, W., Edens, P.S. and Bell, S.T. (2003), "Effectiveness of training in organizations: a meta-analysis of design and evaluation features", *Journal of Applied Psychology*, Vol. 88 No. 2, pp. 234-245.

Avolio, B.J., Avey, J.B. and Quisenberry, D. (2010), "Estimating return on leadership development investment", *Leadership Quarterly*, Vol. 21 No. 4, pp. 633-644.

Axtell, C.M., Maitlis, S. and Yearta, S.K. (1997), "Predicting immediate and longer-term transfer of training", *Personnel Review*, Vol. 26 No. 3, pp. 201-232.

Baldwin, T.T. and Ford, J.K. (1988), "Transfer of training: a review and directions for future research", *Personnel Psychology*, Vol. 41 No. 1, pp. 63-105.

Blume, B.D., Ford, J.K., Baldwin, T.T. and Huang, J.L. (2010), "Transfer of training: a meta-analytic review", *Journal of Management*, Vol. 36 No. 4, pp. 1065-1105.

Burke, L.A. and Hutchins, H.M. (2007), "Training transfer: an integrative literature review", *Human Resource Development Review*, Vol. 6 No. 3, pp. 263-296.

Burke, L.A. and Hutchins, H.M. (2008), "A study of best practices in training transfer and proposed model of transfer", *Human Resource Development Quarterly*, Vol. 19 No. 2, pp. 107-128.

Cheng, E.W.L. and Ho, D.C.K. (2001), "A review of transfer of training studies in the past decade", *Personnel Review*, Vol. 30 No. 1, pp. 102-118.

Chiaburu, D.S. and Lindsay, D.R. (2008), "Can do or will do? The importance of self-efficacy and instrumentality for training transfer", *Human Resource Development International*, Vol. 11 No. 2, pp. 199-206.

Chiaburu, D.S., Sawyer, K. and Thoroughgood, C. (2010a), "Transferring more than learned in training: employees' and managers' (over)generalization of training transfer", *International Journal of Selection and Assessment*, Vol. 18 No. 4, pp. 380-393.

Chiaburu, D.S., Van Dam, K. and Hutchins, H.M. (2010b), "Social support in the workplace and training transfer: a longitudinal analysis", *International Journal of Selection and Assessment*, Vol. 18 No. 2, pp. 187-200.

Clark, C.S., Dobbins, G.H. and Ladd, R.T. (1993), "Exploratory field-study of training motivation – influence of involvement, credibility, and transfer climate", *Group and Organization Management*, Vol. 18 No. 3, pp. 292-307.

Cohen, J. (2003), *Applied Multiple Regression/Correlational Analysis for the Behavioral Sciences*, 3rd ed., Erlbaum, Mahwah, NJ.

Collins, D.B. and Holton, E.F. (2004), "The effectiveness of managerial leadership development programs: a meta-analysis of studies from 1982 to 2001", *Human Resource Development Quarterly*, Vol. 15 No. 2, pp. 217-248.

Colquitt, J.A., LePine, J.A. and Noe, R.A. (2000), "Toward an integrative theory of training motivation: a meta-analytic path analysis of 20 years of research", *Journal of Applied Psychology*, Vol. 85 No. 5, pp. 678-707.

Day, D.V. (2000), "Leadership development: a review in context", *Leadership Quarterly*, Vol. 11 No. 4, pp. 581-613.

Delobbe, N. (2007), "Factors of motivation and transfer of training: a sequential study in the context of a leadership training", *Psychologie du Travail et des Organisations*, Vol. 13 No. 3, pp. 71-88.

DeVoge, J.M. and Bass, E.J. (2007), "Job specific or general training: a quantitative assessment", *The International Journal of Aviation Psychology*, Vol. 17 No. 4, pp. 1-19.

Doty, D.H. and Glick, W.H. (1998), "Common methods bias: does common methods variance really bias results?", *Organizational Research Methods*, Vol. 1 No. 4, pp. 374-406.

Facteau, J.D., Dobbins, G.H., Russell, J.E.A., Ladd, R.T. and Kudisch, J.D. (1995), "The influence of general perceptions of the training environment on pretraining motivation and perceived training transfer", *Journal of Management*, Vol. 21 No. 1, pp. 1-25.

Fisher, S.L. and Ford, J.K. (1998), "Differential effects of learner effort and goal orientation on two learning outcomes", *Personnel Psychology*, Vol. 51 No. 2, pp. 397-420.

Ford, J.K., Smith, E.M., Weissbein, D.A., Gully, S.M. and Salas, E. (1998), "Relationships of goal orientation, metacognitive activity, and practice strategies with learning outcomes and transfer", *Journal of Applied Psychology*, Vol. 83 No. 2, pp. 218-233.

Gegenfurtner, A. (2011), "Motivation and transfer in professional training: a meta-analysis of the moderating effects of knowledge type, instruction, and assessment conditions", *Educational Research Review*, Vol. 6 No. 3, pp. 153-168.

Giangreco, A., Carugati, A. and Sebastiano, A. (2010), "Are we doing the right thing? Food for thought on training evaluation and its context", *Personnel Review*, Vol. 39 No. 2, pp. 162-177.

Goldstein, I.L. and Gilliam, P. (1990), "Training system issues in the year 2000", *American Psychologist*, Vol. 45 No. 2, pp. 134-143.

Hale, J. (2006), *Outsourcing Training and Development: Factors for Success*, Pfeiffer, San Francisco, CA.

Hilte, M. and Reitsma, P. (2011), "Effects of explicit rules in learning to spell open- and closed-syllable words", *Learning and Instruction*, Vol. 21 No. 1, pp. 34-45.

Holding, D.H. (1965), *Principles of Training*, Pergamon Press, London.

Hu, L.T. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modelling*, Vol. 6 No. 3, pp. 1-55.

Hurtz, G.M. and Williams, K.J. (2009), "Attitudinal and motivational antecedents of participation in voluntary employee development activities", *Journal of Applied Psychology*, Vol. 94 No. 3, pp. 635-653.

Jelsma, O., Van Merriënboer, J.J. and Bijlstra, J.P. (1990), "The ADAPT design model: towards instructional control of transfer", *Instructional Science*, Vol. 19, pp. 89-120.

Kline, R.B. (2005), *Principles and Practice of Structural Equation Modeling*, Guilford Press, New York, NY.

Kluge, A., Sauer, J., Burkolter, D. and Ritzmann, S. (2010), "Designing training for temporal and adaptive transfer: a comparative evaluation of three training methods for process control tasks", *Journal of Educational Computing Research*, Vol. 43 No. 3, pp. 327-353.

Libin, A., Lauderdale, M., Millo, Y., Shamloo, C., Spencer, R., Green, B., Donnellan, J., Wellesley, C. and Groah, S. (2010), "Role-playing simulation as an educational tool for health care personnel: developing an embedded assessment framework", *Cyberpsychology, Behavior, and Social Networking*, Vol. 13 No. 2, pp. 217-224.

Lieberman, S. and Hoffmann, S. (2008), "The impact of practical relevance on training transfer: evidence from a service quality training program for German bank clerks", *International Journal of Training and Development*, Vol. 12 No. 2, pp. 74-86.

Lim, D.H. and Morris, M.L. (2006), "Influence of trainee characteristics, instructional satisfaction, and organizational climate on perceived learning and training transfer", *Human Resource Development Quarterly*, Vol. 17 No. 1, pp. 85-115.

McCauley, C.D., Ruderman, M.N., Ohlott, P.J. and Morrow, J.E. (1994), "Assessing the developmental components of managerial jobs", *Journal of Applied Psychology*, Vol. 79 No. 4, pp. 544-560.

MacKie, D. (2008), "Leadership derailment and psychological harm", *The Australian Psychological Society*, available at: www.psychology.org.au/inpsych/derailment (accessed 10 March 2011).

Mathieu, J.E., Tannenbaum, S.I. and Salas, E. (1992), "Influences of individual and situational characteristics on measures of training effectiveness", *Academy of Management Journal*, Vol. 35 No. 4, pp. 828-847.

Noe, R.A. (1986), "Trainees' attributes and attitudes: neglected influences on training effectiveness", *Academy of Management Review*, Vol. 11 No. 4, pp. 736-749.

Noe, R.A. and Schmitt, N. (1986), "The influence of trainee attitudes on training effectiveness: test of a model", *Personnel Psychology*, Vol. 39 No. 3, pp. 497-523.

Noe, R.A. and Wilk, S.E. (1993), "Investigation of the factors that influence employees' participation in development activities", *Journal of Applied Psychology*, Vol. 78 No. 2, pp. 291-302.

Payne, S.C., Youngcourt, S.S. and Beaubien, J.M. (2007), "A meta-analytic examination of the goal orientation nomological net", *Journal of Applied Psychology*, Vol. 92 No. 1, pp. 128-150.

Podsakoff, P.M., MacKenzie, S.B., Lee, J. and Podsakoff, N.P. (2003), "Common methodbiases and behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.

Saks, A.M. and Belcourt, M. (2006), "An investigation of training activities and transfer of training in organizations", *Human Resource Management*, Vol. 45 No. 4, pp. 629-648.

Salas, E. and Cannon-Bowers, J.A. (2001), "The science of training: a decade of progress", *Annual Review of Psychology*, Vol. 52 No. 1, pp. 471-499.

Salas, E., Rosen, M.A., Held, J.D. and Weissmuller, J.J. (2009), "Performance measurement in simulation-based training: a review and best practices", *Simulation and Gaming*, Vol. 40 No. 3, pp. 328-376.

Salas, E., DiazGranados, D., Klein, C., Burke, C.S., Stagl, K.C., Goodwin, G.F. and Halpin, S.M. (2008), "Does team training improve team performance? A meta-analysis", *Human Factors: The Journal of the Human Factors and Ergonomics Society*, Vol. 50 No. 6, pp. 903-933.

Schraw, G. and Dennisson, G.S. (1994), "Assessing metacognitive awareness", *Contemporary Educational Psychology*, Vol. 19 No. 4, pp. 460-475.

Senge, P. (1990), *The Fifth Discipline: The Art and Practice of the Learning Organization*, Doubleday, New York, NY.

Silver, L.S., Dwyer, S. and Alford, B. (2006), "Learning and performance goal orientation of salespeople revisited: the role of performance-approach and performance-avoidance orientations", *Journal of Personal Selling and Sales Management*, Vol. 36 No. 1, pp. 27-38.

Sobel, M.E. (1982), "Asymptotic confidence intervals for indirect effects in structural equation models", in Leinhart, S. (Ed.), *Sociological Methodology*, Jossey-Bass, San Francisco, CA, pp. 290-312.

Spector, P.E. (2006a), *Industrial and Organizational Psychology: Research and Practice*, 4th ed., Wiley, Hoboken, NJ.

Spector, P.E. (2006b), "Method variance in organizational research", *Organizational Research Methods*, Vol. 9 No. 2, pp. 221-232.

Tai, W.-T. (2006), "Effects of training framing, general self-efficacy and training motivation on trainees' training effectiveness", *Personnel Review*, Vol. 35 No. 1, pp. 51-65.

Taylor, P.J., Russ-Eft, D.F. and Chan, D.W.L. (2005), "A meta-analytic review of behavior modeling training", *Journal of Applied Psychology*, Vol. 90 No. 4, pp. 692-709.

Tews, M.J. and Tracey, J.B. (2008), "An empirical examination of posttraining on-the-job supplements for enhancing the effectiveness of interpersonal skills training", *Personnel Psychology*, Vol. 61 No. 2, pp. 375-401.

Thorndike, E.L. and Woodworth, R.S. (1901), "The influence of improvement in one mental function upon the efficiency of other functions", *Psychological Review*, Vol. 8 No. 4, pp. 247-261.

Van Eerde, W., Tang, K.C.S. and Talbot, G. (2008), "The mediating role of training utility on the relationship between training needs assessment and organizational effectiveness", *International Journal of Human Resource Management*, Vol. 19 No. 1, pp. 63-73.

Velada, R., Caetano, A., Michel, J.W., Lyons, B.D. and Kavanagh, M.J. (2007), "The effects of
training design, individual characteristics and work environment on transfer of training",
International Journal of Training and Development, Vol. 11 No. 4, pp. 282-294.

Young, W.B. and Rath, D.A. (2011), "Enhancing foot velocity in football kicking: the role of
strength training", *Journal of Strength and Conditioning Research*, Vol. 25 No. 2,
pp. 561-566.

Yukl, G.A. (2010), *Leadership in Organizations*, 7th ed., Prentice Hall, Upper Saddle River, NJ.

Further reading

Goldstone, R.L. and Sakamoto, Y. (2003), "The transfer of abstract principles governing complex
adaptive systems", *Cognitive Psychology*, Vol. 46 No. 4, pp. 414-466.

Hardré, P.L. (2003), "Beyond two decades of motivation: a review of the research and practice of
instructional design and human performance technology", *Human Resource Development
Review*, Vol. 2 No. 1, pp. 54-81.

About the authors
Martijn van der Locht is a Lecturer at Fontys University of Applied Sciences, where he teaches
courses concerning Work and Organisational Psychology and Professional Skills. His research
interests include training transfer and employee development. Additionally, he is the founder
and owner of Lochting Advies, providing effectiveness training for improving management
skills. Martijn van der Locht is the corresponding author and can be contacted at:
martijn@lochting.nl

Karen van Dam is Professor in Work and Organisational Psychology at the Open University,
The Netherlands. Her research focuses on employee adaptability, including employee learning,
employability, job mobility, and resistance to change. Currently, she is the Editor of *G&O*, a
Dutch journal of work and organisational psychology, and involved in certifying career
counsellors.

Dan S. Chiaburu is Assistant Professor of Management in the Mays Business School at Texas
A&M University. His recent research examined proactive and prosocial work behaviours,
coworker exchanges and relationships, and training transfer. His recent work appeared in the
Journal of Applied Psychology and *Journal of Managerial Psychology*.