Human Resource Development Review

Integrative Literature Review: Motivation to Transfer Training: An Integrative Literature Review

Andreas Gegenfurtner, Koen Veermans, Dagmar Festner and Hans Gruber

Published by:

$SAGE

http://www.sagepublications.com

On behalf of:

AHRD

Academy of Human Resource Development

Motivation to Transfer Training: An Integrative Literature Review

ANDREAS GEGENFURTNER
KOEN VEERMANS
University of Turku, Finland
DAGMAR FESTNER
HANS GRUBER
University of Regensburg, Germany

Motivation to transfer is essential for the transfer of training. Without motivation, newly acquired knowledge and skills will not be applied at work. The purpose of this integrative literature review is to summarize, critique, and synthesize past transfer motivation research and to offer directions for future investigations. First, seven contributions of past research are presented in an attempt to understand antecedents, correlates, and consequences of motivation to transfer. Second, an alternative view that complements and extends current approaches is discussed, and its implications for future studies investigating employees' motivation for training application on the job are outlined.

Motivation is essential for training transfer. On the need to facilitate motivation to facilitate transfer, Latham (2007) notes,

> The time, money, and resources an organization devotes to ways of increasing a person's abilities are wasted to the extent that an employee chooses (. . .) not to apply newly acquired knowledge and skills in the workplace. (p. 3)

Major concerns in human resource development (HRD) theory and practice are the failure of training and the low return on investment because employees

lack motivation. Although researchers have concluded that transfer motivation is essential for training transfer (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Holton, Bates, & Ruona, 2000; Pugh & Bergin, 2006), a comprehensive review on the concept of motivation to transfer has not been done.

Motivation to transfer (transfer motivation is a synonym) is defined as the trainees' desire to use the knowledge and skills learned in training on the job (Noe, 1986). Although work motivation theories indicate that motivation precedes action (see, inter alia, Kanfer, 1990; Latham, 2007; Mitchell & Daniels, 2003), empirical evidence examining whether transfer motivation precedes transfer action is not as clear. Correlation coefficients ranging from .04 to .63 suggest that this relationship needs further elaboration. In addition, the plethora of investigated variables related to transfer motivation deserves organization and structuring.

The purpose of this article is to provide a critique of past research on motivation to transfer and to suggest directions for future investigations. We do not intend to cover all different approaches on training motivation; rather, we intend to concentrate on transfer motivation owing to its central role in the transfer process (Holton et al., 2000; Latham, 2007; Noe, 1986). Specifically, which antecedents, correlates, and consequences of transfer motivation have been identified in past research? How should future research proceed? To answer these research questions, our discussion is organized in two sections. First, we summarize and critique past transfer motivation research using an integrative model as conceptual framework. Second, we propose an alternative view on transfer motivation that complements and extends current approaches, and outline its implications for future HRD research aimed at understanding why training participants choose to apply newly acquired knowledge and skills in the workplace (Latham, 2007).

An Integrative Review of Transfer Motivation Research

Literature Search and Analysis

We conducted our literature review with the following methodology (Torraco, 2005). Using three criteria for inclusion, we searched for appropriate articles that (a) reported empirical investigations; (b) assessed antecedents, correlates, and consequences of trainees' motivation to transfer training; and (c) were published in peer-reviewed journals between January 1, 1986, and April 1, 2008. We used the year 1986 as the starting point owing to Noe's (1986) publication, which introduced motivation to transfer as a construct in HRD research. To ensure a systematic search for both older and more recently published papers, a two-step search procedure was employed. First, we completed an extensive database search in Business Source Premier, ERIC, PsycINFO, and the Social Sciences Citation Index (SSCI) for the keywords motivation to

transfer, transfer motivation, intention to transfer, transfer intentions, desire to transfer, and training motivation included in the abstract. This search revealed a preliminary 88 articles. Of these, 16 articles met all inclusion criteria. Second, we cross-referenced these articles as well as 10 recent literature reviews on training and transfer (Aguinis & Kraiger, 2009; Baldwin & Ford, 1988; Burke & Hutchins, 2007; Cheng & Ho, 2001; Colquitt, LePine, & Noe, 2000; Ford & Weissbein, 1997; Pugh & Bergin, 2006; Salas & Cannon-Bowers, 2001; Tannenbaum & Yukl, 1992; Yamnill & McLean, 2001), which resulted in an additional 15 articles meeting the criteria. In total, the database search and cross-references identified 31 articles that were included in this review.

An example of both discarded and retained articles may help illustrate how we have applied the criteria for inclusion. On one hand, the study of Brachos, Kostopoulos, Soderquist, and Prastacos (2007) investigating knowledge-sharing mechanisms in business enterprises was excluded because it discussed employees' motivation to transfer in terms of a desire to share already acquired knowledge with people within their work unit, rather than in terms of motivation to transfer newly acquired knowledge from the training setting to the workplace. On the other hand, two studies of Machin and Fogarty (2003, 2004) were included because they analyzed motivation to transfer as transfer implementation intentions, a construct aimed to assess employees' subconscious intentions in applying training when a specific context in the workplace is encountered (Gollwitzer, 1999).

Each of the retrieved articles was carefully studied to identify the relationships between transfer motivation and other constructs. Variables in the review are substantiated by significant ($p < .05$) findings reported in at least two peer-reviewed empirical articles. Because of the small number of studies, a meta-analytic technique is not feasible. As noted earlier, we have reviewed, critiqued, and categorized antecedents, correlates, and consequences of transfer motivation and synthesized the literature in an integrative model illustrated in Figure 1. Similar to previous work (e.g., Baldwin & Ford, 1988), the integrative model of motivation to transfer adopts a classification system of individual, organizational, and training-related factors before, during, and after training. Categories of variables in both the review and the model are made to correlate with the identified articles. For example, if the majority of studies assess an individual variable after training, it is listed as a posttraining individual factor. Contrary to Baldwin and Ford's model, however, interrelationships among the set of constructs are acknowledged. Although some factors are listed as pretraining factors reflecting past research practices, these factors could be considered critical after training as well, such as organizational culture. Thus, some flexibility is needed in the interpretation of the integrative model. The model consists of seven components. Each component makes another contribution that helps us understand motivation to transfer. Using Figure 1 as a framework, components and contributions are discussed in turn.
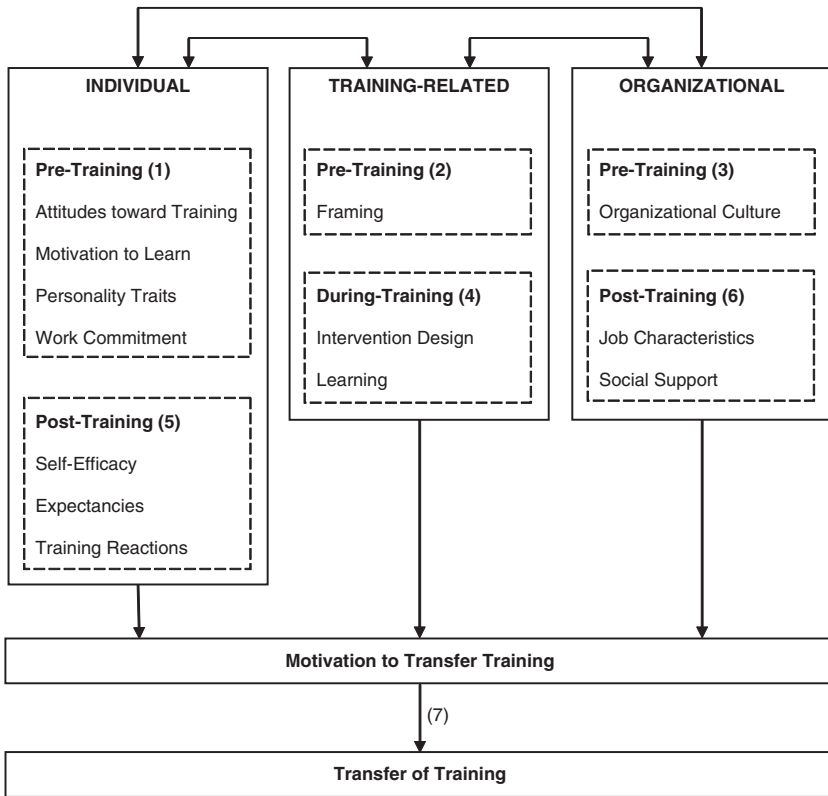
FIGURE 1: An Integrative Model of Motivation to Transfer Training
NOTE: Numbers correspond to contributions in the text.

> *Contribution 1:* Even before attending the training program, trainees may be moti-
> vated or not to transfer what they are going to learn on the job, depending on
> pretraining individual attitudes and attributes.

In his seminal work, Noe (1986) suggests motivation to transfer mediates
the relation between learning and behavior change; furthermore, he suggests
motivation to transfer is affected by environmental favorability. Theories have
evolved since 1986, in that they have also largely addressed how transfer moti-
vation before training is influenced by individual characteristics. Specifically,
research has concentrated on relations of transfer motivation to attitudes toward
training, motivation to learn, personality traits, and work commitment.

Attitudes toward training have been shown to determine motivation to
transfer learning at work (Bates, 2001; Naquin & Holton, 2002; Noe & Wilk,
1993; Rowold, 2007; Seyler, Holton, Bates, Burnett, & Carvalho, 1998). In

general, attitudes relate to behavior (Ajzen, 2001). Further investigation is needed to explore how trainees' attitudes toward specific training content affect their transfer motivation and intentions. Given that intentions based on attitudes are reliable predictors of behavior, further investigations on attitudes affecting transfer motivation will likely contribute to our understanding why trainees become motivated to apply their learning at work. This is discussed in more detail below.

Research evidence makes it safe to conclude that pretraining motivation to learn predicts posttraining motivation to transfer: Correlation coefficients range between .33 and .75 (cf. Bell & Ford, 2007; Chiaburu & Lindsay, 2008; Kontoghiorghes, 2002, 2004; Kuchinke, 2000; Machin & Fogarty, 1997, 2004; Naquin & Holton, 2002; Noe & Wilk, 1993; Rowold, 2007; Seyler, Holton, Bates, Burnett, & Carvalho, 1998; Tai, 2006; Warr, Allan, & Birdi, 1999). Each of these studies considered learning motivation and transfer motivation as one-dimensional. Moving beyond traditional work motivation theories offers the chance to examine motivation that varies in kind rather than in amount (Gagné & Deci, 2005). Hence, research on autonomous and controlled forms of both learning motivation and transfer motivation can aim at exploring the quality rather than the quantity of employee motivation to transfer.

As distal predictors of organizational behavior (Latham, 2007), personality traits have been studied to understand how Five-Factor Model (FFM) variables, affectivity, locus of control, and goal orientation interact with transfer motivation. For example, Rowold (2007), partly replicating Naquin and Holton (2002), shows that the FFM variables of extroversion, conscientiousness, neuroticism, agreeableness, and openness to experience affect transfer motivation. Machin and Fogarty (2003, 2004) and Naquin and Holton (2002) indicate that a positive affectivity has positive effects on transfer motivation and that a negative affectivity has negative effects. Tziner and his colleagues report that the locus of control, a core self-evaluation, has only minor effects on transfer motivation (Tziner & Falbe, 1993; Tziner, Haccoun, & Kadish, 1991). With respect to goal orientation, Bell and Ford (2007) and Smith, Jayasuriya, Caputi, and Hammer (2008) show that a learning goal orientation is positively related to transfer motivation, whereas Kuchinke (2000) finds the opposite to be true. In a meta-analysis, Mesmer-Magnus and Viswesvaran (2007) note that mastery goals are better for inducing motivation to transfer material than performance goals are. Being the fastest growing area in the motivation literature (Mitchell & Daniels, 2003), future studies on traits can shed further light on current mixed findings to explain the individual differences in transfer motivation. They can also help answer the question of to what extent transfer motivation is a stable trait-like characteristic or a situation-specific construct. Specifically, this question can be tackled with multiple measurement times before, during, and after training to trace the dynamic of transfer motivation versus their temporal stability. This is further elaborated in our alternative view on transfer motivation below.

Work commitment can be broadly defined as a function of career commitment, organizational commitment (affective and continuance), job involvement, and work ethic (cf. Morrow, 1993). Several dimensions of work commitment have been shown to determine the motivation to transfer training at work. For example, Kontoghiorghes (2002, 2004) analyzing insurance and automotive industrial training has shown that trainees' transfer motivation is highly associated with commitment. Naquin and Holton (2002) demonstrate that affective and continuance commitment, job involvement, and work ethic mediate the relation of transfer motivation with conscientiousness and agreeableness. Seyler et al. (1998) report that in a computer-based training program in the petrochemical industry, transfer motivation is largely a function of organizational commitment and the transfer environment. In sum, although work commitment reflects a rather broad construct (Morrow, 1993), the research findings mentioned above indicate that its dimensions positively influence trainees' motivation to transfer training.

Concerning pretraining individual attitudes and attributes, two questions may guide further research. First, attitudes are considered to reflect the overall degree of favorability toward an object (Ajzen, 2001). In his theory of planned behavior, Ajzen proposes that attitudes are an immediate antecedent of intention to perform a certain behavior because attitudes reflect the degree to which a behavior is valued. This offers several interesting questions to explore, that is: To what extent do attitudes toward training content determine the motivation to transfer the training content at work? How do attitudes toward transfer actions influence the motivation to transfer? Are different dimensions of transfer motivation affected by attitudes to the same extent? The latter question has recently been explored by Gegenfurtner, Festner, Gallenberger, Lehtinen, and Gruber (2009). They found that attitudes toward training content was stronger related to controlled motivation to transfer than to autonomous motivation to transfer; this shows that employees who liked the training content might also be open to external rewards prompting application of their training. Second, the motivation to engage with particular content can be explained by interest. Are participants who are highly interested in the training content more motivated to transfer than those who are less interested, and does interest before training relate to interest and transfer motivation after training? To conclude, theories of planned behavior and interest may serve as guideline for future studies aimed at explaining transfer motivation.

> *Contribution 2:* The way a training program is framed determines the extent a trainee is motivated to transfer learning to the workplace.

The second contribution to understand transfer motivation concerns pretraining interventions that frame the training program. "Organizations must take into account the way in which different training programs are perceived by organizational members" (Quiñones, 1995, p. 234). Employees' opinions about the

training form their attitudes. To facilitate favorable attitudes toward training, HRD practitioners need to promote favorable perceptions toward the program. This can be done by framing the training. Training framing toward learner readiness includes: (a) deciding about the status of a training program (mandatory versus voluntary), (b) providing realistic information prior to training, and (c) offering trainees the opportunity to provide input (Holton et al., 2000; Russ-Eft, 2002). Baldwin and Magjuka (1991) have found that mandatory training results in higher transfer motivation than voluntary training and that trainees with prior information are more motivated to transfer their training at work than trainees without prior information. Bates and Holton (2004) and Tai (2006) note that framing the training contributes to communicating the company's expectations, which promotes learner readiness and subsequently leads to enhanced transfer motivation (Devos, Dumay, Bonami, Bates, & Holton, 2007; Kirwan & Birchall, 2006; Ruona, Leimbach, Holton, & Bates, 2002). Moving forward, future research should address the research question of how to frame a training program in face of employee diversity. This might become increasingly important as diversity among trainees will rise in a globalized business environment. Along these lines, a training needs analysis, should assess who needs to be trained, and analyze whether a training program should be voluntarily attended or mandatory. However, there has been no investigation linking a needs analysis to transfer motivation.

> *Contribution 3:* Before the training program has even started, the organizational normative context already functions to promote or hinder the development of transfer motivation.

Research on the effect of the pretraining work environment on transfer motivation is sparse, focusing primarily on organizational culture. Various levels of culture have been identified as antecedents of training success (Bunch, 2007) and transfer motivation. For example, an organizational learning culture reflecting values and beliefs about the importance of learning at work has been found to be positively related to trainees' transfer motivation (Bates, 2001; Bates & Holton, 2004; Egan, Yang, & Bartlett, 2004). Baldwin and Magjuka (1991) and Kontoghiorghes (2002) show that transfer motivation is high when trainees understand that they are accountable for the training application, that is, when the organization expects trainees to use the training in the workplace. Bates, Holton, and colleagues (Bates & Holton, 2004; Bates, Holton, Seyler, & Carvalho, 2000; Devos et al., 2007) report that resistance to change significantly inhibits trainees' motivation to invest energy in transfer efforts. Given the variety of organization subcultures, further research may explain how transfer motivation relates to different subcultures. For example, in the initial phase of a training application, when more errors are likely to occur, employees working in a culture dominated by error prevention will avoid making many attempts to apply new skills or procedures at work to avoid negative

consequences. As outlined in the integrative model in Figure 1, future investigations might study how the effects of organizational culture are mediated by work commitment. Finally, organizational culture is considered a pretraining factor because it has been measured before training. However, organizational subcultures are a critical category after training as well. Thus, the study of an organization's culture should be extended to posttraining.

> *Contribution 4:* While attending the training program, trainees' transfer motivation is shaped by factors associated with training instruction, its conditions, and consequences emerging during training.

The fourth contribution to understand motivation to transfer focuses on characteristics during the training program that determine trainees' motivation to transfer what they learn in the workplace. Yelon, Sheppard, Sleight, and Ford (2004) indicate that motivation to transfer develops during training. Compared with empirical investigations on pretraining factors, investigations on processes during training remain scant, focusing primarily on intervention design strategies and trainee learning.

Intervention design strategies are defined as a set of tools or methods used to create manipulations undertaken during training (Broad & Newstrom, 1992). Training research has investigated the effects of relapse prevention, action planning, and goal setting. Particularly, empirical findings indicate that experimental groups trained in relapse prevention report equal (Tziner et al., 1991) or even less (Burke, 1997) motivation to use learning than control groups. Foxon (1997) notes that learners with action plans show less transfer motivation than learners without action plans. Machin and Fogarty (1997, 2003) and Smith et al. (2008) indicate that goal-setting theory explains transfer motivation. The effects of intervention design on transfer motivation might be mediated by training reactions, as outlined in the integrative model in Figure 1. Moving forward, more experimental design-based research is required to analyze how instructional design or technology determines training effectiveness and transfer motivation. In particular, participants may report stronger motivation to transfer learning from simulations or game-based training than from traditional classroom-based training, and they might report even stronger motivation if the simulation training were designed to foster trainee engagement (Van Merriënboer, 1997). A better understanding of how the format of professional training affects employees' transfer motivation can be reached by bridging the gap between educational technology and HRD.

Learning and motivation are both essential for training transfer. Without learning, nothing can be transferred from training to the workplace. Without motivation, nothing will be transferred from training to the workplace. But does successful learning predict the motivation to use this learning back on the job? Although the interplay of learning and transfer motivation has received considerable attention in training literature, the reported effect varies in a range

between $r = .08$ (Tziner et al., 1991) and $r = .40$ (Axtell, Maitlis, & Yearta, 1997). This mixed finding might result from different criteria used to assess learning: studies have employed test scores (Bates et al., 2000; Burke, 1997; Seyler et al., 1998; Tai, 2006; Tziner et al., 1991; Tziner & Falbe, 1993), self-reported learning (Axtell et al., 1997; Bell & Ford, 2007; Machin & Fogarty, 2003; Nijman, Nijhof, Wognum, & Veldkamp, 2006), supervisor-rated learning (Nijman et al., 2006), or a combination of test scores, self-reports, and a scale measuring trainees' perceptions of the value of the trained content (Warr et al., 1999). We believe that an appropriate method to assess learning depends on the learning object. Rather than answering paper-and-pencil multiple-choice questions, it is proposed that participants trained in practical skills prove their learning by demonstrating their newly acquired practical skills. Furthermore, as it remains unclear in past research whether transfer motivation predicts learning or whether learning predicts transfer motivation, future investigations can intend to clarify the direction of this relationship. An alternative explanation for why the link between learning and transfer motivation is mixed addresses the mediating effect of training reactions, such as content validity or perceived utility. Future research may address this issue employing mediator analyses.

Although the focus in past research on factors during training that affect transfer motivation was on training-related characteristics, other factors besides learning and instruction are worth studying. More specifically, affective experiences during training may cause anger, hope, or other emotions that affect transfer motivation; satisfaction of basic psychological needs have been found to explain motivation (Deci & Ryan, 2000; Gagné & Deci, 2005) and the need to feel related to the training group or to feel competent during training are likely to affect transfer motivation as well. Subconscious processes of volition, human will, and goal striving can be studied with projective tests, priming, or introspection to understand how they affect transfer motivation. These are just a few examples of new avenues for HRD research that aim to understand how conditions within the training intervention shape transfer motivation. To what extent is motivation to transfer unconscious? How do trainees regulate their volitional processes toward training application? What can the training instructor do to support motivation and positive emotions during training?

> *Contribution 5:* Back at work, individual factors in response to the training program determine if and how trainees are motivated to initiate and to execute transfer actions.

The extent of transfer motivation is already determined by factors before and during training. After training, the development of transfer motivation continues to be determined by various factors. Focusing on individual antecedents, the literature indicates that transfer motivation interacts with performance self-efficacy, expectations, and training reactions.

Research exploring employees' reasons for applying training on the job has operated within social cognitive theory (Bandura, 2001): efficacy beliefs have been widely found to predict participants' transfer motivation (Axtell et al., 1997; Bates & Holton, 2004; Bell & Ford, 2007; Chiaburu & Lindsay, 2008; Devos et al., 2007; Kirwan & Birchall, 2006; Machin & Fogarty, 1997, 2003, 2004; Noe & Wilk, 1993; Ruona et al., 2002; Seyler et al., 1998; Smith et al., 2008; Tai, 2006; Warr et al., 1999). Of the different scales used—learning confidence, computer confidence, general and performance self-efficacy—the strongest factor for predicting transfer motivation has been found in posttraining performance self-efficacy.

Employing the expectancy theory (e.g., Smith et al., 2008; Yamnill & McLean, 2001), research on training-related expectations has received considerable attention in recent years owing to two scales of the learning transfer system inventory (Holton et al., 2000): (a) transfer effort-performance expectations measuring the expectation that investing effort to use trained skills and knowledge at work will improve future job performance and (b) performance-outcome expectations measuring the expectation that increased job performance will lead to second-level outcomes the trainee values; both have been found to have significant effects on trainees' transfer motivation (Bates, 2001; Bates & Holton, 2004; Devos et al., 2007; Kirwan & Birchall, 2006; Naquin & Holton, 2002).

After training, trainees' affective, content, and utility reactions toward the program play a role in determining if and how participants are motivated to transfer learning to the workplace. Research provides a clear picture that satisfaction/enjoyment (Burke, 1997; Kuchinke, 2000; Smith et al., 2008; Warr et al., 1999), content validity/job relevance (Axtell et al., 1997; Bates et al., 2000; Bates & Holton, 2004; Devos et al., 2007; Kirwan & Birchall, 2006; Seyler et al., 1998), and utility/perceived usefulness (Ruona et al., 2002; Smith et al., 2008; Tai, 2006; Warr et al., 1999) predict transfer motivation. Although such reaction scales illustrate refinement of rather general training reaction scales (Bell & Ford, 2007; Machin & Fogarty, 1997; Tziner et al., 1991; Tziner & Falbe, 1993), further progress can be made measuring reactions over time to explore their temporal stability as motivators for transfer. As Alliger, Tannenbaum, Bennett, Traver, and Shotland (1997, p. 355) note: "By gathering reaction data 1, 3, or 6 months after training, trainees will have experienced whether the training was in fact useful, and should be in a better position to judge the utility of the training."

With constant changes in the nature of work and in labor markets (Billett, 2006), employees face an ongoing need to cope actively with their environment and adapt to change, rather than simply reacting to new situations. Consideration of the dynamic and contextual influences on trainees provides an avenue for future research aimed at explaining transfer motivation in constantly changing workplaces.

Contribution 6: After training, trainee perceptions of the work environment facilitate or inhibit their motivation to transfer learning on the job.

Besides individual posttraining characteristics, research has also found posttraining characteristics of the work environment that predict transfer motivation. Compared with minimal citations in Baldwin and Ford (1988), studies investigating posttraining organizational effects on transfer motivation have proliferated in the past few decades. Although pretraining variables focus on a macro-level, that is, organization culture, posttraining variables focus on a micro-level, that is, job characteristics and social support.

Because time, energy, and mental space is needed to help transfer (Holton et al., 2000; Russ-Eft, 2002) job characteristics such as autonomy, workload, opportunity to perform, and situational constraints have primary effects on organizational behavior by facilitating or inhibiting transfer motivation. For example, Leitl and Zempel-Dohmen (2006) indicate that, 3 months after training, the motivation of trainees who consider they have high job autonomy decreased significantly less than that of trainees who consider they have low job autonomy. Axtell et al. (1997) report a significant relation between transfer motivation and autonomy. Bates and Holton (2004) as well as Kirwan and Birchall (2006), provide consistent findings identifying workload as a significant antecedent of transfer motivation. Opportunities to perform positively affect transfer motivation (Bates et al., 2000; Bates & Holton, 2004; Devos et al., 2007; Kirwan & Birchall, 2006; Ruona et al., 2002; Seyler et al., 1998) whereas situational constraints negatively affect transfer motivation (Machin & Fogarty, 1997; Noe & Wilk, 1993). Mediation analysis is needed to investigate the extent to which the effects of job characteristics on transfer motivation are influenced by self-efficacy. Disentangling the interaction between the workplace and the trainee to predict transfer motivation would benefit from additional investigation, because motivation is widely seen as the product of interactions between the employee and the environment (cf. Locke & Latham, 2004; Latham, 2007). However, the relation between person–environment fit and transfer motivation currently seems neglected.

Social support is among the more frequently examined predictors of transfer motivation. Although social support used to be a somewhat general term (Noe & Wilk, 1993; Tziner et al., 1991; Tziner & Falbe, 1993; Warr et al., 1999), recent findings have identified several dimensions: supervisor support, peer support, supervisor sanctions, and performance coaching/feedback. First, there seems to be clear evidence of the facilitating effects of supervisor support on employees' transfer motivation (Axtell et al., 1997; Bates et al., 2000; Bates & Holton, 2004; Devos et al., 2007; Foxon, 1997; Kirwan & Birchall, 2006; Leitl & Zempel-Dohmen, 2006; Ruona et al., 2002; Seyler et al., 1998). However, Nijman et al. (2006) have found a negative impact of trainee-rated supervisor support on transfer motivation. An explanation for this surprising

result may be that some employees perceive supportive supervisors as coercive in that they endanger the feeling of autonomy in applying training at work (Deelstra, Peeters, Schaufeli, Stroebe, Zijlstra, & Van Doornen, 2003). Future studies addressing this issue contribute toward understanding conditions when support is not welcome, that is, through an analysis of how trainee personality mediates the relation between social support and transfer motivation. Second, it has been found that peer support is more useful than supervisor support (Bates et al., 2000; Bates & Holton, 2004; Devos et al., 2007; Kirwan & Birchall, 2006; Leitl & Zempel-Dohmen, 2006; Ruona et al., 2002; Seyler et al., 1998). Third, and more recently, performance coaching/feedback has been shown to have a positive affect (Bates & Holton, 2004; Devos et al., 2007; Kirwan & Birchall, 2006) and supervisory sanctions negatively affect transfer motivation (Bates et al., 2000; Bates & Holton, 2004; Devos et al., 2007; Seyler et al., 1998). Supervisor sanctions may be devastating especially for those trainees with low or controlled motivation to transfer. Person-oriented studies investigating the effects of managerial sanctions on different types of transfer motivation are in short supply, however.

It seems important to note that the work environment itself is not considered influential to transfer motivation. Rather, individual perceptions of the work environment determine transfer motivation. For example, some trainees might perceive the offer of supervisor support for a training application as encouraging, whereas other trainees might perceive the offer as an external controlling factor. Also, positive or negative effects of workload on transfer motivation differ among trainees, moderated by individual coping strategies and self-management. In sum, work characteristics are not assumed to facilitate or inhibit transfer motivation per se, but are dependent on how the work environment is individually perceived. This assumption can be specifically tested by interviewing employees who share a similar work environment: Do their motivation to transfer vary as a product of individual perceptions (cf. also the above suggestions on person-environment fit)?

Contribution 7: Motivation to transfer precedes transfer of training to the workplace.

The previous six components aimed to review transfer motivation's antecedents and correlates. This final component aims to review transfer motivation's consequence: the subsequent use of training at work. Studies addressing this are surprisingly rare. Of the 31 studies included in the review, one third examines transfer motivation as an antecedent of training transfer. Of these, only Axtell et al. (1997), Chiaburu and Lindsay (2008), and Machin and Fogarty (1997) provide significant data confirming that transfer motivation precedes training transfer; all other studies report a marginal relation at a nonsignificant level ($p > .05$). The wide amplitude of findings, ranging from $r = .04$ (Tziner et al., 1991) to $r = .63$ (Machin & Fogarty, 1997), suggests that this relationship needs further elaboration. First, the criteria used to measure training transfer vary across studies, from subsequent use at work

(Axtell et al., 1997; Burke, 1997; Chiaburu & Lindsay, 2008; Devos et al., 2007; Machin & Fogarty, 1997; Tziner et al., 1991; Tziner & Falbe, 1993), increased frequency of use (Warr et al., 1999), or correct performance after training (Bates et al., 2000; Bell & Ford, 2007). Second, the ratings vary across studies, using self-ratings (Burke, 1997; Chiaburu & Lindsay, 2008; Devos et al., 2007; Machin & Fogarty, 1997; Warr et al., 1999), supervisory-ratings (Bates et al., 2000), self and supervisory-ratings (Axtell et al., 1997; Tziner et al., 1991; Tziner & Falbe, 1993), or ratings from an independent observer (Bell & Ford, 2007). Third, the time intervals used to measure training transfer vary across studies, using short-term measures of 1 to 4 weeks after training (Axtell et al., 1997; Bates, 2000; Bell & Ford, 2007; Burke, 1997; Machin & Fogarty, 1997), midterm measures of 4 to 12 weeks after training (Devos et al., 2007; Tziner et al., 1991; Tziner & Falbe, 1993) or long-term measures of 1 year after training (Axtell et al., 1997). The variety of different criteria, ratings, and time intervals hampers corroboration of the theoretical assumption of transfer motivation as an antecedent of training transfer within these empirical findings. Moving forward, future research may use our preliminary analysis for a systematic comparison of different transfer measurements—including criteria, ratings, and time intervals—and how these are related to transfer motivation.

Overall Critique of Transfer Motivation Antecedents, Correlates, and Consequences

Although the limited number of studies examining transfer motivation offer initial explanations for understanding why trainees become motivated to apply learning, a critical review of the transfer motivation literature reveals certain neglected areas. Research on emotion, volition, subconscious motivation, and sensitivity to context are needed to measure motivational forces affecting the transfer process. Many of the studies operate at a microlevel, whereas studies investigating macrolevel characteristics determining transfer motivation are limited to organizational subcultures. Longitudinal data beyond self-ratings and meta-analyses will elucidate further the role of transfer motivation and its predictors in training applications. Notably, investigations of motivation to apply computer-based and Web-based training, team training, or computer-supported learning are needed to unravel the relation of educational technology and collaboration in the training design affecting transfer motivation. Next, we provide an alternative conceptualization of transfer motivation to further develop our understanding of motivation in the transfer process.

An Alternative View on Motivation to Transfer Training

The first part of the article has reviewed antecedents, correlates, and consequences of transfer motivation to answer the following question: What has been

identified in past research? The second part now turns to transfer motivation as a construct to answer the question: How should future research on transfer motivation proceed? We argue that prevailing theories and methods of measuring transfer motivation are limited in scope. To express our alternative view, we postulate four hypotheses. First, transfer motivation is multidimensional. Second, transfer motivation mediates the transfer process. Third, not only individuals but also teams can be motivated to transfer learning. Last, transfer motivation is dynamic, changing over time. Serving as an agenda for future research, each hypothesis is discussed in turn.

The Multidimensionality of Transfer Motivation

One of the most complex phenomena studied in the social sciences is human motivation. Over the course of time, researchers have explored numerous dimensions and depicted the subtle ramifications of motivational processes in human actions. To name just a few, we know of intrinsic and extrinsic motivation; conscious goal intentions and unconscious implementation intentions; expectancies, instrumentalities, and valences; various types of motivational regulation and mindsets; and we differentiate motivation, volition, and emotion. All contribute to our understanding of the many facets and colors of motivation.

Employee motivation to transfer trained knowledge and skills to the workplace arguably goes in concert with all of the dimensions just mentioned. Paradoxically, however, past research has investigated transfer motivation as a one-dimensional construct: Each study has assessed the construct with one scale consisting of 1 to 11 items. Table 1 presents the sample items that are reported in articles included in this review. These items aimed at understanding transfer motivation illustrate efforts to answer the seemingly simple question of why trainees are motivated to transfer. If at all reported, past studies have employed Vroom's (1964) valence × instrumentality × expectancy (VIE) framework as the theoretical basement for transfer motivation. Although VIE has been, and will undoubtedly continue to be, very important in training research (Yamnill & McLean, 2001), it is limited in scope. As Locke and Latham (2004) note

> This theory implies determinism, because it is argued that people are constructed to be satisfaction maximizers, yet, in fact, people are usually not maximizers of anything (Simon, 1976), nor do they have to multiply $E \times I \times V$ when deciding what to do. E, I, and V are only factors that they may choose to consider, and they may choose to weight the three components in different ways, or even to ignore one or more of them. (p. 399)

Beyond expectancy frameworks, there are many work motivation theories that have potential as the theoretical underpinning of one or more dimensions of transfer motivation. Considering alternate theory concepts that

TABLE 1: Sample Items Operationalizing Motivation to Transfer Training

First Author (Year)	Sample Items Reported
Baldwin (1991)	I will use the skills learned in this course to improve my professional competence in the job
Bates (2000)	I plan to use what I learned on the job. I believe the training will help me do my job better
Bates (2001)	Training increases my personal productivity. I get excited about using my new learning
Bell (2007)	I intend to apply what I learn from my course to my everyday driving
Burke (1997)	The skills I learned in the assertive communication session will be useful in solving problems encountered in everyday life
Chiaburu (2008)	I believe my job performance will likely improve if I use the knowledge acquired in training
Devos (2007)	I use this training in my job whenever I have the possibility to do so. The quality of my work has improved after using the new skills I learned in training
Egan (2004)	At work, I am motivated to apply new knowledge
Kirwan (2006)	I get excited when I think about trying to use my new learning in my job
Leitl (2006)	I believe my job performance will likely improve if I use the knowledge and skills acquired in training. It is unrealistic to believe mastering the training content can improve my job performance. I am able to apply skills and knowledge acquired from the training on my job
Machin (2003)	I will look for opportunities to use the skills which I have learned
Noe (1993)	Before attending the training programs, I usually consider how I will use the content of the program
Rowold (2007)	I am highly motivated to apply the skills I learned in this training to my daily work
Seyler (1998)	I believe the training will help me do my current job better. I plan to use what I learned on the job
Smith (2008)	How committed are you to applying the skills and knowledge from this training program to your job?
Tai (2006)	I am willing to apply the skills and knowledge obtained from the program on the job. I can transfer the skills, competencies, and knowledge acquired from the training programs to my job
Warr (1999)	I feel very committed to apply what I have learned to my job

NOTE: Items reported in Leitl and Zempel-Dohmen (2006) were translated into English. Fifteen items reported in Machin and Fogarty (2004, p. 228) were not listed owing to space limitations.

extend and complement current approaches may clear the way for recognizing the multidimensionality of transfer motivation. For example, Gegenfurtner et al. (2009) recently showed that expectancy theory and self-determination theory can be merged to analyze autonomous and controlled forms of transfer

motivation. Further possibilities for exploring multiple facets are also illustrated in Table 1: Among the hodgepodge of components used to operationalize transfer motivation, sample items would also be appropriate to assess, for example, trainees' self-efficacy, emotional arousal, volition, or utility reactions. Analysis of existing sample items measuring the one-dimensional construct of transfer motivation may inspire rethinking transfer motivation as a multidimensional construct. If training research and work motivation theory go hand in hand, then transfer motivation as a single factor might become redundant in the near future, whereas transfer motivation as a theoretical category might become increasingly important in providing a frame of reference for investigating the multidimensionality of motivational, emotional, and/or volitional forces in training application contexts.

Transfer Motivation and Its Mediating Position in the Transfer Process

As shown in Figure 1, motivation to transfer is proposed to be the only factor to mediate the effect of other antecedents on the transfer of training. This is a provocative hypothesis that clearly needs empirical testing. However, the following situation may show its relevance. On the one hand, trainees may find opportunities to use training on the job, but if they are not motivated to transfer, they will not apply the training at work (Latham, 2007). On the other hand, trainees may find no opportunities in the beginning, but if they are motivated to transfer, their motivation may result in their actively seeking situations, or even in changing the work environment, to use their training on the job. Opportunities to perform are a necessary but not a sufficient factor for successfully applying training at work; it is mediated by trainees' transfer motivation.

The view on transfer motivation's mediating position in the transfer process was not invented by us—this view already exists in the literature (Baldwin & Ford, 1988; Holton et al., 2000; Kontoghiorghes, 2004; Noe & Schmitt, 1986; Pugh & Bergin, 2006; Warr et al., 1999). However, empirical analyses examining the mediating position are lacking. This might result from focusing on the expectancy theory as a theoretical approach for transfer motivation. As Locke and Latham (2004) recommend, future motivation research may shift its focus toward understanding free will in human action. Volition, assessment of people's willingness to strive for goals, is accordingly seen as an avenue for further transfer motivation research that aims to explain trainees' choices about using learning at work. All told, mediator analyses are needed to unravel motivational–volitional processes in training transfer.

Transfer Motivation and Levels of Analysis

Motivation is not a phenomenon reserved for individuals only. As organizations continue to implement team training as HRD intervention, motivation in

terms of team effectiveness to use learning becomes more and more important (Locke & Latham, 2004; Salas & Cannon-Bowers, 2001). Thus, transfer motivation should not be focused exclusively on the individual level, as it currently appears to be, but extended to the community/team level. Future attempts investigating motivation to transfer team training, by engaging in multilevel research, might help us understand more fully the complexity of transfer motivation.

Garavan, McGuire, and O'Donnell (2004) indicate that researchers should not assume that a variable is the same at different levels of analysis. Thus, if we examine motivational processes affecting training applications from both individual and community levels, then those multiple perspectives can contribute to our understanding of the effectiveness of employee training. For both HRD theory and practice, these insights might be used to develop more robust concepts for team training. This becomes especially urgent as workers continue to be engaged in fast-changing teams, groups, and communities of practice within and across modern work organizations (Billett, 2006).

The Dynamics of Transfer Motivation

Motivation for action constantly changes over time. This assumption is certainly not new. Atkinson and Birch (1970) note that people's motivation is dynamic because it is affected by numerous forces that are in constant flux themselves. Thus, goal-oriented behavior must be understood from a temporal perspective. Motivation psychology has generated a multitude of models to understand the setting of and the striving for goals (e.g., Bandura, 2001; Deci & Ryan, 2000; Gollwitzer, 1999; Locke & Latham, 2004). Despite all the differences, there is one aspect that all of these theories share: their need to study motivation from a temporal perspective.

Motivation to transfer training is dynamic because it is affected by numerous factors all the time. Some of these factors were reviewed in the first section of this article. Similar to understanding motivation in general, it is proposed that transfer motivation must be understood from a temporal perspective. The methodological consequence is associated with the selection and realization of goals for transfer action at multiple points in time. Longitudinal designs are able to capture the changing levels of transfer motivation, its development, and maintenance prior to, during, and after training.

To date, however, transfer motivation has been studied from a static perspective. Rather than employing longitudinal study designs, past transfer motivation research has concentrated on single snapshots at the conclusion of the training. The currently accustomed static perspective disregards the constantly changing nature of motivation to transfer. This is what we call the dynamic problem of transfer motivation research. As Baldwin and Ford (1988) have pointed to the importance of a dynamic perspective: "Unfortunately, most studies examining motivational factors and transfer have examined

motivation from a static perspective, gathering information at one period of time" (Baldwin & Ford, 1988, p. 92). It is a remarkable finding that, after two decades, current studies still persist in surveying transfer motivation at only one measuring time.

There are exceptions, though. Leitl and Zempel-Dohmen (2006) have investigated the development of transfer motivation and its predictors at the immediate end of training and 3 months after training. Results indicate that supervisor support mitigates the decrease of transfer motivation during a 3-month time period. This result is a proof of the dynamics of transfer motivation. For additional research, we need more efforts that help us understand the changing levels of motivation to transfer and its determinants during the transfer process (Yelon et al., 2004). Future findings employing a temporal perspective may then be used to stimulate theory-building and the generation of appropriate interventions for HRD aimed at maintaining trainees' motivation to use learning in the workplace.

Conclusion

The purpose of this article has been to provide an overview of past transfer motivation research and to guide future directions exploring motivation to apply learning at work. The discussion of antecedents, correlates, and consequences of transfer motivation with an integrative model of motivation to transfer has revealed seven contributions that help us understand intentions in the transfer process. We have proposed an alternative view on transfer motivation that complements and extends current approaches, and we have outlined how its implications can encourage future investigations. In concluding this article, we believe that HRD research analyzing transfer motivation will benefit if it adopts a multidisciplinary and multilevel perspective. Research on work motivation, organizational behavior, educational technology, and adult education offers many theories and models, some of them considered in this review, which can inspire further examination of employee motivation to transfer training.

References

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

Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology*, *52*, 27-58.

Alliger, G. M., Tannenbaum, S. I., Bennett, W., Traver, H., & Shotland, A. (1997). A meta-analysis of the relations among training criteria. *Personnel Psychology*, *50*, 341-358.

Atkinson, J. W., & Birch, D. (1970). *The dynamics of action*. New York: Wiley.

Axtell, C. M., Maitlis, S., & Yearta, S. (1997). Predicting immediate and longer-term transfer of training. *Personnel Review*, *26*, 201-213.

Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, *41*, 63-105.

Baldwin, T. T., & Magjuka, R. J. (1991). Organizational training and signals of importance: Linking pretraining perceptions to intentions to transfer. *Human Resource Development Quarterly*, *2*, 25-36.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, *52*, 1-26.

Bates, R. A. (2001). Public sector training participation: An empirical investigation. *International Journal of Training and Development*, *5*, 136-152.

Bates, R. A., & Holton, E. F. (2004). Linking workplace literacy skills and transfer system perceptions. *Human Resource Development Quarterly*, *15*, 153-170.

Bates, R. A., Holton, E. F., Seyler, D. L., & Carvalho, M. A. (2000). The role of interpersonal factors in the application of computer-based training in an industrial setting. *Human Resource Development International*, *3*, 19-42.

Bell, S., & Ford, J. K. (2007). Reactions to skill assessment: The forgotten factor in explaining motivation to learn. *Human Resource Development Quarterly*, *18*, 33-62.

Billett, S. (2006). *Work, change and workers*. Dordrecht, the Netherlands: Springer.

Brachos, D., Kostopoulos, K., Soderquist, K. E., & Prastacos, G. (2007). Knowledge effectiveness, social context and innovation. *Journal of Knowledge Management*, *11*, 31-44.

Broad, M., & Newstrom, J. (1992). *Transfer of training: Action packed strategies to ensure high payoff from training investments*. Reading, MA: Addison-Wesley.

Bunch, K. J. (2007). Training failure as a consequence of organizational culture. *Human Resource Development Review*, *6*, 142-163.

Burke, L. A. (1997). Improving positive transfer: A test of relapse prevention training on transfer outcomes. *Human Resource Development Quarterly*, *8*, 115-128.

Burke, L. A., & Hutchins, H. M. (2007). Training transfer: An integrative literature review. *Human Resource Development Review*, *6*, 263-296.

Cheng, E. W. L., & Ho, D. C. K. (2001). A review of transfer of training studies in the past decade. *Personnel Review*, *30*, 102-118.

Chiaburu, D. S., & Lindsay, D. R. (2008). Can do or will do? The importance of self-efficacy and instrumentality for training transfer. *Human Resource Development International*, *11*, 199-206.

Colquitt, J. A., LePine, J. A., & 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*, *85*, 678-707.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227-268.

Deelstra, J. T., Peeters, M. C., Schaufeli, W. B., Stroebe, W., Zijlstra, F. R., & Van Doornen, L. P. (2003). Receiving instrumental support at work: When help is not welcome. *Journal of Applied Psychology*, *88*, 324-331.

Devos, C., Dumay, X., Bonami, M., Bates, R., & Holton, E. F. (2007). The Learning Transfer System Inventory (LTSI) translated into French: Internal structure and predictive validity. *International Journal of Training and Development*, *11*, 181-199.

Egan, T. M., Yang, B., & Bartlett, K. R. (2004). The effects of organizational learning culture and job satisfaction on motivation to transfer learning and turnover intention. *Human Resource Development Quarterly*, *15*, 279-301.

Ford, J. K., & Weissbein, D. A. (1997). Transfer of training: An updated review and analysis. *Performance Improvement Quarterly*, *10*, 22-41.

Foxon, M. (1997). The influence of motivation to transfer, action planning, and manager support on the transfer process. *Performance Improvement Quarterly*, *10*, 42-63.

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, *26*, 331-362.

Garavan, T. N., McGuire, D., & O'Donnell, D. (2004). Exploring human resource development: A levels of analysis approach. *Human Resource Development Review*, *3*, 417-441.

Gegenfurtner, A., Festner, D., Gallenberger, W., Lehtinen, E., & Gruber, H. (2009). Predicting autonomous and controlled motivation to transfer training. *International Journal of Training and Development*, *13*, 124-138.

Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist*, *54*, 493-503.

Holton, E. F., Bates, R. A., & Ruona, W. E. (2000). Development of a generalized learning transfer system inventory. *Human Resource Development Quarterly*, *11*, 333-360.

Kanfer, R. (1990). Motivation theory and industrial and organizational psychology. In M. D. Dunnette & L. Hough (Eds.), *Handbook of industrial and organizational psychology* (Vol. 1, pp. 75-170). Palo Alto, CA: Consulting Psychologists Press.

Kirwan, C., & Birchall, D. (2006). Transfer of learning from management development programmes: Testing the Holton model. *International Journal of Training and Development*, *10*, 252-268.

Kontoghiorghes, C. (2002). Predicting motivation to learn and motivation to transfer learning back to the job in a service organization: A new systemic model for training effectiveness. *Performance Improvement Quarterly*, *15*, 114-129.

Kontoghiorghes, C. (2004). Reconceptualizing the learning transfer conceptual framework: Empirical validation of a new systemic model. *International Journal of Training and Development*, *8*, 210-221.

Kuchinke, K. P. (2000). The role of feedback in management training settings. *Human Resource Development Quarterly*, *11*, 381-401.

Latham, G. P. (2007). *Work motivation. History, theory, research, and practice*. Thousand Oaks, CA: Sage.

Leitl, J., & Zempel-Dohmen, J. (2006). Die Bedeutung des Arbeitsumfelds für die Veränderung der Transfermotivation [The impact of work environment on the changing level of motivation to transfer]. *Zeitschrift für Arbeits- und Organisationspsychologie*, *50*, 92-102.

Locke, E. A., & Latham, G. P. (2004). What should we do about motivation theory? Six recommendations for the twenty-first century. *Academy of Management Review*, *29*, 388-403.

Machin, M. A., & Fogarty, G. J. (1997). The effects of self-efficacy, motivation to transfer, and situational constraints on transfer intentions and transfer of training. *Performance Improvement Quarterly*, *10*, 98-115.

Machin, M. A., & Fogarty, G. J. (2003). Perceptions of training-related factors and personal variables as predictors of transfer implementation intentions. *Journal of Business and Psychology*, *18*, 51-71.

Machin, M. A., & Fogarty, G. J. (2004). Assessing the antecedents of transfer intentions in a training context. *International Journal of Training and Development*, *8*, 222-236.

Mesmer-Magnus, J. R., & Viswesvaran, C. (2007). Inducing maximal versus typical learning through the provision of a pre-training goal orientation. *Human Performance*, *20*, 205-222.

Mitchell, T. R., & Daniels, D. (2003). Motivation. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Handbook of psychology: Industrial and organizational psychology* (pp. 225-254). New York: Wiley.

Morrow, P. C. (1993). *The theory and measurement of work commitment*. Greenwich, CT: JAI Press.

Naquin, S. S., & Holton, E. F. (2002). The effects of personality, affectivity, and work commitment on motivation to improve work through learning. *Human Resource Development Quarterly*, *13*, 357-376.

Nijman, D.-J. J. M., Nijhof, W. J., Wognum, A. A. M., & Veldkamp, B. P. (2006). Exploring differential effects of supervisor support on transfer of training. *Journal of European Industrial Training*, *30*, 529-549.

Noe, R. A. (1986). Trainees' attributes and attitudes: Neglected influences on training effectiveness. *Academy of Management Review*, *11*, 736-749.

Noe, R. A., & Schmitt, N. (1986). The influence of trainee attitudes in training effectiveness: Test of a model. *Personnel Psychology*, *39*, 497-523.

Noe, R. A., & Wilk, S. L. (1993). Investigation of the factors that influence employees' participation in development activities. *Journal of Applied Psychology*, *78*, 291-302.

Pugh, K. J., & Bergin, D. A. (2006). Motivational influences on transfer. *Educational Psychologist*, *41*, 147-160.

Quiñones, M. A. (1995). Pre-training context effects: Training assignment as feedback. *Journal of Applied Psychology*, *80*, 226-238.

Rowold, J. (2007). The impact of personality on training-related aspects of motivation: Test of a longitudinal model. *Human Resource Development Quarterly*, *18*, 9-31.

Ruona, W. E., Leimbach, M., Holton, E. F., & Bates, R. A. (2002). The relationship between learner utility reactions and predicted learning transfer among trainees. *International Journal of Training and Development*, *6*, 218-228.

Russ-Eft, D. (2002). A typology of training design and work environment factors affecting workplace learning and transfer. *Human Resource Development Review*, *1*, 45-65.

Salas, E., & Cannon-Bowers, J. A. (2001). The science of training: A decade of progress. *Annual Review of Psychology*, *52*, 471-499.

Seyler, D., L., Holton, E. F., Bates, R. A., Burnett, M. F., & Carvalho, M., A. (1998). Factors affecting motivation to transfer training. *International Journal of Training and Development*, *2*, 2-16.

Smith, R., Jayasuriya, R., Caputi, P., & Hammer, D. (2008). Exploring the role of goal theory in understanding training motivation. *International Journal of Training and Development*, *12*, 54-72.

Tai, W.-T. (2006). Effects of training framing, general self-efficacy and training motivation on trainees' training effectiveness. *Personnel Review*, *35*, 51-65.

Tannenbaum, S. I., & Yukl, G. (1992). Training and development in work organizations. *Annual Review of Psychology*, *43*, 399-441.

Torraco, R. J. (2005). Writing integrative literature reviews: Guidelines and examples. *Human Resource Development Review*, *4*, 356-367.

Tziner, A., & Falbe, C. M. (1993). Training-related variables, gender and training outcomes: A field investigation. *International Journal of Psychology*, *28*, 203-221.

Tziner, A., Haccoun, R. R., & Kadish, A. (1991). Personal and situational characteristics of transfer of training improvement strategies. *Journal of Occupational Psychology*, *64*, 167-177.

Van Merriënboer, J. J. G. (1997). *Training complex cognitive skills: A four-component instructional design model for technical training*. Englewood Cliffs, NJ: Educational Technology Publications.

Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.

Warr, P., Allan, C., & Birdi, K. (1999). Predicting three levels of training outcome. *Journal of Occupational and Organizational Psychology*, *72*, 351-375.

Yamnill, S., & McLean, G. N. (2001). Theories supporting transfer of training. *Human Resource Development Quarterly*, *12*, 195-208.

Yelon, S., Sheppard, L., Sleight, D., & Ford, J. K. (2004). Intention to transfer: How do autonomous professionals become motivated to use new ideas? *Performance Improvement Quarterly*, *17*, 82-103.

Andreas Gegenfurtner is a researcher at the Centre for Learning Research, University of Turku, Finland. His research focuses on the interplay of motivation and transfer in corporate training, professional expertise, technology in medical and management education,and workplace learning.

Koen Veermans is a senior researcher at the Centre for Learning Research, University of Turku, Finland. His research interests include learning and cognition, computers and learning, problem solving, and research methodology. This resulted in research on simulation based (discovery) learning and intelligent tutoring systems.

Dagmar Festner is a researcher at the Institute for Education, University of Regensburg, Germany, and at f-bb, Nuremberg, Germany. Her research is focused on the transfer of training, lifelong learning, and professional learning.

Hans Gruber is Full Professor for Education at the Institute for Education, University of Regensburg, Germany. His research interests include expertise, learning from errors, professional learning, transfer, and workplace learning.