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Social Support in the Workplace and Training Transfer: A longitudinal analysis

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Training transfer is crucial for workplace effectiveness, yet some of its social support antecedents are not well investigated. We examine the extent to which two forms of social support (from the organization and the supervisor) predict training transfer and propose several related processes explaining these influences. First, social support enhances training self-efficacy, increases trainees' mastery (learning) goal orientation, and their motivation to transfer. In turn, we propose that these individual factors are positively related to training-related cognitions. We test and confirm our model in a longitudinal study based on a sample of 111 employees. The results contribute to a better understanding of organization- and supervisor-based social support as predictors of transfer, and clarify several important related mechanisms.

1. Introduction

Ensuring that training investments yield performance improvement continues to be a vexing problem for organizations. Training transfer, commonly understood as the generalization and application of new knowledge and skills to the work setting (Baldwin & Ford, 1988), could be considered the Achilles' heel of the training design process. That is, when trainees fail to use their new knowledge to improve performance, resources dedicated to training are wasted and business results go unrealized. Such outcomes are particularly unwelcome to organizational executives demanding a positive return on training investments, which in the United States accounts for over 130 billion dollars annually (Paradise, 2007).

Extant research on training transfer points to several strategies at the learner, training design, and organizational level for increasing transfer. Learner attributes such as cognitive ability (Colquitt, LePine, & Noe, 2000), motivation (Axtell, Maitlis, & Yearta, 1997), self-efficacy (Chiaburu & Lindsay, 2008), and perceptions of job utility (Lim & Morris, 2006) have demonstrated both indirect – through learning – and direct effects on transfer outcomes. Research has also demonstrated the resilience of certain training design factors on skill application, namely the use of learning principles (identical elements, stimulus generalization, and practice) and instructional methods on transfer performance (e.g., learner control, practice variability; Holladay & Quiñones, 2003; Orvis, Fisher, & Wasserman, 2009; van Merrienboer, 1997). However, current research has overwhelming favored some elements of support originating in the organizational setting to positively influence individuals' training transfer. Long-standing factors such as providing the opportunity to apply new learning and receiving supervisor support (i.e., asking questions about training, holding trainees accountable, participative goal-setting) have been found to be some of the most consistent predictors of transfer outcomes (Burke & Hutchins, 2007).

An emergent aspect that accounts for a broader view of organizational support for training transfer is trainees’ perceptions of organizational support. Perceived organizational support (POS) is defined as an employees' belief about how much the organization cares about them and values their contributions to the organization (Aselage & Eisenberger, 2003; Rhoades & Eisenberger, 2002). Although important for performance and discretionary behaviors, support from the organization is less examined in connection to transfer. Indeed, extant research has focused on specific antecedents (e.g., manager, peer support) for general work performance and training transfer (Rodgers & Hunter, 1991; Russell, Terborg, &
Powers, 1985), but less so on the perceived support emanating from the organization. However, support from the organization may bolster employees’ self-esteem and give the employee the feeling that the employer values them. Organizational support increases employees’ satisfaction and commitment (Ng & Sorensen, 2008) and is reciprocated by employees’ feelings of obligation toward the organization, leading further to increased work engagement (e.g., Salanova, Agut, & Peiró, 2005). Extrapolating these outcomes to a training transfer context, employees who perceive high levels of organizational support may also demonstrate their commitment through being more motivated in a training context and applying the new learning on the job (Pidd, 2004; Russell et al., 1985; Tansky & Cohen, 2001).

To date, research examining the relationship between POS and training transfer has been limited, despite the fact that organizational support is correlated with a number of work aspects which have been related either theoretically or empirically to training transfer (e.g., affective commitment, job satisfaction, job involvement; Rhoades & Eisenberger, 2002). Examining the role of support originating from the organization in training transfer would begin to elucidate possible differential effects of support as behaviors originating from managers, coworkers, and other stakeholders (Cromwell & Kolb, 2004) versus support as work characteristics or broader organizational features (e.g., Clarke, 2002). Given existing evidence for POS as an antecedent to positive attitudes toward work and to performance, and positive correlations between aspects of the work environment including support from the organization and proximal aspects of transfer such as declarative knowledge (e.g., Tracey, Hinkin, Tannenbaum, & Mathieu, 2001), we expect organizational support to positively influence training transfer. In addition, this relationship is explored because organizational context factors are less examined as predictors of training transfer and, when examined, they yield mixed results (Cheng & Ho, 2001).

Typically, POS and supervisor support are parallel constructs (e.g., Kottke & Sharafinski, 1988; Rhoades & Eisenberger, 2002). In a training transfer context, supportive supervision can include both a more general view of employee development as an important aspect of the managers’ jobs (Yarnall, 1998), coupled with more immediate and practical aspects, such as providing the subordinate time for skill practice and offering reminders aiding skill implementation (Chiaburu & Tekleab, 2005). To best explore POS as a predictor of training transfer, supervisory support (a longstanding transfer predictor) must also be considered for examination within the same model. This need is consistent with studies situated both in a broad organizational context (see Ng & Sorensen, 2008, for a recent meta-analysis of the two forms of support) and with research where support is conceptualized in a training transfer domain (Burke & Hutchins, 2007). Testing both organization- and supervisor-based types of support will offer more information on each factor’s unique contribution to training transfer and to aspects leading to it.

We also attempt to elucidate intervening processes between support and training transfer. Specifically, we expect POS and supervisory support to affect training transfer indirectly through influencing individual factors. We focus specifically on trainee perceived self-efficacy (Gaudine & Saks, 2004; Stevens & Gist, 1997), learning (or mastery) goal orientation (Fisher & Ford, 1998; Silver, Dwyer & Alford, 2006), and motivation to transfer (Axtell et al., 1997). Trainees who perceive support from both distal (POS) and proximal (supervisor) sources will have increased perceived ability that they can transfer skills (self-efficacy), high levels of learning goal orientation, and will reciprocate through increased motivation (to transfer). In turn, these also influence how trainees think about their training transfer, or engage in training cognitions related to the skills acquired and to training transfer. In this study, we suggest that training-related cognitions mediate the relationship between individual factors and training transfer.

1.1. Theory development and hypotheses

Perceived support from the organization (POS) represents employees’ global beliefs regarding how much the organization cares about their well-being (Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001; Eisenberger, Huntington, Hutchison, & Sowa, 1986). These can be manifested by specific actions, including considering employees’ goals and values, and offering help when employees need it. In turn, employees reciprocate through performance, citizenship behaviors, and more involvement with their organizations (Aselage & Eisenberger, 2003; Coyle-Shapiro, 2002; Turnley, Bolino, Lester, & Bloodgood, 2003). This may include engaging in acquiring new skills and transferring knowledge and skills to a work situation, as part of employees’ felt obligation to help the organization reach its goals (Shore, Barksdale, & Shore, 1995).

We propose that POS influences performance through individual-level factors found to have a positive impact on training transfer, including trainees’ self-efficacy, learning goal orientation, and motivation to transfer (Burke & Hutchins, 2007). In more concrete terms, POS implies ‘assurance that aid will be available from the organization when it is needed to carry out one’s job effectively and to deal with stressful situations’ (Rhoades & Eisenberger, 2002, p. 698). In a training transfer context, organizational support (in the form of rewards given to trainees for transfer) positively impacts skill transfer, a relationship mediated by trainees’ self-efficacy (Tracey et al.,
2001). More generally, based on sociocognitive and social support theories, when various contingencies in the work context are taken care of, including the assurance of overall support from the organization, employees are more likely to set and achieve challenging performance goals (Bandura, 1986, 1997; Viswesvaran, Sanchez, & Fisher, 1999). We examine similar outcomes of support in a training transfer context, and focus next on trainees’ self-efficacy, learning goal orientation, and motivation to transfer.

Training self-efficacy is generally described as a trainee’s judgment about their ability to succeed in training, and has specifically been found to be positively related to training generalization and maintenance across multiple studies and settings (Ford, Smith, Weissbein, Gully, & Salas, 1998; Gaudine & Saks, 2004; Latham & Frayne, 1989; Stevens & Gist, 1997; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991). That is, trainees are more likely to overcome obstacles that may delay the application of new learning when they believe in their ability to learn and to use their knowledge and skills on the job. A positive link between strategies that increase self-efficacy, such as goal-setting, mastery experiences, supportive feedback, and verbal guidance, have also been found to influence transfer (Brown & Morrissey, 2004; Chiaburu & Lindsay, 2008; Gist, 1986; Richman-Hirsch, 2001) suggesting that self-efficacy can be influenced as a way to increase learning and subsequent transfer success. Although the research largely supports the role of supervisory support in influencing training self-efficacy, it is also expected that such influence may emanate from the larger organizational context in addition to or instead of a discrete and proximal source (i.e., supervisor or peer).

Specifically, when estimating their levels of self-efficacy, individuals take into account both individual and situational resources and constraints (Gist & Mitchell, 1992), such as support existing in their organizational environment. For example, Tracey et al. (2001) found that trainees who perceived a supportive work environment (comprised of support from manager, on the job, and from the organization) reported higher levels of pretraining self-efficacy and pretraining motivation (which then predicted transfer). These findings suggest that the process by which trainees are prepared for training can influence trainee attitudes and motivation toward applying their knowledge and skills in the work setting.

Learning (or mastery) orientation is grounded in the theory of achievement motivation, and explains individual behavior and motivation in achievement settings (Ames & Archer, 1988; Dweck & Leggett, 1988). Trainees with a learning (sometimes referred to as mastery goal orientation) orientation are concerned with developing competence through training, and are more likely to take on challenging tasks that will further support learning acquisition. Although learning orientation is a predictor of training knowledge (Fisher & Ford, 1998) and transfer (Silver et al., 2006), it influences transfer outcomes through some intervening mechanism. For example, mastery goal orientation has been found to influence transfer through pretraining motivation (Chiaburu & Marinova, 2005), metacognitive activity (Ford et al., 1998; Schmidt & Ford, 2003), and deeper (rather than superficial) cognitive processing strategies and effort (Dupeyrat & Mariné, 2005).

Determinants of learning orientation are thought to originate out of situational cues or factors in the larger performance context, which can be altered (Dragoni, 2005; Dweck, 1989). In terms of training transfer, learning orientation may be influenced by how employee application of training knowledge is valued and supported by the organization. For example, Chiaburu and Marinova (2005) suggest that contextual factors such as organizational reward structures might be used to influence aspects of the environment that are likely to deemphasize a learning orientation (and favor a performance orientation). That is, rewards that are based on effort rather than results (e.g., sales quotes) may increase trainees’ goals toward learning rather than just performance. The existence of feedback and support, opportunities to perform, and holding trainees accountable for applying their training on the job may also increase trainees’ leaning goal orientation (Kontoghiorghes, 2001; Lim & Morris, 2006; Tracey, Tannenbaum, & Kavanagh, 1995).

Motivation to transfer is the trainee’s intended effort to utilize skills and knowledge learned in training setting to a real world work situation (Noe, 1986), and has been found to directly influence transfer outcomes (Axtell et al., 1997; Chiaburu & Lindsay, 2008; Nijman, Nijhof, Wognum, & Veldkamp, 2006). Interestingly, research connecting motivation to transfer directly with specific transfer outcomes has overall been limited (Kontoghiorghes, 2002; Machin & Fogarty, 2004; Seyler, Holton, Bates, Burnett, & Carvalho, 1998), compared with fairly strong support for pretraining motivation and motivation to learn (Burke & Hutchins, 2007; Pugh & Bergin, 2006). For example, Kirwan and Birchall (2006) examined the relationship of individual and work environment factors in Holton, Bates, and Ruona’s (2000). Learning Transfer System Inventory, a diagnostic survey that assesses trainees’ perceptions of individual, training design, and situational factors known to influence transfer.

One of the more important findings to the current study is that work support factors known to influence transfer directly (opportunity to use, manager support, manager sanctions, peer support, feedback, and coaching) were strongly related to motivation to transfer. Additionally, results indicated that motivation to transfer was significantly influenced by peer support, opportunity to use, and feedback/coaching. Even though the influence of POS (separate from supervisory support) on motivation to transfer and transfer outcomes is less clear, there is some empirical support for the role of learning culture in
motivation to transfer (Egan, Yang, & Bartlett, 2004) and of the work environment on transfer dimensions (Noe, 1986; Tracey et al., 2001). Thus, elucidating the source mechanism (i.e., POS, supervisory support) for influencing individual factors on transfer outcomes will help tease out the specific contributions of each on training transfer.

Hypothesis 1: POS is positively related to trainees’ (a) training self-efficacy, (b) learning goal orientation, and (c) motivation to transfer.

As discussed, the antecedents of individual factors that influence performance often lie with situational cues: these can originate not only from the organization, but can also come in the form of supervisor support (Burke & Baldwin, 1999; Clarke, 2002; Nijman et al., 2006). To summarize, based on theories mentioned previously, supervisors are well positioned to positively influence their subordinates’ self-efficacy (Axtell & Maitlis, 1997; Guerrero & Sire, 2001; Tracey et al., 2001), goal orientation (Dragoni, 2005; Janssen & Van Yperen, 2004), and training motivation (e.g., Facteau, Dobbins, Russell, Ladd, & Kudisch, 1995; Guerrero & Sire, 2001), which may result in increased performance and training transfer.

Hypothesis 2: Supervisor support is positively related to trainees’ (a) training self-efficacy, (b) learning goal orientation, and (c) motivation to transfer.

Research suggests that training transfer increases when trainees have high expectations of their ability to perform, focus on learning as an outcome, and are motivated to use their skills on the job. However, it is possible that these individual factors actually influence how trainees engage in cognitive elaboration about how they will use their learning acquired in training (i.e., thinking about when they will transfer, considering potential obstacles to transfer, and identifying needed support and resources). All these increase the likelihood that trainees will transfer their learning to the work setting by engaging in mental elaboration concerning skill transfer. For example, an individual’s level of self-efficacy will influence the choice of activities and environments, and will often dictate decisions on how much effort will be invested into accomplishing goals despite obstacles or stressful conditions (Tai, 2006).

The process of thinking about specific aspects of skill utilization and how training will be applied (transferred) is known as training-related cognitions (Dupeyrat & Mariné, 2005; Gist, Stevens, & Bavetta, 1991). This type of cognitive engagement parallels affective- and skill-based outcomes of training (Ford, Kraiger, & Merritt, 2009) and has both reflective and active aspects, such as thinking about how to achieve goals and identifying obstacles to skill transfer, respectively.

Although training-related cognitions focus on the mental process of training and transfer, research suggests that such cognitive processes can be predicted by individual difference aspects. For example, individuals with learning goal orientations have more inclinations toward being self-motivated (using an intrinsic mode of motivation; Hirschfeld, Thomas, & McNatt, 2008), which may dispose them to think more of the skills acquired in training, and elaborate more on how they can be maintained and used in a work setting. Empirical research in educational setting indicates that learning orientations are correlated to cognitive strategies, deep information processing and persistence (Elliot, McGregor, & Gable, 1999; Wolters, 2004), and facilitate access to information acquired during the training stage (Graham & Golan, 1991). Similarly, persons who consider themselves highly efficacious are more likely to set difficult goals and adjust them based on their progress, will take a proactive role in reducing stress or disruptions in their environment that may inhibit performance (Gist & Mitchell, 1992). Overall, individuals who are likely to perceive they can succeed in training, are more focused on mastering the training content, and are motivated to transfer, will likely be more inclined to consider how they can apply the knowledge than trainees who are less active in these areas.

Hypothesis 3: Trainees’ (a) training self-efficacy, (b) learning goal orientation, and (c) motivation to transfer are positively related to training cognitions.

Transferring skills to a work context is an iterative process involving transactions between declarative, working, and procedural memory (Anderson, 1982). Even though employees may have retained (and repeated several times) behavioral checklists in a classroom setting, they still need to recall, rehearse, utilize, and perhaps optimize them in a work setting. Research on self-management strategies, such as goal-setting and relapse prevention techniques, suggests that having trainees consider how they will use their new skills and knowledge on the job has positively influenced transfer outcomes (Brown, 2005; Burke & Baldwin, 1999; Frayne & Latham, 1987; Gist, Bavetta, & Stevens, 1990; Latham & Frayne, 1989; Richman-Hirsch, 2001). Self-management skills not only include participants considering how new learning will be applied, but also in how to mitigate potential obstacles that may interfere (e.g., deadlines, work pressure, interpersonal conflicts) with positive training transfer.

For example, Ford et al. (1998) found that participants engaging in monitoring learning, identifying which areas they had problems, and adjusting behavior accordingly reported greater knowledge and higher transfer performance in the training program. Likewise, experimental work in educational settings has connected cognitive...
activities (e.g., deep processing, persistence) with higher levels of performance (e.g., Dupeyrat & Maríne. 2005; Elliot et al., 1999). Similarly, cognitive engagement consisting in thinking about the skills acquired in training and ways to incorporate into day-to-day work activities will enhance effectiveness in a training context. Thus, it is also expected that engaging in thinking about how training will be used will be related to actual training transfer.

Hypothesis 4: Training cognitions are positively related to training transfer.

Engaging in thinking about skill transfer has also been found to mediate the relationships between individual-level variables and training transfer (e.g., Schmidt & Ford, 2003). For example, participants with a mastery of learning orientation reported more use of self-regulatory behaviors (i.e., thinking about the training content, prioritizing tasks and resources for learning) during learning, which then predicted performance on a skill-based training assessment (Ford et al., 1998; Wolters, 2004). The authors suggested that learners who were more concerned with mastering the training content—rather than focusing on outperforming others—engaged in more cognitive processes relative to using and generalizing their new learning to the work setting. Similarly, Enos, Kehrhahn, and Bell (2003) suggested that thinking about how training would be used may work to increase performance and help participants achieve goals despite the level of support in the work environment. In a training setting, Stevens & Gist (1997) found that trainees with high levels of learning goal orientation engaged more in skill maintenance activities, including thinking about what skills to use and how to maintain them. The results are consistent with recent meta-analytic work: mastery-oriented trainees go beyond memorizing the material and look at conceptual implications and connections with other areas (i.e., through cognitive activities; Mesmer-Magnus & Viswesvaran, 2007), which can increase transfer.

The utility of trainees considering how they will apply their new knowledge and skills in the work setting is consistent with Burke and Baldwin’s (1999) study of relapse prevention. Specifically, engineering professionals were more likely to use cognitive strategies (i.e., setting skill maintenance goals, identifying obstacles, developing cognitive strategies to mitigate obstacles) when they perceived less support for training transfer. Although relapse prevention was not tested as a mediator, the study did show how using cognitive strategies in considering how training would be used is influenced by trainees’ perception of support in the work setting. The conclusions parallel those in educational settings, where students with high levels of self-efficacy engage in more cognitive activities (e.g., rehearsal, elaboration, and organizational strategies), which lead to better performance (e.g., Pintrich & De Groot, 1990). Given the role cognitive processes play in supporting training transfer, we suggest that training cognitions will mediate the relationship between the individual factors and training transfer.

Hypothesis 5: Training cognitions will mediate the relationships between (a) training self-efficacy, (b) learning goal orientation, and (c) motivation to transfer and training transfer.

2. Method

2.1. Survey design and procedure

We conducted the longitudinal field study in a large organization in the Mid-Atlantic region of the United States. Employees attended training as part of changes related to their positions, as a result of a company effort to institutionalize a climate of service to external customers and of responsiveness toward other employees (e.g., colleagues in their and other units) inside the organization. We surveyed 750 employees, and obtained 372 surveys with usable data at time one, 223 at time two, and 111 at time three. A total of 111 participants provided information on all scales. The demographic profile of these participants is as follows: 79% were men, 76.8% had some college education, 89% were 30 years or older, and 86.3% had worked for the organization for >1 year. Previously published scales were used in our questionnaire, with the measures anchored on a 5-point Likert-type scale (from 1 = strongly disagree to 5 = strongly agree).

We minimized question order effects and common source measurement biases by following current suggestions (e.g., Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Schwarz, Knäuper, Oyserman, & Stich, 2008). When the sources of predictor and criterion variables cannot be separated, one available procedural remedy is separating the measurement of predictor and criterion variables in time. We did so, by having the participants respond to our questions at different times. Thus, the social context and individual factors were assessed at time one (during the training program). Training cognitions were measured at time two, 1 month after the training program. Finally, training transfer was measured at time three, 2–3 months after the training took place. Longitudinal designs are also more appropriate than crosssectional ones for causal inferences based on preexisting theory and empirical data.

2.2. Social context predictors

POS was measured using seven items from the POS scale (‘Help is available from the organization when I have a
problem,’ \( x = .86 \), Eisenberger et al., 1986). Supervisor support was measured using five items (Chiaburu & Tekleab, 2005; Yarnall, 1998; ‘My supervisor provides me with the time I need to practice the skills learned in training,’ \( x = .78 \)).

2.3. Individual difference predictors

Training self-efficacy was measured with Noe and Wilk’s (1993) eight-item scale (e.g., ‘When I take training courses in unfamiliar areas, I expect to be able to do well at them,’ \( x = .84 \)). Learning goal orientation was measured with Elliot and McGregor’s (2001) three-item scale adapted for a training context (e.g., ‘I want to learn as much as possible from the training,’ \( x = .84 \)). Motivation to transfer was measured with five items developed by Noe (1986) (‘I believe my job performance will likely improve if I use the knowledge and skills acquired in training,’ \( x = .75 \)).

2.4. Training cognitions

Thinking about skill transfer was assessed using questions designed to probe how trainees maintain their skills (six items, Gist et al., 1991), “Since the training session, I have thought about how to achieve the training objectives,” \( x = .83 \).

2.5. Training outcomes

We used the training transfer scale (six items, Xiao, 1996; ‘Using the new knowledge from training has helped my work,’ \( x = .76 \)) to determine the extent to which trainees transferred skills acquired in training into their daily activities.

2.6. Analyses

Structural equations modeling (SEM) with maximum likelihood estimation was used to test the hypotheses and the fit of the overarching model. Multiple fit indices were used to assess the adequacy of the estimated model: the Tucker-Lewis index (TLI), the comparative-fit-index (CFI), and the root mean squared error of approximation (RMSEA). It is generally suggested that the TLI and CFI should exceed .90 or even .95 for the model to be considered of good fit (Hu & Bentler, 1999); similarly, a value of .06 or less for the RMSEA reflects good fit (Browne & Cudeck, 1993). Finally, a chi-squared difference test was conducted for choosing among competing models. These analyses were performed with the AMOS 6.0 software package (Arbuckle, 2006).

To investigate the mediating effect of training cognitions, we examined whether Baron and Kenny’s (1986) three conditions for mediation were met (1) a significant relationship exists between the independent variable and the dependent variable; (2) a significant relationship exists between the independent variable and the mediator; and (3) a significant relationship exists between the mediator and the dependent variable while holding the independent variable constant. In case of full mediation, the independent variable has no significant relationship with the dependent variable when the mediator is added to the analysis. Sobel’s (1982) test for mediation was used to establish the significance of the mediated effect of the independent variable on the dependent variable.

3. Results

3.1. Preliminary results

Although we sought to control for age, gender, educational level, organizational tenure and job tenure, preliminary analyses showed that none of the control variables was significantly related to training transfer. Therefore, they were not included in the analyses. In addition, we tested whether respondents and nonrespondents were significantly different in terms of gender, race, education, age, tenure with the organization, and time in the current position, with no statistically significant differences found. Table 1 presents the means, standard deviations, reliabilities, and intercorrelations of the study variables.

3.2. Model fit and hypotheses tests

Based on our hypotheses, and especially our mediating hypothesis, the proposed model showed a modest fit: \( \chi^2(df = 10) = 23.93, p < .01; \chi^2/df = 2.39; CFI = .93; TLI = .86; \) RMSEA = .11. The standardized residuals suggested that model fit might be improved by including direct relationships between training self-efficacy, motivation to transfer and training transfer. This would imply that training cognitions would only partially mediate the relationship between training self-efficacy, motivation to transfer and transfer. Because previous studies have also found direct relationships of training self-efficacy (e.g., Chiaburu & Marinova, 2005), and motivation to transfer (e.g., Colquitt et al., 2000) with training, a full mediation model might be too stringent. Therefore, we revised our model including direct paths from training self-efficacy (e.g., Chiaburu & Marinova, 2005), and motivation to transfer (e.g., Colquitt et al., 2000) to training transfer. Conversely, learning goal orientation is more likely to be connected to training transfer through employee cognitions (Mesmer-Magnus & Viswesvaran, 2007). The revised model had very good fit: \( \chi^2(df = 9) = 12.19, p = .20; \chi^2/df = 1.36; CFI = .99; TLI = .96; \) RMSEA = .05. A chi-squared difference test indicated that the extended model provided a significantly better description of the data than the original model (\( \Delta \chi^2/\Delta df = 11.74, p < .001 \)).
Based on the existing theory and research, we decided to use the extended model for testing our hypotheses. The standardized regression coefficients for this model are presented in Figure 1.

In the first two hypotheses, we connected our social context factors (POS and supervisor support) with trainees’ self-efficacy, goal orientation, and motivation to transfer. The results show that POS was significantly related to training self-efficacy ($\beta = .34, p < .001$) and motivation to transfer ($\beta = .16, p < .05$), but did not reach significance in its relationship to learning goal orientation ($\beta = -.06, NS$). Therefore, Hypotheses 1(a) and 1(c) were supported. Supervisor support showed significant relationships with all three individual difference variables: training self-efficacy ($\beta = .42, p < .001$), learning goal orientation ($\beta = .32, p < .001$), and motivation to transfer ($\beta = .49, p < .001$). The findings fully supported Hypotheses 2(a)–(c).

In the next set of hypotheses, we proposed positive relationships between training self-efficacy [Hypothesis 3(a)], learning goal orientation [Hypothesis 3(b)], and motivation to transfer [Hypothesis 3(c)] and training cognitions. Our data show significant relationships between training self-efficacy ($\beta = .16, p < .01$), learning goal orientation ($\beta = .31, p < .01$), motivation to transfer ($\beta = .21, p < .05$), and cognition. Therefore, all three components of our Hypothesis 3 were supported.

Finally, we tested whether training cognitions are a positive predictor of training transfer (Hypothesis 4) and a mediator of the relationships between training self-efficacy [Hypothesis 5(a)], learning goal orientation [Hypothesis 5(b)], and motivation to transfer [Hypothesis 5(c)].

Table 1. Means, standard deviations, reliability estimates, and intercorrelations of study variables

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<th>Variable</th>
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<th>M</th>
<th>SD</th>
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<th>2*a</th>
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<th>5b</th>
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Note. Means and standard deviations in the first two columns and correlations below the diagonal are based on the sample of N = 111 used in the structural equations modeling analyses; for $r \geq .19, p < .05$; for $r \geq .23, p < .01$; for $r \geq .31, p < .001$. Means and standard deviations in the third and fourth column and correlations above the diagonal are based on the larger samples of N = 372 (denoted by a) and N = 223 (denoted by b). Reliability estimates (a's) are on the diagonal in parentheses (based on N = 111).

Figure 1. Final model with results. Note. Paths with dotted lines (from training self-efficacy to training transfer, and from motivation to transfer to training transfer) are part of the revised model. a$p < .05$; **$p < .01$; ***$p < .001$. 
5(c)], and training transfer. Training cognitions were indeed a positive predictor of transfer ($\beta = .41$, $p < .001$), supporting Hypothesis 4. Sobel’s test for mediation showed that training cognitions mediated the effects of the individual factors. The indirect effects were 2.54 ($p < .01$) for training self-efficacy; 2.82 ($p < .01$) for learning goal orientation; and 2.00 ($p < .05$) for motivation to transfer. However, in addition to these hypothesized relationships, the data also revealed direct relationships for training self-efficacy ($\beta = .18$, $p < .01$), and motivation to transfer ($\beta = .19$, $p < .05$) with training transfer and indirect relationships from goal orientation to training transfer (through training cognitions). The fact that our revised model fitted the data better than the fully mediated model (as discussed above), leads to the conclusion of partial mediation, and thus support of Hypothesis 5(b), but not of Hypotheses 5(a) and (c).

In addition to testing the full model on the responses of 111 participants, we tested the hypotheses by examining parts of the model with exploratory regression analysis using the larger samples. Using the full sample of 372 participants, significant relationships were found between POS and training self-efficacy ($\beta = .38$, $p < .001$), and motivation to transfer ($\beta = .26$, $p < .001$); the relationship with learning goal orientation did not reach significance ($\beta = .03$, NS). Similarly, supervisor support showed significant relationships with all three individual difference variables: training self-efficacy ($\beta = .43$, $p < .001$), leaning goal orientation ($\beta = .44$, $p < .001$), and motivation to transfer ($\beta = .34$, $p < .001$). Using the sample of 223 participants, significant relationships were found between training self-efficacy ($\beta = .21$, $p < .01$), leaning goal orientation ($\beta = .32$, $p < .001$), motivation to transfer ($\beta = .21$, $p < .01$), and training related cognitions. In conclusion, these post hoc analyses on the larger samples confirmed the outcomes of the SEM analyses.

4. Discussion

Few studies have examined the contribution of support from both supervisors and from the larger organizational context in the context of training transfer. Much of the research testing work environment factors as an antecedent to training transfer have focused on the role of supervisors in providing support, resources, opportunities to perform, and consequences for behavior (Burke & Hutchins, 2007). Similarly, studies examining the role of transfer climate (Tracey et al., 2001) or transfer system (Holton et al., 2000) have grouped various work factors together as an aggregate assessment of support. Consistent with the idea that various forms of support may have different magnitudes of relationships with aspects of the training transfer process (Cheng & Ho, 2001) and with the need to focus more on aspects of the trainees’ work environment (Ford & Weissbein, 1997), we extend previous research by examining how two forms of social support influence training transfer. To determine the influence of social context on skill transfer, we also examined individual outcomes of support, including trainee self-efficacy, learning goal orientation and motivation to transfer, and training cognitions both as a mediator between individual factors and training transfer. Our study revealed several important findings concerning the role of support within the broader organizational context and the utility of individual (cognitive and motivational) factors for training transfer.

4.1. Support from the organization and the supervisor

As expected, we found that both supervisory support and POS were positively related to trainee self-efficacy and motivation to learn, suggesting that influences on these individual factors could stem from either support source. An exception was in the relationship between POS and learning goal orientation. While supervisor support was positively related to learning goal orientation, organizational support was not. This seems to suggest that the main drivers of trainees’ goal orientation originate from a more proximal source (such as one’s supervisor) rather than from the larger organizational context. That is, even when trainees perceive rewards and other support incentives in the organizational setting (e.g., Chiaburu & Marinova, 2005) that are tied to training transfer, they may need direct or additional reinforcement from a direct supervisor (or a source close to them) to influence goal orientation. This finding is consistent with research showing that the quality of relationship with one’s supervisor influences subordinates’ learning goal orientations (e.g., Janssen & Van Yperen, 2004) and extends prior research where other aspects of the work environment, including culture and climate were connected to training transfer (Chiaburu & Tekleab, 2005; Rouiller & Goldstein, 1993; Tracey et al., 2001; Tziner, Fisher, Senior, & Weisberg, 2007).

In addition, supervisor support positively influences motivation to transfer and does so to a greater extent than organizational support. The same is true, to a lesser extent, for training self-efficacy. When comparing the more distal and diffuse entity (the organization) and the proximal and concrete one (the supervisor) aspects of social support (correlated .20 in our study), supervisors seem to matter slightly more for their subordinates’ self-efficacy, goal orientation, and training motivation. Extending other studies where different entities forming the social context were compared qualitatively (e.g., Hawley & Barnard, 2005), or where other sources of support were compared (e.g., co-workers, supervisors; Chiaburu & Marinova, 2005; van der Klink, Gielen, & Nauta, 2001), we directly compared the influence of organizational and supervisor support.
4.2. The importance of training-related cognitions

Our finding that trainee efficacy, motivation, and goal orientation were related to training cognitions, and that thinking about how to use training in the work setting was a strong predictor of training transfer sheds some light on the interplay between how trainee cognition and motivational factors influence performance. These findings suggest that trainees are more likely to consider how they will apply their training on the job when they feel confident, motivated, and interested in acquiring knowledge, which can lead to enhanced training transfer. Interestingly, learning goal orientation had the strongest relationship with training cognitions and was the only factor mediated by training cognitions in relation to training transfer (see later discussion). This finding is not completely surprising: individuals with high levels of learning goal orientation have been found to engage in cognitive strategies such as task-oriented practice, rehearsal, and elaboration techniques (Elliott & McGregor, 2001; Ford et al., 1998; Pintrich, 2000; Wolters, 2004). Although the majority of these studies were based in educational settings, our study confirms similar findings in a corporate setting.

Finally, training cognitions also functioned to partially mediate the relationship between both trainee self-efficacy and motivation to transfer and training transfer. Our revised model resulted in a direct relationship between self-efficacy and motivation to transfer and training transfer, in addition to the direct relationships between these individual variables and training cognitions; however, training cognitions did mediate the relationship between learning goal orientation and training transfer. These results suggest that although trainees with high self-efficacy and motivation to transfer may engage more in thinking about transferring their skills, their heightened affective and motivational states could be sufficient to successfully apply their learning in a work setting. That is, training cognitions might not be a necessary step for trainees that are confident in their task performance and are motivated to apply their training on the job. However, the predictive power of learning goal orientation is realized through its impact on training-related cognitions.

Theoretical arguments exist for the idea that skill development is continuous and with time trainees develop more elaborate strategies and approaches (e.g., Anderson, 1982). Moreover, this result is in line with several lines of research: trainees with a learning goal orientation are interested in developing competency (rather than outperforming others), and thus are more willing to consider how they may increase their knowledge and ability for a given task (Schmidt & Ford, 2003). Meta-analytic work also shows that goal orientation is positively correlated with both learning strategies and feedback seeking (Payne, Youngcourt, & Beaubien, 2007). According to our results, this type of cognitive elaboration is enhanced through trainees’ learning goal orientation. It remains to be determined whether other types of mediators (e.g., of a more affective or motivational rather than of cognitive nature) would intervene between self-efficacy and training motivation, respectively, and training transfer.

4.3. Limitations

The results presented above need to be seen in the light of the study limitations. First, strong causal inferences are tentative, given the nonexperimental nature of the study, although the longitudinal nature of the data mitigates this concern to some extent. Our results can be further supported by studies replicating the results using other longitudinal studies, or using (quasi-) experimental designs. Second, we collected the data from one organization, which makes us cautious about proposing broad generalizations of the findings until the results are replicated and extended in other settings. Third, we adjusted the original model to include direct relationships between some of the individual factors and transfer. Although direct relationships have been observed in previous studies (e.g., Colquitt et al., 2000), the decision for adjustment was also based on the outcomes of statistical analysis. Therefore, the final model should be replicated in another sample.

Finally, we collected data from one source: the employees attending training, reporting on their social context, on individual factors, their cognitions, and engagement in skill transfer. Despite the fact that single-source bias may be less problematic than commonly believed (e.g., Spector, 2006), we collected data at three different time periods and used current best practices (e.g., providing confidentiality, having respondents complete the questionnaire for the criterion, and predictor variables in different settings; Podsakoff et al., 2003) to mitigate such issues. Furthermore, research that has compared self-report and objective outcome measures have shown these to yield similar results. In a meta-analysis examining the relationship between training and organizational outcomes (human resource, organizational performance, and financial data), Tharenou et al. (2007) found similar bivariate correlations and effect sizes between training outcomes and self-report and objective measures of organizational factors. Even though we recognize that perceptual scores may inflate the overall effect (as compared with objective measures), the longitudinal design of the current study lessens this chance compared with self-report data collected at a single time. Future studies, however, may use multisource data (e.g., including data on training transfer obtained from supervisors, peers, or customers, if these have the opportunity to observe the employee engaging in the respective skills, and archival data).
4.4. Significance and implications to practice

Despite these limitations, the study has practical implications related to the support of training transfer. First, and consistent with extant literature, supervisory support had a strong relationship with individual factors which then influenced training transfer. Supervisors can show their support for trainee transfer of training by providing feedback on performance, opportunities to perform, consequences and accountability goals, and assistance with managing workload during training (Burke & Baldwin, 1999; Lim & Morris, 2006; Smith-Jentsch, Salas, & Brannick, 2001; Taylor, Russ-Eft, & Chan, 2005). However, many managers are either unaware of or not required to support trainee performance after training, which supports the ‘myth’ that the training experience is sufficient for performance to occur. Broad (2005) suggests that managers be involved before, during, and after the training experience to influence training transfer, which may require training professionals to coach managers on how to best support trainee performance. Although the direct supervisor often represents a central source of support for trainees, other colleagues to whom trainees have a closer relationship might also influence training transfer. In Burke and Hutchins’ (2007) comprehensive review of transfer literature, several studies found peer support equal to or more important than supervisor support to training transfer. Our results suggest that managers continue to be strong influence on trainee performance, and thus should understand how to support training transfer. This is important, when attempting to apply our findings to practical situations, especially when considering the difficulties practitioners can have in determining the main predictors of transfer (Burke & Hutchins, 2008).

Supervisors also play a major role in influencing trainees’ goal orientation, which has been found to be a consistent predictor of training transfer in the transfer literature (Silver et al., 2006). Our results indicated that only supervisory support was related to learning goal orientation, suggesting that the relationship between supervisors and employees may influence goal orientation. This is consistent with research linking leader-member exchange, goal orientation, and performance. Specifically, Janssen and Van Yperen (2004) suggested that supervisors may influence employees’ learning orientation though assigning challenging opportunities, delegating responsibility and autonomy in carrying out tasks, and assisting individuals with overcoming barriers to performance. Other strategies supervisors can use to influence learning goal orientation include rewarding employee effort and task mastery (rather than strictly performance), encouraging personal development and experimentation, and supporting enhanced cognitive engagement, including self-evaluation opportunities to reflect on performance (Ames, 1992; Stevens & Gist, 1997).

Finally, our study suggests that individual factors may influence training transfer differently, and thus should be considered in applying interventions to support training transfer. Training cognitions mediated the relationship between learning goal orientation and transfer exclusively, indicating that learning goal orientation operates through its impact on training-related cognitions. An exception would be if the trainees already have high self-efficacy and/or motivation to transfer as evidenced by their direct relationship with training transfer in our study. In empirical studies, several authors found that cognitive or mental rehearsal and behavioral practice strategies during training are positively correlated with transfer (Ford & Kraiger, 1995; Holladay & Quiñones, 2003; Warr & Allan, 1998). These include cognitive rehearsal and elaboration (Schmidt & Ford, 2003), goal-setting (Brown, 2005; Locke & Latham, 2002), and other self-management techniques (such as relapse prevention; Burke & Baldwin, 1999) that help trainees consider how they can generalize and apply their training knowledge to the work setting. In the light of our findings, these are most beneficial for trainees with high levels of learning goal orientation, who may benefit from being guided into engaging in maintenance activities.

4.5. Future research

The current study can also open new venues of investigation. First, we conceptualized POS without differentiating support originating from the organization, work unit, or one’s team, which may not match the way employees think about their workplace. Levels of proximity can be embedded further by distinguishing between support originating from the organization, unit, and immediate team. Such differences may help produce more refined models: it is possible for self-efficacy to be a factor of work unit or team support, given the importance of vicarious learning and mastery originating from within the proximal workgroup (Bandura, 1997). Additional aspects of support, such as the extent to which training is offered, employees have autonomy, and are provided the requisite technology (Salanova et al., 2005) can be tested in future studies. Along the same line of thought, support can originate not only from the organization and the supervisor, but also from one’s coworkers (e.g., Chiaburu & Harrison, 2008; Pidd, 2004). These may have an even stronger effects on proximal outcomes, including focuses employees’ self-efficacy, motivation, and goal orientation.

Moving from predictors to processes, even though we uncovered one mediating mechanism in the form of trainee cognitions, additional explanations may be found if other processes are explicitly theorized. Considering their focus on the task to be executed, trainees with high levels of self-efficacy and motivation to transfer may be helped in reaching training transfer by reaching high performance levels in intermediate stages of transfer.
(1 month after training) or through motivational rather than cognitive actions and states, in the light of evidence suggesting that motivational aspects are more likely to mediate the relationship between self-efficacy and performance (Chen, Gully, & Eden, 2004).

Finally, it is worth examining how the present model generalizes to a range of different skills and tasks to be performed on the job. The current skill set involved engagement in behaviors directed at internal or external customers. Skills and their uses may be considered episodic (Baldwin & Magiuka, 1997), with employees having periods of time when the skills would not be used, punctuated by interactions where skill utilization is necessary. This intermittent structure may have played a role in enhancing training transfer for employees who engaged more in training cognitions and maintained their skills. It could be useful to test the model on skills used in a more or less permanent manner, to determine whether the advantage of cognitive engagement remains unchanged. In addition, given existing evidence that self-efficacy has a stronger relationship with performance for skills of lower complexity (Chen, Casper, & Cortina, 2001), the model can be tested on a variety of skills varying from simple to more elaborate.

5. Conclusion

Training transfer continues to be a problem for organizations seeking to maximize training effectiveness. Although research has identified factors at the individual, training, and work/organizational level as influencing transfer, the extent to which trainees perceive support in the work setting continues to be a consistent predictor of training transfer. Our study contributes to the current knowledge base by testing a model of social support on training transfer, and demonstrating how support emanating from supervisors and the organization influence trainee self-efficacy, motivation, and goal orientation in different ways. Our results suggest new venues of investigation, including testing models involving skills from simple to complex and focus on mediators to explain the intervening processes. In addition to refocusing on social context factors as predictors of transfer, we offer targeted suggestions to influence training transfer optimization in organizational settings.

Note

1. The authors contributed equally to this paper.

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