

2010

## Workplace Climate and Peer Support and Determinants of Training Transfer

Harry J. Martin

*Cleveland State University*, [h.martin@csuohio.edu](mailto:h.martin@csuohio.edu)

Follow this and additional works at: [https://engagedscholarship.csuohio.edu/bus\\_facpub](https://engagedscholarship.csuohio.edu/bus_facpub)



Part of the [Human Resources Management Commons](#)

**How does access to this work benefit you? Let us know!**

---

### Original Published Citation

Martin, H. J. (2010). Workplace Climate and Peer Support and Determinants of Training Transfer. Wiley InterScience Human Resource Development Quarterly, 21(1), pp. 87-104.

This Article is brought to you for free and open access by the Monte Ahuja College of Business at EngagedScholarship@CSU. It has been accepted for inclusion in Business Faculty Publications by an authorized administrator of EngagedScholarship@CSU. For more information, please contact [library.es@csuohio.edu](mailto:library.es@csuohio.edu).

---

# Workplace Climate and Peer Support as Determinants of Training Transfer

Harry J. Martin

*Although billions of dollars are spent annually on training and development, much about the transfer processes is not well understood. This study investigated the interaction of workplace climate and peer support on the transfer of learning in a corporate field setting. Supervisor ratings of performance on several skill dimensions were obtained before and after training. Trainees in a division with a more favorable climate and those with greater peer support showed greater improvement. In addition, peer support mitigated the effects of a negative climate. Trainees with peer support in a negative climate achieved the same degree of transfer as trainees in a positive climate. These results suggest that more proximal factors, like peer support, can overcome the effect of more distal factors, like climate, in promoting transfer. This study also advances understanding of the transfer process by assessing workplace environment with the use of measures other than trainee perceptions.*

Training and employee development are vital contributors to organizational success and will continue to be so in the foreseeable future. Changes in economic forces and globalization point to the importance of human resources and skilled “knowledge workers” as key sources of sustainable competitive advantage (Drucker, 1999; Drucker, Dyson, Handy, Saffo, & Senge, 1997). Every indication is that the need for training will continue given increasing demands on organizations to boost productivity, keep pace with technological advances, meet competitive pressures, use team-based decision making and problem solving, reengineer processes, and satisfy employee development and retention requirements.

Billions of dollars are spent by organizations on employee training and management development. This figure has been estimated from \$55.8 billion to as much as \$200 billion annually (Arthur, Bennett, Edens, & Bell, 2003; Bunch, 2007; O'Leonard, 2008; Salas & Cannon-Bowers, 2001). Although U.S. corporations are unlikely to increase spending on training and development in the current economic climate, governmental stimulus efforts support a significant amount of worker retraining (Leonard, 2009). The capacity of organizations to learn, adapt, and change is a critical component of competitiveness today, and managers must continue to emphasize processes that help companies become "learning organizations" (Gephart, Marsick, Van Buren, & Spiro, 1996; Senge, 1995).

With this emphasis on learning and skill development, employers hope expenditures will yield a favorable return on their investment. However, little is done to assess the impact of this training on the behavior and performance of employees. Studies suggest that many training and development activities are implemented on blind faith in the hope that they will produce results (Arthur et al., 2003; Broad & Newstrom, 1992; Robinson & Robinson, 1989). Rarely do training programs assess needs, establish specific objectives, or evaluate impact beyond the reaction level. Only a small portion of training budgets is spent to determine the effect of training on job performance (Bersin, 2006) and those organizations that do evaluate results often find little impact. One of the more optimistic estimates suggests that no more than 15% of learning transfers to the job (Cromwell & Kolb, 2004). Other studies of transfer rates find they typically average only in the 10%–40% range (Baldwin & Ford, 1988; Ford & Kozlowski, 1997). Therefore, it is important to explore ways to encourage transfer of learning to achieve greater training impact.

Models of training effectiveness have focused on program design, trainee characteristics, and workplace environment as the key factors that determine transfer of learning (e.g., Alvarez, Salas, & Garofano, 2004; Baldwin & Ford, 1988; Ford & Weissbein, 1997; Yamnill & McLean, 2001). But several reviews of the transfer literature conclude that more research needs to be conducted to understand better the context in which employees apply the knowledge and skills learned (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Chen & Klimoski, 2007; Cheng & Ho, 2001; Colquitt, LePine, & Noe, 2000; Ford & Weissbein, 1997; Salas & Cannon-Bowers, 2001; Tannenbaum & Yukl, 1992). The purpose of this article is to consider two aspects of training context—workplace climate and peer support—and assess their impact on the transfer of managerial skills in a field setting. Workplace climate includes factors such as adequate resources, cues that remind trainees of what they have learned, opportunities to apply skills, barriers and constraints to transfer, and consequences for using training on the job (Holton, Bates, Seyler, & Carvalho, 1997). Peer support includes the encouragement trainees receive from their immediate coworkers and peers (Chiaburu &

Marinova, 2005). The article also extends previous research by considering whether factors that are more removed from the employee, like workplace climate, continue to influence training transfer when factors in closer proximity to the employee, like peer support, are present.

## Contextual Factors Affecting Transfer

The following subsections present different contextual factors affecting transfer: workplace climate, peer support, and distal and proximal factors, followed by hypotheses.

**Workplace Climate.** Although many researchers have studied the effect of program design (e.g., Montesino, 2002; Olsen, 1998; Rossett, 1997) and trainee characteristics (e.g., Burke, 1997; Cheng & Ho, 2001; Fecteau, Dobbins, Russell, Ladd, & Kudisch, 1995) on learning transfer, others have focused on various aspects of the transfer environment. The context of the training matters (Rouiller & Goldstein, 1993) and the transfer environment can have a powerful impact on the extent to which newly acquired skills are used back on the job (Tracey, Tannenbaum, & Kavanagh, 1995). The transfer environment has been shown to influence training outcomes directly (Kontogiorgis, 2001; Lim & Morris, 2006; Mathieu, Tannenbaum, & Salas, 1992) and indirectly as a moderator between individual differences factors and transfer (Burke & Baldwin, 1999). Kozlowski and Salas (1997) highlighted the importance of understanding the factors and processes in which training interventions are implemented to ensure skills are transferred.

Even with superior design and enthusiastic trainees, a favorable climate is required for transfer to occur (Eisenberger, Fasolo, & Davis-LaMastro, 1990). A review of research by Colquitt et al. (2000) found a strong correlation between climate and transfer across a variety of studies. Lim and Johnson (2002) found that the opportunity to use learned skills was rated as the highest form of support for employees and the lack of opportunity to use training was rated as the biggest obstacle to transfer. Trainees need an opportunity to perform the skills they have learned (Ford, Quinones, Sego, & Sorra, 1992) and delays between training and actual use on the job can create significant skill decay (Arthur, Bennett, Stanush, & McNelly, 1998). Noe's (1986) model predicts a direct link between a favorable climate and positive transfer as well as through linkages to motivation to learn. In addition, Tracey et al. (1995) showed that organizational climate and culture were directly related to posttraining behaviors.

**Peer Support.** Perhaps the most consistent factor explaining successful transfer is the support trainees receive from others (Clarke, 2002). Even well-learned skills will not be maintained on the job if trainees are not motivated to apply them. But low motivation can often be traced to a lack of support rather than the personal failings of the trainee. The ability of supervisors to influence trainee transfer has been widely supported in both empirical and

qualitative studies (Birdi, Allan, & Warr, 1997; Brinkerhoff & Montesino, 1995; Broad & Newstrom, 1992; Burke & Baldwin, 1999). Foxon (1997) found that trainees' perception of managerial support for using skills on the job correlated with greater reports of transfer. Supervisors signal whether the training is to be used and how quickly changes are expected. Supervisory support can be expressed in a variety of ways, including encouragement to attend training, goal-setting activities, types of reinforcement provided, modeling of behaviors, use of action plans for applying skills, discussing new learning with trainees, involvement in the training program, coaching trainees following training, and giving trainees praise and recognition (Garavaglia, 1993; Rouiller & Goldstein, 1993; Smith-Jentsch, Salas, & Brannick, 2001; Xiao, 1996).

Support from peers and colleagues is also important in promoting transfer (Hatala & Fleming, 2007; Jellema, Visscher, & Scheerens, 2006) and may have a stronger influence on trainee transfer than supervisory support (Gilpin-Jackson & Bushe, 2007). Fecteau et al. (1995) showed a positive link between peer support and transfer but manager support affected transfer primarily through motivation to learn. It appears that variables like supervisory support, self-efficacy, and goal orientation affect skill transfer through pretraining motivation (Chiaburu & Marinova, 2005). It may be that peer support enhances learning transfer through the feedback, encouragement, problem-solving assistance, supplemental information, and coaching assistance provided to trainees.

***Distal and Proximal Factors.*** This research suggests that behavioral changes following training will be short-lived without resources and activities to support transfer. However, a greater understanding of the interaction among environmental factors is needed (Burke & Hutchins, 2008). This is especially true for how factors that are closer and more immediate to the trainee, like peer support, interact with factors that are more distant and removed, like climate. Hawley and Barnard (2005) found networking with peers and sharing ideas about course content helped promote skill transfer. However, a perceived lack of manager support on the job limited the positive influence of peer support on skill maintenance. Likewise, Birdi et al. (1997) found that coworker support had a significant positive effect on transfer but failed to predict transfer independently when management support was considered. This suggests that supervisory support is a stronger force affecting transfer than peer support. However, both supervisors and peers are in relatively close proximity to the trainee. This raises the question as to whether more distal factors continue to influence transfer in the presence of closer sources support.

Colquitt et al. (2000) suggest that proximal factors directly impact training motivation and that distal factors impact training motivation through their effect on the proximal factors. They defined proximal factors as variables such as self-efficacy, valence, and job/career variables, whereas distal factors were largely defined by situational variables. Smith, Jayasuriya,

Caputi, and Hammer (2008) found that more proximal factors, like trainee self-efficacy and expectancy, had a stronger effect on outcomes than distal factors, like goal orientation, and that the effect of distal factors was mediated by proximal factors. It may be that proximal variables are able to attract more of the employee's attention and arouse more action than distal variables. For example, Burke, Sarpy et al. (2006) found that more arousing and engaging safety training methods were more effective at reducing accidents and injuries than more passive methods. Likewise, Brown (2005) found that distal outcome goals were not as motivating as proximal goals when learning new skills and resulted in less transfer.

**Hypotheses.** Given these findings, we expect that proximal factors should have a significant effect on training transfer, given their greater immediacy and ability to arouse and motivate trainees. However, distal variables should interact with proximal variables to predict training transfer. Here we use peer support as a proximal factor and workplace climate as a distal factor. This leads to the study's first hypothesis that peer support will have a positive effect on transfer due to the ability of peers to arouse and motivate trainees. Likewise, the positive link between environmental variables and transfer shown in the literature leads to this study's second hypothesis that a favorable climate will have a direct positive effect on transfer. Although not as immediate or potentially stimulating as peer support, climate sets a norm as to whether transfer should be taken seriously or not. However, a more interesting question is whether proximal factors like peer support can mediate the effect of more distal factors like climate. Specifically, this study's third hypothesis is that peer support should mitigate the negative effect of an unfavorable climate and lead to greater transfer. Conversely, trainees with low peer support in an unfavorable climate should show little training transfer. This would confirm previous studies of proximal and distal variables (e.g., Colquitt et al., 2000) but extend them to new kinds of variables (i.e., peer support instead of self-efficacy and workplace climate instead of goal orientation).

This study contributes to our understanding of the processes surrounding training transfer by considering the differential role of distal and proximal factors and by establishing the interaction of climate and peer support. However, it also contributes to the literature by looking at the process using different sources of measurement. The Baldwin and Ford (1988) review of the transfer literature found that few studies used different types of analysis. Ford and Weissbein (1997) recommended that researchers explore transfer not just from an individual perspective but also from departmental, subunit, and organizational perspectives. Kozlowski and Salas (1997) suggest using different levels of measurement to capture the interrelatedness of individual and organizational factors. By considering transfer across different divisions in an organization and using multiple sources of measurement, this study seeks to assess climate effects with assessments other than individual trainee perceptions.

## Method

Evaluation of the differential effects of distal and proximal factors on training transfer was conducted in a comprehensive field study.

**Context of the Study.** The hypotheses were evaluated in conjunction with a comprehensive training program for managers of a large manufacturing company in the midwestern United States. The company was in the process of shifting daily supervisory duties from company managers to hourly employees in self-directed work teams. The program was designed to build the skills necessary to transition frontline managers from traditional supervisory activities to a new role labeled “process manager.” Here managers would focus on providing support to work teams and managing projects to improve operations. Transfer of learning was an important consideration and it was addressed through a variety of program design, trainee motivation, and workplace environment initiatives.

Program design included a comprehensive needs assessment that was guided by the strategic and operational goals of the organization. The assessment was jointly managed by operational and human resource managers and involved a variety of stakeholder groups. Specific goals for the program and measures of success were defined. From this assessment, 13 skill dimensions were identified as being closely related to the process manager’s job requirements: coaching, goal setting, goal acceptance, performance feedback, leadership style, use of influence, listening skill, managing change, meeting effectiveness, oral communication, project management, team building, and written communication. The needs assessment and program design process made it easier for the organization to develop a training program to address these skills and establish the credibility and relevance of the training. This also helped program managers to explain the training’s objectives, its relevance to individual and organizational performance, and the expectations for application.

Prior to scheduling training, a series of informational workshops were conducted for middle- and upper-level managers to orient them to the program, explain their role in supporting the frontline managers’ application of the skills, describe the process for reinforcing skill use, and detail methods of providing feedback to trainees. In addition, presentations were made to groups of frontline managers to reduce anxiety and increase motivation and pretraining self-efficacy. This was accomplished by providing specific information about the training program, explaining how it could improve job performance, and describing the organizational supports to be provided (e.g., time, resources, opportunities to apply skills, technical support, and favorable consequences for using training on the job). This was especially important, because many of the trainees were older employees with many years of supervisory experience.

A total of 237 managers attended 1 of 12 week-long training sessions. Ninety-five percent of the trainees were male. The age of the participants

ranged from 25 to 64, with an average of 43 years. Trainees had occupied their present position for a median of 3 years (ranging from 1 month to 32 years) and had been employed by the company a median of 21 years (ranging from 1 to 41 years). Managers were employed in 1 of the firm's 12 divisions and all staff and operating departments were represented. Training groups averaged 20 persons and ranged in size from 17 to 22.

**Measures.** Workplace climate, peer support, and training transfer were used as measures.

*Workplace Climate.* The study expected that trainees' workplace climate would affect skill transfer. Participants came from 12 different company divisions with widely varying size, functions, organizational status, and leadership. Unfortunately, it was not possible to obtain a detailed assessment of climate in this situation, as has been done in other studies (e.g., Holton, Bates, & Ruona, 2000). Also, the diverse nature of the firm made it difficult to assess organizational climate as it has been defined in other investigations (e.g., James et al., 2008). An alternative approach was to assess divisional climate as defined by the support of the company's general managers for the training program. This yielded a global measure of workplace climate in each division.

Each of the company's 12 divisions was led by a general manager, and these individuals varied in their support for the training program and proposed changes in work-group supervision. Although they officially supported the change and the directives of senior management, it was well known in the organization that some general managers were not enthusiastic about the program or the training effort. The director of the training project and two staff from the firm's human resources department had extensive contact with each of the general managers over the period during which the project was completed. Toward the completion of the training, these three individuals independently rated each general manager on a 5-point scale according to how favorably they thought the manager viewed the program. The rating question asked, "Based on your interactions with each of the following managers, please evaluate his or her level of support for the training program and trainee skill implementation." The three ratings were averaged and those above the scale midpoint were designated as a division with a favorable climate and those scoring below the scale midpoint were designated as a division with an unfavorable climate. The interrater reliability coefficient averaged 0.89. Under this procedure, five divisions with 102 trainees were judged to have a favorable climate (average rating from 3.5 to 4.7) and seven divisions with 135 trainees were judged to have an unfavorable climate (average rating from 1.5 to 2.8). With only a few exceptions, trainees did not report directly to a general manager, and these managers did not provide the performance assessment ratings of trainees used in this study.

Although this is obviously a global and subjective evaluation of climate, informal conversations with other managers in the company suggested a high degree of agreement with the resulting favorable/unfavorable classification.



The assessment of division general manager support captured many of the components typically assessed by other workplace climate research including resource support, cues that remind trainees of what they have learned, opportunities to apply skills, barriers and constraints to transfer, and consequences for using training on the job (e.g., Holton et al., 1997).

*Peer Support.* Because the duties of frontline managers were changing significantly, a series of four 1-hour peer meetings were scheduled with each training group following their session to provide technical support and encourage application. These meetings were facilitated by an external consultant and scheduled between 2 and 12 weeks after each group's training session. During these meetings, managers were given the opportunity to discuss progress implementing their action plans, review the results of their development efforts, provide illustrations, and share problems associated with implementing the skills. These meetings provided trainees with support from their peers by (a) motivating participants to take action through direct encouragement and the examples provided by other trainees, (b) providing suggestions on how to apply the skills and feedback to improve the implementation of action plans, (c) improving the trainees' understanding of the material learned and providing insight into how the skills could improve performance, (d) helping trainees to understand the problems and pressures faced by other managers better and how to overcome barriers to implementation, (e) encouraging participants to persist in their efforts to implement action plans even when faced with obstacles and setbacks, and (f) providing networking opportunities with other trainees who could be called upon outside of peer meetings for support and advice.

Although attendance at peer meetings was encouraged, it was voluntary. Attendance was recorded, with each manager attending between zero and four sessions. Those attending zero or one meeting were labeled the low support group and those attending between two and four meetings were labeled the high support group. Although this measurement of peer support is different from other studies, it is consistent in that it focuses on the encouragement trainees received from their coworkers and peers (e.g., Chiaburu & Marinova, 2005).

*Training Transfer.* The evaluation plan for the project included collecting performance ratings for all managers attending the training. These ratings were made by each manager's immediate superior and were obtained 1 week prior to the person's training session and at 6 weeks and 3 months following training. A rating instrument was developed especially for this project that assessed each of the 13 targeted performance dimensions. Each dimension was rated on a 1–7 scale, with larger values indicating a higher level of performance. Definitions were provided for each dimension with the lowest, middle, and highest scale values anchored by a behavioral description. These descriptions reflected the specific content areas covered in the training program. Ideally, separate measures would be obtained to assess learning of the

content, and subsequently behavioral change based on that learning. However, program limitations only allowed for assessment of behavioral change and it is assumed that this change occurred as a result of the knowledge gained through the training.

The immediate superior of each trainee was sent the performance-rating instrument and a cover letter instructing him or her to mail the booklet directly to the researchers. Managers were assured that their individual ratings would not be revealed to subordinates or any company personnel. A total of 55 managers were asked to provide ratings. The number of trainees rated by each manager ranged from 1 to 15, with no more than 3 trainees rated at any one time. The raters were primarily middle managers at a department-head level. Eighty-nine percent of the pretraining rating forms were returned. Eighty-one percent of the 6-week ratings were returned, and 72% of the 3-month ratings were returned.

## Results and Discussion

Analysis of these data focused on both the direct effects of climate and peer support on transfer as well as their interaction.

**Analysis of Transfer.** Analysis of difference scores was used as the primary measure of training transfer. This measure was employed rather than multivariate analysis because of the nature of the rating procedure and diversity of trainees. As is often the case in field studies, not all rating forms were returned for each time period. Also, supervisors had the option of not rating a performance dimension if they felt they did not have sufficient opportunity to observe the trainee in that capacity. Although many similarities existed among the frontline managers, they performed their jobs differently given the diversity of situations represented. For example, in the 12 weeks following training not all trainees managed projects, had the opportunity to conduct meetings, coached other employees, or engaged in team-building activities. Therefore, missing data were expected for some participants. To maximize inclusion of available trainee data in the analysis, the average difference in performance between the initial and 3-month ratings was used. This was calculated by averaging the difference scores across as many of the 13 performance dimension as possible. This yielded a pre-post measurement for 160 of the 237 trainees. The 77 trainees for whom this measurement could not be calculated did not differ significantly in age, gender, tenure in position, or tenure with the company from those whose performance difference score could be calculated.

The hypotheses were assessed with the use of a  $2 \times 2$  ANOVA of the difference between the initial and 3-month composite performance rating. Favorable and unfavorable climate groups were defined by the evaluation of division general manager support for the program. High and low peer support groups were defined by the trainee's attendance at peer meetings. Prior to the analysis, the composition of trainees in each study condition was assessed. Sixty-four

trainees were employed in a division with a favorable climate and 96 were employed in a division with an unfavorable climate. Seventy-four trainees were classified in the low peer support condition and 86 were classified in the high peer support condition. As might be expected, division climate and peer support were significantly related ( $r[236] = 0.27$ ;  $p < 0.001$ ;  $\chi^2[1] = 16.63$ ;  $p < 0.001$ ) with those in a favorable climate attending more peer meetings and those in an unfavorable climate attending fewer peer meetings (favorable climate, low support,  $n = 17$ ; favorable climate, high support,  $n = 47$ ; unfavorable climate, low support,  $n = 57$ ; unfavorable climate, high support,  $n = 39$ ). No significant differences in age, gender, tenure in position, or tenure with the company were noted among these groups.

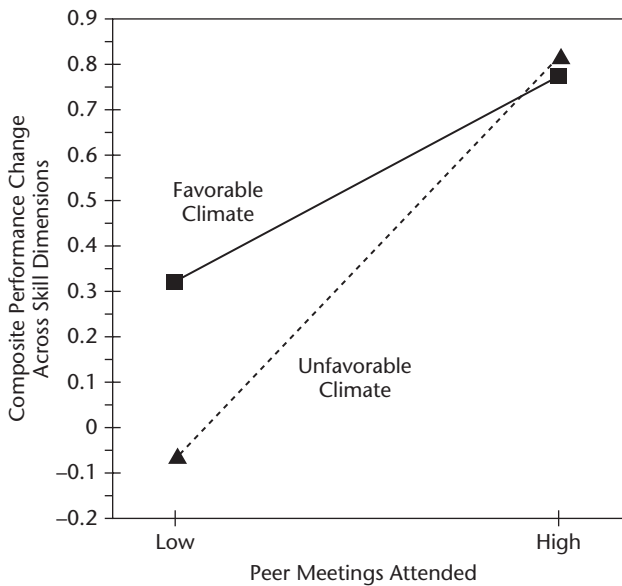
**Direct Effects of Workplace Climate and Peer Support on Transfer.** The study's first hypothesis was that a proximal factor, like peer support, will have a positive effect on transfer due to the ability of peers to arouse and motivate trainees. The second hypothesis was that a distal factor, like workplace climate, will also have a direct positive effect on transfer through its influence on norms regarding whether transfer should be taken seriously. Analysis of the composite difference score supported both hypotheses. Trainees in a more favorable workplace environment showed greater combined performance improvement than those in an unfavorable climate ( $F[1,156] = 3.71$ ,  $p < 0.05$ ,  $\eta_p^2 = 0.02$ ). Likewise, those with greater peer support showed greater improvement than those with less peer support ( $F[1,156] = 53.22$ ,  $p < 0.001$ ,  $\eta_p^2 = 0.25$ ). Consistent with previous studies, the effect size for the proximal variable peer support was substantially larger than that of the distal factor workplace climate.

**Interaction of Workplace Climate and Peer Support.** It was also hypothesized that peer support would enable trainees to overcome the effect of a negative workplace climate. If proximal factors are more immediate and potent in their effect on motivation, they should moderate the effect of more distal factors (e.g., Colquitt et al., 2000). Specifically, it was expected that peer support should mitigate the negative effect of an unfavorable climate and lead to greater transfer. Conversely, trainees with low peer support in an unfavorable climate should show little training transfer. This would confirm previous studies of proximal and distal variables and extend their assessment to new types of variables (i.e., peer support instead of self-efficacy and workplace climate instead of goal orientation).

The interaction of climate and support on the composite difference score also proved to be significant ( $F[1,156] = 5.05$ ,  $p < 0.025$ ,  $\eta_p^2 = 0.03$ ). The mean change in performance for each condition is displayed in Figure 1. As expected, the negative impact of an unfavorable climate was largely ameliorated by attendance at the peer meetings.

To understand better the effects of climate and peer support on transfer, a separate repeated-measures ANOVA was conducted for each of the 13 separate skill dimensions. These analyses allowed for the examination of between-subjects and within-subjects effects of the training. Analysis showed a

**Figure 1. Mean Difference Scores for Climate and Peer Support Groups**



significant linear within-subjects effect for the training over time and a significant linear interaction between time and peer support, with those attending more peer meetings showing greater improvement over time than those attending fewer meetings. These results were observed for each of the 13 skill dimensions. The hypothesized between-subjects interaction between climate and support was observed for 6 of the 13 skill dimensions. These findings for skill dimensions with a significant interaction are presented in Table 1, and those that did not show a significant interaction are presented in Table 2.

Overall, the main effects of climate and peer support were not as strong as observed for the composite difference score when accompanied by the within-subjects effects. However, the form of the between-subjects interaction for climate and support was similar to Figure 1. Trainees who attended the peer meetings showed steady improvement in performance on each of the dimensions in Table 1 over time regardless of climate. On the other hand, trainees in a favorable climate who did not have the support of the peer meetings showed less progress and the performance of trainees in the unfavorable climate–low support condition was essentially flat over time.

## Summary and Conclusions

These findings are consistent with previous research citing the importance of support for training transfer (e.g., Rossett, 1997; Tracey et al., 1995). However,

Table 1. Repeated-Measures ANOVA for Performance Rating Dimensions With Significant Climate × Support Interactions

Effect	Goal Setting		Goal Acceptance		Leadership Style		Listening Skill		Managing Change		Team Building	
	F	MS	$\eta_p^2$	F	MS	$\eta_p^2$	F	MS	$\eta_p^2$	F	MS	$\eta_p^2$
Between subjects												
Climate	1.64	4.93	0.01	4.50*	8.35	0.04	1.95	5.86	0.02	0.53	0.99	0.00
Peer support	0.04	0.11	0.00	0.07	0.13	0.00	0.02	0.07	0.00	1.17	2.20	0.01
Climate support	3.64*	11.44	0.03	6.42**	11.89	0.05	4.11*	12.39	0.03	6.61**	12.38	0.04
Within subjects												
Time	30.62**	13.13	0.19	43.16**	17.14	0.27	11.70**	4.41	0.08	22.27**	9.37	0.13
Time support	7.14**	3.06	0.05	9.80**	3.89	0.08	10.19**	3.84	0.07	16.01**	6.73	0.10

\* $p < 0.05$ .

\*\* $p < 0.01$ .

Table 2. Repeated-Measures ANOVA for Performance Rating Dimensions Without Significant Climate × Support Interactions

Effect	Coaching			Performance Feedback			Use of Influence			Meeting Effectiveness			Oral Communication			Project Management			Written Communications			
	F	MS	$\eta_p^2$	F	MS	$\eta_p^2$	F	MS	$\eta_p^2$	F	MS	$\eta_p^2$	F	MS	$\eta_p^2$	F	MS	$\eta_p^2$	F	MS	$\eta_p^2$	
Between subjects																						
Climate	1.98	5.08	0.02	0.67	1.57	0.01	1.72	4.14	0.01	4.27*	6.52	0.04	0.59	1.20	0.00	0.19	3.26	0.00	0.41	0.77	0.00	
Peer support	0.22	0.56	0.00	2.00	4.72	0.02	0.09	0.22	0.00	0.12	0.18	0.00	0.00	0.01	0.00	0.03	0.02	0.00	2.31	4.32	0.02	
Climate support	2.23	5.70	0.02	2.52	5.95	0.02	0.38	0.91	0.00	0.78	1.18	0.01	0.70	1.42	0.01	0.25	0.25	0.00	0.22	0.42	0.00	
Within subjects																						
Time	35.06**	13.37	0.23	10.41**	3.98	0.08	8.47**	2.91	0.06	8.10**	3.29	0.08	14.76**	5.41	0.09	3.43	1.95	0.03	10.15**	4.33	0.07	
Time support	20.73**	7.90	0.15	28.28**	10.82	0.20	16.54**	5.68	0.11	13.76**	5.58	0.12	6.74**	2.47	0.04	13.31**	7.56	0.10	19.35**	8.26	0.12	

\* $p < 0.05$ .

\*\* $p < 0.01$ .

they also advance understanding of the impact of support by considering its relative proximity to the trainee. Previous research (Birdi et al., 1997; Hawley & Barnard, 2005) has found that the support of peers is diminished in the presence of an unsupportive supervisor. The current results show that peer support can be especially beneficial in helping to overcome the effects of a negative climate. Thus, the effect of environmental variables appears to vary with proximity to the trainee with distal factors having less of an influence on training transfer than more proximal factors.

This study also shows that the concept of proximal and distal factors is useful for understanding transfer when applied to environmental variables. To date, the study of this concept has focused more on processes internal to the trainee, such as self-efficacy, expectancy, and goal orientation. It appears that the notion of proximity is also useful in explaining the impact of factors such as climate and peer support.

These results also have practical implications for managers and human resource professionals. The literature has long recommended that support be provided to trainees before, during, and after training to promote transfer and maximize the organization's return on its investment. The results of this study suggest that follow-up programs should be designed to address both the immediate and general organizational environments. Care must be taken to help ensure that peers and immediate supervisors help trainees put the skills to work. Coworkers could provide general encouragement or be involved in more structured activities such as the peer meetings employed in this study. Because the literature suggests that supervisors can undermine the positive support of peers, numerous mechanisms have been recommended to involve bosses in promoting transfer (e.g., Burke & Baldwin, 1999; Burke & Hutchins, 2008). But the overall climate needs to be considered as well. Although this study found that supportive peers can mitigate a negative climate, it is clear efforts should be made to ensure that more distal factors are also working in favor of transfer to boost training impact.

Although these results are significant, the circumstances of this study did not allow for the investigation of other important questions regarding the causal mechanisms behind transfer. Numerous studies have investigated the role of psychological processes such as pretraining motivation, self-efficacy, and valence in promoting transfer (e.g., Chiaburu & Marinova, 2005; Colquitt et al., 2000). Others have considered how these psychological processes interact with components of the workplace environment (e.g., Fecteau et al., 1995; Mathieu, Martineau, & Tannenbaum, 1993). This study lacked measures of trainee motivation and cannot address the role of trainee psychology in producing the observed results. In addition, many studies have investigated the role of supervisor support in training transfer (e.g., Lim & Morris, 2006). Unfortunately, it was not possible to assess this variable in the current situation.

This study also did not directly manipulate peer support and workplace climate or assign trainees to controlled conditions. Therefore, the observed

results are confounded with other factors. For example, attendance at peer meetings is confounded by other covariates such as motivation, perceived need, supervisor encouragement, and other job pressures. The study assumes that the positive effect of attending the peer meetings was due to the support received. However, the effect could have been due to a possible correlation with motivation to learn, greater perceived need, better boss support, more training opportunities, and/or a lack of competing job priorities. Also, the study relied on a global and subjective measure of workplace climate. Because climate was not directly manipulated and was based on the attitude of the division general manager toward the training, it is unknown what specifically was done across company divisions to support or restrict training transfer.

Another significant limitation is the nature of how transfer of training was measured. The accuracy of trainee ratings by their immediate supervisors could not be independently verified and contain unknown measurement error. Likewise, an independent assessment of skill learning was not available so it is assumed that the behavioral changes observed resulted from the knowledge gained in the training program. Also, the diverse situations faced by trainees and nonuniform application of skill dimensions resulted in missing data. Not all participants had the same duties or opportunities to apply each skill, making it difficult to apply more sophisticated analytical techniques.

Future research should take into consideration the causal influences of individual differences variables such as self-efficacy, motivation to learn, conscientiousness, and anxiety (e.g., Rowold, 2007). These variables may have a significant ability to explain why peer support was able to mitigate a negative climate in this situation. In addition, other interactive effects need to be taken into account (e.g., Elangovan & Karakowsky, 1999). It is likely that the factors discussed in this article are more likely to influence the transfer process jointly and interactively than in isolation. Finally, our understanding of the transfer process can benefit from improved analysis of peer support, its dimensions, and components. For example, conversations with trainees suggested that a significant amount of network development occurred as a by-product of the peer meetings. Some trainees used these contacts on the job as a source of encouragement and problem-solving assistance. Therefore, it would be productive to explore the nature and types of assistance peers provide that encourage transfer and prevent relapse.

## References

- Alvarez, K., Salas, E., & Garofano, C. M. (2004). An integrated model of training evaluation and effectiveness. *Human Resource Development Review*, 3, 385–416.
- Arthur, W., Bennett, W., Edens, P. S., & Bell, S. T. (2003). Effectiveness of training in organizations: A meta-analysis of design and evaluation features. *Journal of Applied Psychology*, 88, 234–245.



- Arthur, W., Bennett, W., Stanush, P. L., & McNelly, T. L. (1998). Factors that influence skill decay and retention: A quantitative review and analysis. *Human Performance*, 11, 57–101.
- Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, 41, 63–105.
- Bersin, J. (2006). Companies still struggle to tie training to business goals. *Training*, 43(10), 22–23.
- Birdi, K., Allan, C., & Warr, P. (1997). Correlates of perceived outcomes of four types of employee development activity. *Journal of Applied Psychology*, 82, 845–857.
- Brinkerhoff, R. O., & Montesino, M. U. (1995). Partnerships for training transfer: Lessons from a corporate study. *Human Resource Development Quarterly*, 6, 263–274.
- Broad, M. L., & Newstrom, J. (1992). *Transfer of training: Action-packed strategies to ensure payoff from training investments*. Reading, MA: Addison-Wesley.
- Brown, T. C. (2005). Effectiveness of distal and proximal goals as transfer-of-training interventions: A field experiment. *Human Resource Development Quarterly*, 16, 369–387.
- 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., & Baldwin, T. T. (1999). Workforce training transfer: A study of the effect of relapse prevention training and transfer. *Human Resource Management*, 38, 227–243.
- Burke, L. A., & Hutchins, H. M. (2007). Training transfer: An integrative literature review. *Human Resource Development Review*, 6, 263–296.
- Burke, L. A., & Hutchins, H. M. (2008). A study of best practices in training transfer and proposed model of transfer. *Human Resource Development Quarterly*, 19, 107–128.
- Burke, M. J., Sarpy, S. A., Smith-Crowe, K., Chan-Serafin, S., Salvador, R. O., & Islam, G. (2006). Relative effectiveness of worker safety and health training methods. *American Journal of Public Health*, 96, 315–324.
- Chen, G., & Klimoski, R. J. (2007). Training and development of human resources at work: Is the state of our science strong? *Human Resource Development Review*, 17, 180–190.
- 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., & Marinova, S. V. (2005). What predicts skill transfer? An exploratory study of goal orientation, training self-efficacy, and organizational supports. *International Journal of Training and Development*, 9, 110–123.
- Clarke, N. (2002). Job/work environment factors influencing training effectiveness within a human service agency: Some indicative support for Baldwin and Ford's transfer climate construct. *International Journal of Training and Development*, 6, 146–162.
- 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.
- Cromwell, S. E., & Kolb, J. A. (2004). An examination of work-environment support factors affecting transfer of supervisory skills training to the workplace. *Human Resource Development Quarterly*, 15, 449–471.
- Drucker, P. F. (1999, March/April). Managing oneself. *Harvard Business Review*, 77, 65–74.
- Drucker, P. F., Dyson, E., Handy, C., Saffo, P., & Senge, P. M. (1997, September/October). Looking ahead: Implications of the present. *Harvard Business Review*, 75, 3–10.
- Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology*, 75, 51–59.
- Elangovan, A. R., & Karakowsky, L. (1999). The role of trainee and environmental factors in transfer of training: An exploratory framework. *Leadership and Organization Development Journal*, 20, 268–275.

- Facteau, J. D., Dobbins, G. H., Russell, J. E. A., Ladd, R. T., & Kudisch, J. D. (1995). The influence of general perceptions of the training environment on pretraining motivation and perceived training transfer. *Journal of Management*, 21, 1–25.
- Ford, J. K., & Kozlowski, S. W. J. (Eds.). (1997). *Improving training effectiveness in work organizations*. Mahwah, NJ: Lawrence Erlbaum.
- Ford, J. K., Quinones, M. A., Sego, D. J., & Sorra, J. S. (1992). Factors affecting the opportunity to perform trained tasks on the job. *Personnel Psychology*, 45, 511–527.
- Ford, J. K., & Weissbein, D. A. (1997). Transfer of training: An updated review and analysis. *Performance Improvement Quarterly*, 10(2), 22–41.
- Foxon, M. (1997). The influence of motivation to transfer, action planning, and manager support on the transfer process. *Performance Improvement Quarterly*, 10(2), 42–63.
- Garavaglia, P. L. (1993). How to ensure transfer of training. *Training and Development*, 47(1), 63–68.
- Gephart, M. A., Marsick, V. J., Van Buren, M. E., & Spiro, M. S. (1996). Learning organizations come alive. *Training and Development*, 50(12), 34–45.
- Gilpin-Jackson, Y., & Bushe, G. R. (2007). Leadership development training transfer: A case study of post-training determinants. *Journal of Management Development*, 26, 980–1004.
- Hatala, J., & Fleming, P. R. (2007). Making transfer climate visible: Utilizing social network analysis to facilitate the transfer of training. *Human Resource Development Review*, 6, 33–63.
- Hawley, J. D., & Barnard, J. K. (2005). Work environment characteristics and implications for training transfer: A case study of the nuclear power industry. *Human Resource Development International*, 8, 65–80.
- Holton, E. F., III, Bates, R. A., & Ruona, W. E. A. (2000). Development of a generalized learning transfer system inventory. *Human Resource Development Quarterly*, 11, 333–360.
- Holton, E. F., III, Bates, R. A., Seyler, D. L., & Carvalho, M. B. (1997). Toward construct validation of a transfer climate instrument. *Human Resource Development Quarterly*, 8, 95–113.
- James, L. R., Choi, C. C., Ko, C. E., McNeil, P. K., Minton, M. K., Wright, M. A., & Kwang-il, K. (2008). Organizational and psychological climate: A review of theory and research. *European Journal of Work and Organizational Psychology*, 17, 5–32.
- Jellema, F., Visscher, A., & Scheerens, J. (2006). Measuring change in work behavior by multi-source feedback. *International Journal of Training and Development*, 10, 121–139.
- Kontoghiorghes, C. (2001). Factors affecting training effectiveness in the context of the introduction of new technology—A U.S. case study. *International Journal of Training and Development*, 5, 248–260.
- Kozlowski, S. W. J., & Salas, E. (1997). A multilevel organizational systems approach for the implementation and transfer of training. In J. K. Ford & S. W. J. Kozlowski (Eds.), *Improving training effectiveness in work organizations* (pp. 247–290). Mahwah, NJ: Lawrence Erlbaum.
- Leonard, B. (2009, January 29). Economic stimulus bill includes wide-ranging HR-related provisions. *HR News*.
- Lim, D. H., & Johnson, S. D. (2002). Trainee perceptions of factors that influence learning transfer. *International Journal of Training and Development*, 6, 36–48.
- Lim, D. H., & Morris, M. L. (2006). Influence of trainee characteristics, instructional satisfaction, and organizational climate on perceived learning and training transfer. *Human Resource Development Quarterly*, 17, 85–115.
- Mathieu, J. E., Martineau, J. W., & Tannenbaum, S. I. (1993). Individual and situational influences on the development of self-efficacy: Implications for training effectiveness. *Personnel Psychology*, 46, 125–147.
- Mathieu, J. E., Tannenbaum, S. I., & Salas, E. (1992). Influences of individual and situational characteristics on measures of training effectiveness. *Academy of Management Journal*, 35, 828–847.
- Montesino, M. U. (2002). Strategic alignment of training, transfer-enhancing behaviors, and training usage: A posttraining study. *Human Resource Development Quarterly*, 13, 89–108.

- Noe, R. A. (1986). Trainees' attributes and attitudes: Neglected influences of training effectiveness. *Academy of Management Review*, 11, 736–749.
- O'Leonard, K. (2008). *The 2008 corporate learning factbook: Benchmarks, facts, and analysis in U.S. corporate learning and development*. Oakland, CA: Bersin & Associates.
- Olsen, J. H., Jr. (1998). The evaluation and enhancement of training transfer. *International Journal of Training and Development*, 2, 61–75.
- Robinson, D. G., & Robinson, J. C. (1989). *Training for impact: How to link training to business needs and measure the results*. San Francisco: Jossey-Bass.
- Rossett, A. (1997). It was a great class, but. *Training and Development*, 51(7), 18–24.
- Rouiller, J. Z., & Goldstein, I. L. (1993). The relationship between organizational transfer climate and positive transfer of training. *Human Resource Development Quarterly*, 4, 377–390.
- 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.
- Salas, E., & Cannon-Bowers, J. A. (2001). The science of training: A decade of progress. *Annual Review of Psychology*, 52, 471–499.
- Senge, P. M. (1995). *The fifth discipline*. New York: Doubleday.
- 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.
- Smith-Jentsch, K. A., Salas, E., & Brannick, M. T. (2001). To transfer or not to transfer? Investigating the combined effects of trainee characteristics, team leader support, and team climate. *Journal of Applied Psychology*, 86, 279–292.
- Tannenbaum, S. I., & Yukl, G. (1992). Training and development in work organizations. *Annual Review of Psychology*, 43, 399–441.
- Tracey, J. B., Tannenbaum, S. I., & Kavanagh, M. J. (1995). Applying trained skills on the job: The importance of the work environment. *Journal of Applied Psychology*, 80, 239–252.
- Xiao, J. (1996). The relationship between organizational factors and the transfer of training in the electronics industry in Shenzhen, China. *Human Resource Development Quarterly*, 7, 55–73.
- Yammarill, S., & McLean, G. N. (2001). Theories supporting transfer of training. *Human Resource Development Quarterly*, 12, 195–208.