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Influencing Learning States to Enhance Trainee Motivation and Improve Training Transfer

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Abstract
Purpose This study examines a pretraining intervention to enhance transfer of training. The learning-state analog of locus of control was the target for intervention designed to impact motivation to learn which in turn would affect knowledge acquisition and the amount of posttraining practice.
Design/Methodology/Approach Data were collected from 91 participants who received interpersonal negotiation training and completed a negotiation transfer task approximately 2 days after training.
Findings Results supported our research model in that the pretraining intervention impacted individuals' internal, controllable attributions (i.e., belief that success is due to effort and strategy). These controllable attributions affected trainee's motivation to learn. Findings also showed that motivation to learn impacted the application of learning to a negotiation transfer task through its influence on the amount of posttraining practice and rehearsal activities engaged in by the trainee prior to the transfer task. The pretraining intervention also had an effect on transfer above and beyond that accounted for by motivation to learn and posttraining practice.
Implications This study demonstrates the benefits of using attributional intervention in the pretraining period to enhance transfer of training. This study also establishes the linkage from attributional states through motivation to learn to transfer of training.
Originality/Value The new pretraining intervention adds to the selection of methods the training designer can employ prior to the training to facilitate transfer. This study also highlights the role of posttraining rehearsal in enhancing transfer.

Keywords Motivation to learn · Transfer of training · Locus of control · Learning states · Pretraining intervention

Introduction

Changes in the workplace such as increases in technology and the increased influence and competition from international markets have led organizations to rely increasingly on their ability to train employees on an ongoing basis to maintain the necessary levels of knowledge, skill, and performance (Goldstein and Ford 2002). Indeed, with many organizations viewing training as a way to gain a competitive advantage (Cutcher-Gershenfeld and Ford 2005), it is important that trainees learn the necessary knowledge and skills and that this learning is successfully transferred to the job.

Traditionally, training research has focused on training design, individual differences, and the work environment to understand the factors that affect transfer of training

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(Baldwin and Ford 1988). Over the past 20 years, training researchers have increased efforts to investigate transfer interventions. The majority of the interventions targeted to facilitate transfer are embedded within the design of the training. For example, meta-analytic studies have shown that behavior modeling (Taylor et al. 2005) and error management training (Keith and Frese 2008) can enhance training transfer. Posttraining interventions such as goal-setting (e.g., Werner et al. 1994), relapse prevention/self-management (e.g., Wexley and Baldwin 1986), and verbal self-guidance (Brown and Morrissey 2004) have shown small impacts (Blume et al. 2010).

The pretraining period provides an important opportunity to address trainee characteristics prior to the delivery of the training content (Baldwin et al. 2009). Trainees come into a learning situation with various experiences, beliefs, assumptions about their ability as well as assumptions about the level of effort needed to acquire the skills to be trained (Baldwin and Magjuka 1997). In contrast to the number of studies on transfer interventions *during* and *after* training, we were only able to identify two pretraining transfer interventions that were directly linked to transfer: (a) training previews and (b) framing-of-training. In training previews, trainees receive information about the training program that is either realistic/balanced or optimistic/highly positive. The effects of training previews on training outcomes has been inconsistent: Hicks and Klimoski (1987) found that trainees in the realistic preview condition had higher training motivation than trainees in the optimistic condition, but the two groups did not differ on training transfer. In contrast, Karl and Ungsrithong (1992) showed that optimistic preview yielded higher training motivation and better transfer than a realistic preview.

Framing-of-training interventions manipulate the information trainees receive about the purpose of the training. For example, Quiñones (1995) created two types of frames. One frame stated that a pre-assessment indicated that the individual should be assigned to advanced training while individuals were told in another frame that they would be assigned to a remedial course. The framing-of-training intervention interacted with attributions regarding past performance to affect pretraining self-efficacy. The remedial framing intervention also resulted in higher performance on the learning task than the advanced framing intervention. Framing effects have also been found by Martocchio and his colleagues (Martocchio 1992; Webster and Martocchio 1993, 1995).

Considering the importance of pretraining context and the limited research on pretraining interventions, an effective pretraining transfer intervention is needed that can be applied to various types of training. The present article focuses on the linkage from motivation to learn to training transfer as the point of departure for the design of pretraining intervention. Based on a dynamic view of the trainee (Ford and Oswald 2003), we constructed a pretraining intervention targeted at enhancing a learning-state analog of locus of control that can lead to positive attribution states and evaluated the effect of the intervention in a dynamic negotiation training context.

Motivation to Learn

Motivation to learn has long been recognized as a critical precursor to training outcomes (e.g., Maier 1973; Noe 1986). Considerable research has confirmed that a trainee's motivation before training influences cognitive and skill-based learning outcomes as well as training transfer (Chiaburu and Marinova 2005; Facteau et al. 1995; Quiñones 1995; Tziner et al. 2007). Two recent meta-analytic studies have corroborated the importance of motivation in the training-transfer process. Colquitt et al. (2000) found that motivation to learn exerted a significant influence on the learning outcomes of declarative knowledge and skill acquisition (ρs = .27 and .16, respectively). Focusing on predictors of transfer, Blume et al. (2010) found that trainee motivation had a significant positive effect on transfer (ρ = .23, k = 24).

Locus of control, a generalized expectancy about the extent to which there is a contingency between an individual's behavior and subsequent outcomes (Rotter 1966), has been identified as a precursor to trainee motivation (Noe 1986). Individuals with an internal locus of control tend to attribute life events as a result of their own behaviors, whereas individual with an external locus of control tend to construe events as determined by power, luck, or fate (Strickland 1989). As individuals with an internal locus of control are more likely to believe that their effort will lead to better training outcomes than those with an external locus of control, they are more likely to be more motivated to learn (Noe 1986; Spector 1982). Meta-analytic research has supported the relationship between internal locus of control and motivation to learn (ρ = .46, k = 3; Colquitt et al. 2000).

Rather than viewing locus of control as only a relatively stable, trait-like variable (Rotter 1990), we propose to intervene to affect trainees' perceptions of control so as to affect attributional states within a specific training context. Next, we present the theoretical basis for our pretraining intervention and describe the process by which this type of intervention can influence transfer.

Designing a Pretraining Intervention to Influence the Dynamic Learner

The theoretical underpinning of the pretraining intervention is grounded in the notion that individuals respond in

dynamic ways to various situations beyond the influence of stable dispositional factors (Mischel 1969). Numerous research studies have demonstrated that individuals indeed actively respond to the immediate context (Brown and Moskowitz 1998; Diener and Larsen 1984; Mischel and Peake 1982; Mischel and Shoda 1995). From this perspective, researchers have focused on states or psychological conditions that are generally caused by or in response to external situations and that may affect subsequent motivation and behavior (Chaplin et al. 1988). In training research, particular emphasis has been placed on state analogs of trait variables that have been shown to influence learning and transfer (Ford and Oswald 2003), such as state anxiety (Calvo et al. 1990; Chen et al. 2000) and state goal orientation (Fisher 1998; Smith-Jentsch et al. 2000; Steele-Johnson et al. 2001). Training interventions (e.g., Bell and Kozlowski 2008) have also been designed to influence relevant learning states in order to impact learning (cf. Baldwin et al. 2000).

Similarly, we propose that trait locus of control has a proximal, contextualized state analog that can influence motivation to learn. Consistent with social learning theory (Rotter 1954; Rotter et al. 1972), this "state locus of control" localized within the training setting captures the extent to which individuals attribute training outcomes to their own behaviors as opposed to external influences outside of their control (Weiner et al. 1976; Triplet and Cohn 1984). The goal of our pretraining intervention, therefore, is to introduce to the trainee a localized contingency between his/her behavior and training outcomes.

To promote this contingency, the intervention focused on influencing the trainees' effort and strategy attributions. Research in social psychology has demonstrated that attribution of performance to effort (Diener and Dweck 1978; Licht and Dweck 1984; Onifade et al. 1997; Weiner et al. 1972) and strategies (Anderson 1983; Anderson and Jennings 1980) are associated with heightened task motivation and persistence. For example, Anderson (1983) found that participants who believed task outcomes were more a function of internal, variable causes such as effort and strategy had higher expectancies and a smaller decrease in expectancies following failure than those with stable (i.e., ability) attributions for performance.

As attributions are essentially cognitive judgments about causality, these attributions can be influenced by cues in the environment. In clinical settings, attribution retraining is used to change unproductive attribution patterns that encourage helplessness (i.e., attributing failure to stable, uncontrollable factors such as low ability) into constructive attributions that promote efficacy, effort, and persistence (i.e., attributing success to controllable, effort-related factors). One approach to attribution retraining is based on principles of persuasion in which the desired attributions for how to handle failure are emphasized (e.g., Anderson 1983; Schunk 1983). Another method is modeling (e.g., Zoeller et al. 1983) where videotapes of people ("experts" or people similar to the participants) attribute behavior to controllable factors and explain that success can be gained through persistence, effort, or strategy change. Both persuasion and modeling can be incorporated in a pretraining intervention to help heighten trainees' perceptions of internal control. We describe the hypothesized linkages between motivation to learn and transfer and then present our research model.

Impact of Motivation to Learn on Training Transfer

Trainees who are more motivated to learn are more likely to exhibit better transfer (Blume et al. 2010; Colquitt et al. 2000). Two separate pathways are proposed to mediate the relationship between motivation to learn and transfer. First, motivation to learn is expected to impact the cognitive learning outcome of declarative knowledge. This elevated level of knowledge can then lead to a higher level of training transfer (Kraiger et al. 1993).

Second, training transfer is a function of the extent to which individuals are motivated to take advantage of the opportunities to apply that learning to the transfer context (Ford et al. 1992; Quiñones et al. 1996). Applying skills after training through mental rehearsal or actual practice should facilitate the generalization of acquired knowledge and skills. Ford et al. (1992) found that individuals who were more motivated to learn in training were more likely to seek out practice opportunities once on the job. Therefore, we hypothesize that trainees who are motivated to learn are more likely to practice skills after training irrespective of their level of learning from the training program. Actual practice of behaviors as well as mental rehearsal after training should also lead to higher levels of training transfer.

Research Model

We sought to develop an intervention strategy that could directly impact the specific control or attributional frame an individual takes in relation to the content of what is about to be trained. These perceptions should have an important influence on his/her motivation to learn. This level of motivation to learn should then impact practice activities as well as how well the trainee applies what he/she has learned to the job in the transfer setting.

The current research framework (Fig. 1) highlights two key sets of linkages that are examined in this study: (a) the link from a pretraining intervention to a learning state that affects the trainee's motivation to learn and (b) the link from the trainee's motivation to learn to knowledge

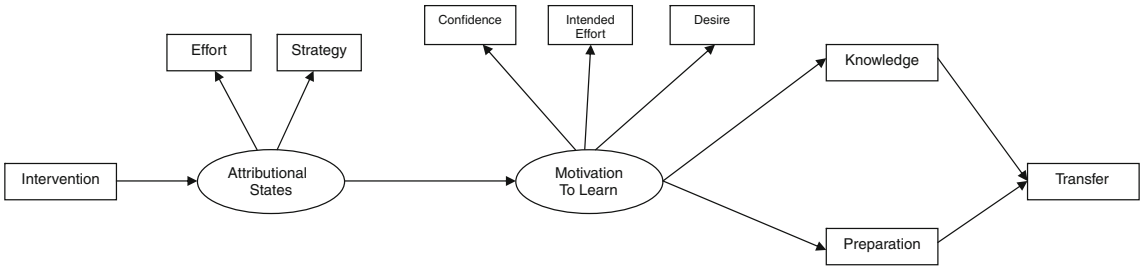

Fig. 1 Proposed model

acquisition, posttraining practice and rehearsal activities, and ultimately to transfer outcomes. We hypothesize that our intervention will impact attributional states and the motivation to learn. Motivation to learn will impact transfer through two pathways of enhanced knowledge acquisition and increased posttraining practice and rehearsal activities.

Method

Participants

Participants in this study were 119 undergraduate students enrolled in introductory psychology courses at a large Midwestern university in the United States. Students received partial course credit for their participation. The majority of the participants were female ($N = 78$) with the typical age between 19 and 22 years old. Only one participant stated that he/she had had any type of negotiation training experience.

Training Program

The training program was based on the work of Gist and colleagues on building assertiveness skills and negotiation strategies (Gist et al. 1990, 1991), with the focus taken off salary negotiation per se and applied to any one-on-one negotiation situation. In particular, 10 strategies of principled bargaining and assertiveness were addressed in the program. The training consisted of a brief introduction to negotiation, ending with a focus on principled "win–win" bargaining. Next, five active strategies were presented: (a) attitudinal bargaining which involves confidence and contained enthusiasm; (b) appeals to interests which involves disentangling positions and interests and determining what is important to the opponent; (c) contrast effects which involves furnishing objective standards for comparison; (d) proposing options for mutual gain; and (e) compensatory offers, or asking for things outside of the main area of concern which could also fulfill interests.

The training then covered reactive strategies that involved ways to deal with how an opponent is reacting during the encounter. The five strategies covered were (a) maintaining silence to indicate an unacceptable offer or incomplete answer; (b) placing additional issues on the table to avoid a quick termination to negotiation; (c) a broken record approach or repeating issues when the person is ignoring what you are saying; (d) a tactful direct counter to tricks or aggressive posturing; and (e) fogging or "negotiation jujitsu" to an attack on you or your position which involves acknowledging the attack, turning it into a discussion about the underlying issue.

The training program included information dissemination, discussion, and modeling. Some exercises were imbedded to provide practice or to reinforce important points. The entire training program lasted 2.5 h, which was the same for both the experimental and the control conditions.

Pretraining Intervention

The pretraining intervention was designed to impact attribution states that were expected to affect motivation to learn. The intervention was intended to encourage strategy and effort attributions for success in becoming a good negotiator. As discussed above, these two types of attributions were considered adaptive in a learning context as they are controllable and internal (e.g., Anderson 1983; Anderson and Jennings 1980; Onifade et al. 1997).

Participants viewed a videotape of male and female models of a similar age to the participants who suggested that they had some doubts regarding whether they could get better as a negotiator, and whether they had the necessary personality or ability. However, the models suggested that with effort, and by concentrating on learning and using the strategies, they were able to improve. Specifically, the cues suggested that the development of negotiation skills was achievable and within the trainees' control. The models suggested that effort and strategy were critical and that improvement was possible through persistent effort and correct strategy use. They also suggested that when effort and strategy were present, trainees did better. After the

presentation, the instructor reiterated these key points from the video and encouraged the experimental group participants to not be afraid to make mistakes, not be afraid to ask questions, and to focus on improving and learning. They were reminded that everyone present was a novice, so they should focus on learning as much as they could instead of worrying about looking good in front of their peers or trying to show how much they knew. These additional instructions, consistent with some of the instructions given in error management and mastery-oriented framing studies (Bell and Kozlowski 2008; Heimbeck et al. 2003; Keith and Frese 2005), were given to reinforce the notion that effort and strategy exploration were the key to success rather than the level of ability the person had coming into the training program. The entire pretraining intervention, including the videotape messages and the additional instruction, lasted about 25 min.

Measures

Attribution States

Attribution states were measured with eight-Likert-type items using a five-point scale. Participants were asked the extent to which they agreed with statements that suggested two causes for performance: strategies used and effort. Effort and strategies reflect internal controllable, unstable causes (Weiner 1985). A sample item was "Anyone can become a successful negotiator if they invest the effort."

Motivation to Learn

Motivation to learn was measured with 16 items using a five-point Likert-type scale. The items adapted from Noe (1985), Brown (2001), and Ford et al. (1998) tapped issues of desire, intention, and confidence to succeed in the training program. Sample items were "I am motivated to learn the skills emphasized in the training program" and "I am going to put forth a lot of effort if needed to learn the material."

Posttraining Practice Activities

At the end of the training session, all participants were provided with a list of interim activities that would help them practice and rehearse for the final negotiation that would occur in 2 days. Just prior to the negotiation simulation (i.e., the transfer task described below), they completed a 16-item assessment indicating the extent to which they practiced or rehearsed any of the suggested activities. Engaging in optional preparatory activities reflected the motivation to apply what they have learned. Example items included "Thought specifically about how to achieve your goals" and "Reviewed training materials and notes".

Strategy Knowledge

The learning measure involved being able to identify the negotiation strategies. An audiotape presented negotiators engaged in 10 strategy behaviors that were taught in the training. The participants followed along with a script. As they heard a strategy used, they wrote the strategy name next to where it appeared on the script.

Posttraining Self-Efficacy

To assess the alternative explanation that the pretraining intervention affected transfer through heightened trainee self-efficacy, we assessed posttraining self-efficacy to recognize and use each of the 10 strategies covered in the training session. Trainees rated the degree to which they felt capable of recognizing/using each strategy, using a five-point Likert scale.

Transfer Performance

Transfer performance was measured using the procedure developed by Gist et al. (1990). A salary negotiation scenario was given to the participants at the end of the training program to allow them time to prepare. The participants returned in 2 days to engage in a one-on-one negotiation to obtain the best offer they could. This task involved generalization to a more complex, free-form negotiation simulation than they had practiced in training. Thus, the transfer task design included elements that aligned with both the generalization and the maintenance dimensions of transfer defined by Blume et al. (2010).

The scoring of the transfer task was standardized by units of $250 of increase in salary offer that are given by the negotiator to the participant for using different strategies or using one strategy up to three times. Specifically, participants started with an initial offer of $37,000 and received $1,000, $500, and $250 increase in salary for using a strategy the first, second, and third time. There were also scripted in at specific salary levels "attacks" by the negotiator to provide some sense of interpersonal risk, and to allow participants to use the reactive negotiation strategies. Participants were not told the scoring scheme (see Gist et al. 1990 for the full scoring scheme.)

Procedure

Participants signed up for various times for the training workshop, with each session attended by four to six

individuals. They arrived and received a brief explanation of the study, what it involved and what they could expect, and then completed the informed consent form. Participants were randomly assigned to two groups: (a) the experimental group that received the pretraining intervention described above and (b) the control group that did not receive any intervention. Next, all participants took the pretraining attribution measures followed by the pretraining motivation measures. Once the measures were collected, the negotiation and assertiveness skills training program commenced (Gist et al. 1990, 1991; Stevens and Gist 1997). A single trainer conducted all training sessions.

At the end of training, participants completed the posttraining self-efficacy measure and the learning assessment on strategy recognition. Before leaving, participants were asked to sign up for a negotiation simulation time two days after the training and received the scenario and practice activities sheet. Scheduling difficulties on the part of either the participants or the confederate negotiators caused some variation, but rarely more than a few hours from the 48-h goal.

Upon returning 2 days later for the simulation, the participants faced a negotiator unfamiliar to them (i.e., not the trainer or a participant in the training). The negotiator had the participant complete the pre-negotiation questionnaire asking about preparation activities. The negotiator then recorded the time the session began, and started at the standard salary following a basic script. Three negotiator confederates were trained to negotiate the same way each time to the extent possible, identify strategies as they are used during the negotiation, record them, and change the offer accordingly. At the standard salary levels, the negotiators responded with the same nonverbal and verbally aggressive behaviors to allow participants to use their direct counter and jujitsu strategies. The simulations lasted between 5 and 25 min depending on the participant. The negotiation concluded when the participant agreed to an offer or when the maximum amount was reached (which did not occur). Following the negotiation simulation, the participants completed a post-simulation questionnaire that included an evaluation of the negotiator's behavior. The participants were then debriefed, thanked, and excused with credit for participation.

We excluded data from six participants (four from the experimental group and two from the control group) who either opted out of the transfer simulation or chose not to respond to relevant measures. Examination of the scoring of the transfer simulation revealed that the final salary for 22 participants (10 from the experimental group and 12 from the control group) deviated from the standard scoring algorithm, with their actual salary negotiated being $1,375 higher on average than what they should have received. The salary discrepancy ranged from −$1,000 to $10,000, with a standard deviation of $2,111. Exploratory analysis showed that the rate of the error did not differ across negotiators ($\chi^2 = 2.20$, df = 2, $p = .33$), across conditions ($\chi^2 = .02$, df = 1, $p = .88$) or across participant gender ($\chi^2 = .37$, df = 1, $p = .54$); the occurrence of the discrepancy was not associated with the sequence of participation or the time engaged in negotiation (rs = .11 and .15, respectively, ps > .12, $N = 113$). Moreover, no systematic difference was found on any of the study variables between the participants who received correct scoring and those who did not: independent samples t tests revealed no significant differences on attribution scales, pretraining motivation scales, knowledge, and prepare activities (ps > .30, ds < .26). Given that the negotiation ended when the participant agreed to an offer made by the negotiator, having received a different scoring algorithm may have affected how long the participants persisted in the negotiation. Thus, we decided not to make post hoc scoring correction and proceeded with the analysis on data from the 91 participants who received correct scoring in the final negotiation task. Of the 91 participants, 43 were in the experimental group; 66% were female; more than 90% were less than 23 years old; 47% were in the experimental condition and 53% were in the control condition. Out of a total of 10 strategies, the average number of *different* strategies used was 3.65 (SD = 1.66), and the average number of total strategies used was 4.76 (SD = 2.63). The participants' final salaries from the negotiation ranged from $37,000 to $47,500 ($M$ = $41,299, SD = $2,148).

Results

As a first step in analyzing the data, the factor structure of the attribution and motivation to learn measures were examined via confirmatory factor analysis in AMOS 17.0 (Arbuckle 2008). Two nested models were estimated (a) an uncorrelated five factor baseline model consisting of two attributional scales (effort and strategy) and three motivation to learn scales (confidence, intended effort, and desire) and (b) an a priori second-order two-factor model consisting of the same five first-order factors and two second-order factors of internal attributions and motivation to learn. Model fit statistics are presented in Table 1. The uncorrelated five factor model represented a relatively poor fit to the data: $\chi^2(252) = 598.02$; CFI = .76; RMSEA = .11; SRMR = .27, while the second-order model provided a significantly better fit: $\chi^2(246) = 394.27$; $\Delta\chi^2(6) = 203.75$, $p < .001$. In addition, the fit indices of the second-order model (CFI = .90; RMSEA = .07; SRMR = .07) met the rules of thumb for reasonable fit in

Table 1 Fit statistics for the measurement and structural models

Model	χ^2	df	p	RMSEA	90% CI						
					RMSEA	SRMR	TLI	CFI	IFI	AIC	BIC
Measurement models											
Five uncorrelated factors	598.02	252	<.001	.11	.10, .12	.27	.74	.76	.77	694.02	824.08
A priori second-order	394.27	246	<.001	.07	.06, .09	.07	.89	.90	.90	502.27	648.59
Two correlated factors	622.10	252	<.001	.12	.10, .13	.14	.72	.75	.75	718.10	848.16
Structural model[a]											
Proposed model	24.59	25	.49	.00	.00, .08	.08	1.00	1.00	1.00	64.59	114.81
Revised model	20.15	24	.69	.00	.00, .07	.08	1.03	1.00	1.02	62.15	114.88

Note. 90% CI RMSEA = 90% confidence interval for RMSEA

[a] Scale scores were computed for first order factors and used as indicators for second-order factors in the structural model

the structural equation modeling literature[1] (e.g., Browne and Cudeck 1993; Meyers et al. 2006). Further, all factor loadings were significant, with average first-order factor loadings of .73 (SD = .13) and average second-order factor loadings of .83 (SD = .11).

We further compared the a priori model with a more parsimonious alternative model containing two correlated factors: (a) a single factor for all attribution items and (b) another single factor for all motivation items. The alternative model failed to not provide a reasonable fit to the data: $\chi^2(252) = 622.10$; CFI = .75; RMSEA = .12; SRMR = .14. As the alternative model and the a priori model were nonhierarchical, model AIC and BIC were also used to inform the selection of competing models (Kline 2005). The alternative model had higher values of AIC and BIC than the a priori model, suggesting worse fit. Taken together, the confirmatory factor analysis supported the hypothesized measurement model where internal attributions and motivation to learn represent two distinct higher order constructs.

Table 2 shows scale descriptive statistics, reliability, and intercorrelations. Independent samples t tests were conducted to assess the effects of the pretraining intervention on attributional states and on transfer. As expected, the pretraining intervention led to significantly higher levels of effort attribution ($t(89) = 2.71$, $p < .01$, $d = .55$) and strategy attribution ($t(89) = 2.37$, $p = .02$, $d = .49$). Further, there was a significant difference in transfer task performance between those participants who received the pretraining intervention and those who did not, $t(89) = 2.31$, $p = .02$, $d = .47$, which is a medium effect size. Therefore, the results showed that the pretraining intervention resulted in higher negotiated salaries as expected. In contrast, the effect of pretraining intervention on self-efficacy was not significant, $t(89) = 1.32$, $p = .19$, $d = .28$. Coupled with a nonsignificant correlation between self-efficacy and transfer performance ($r = .12$, $p = .28$), the results suggested that pretraining intervention did not affect transfer through trainees' self-efficacy.[2]

In light of the current sample size, we adopted the partial aggregation structural equation modeling approach described by Bagozzi and Edwards (1998). Scale scores were computed for each first-order factor in accordance with the confirmatory factor analysis above, rather than treating each individual item as indicator of the first-order factors. The scales of effort attributions and strategy attributions were then used as indicators of the latent internal attributions factor, whereas the scales of confidence, desire, and intended effort serve as indicators of the latent motivation to learn factor.

The structural model (Fig. 2) provides a test of the hypothesized model, which proposes that the effects of the pretraining attribution intervention on motivation to learn are mediated by the internal, controllable attributions. The model provides a good fit to the data (see Table 1), $\chi^2(25) = 24.59$, $p = .49$; RMSEA < .001; CFI = 1.00[3]; SRMR = .08. The standardized coefficients indicate that the pretraining intervention had a moderate effect on controllable attributions, accounting for 14% of variance in controllable attributions, which then positively impacted

[1] Note that CFI and TLI generally have a downward bias as the number of variables in the model gets larger (Ding et al. 1995; Kenny and McCoach 2003). Thus, the observed CFI of .90 and TLI of .89 may be a function of both slight misspecification and the relatively large number of variables in the model.

[2] It is possible that a ceiling effect on self-efficacy ($M = 4.02$, SD = 0.55 on a five-point scale) may have attenuated self-efficacy's mediating effect. However, the other mediators showed similar distributions (in terms of the means and SD) as self-efficacy, and yet they did function as mediators, which seems to give more credence to the argument that self-efficacy did not mediate the intervention's effects.

[3] The CFI of 1.00 merely reflects $\chi^2 <$ df in the structural model; it does not indicate a perfectly fitting model (Kline, 2005, p. 140). TLI and IFI values of 1.00 do not indicate perfect fit either, as they are not normed between 0 and 1 (Bentler and Bonett 1980; Bollen 1989). While the model fit was quite high, the observed fit should be interpreted in light of the relative simplicity of the model.

Table 2 Descriptive statistics and intercorrelations for study variables

	1	2	3	4	5	6	7	8	9	10
1. Intervention	–									
2. Effort attributions	**.28**	.82								
3. Strategy attributions	**.24**	**.55**	.78							
4. Motivation—confidence	.14	.18	.10	.77						
5. Motivation—desire	**.27**	.16	.18	**.59**	.87					
6. Motivation—intended effort	.19	.18	.16	**.61**	**.82**	.92				
7. Self-efficacy	.14	.15	.06	**.41**	**.38**	**.29**	.90			
8. Strategy knowledge	−.13	−.10	−.12	.03	−.02	.07	.12	–		
9. Practice activities	.19	.05	.12	**.34**	**.36**	**.40**	**.28**	.19	–	
10. Salary negotiated (transfer)	**.24**	.13	.16	**.21**	.18	.15	.12	.14	**.26**	–
M	.47	3.87	3.94	3.91	3.79	3.74	4.02	6.85	6.67	41299.45
SD	.50	.62	.55	.41	.71	.65	.55	1.91	3.87	2148.39

Note. $N = 91$. Means and standard deviations for variables 1 through 8 as well as their intercorrelations were substantially similar based on all data available (N ranged from 114 to 119). Correlations with $p < .05$ are listed in bold. Cronbach's αs are presented on the diagonal

Intervention: 0 = control group ($N = 48$); 1 = experimental group ($N = 43$)

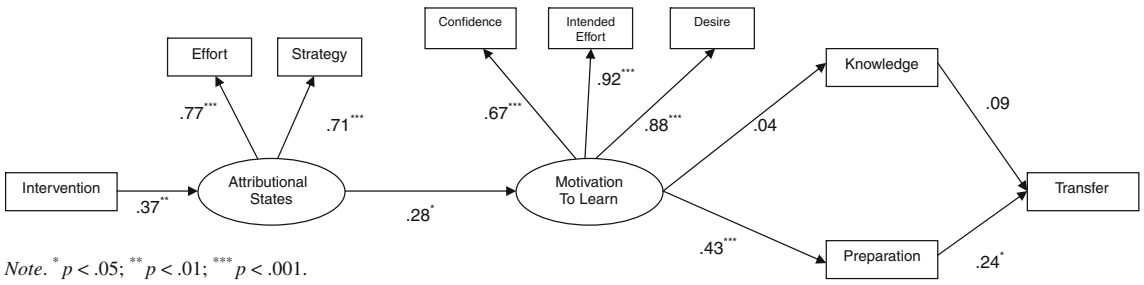

Fig. 2 Proposed structural model with standardized estimates. *Note*. *$p < .05$; **$p < .01$; ***$p < .001$

motivation to learn. The two hypothesized paths from motivation to learn to training transfer are worth noting: whereas strategy knowledge did not mediate the effect of motivation to learn on transfer, posttraining practice activities did. Trainees who had higher motivation to learn reported that they engaged in more preparation activities, which then resulted in higher final salary in the transfer negotiation task.

The proposed structural model focused on the effect of the pretraining intervention mediated by the intervening variables of attributional states and motivation to learn. Consistent with motivational theories (e.g., Naylor et al. 1980; Kanfer and Ackerman 1989), Colquitt et al. (2000) showed that motivation to learn partially rather than fully mediated the effects of distal antecedents on transfer. Thus, we assessed the direct effect of the pretraining intervention on transfer by adding a path from pretraining intervention to transfer in the revised model (Fig. 3). The revised model provided significant better fit to the data, $\chi^2(25) = 20.15$, $p = .69$; RMSEA < .001; CFI = 1.00; SRMR = .08; $\Delta\chi^2(1) = 4.44$, $p < .04$. Aside from the hypothesized effects mediated by attribution states and motivation to learn, the pretraining intervention had a significant direct effect on transfer negotiation task. The revised model explained 11% of variance in transfer.

Discussion

The training literature has identified a number of work environment, training design, and individual difference factors that can impact motivation to learn and training effectiveness. This study builds upon this literature by examining the impact of a pretraining intervention to enhance motivation to learn and ultimately increase transfer of training. In particular, we developed an intervention targeted to influencing the state analog of trait locus of control. Overall, the analyses supported the

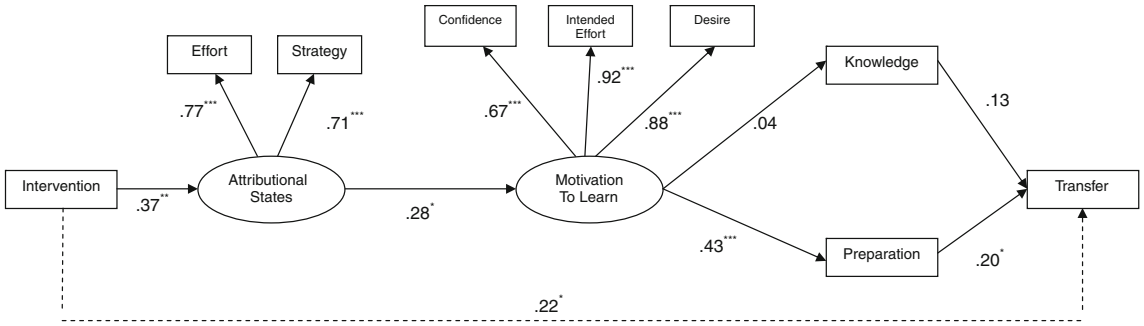

Fig. 3 Revised structural model with standardized estimates. *Note*. *$p < .05$; **$p < .01$; ***$p < .001$

hypothesized model. The results demonstrated that the pretraining intervention positively impacted motivation to learn by engendering more internal, controllable attribution perceptions. In turn, motivation to learn was positively related to transfer performance, as mediated by the extent to which trainees engaged in various practice activities in the time between initial training and the final salary negotiation.

This study contributes to the literature by providing a viable pretraining approach to facilitate transfer. The pretraining intervention was based on research in attributional retraining (Fosterling 1985) and is consistent with the principles of attribution training. By presenting training in ways consistent with an internal, controllable attributional frame, the pretraining intervention led to significant higher motivation to master the training materials. More importantly, the intervention resulted in a significantly higher transfer outcome. Taken together, the pretraining intervention adds to the researcher's repertoire of tools for addressing two important yet understudied questions in the training literature: (a) how to enhance a trainee's motivation to learn (Brown and Ford 2002) and (b) how to effectively facilitate transfer through a transfer-of-training intervention (Blume et al. 2010). In addition, the present study highlights the pretraining window as a valuable time for affecting subsequent learning and transfer while echoing previous research on the importance of framing a training experience prior to delivery of training content (e.g., Martocchio 1992; Quiñones 1995).

Another contribution of this study is the explication of the extended paths that link pretraining effort and strategy attributions to motivation to learn, which, once imparted, positively impacted important posttraining practice processes and performance on the transfer task. Two specific aspects of the paths are worth noting. First, in accordance with the emphasis on the role of relevant psychological states such as state goal orientation and state anxiety (e.g., Bell and Kozlowski 2008) in influencing training outcomes, the present results underscore the benefits in including attribution states in training research. The identification of the relevance of attribution states can facilitate future investigation of the interplay between attribution states and other predictors of learning and transfer. Second, the study sheds light on the process by which motivation to learn can translate into transfer: motivation to learn affected how often trainees practiced their skills posttraining, which in turn impacted training transfer performance. As the knowledge measure was carefully constructed to reflect what was imparted in the training, the failure to find a significant mediating effect of posttraining knowledge cannot be fully attributed to the nature of the measure. There was no evidence of a ceiling or floor effect on the knowledge outcome measure, which ranged from 1 to 10 and was only slightly skewed (skewness $= -.53$). A more plausible explanation is that the short duration of training (2.5 h) coupled with standardized training delivery may have limited the effect of the affective construct of motivation to learn on the cognitive outcome of knowledge acquisition. Indeed, a recent meta-analysis by Bauer et al. (2010) found that the average uncorrected correlation between motivation to learn and declarative knowledge outcome was .13, and the corrected population parameter estimate was .19 with the 95% credibility interval ranging from $-.12$ to .48 ($k = 35$, $N = 4{,}305$). For comparison purpose, we conducted a simple structural equation modeling analysis with the latent factor of motivation to learn predicting the declarative knowledge outcome, and found a standardized coefficient of .08. Therefore, the weak correlation between motivation to learn and declarative knowledge outcome could be the result of all of the following factors: (a) sampling error, (b) measurement error, and (c) weak population parameter.

On the other hand, the linkage from motivation to learn to practice activities to transfer is consistent with the conceptualization of positive transfer maintenance curve by Baldwin and Ford (1988, p. 97). Indeed, recent studies

suggest that the effects of motivation to learn can be manifested in the extent to which trainees devote time to engage in developmental activities over a long period of time (Brown 2005; Major et al. 2006). The present findings further accentuate the need to understand transfer of training vis-à-vis factors that may facilitate or constrain the trainee's posttraining developmental activities, such as opportunity to perform (e.g., Ford et al. 1992; Quiñones et al. 1996) and the context in which transfer occurs.

Limitations and Directions for Future Research

The generalizability of the findings is limited by the study design. First, by using undergraduate population in a laboratory study, we estimated the effect of the pretraining intervention on transfer but could not examine factors such as the level of support from the workplace, the overall transfer climate (Blume et al. 2010), and trainees' utility perceptions (Bell and Ford 2007). Moreover, the overall lack of negotiation experience in the current sample limits generalizability as in work settings individuals would have different levels of negotiation skills. Second, although the design of the negotiation task has been operationalized to measure transfer in several studies (e.g., Gist et al. 1990, 1991), the task only assessed transfer in a limited way. Specifically, the negotiation task was assessed with only short-temporal separation from the training (2 days), representing what Barnett and Ceci (2002) defined as near transfer. Further, the transfer task only speaks to the extent to which trainees *can* transfer, instead of measuring whether trainees *do* transfer. Third, the nature of the skills trained in the study may limit its generalizability to other types of skills. Unlike closed skills training where trainees learn to replicate certain modeled behaviors, the training used in this study focused on open skills, imparting general principles of negotiation and allowing the trainees to develop individual ways to apply the principles (see Yelon and Ford 1999, for a discussion of open vs. closed skills training). Thus, caution should be taken before generalizing the findings to closed skills training. Nevertheless, the current study provides a logical first step that determines whether it is *possible* to manipulate critical learning states through the pretraining intervention to achieve better training transfer. Research can now begin to move to generalize these findings to trainees in organizations to evaluate the efficacy of the intervention in enhancing actual transfer to the workplace.

The success of the pretraining intervention highlights the potential benefits in adopting a situated approach to understanding training motivation (see Turner and Patrick 2008) and identifying key state analogs of known trait variables. Based on a dynamic view of the learner (Ford and Oswald 2003), the pretraining intervention targeted the state analog of trait locus of control, and exerted influence on the state construct directly. Training researchers can begin to identify other individual differences that have state analogs that can be targeted to improve training motivation. This study has focused on locus of control and its state analog of attributions. Certainly, there are other traits that impact training, such as achievement motivation and conscientiousness. The understanding of how contextual factors influence the expression of personality traits in personality states (e.g., Fleeson 2001, 2007; Huang and Ryan in press) may facilitate the effort to identify and influence other state variables in training. Recent development on positive psychology and attempts to enhance positive psychological capital (e.g., Luthans et al. 2008; Turner et al. 2002) also points to a potential new area for training interventions.

The direct effect of the pretraining intervention on transfer observed in this study may also serve as a focus for future investigations. It is possible that, in addition to affecting trainees' attribution states, the pretraining intervention influenced other relevant variables, such as state anxiety (e.g., Warr and Bunce 1995), positive/negative affect (e.g., Machin and Fogarty 2003), and motivation to transfer (e.g., Axtell and Maitlis 1997) that ultimately contributed to better transfer performance. It is worth noting that in our study participants might have perceived a mismatch between a more mastery goal frame in the training phase and the performance frame (perform well on the salary negotiation) in the transfer phase.[4] For future research, posttraining interventions focused on transitioning individuals into a performance frame might help boost the pretraining intervention effect found in this study.

Finally, recent research has highlighted the potential for the interactive effects of interventions and individual differences. For example, Gully et al. (2002) found that the effectiveness of an error-training program was dependent on the cognitive ability and trait-like dispositional traits (conscientiousness, openness to experience). Similarly, Schmidt and Ford (2003) found that a training intervention interacted with the goal orientation of the learner to affect self-regulatory learning activities and learning outcomes. This type of research holds promise for better understanding various "attribute–treatment" interactions (Ford and Oswald 2003).

[4] The difficulty to differentiate state mastery goal orientation from motivation to learn at both the conceptual and measurement levels precluded us from examining state goal orientation. Also note that high correlations between these two variables have been reported in the literature (e.g., Colquitt and Simmering 1998, $r = 0.47$; Klein et al. 2006, $r = 0.43$).

Implications for Practice

Research on training motivation has taken a relatively static view of the learner (Ford and Oswald 2003). Our research suggests that one can also view trainees in the training context as more malleable, flexible, and dynamic. The research on pretraining interventions contends that trainers do not merely have to select the properly motivated trainee, but can attempt to help create the properly motivated trainee. This research provides evidence that a targeted intervention is able to induce attributional patterns that are beneficial for fostering stronger motivation to learn. Prior to the delivery of training content, organizations or trainers may utilize the pretraining window to affect trainee states by focusing attention to the achievability of the knowledge and skills through increasing effort and selecting appropriate strategies. Although trainers likely do some sort of pretraining information distribution by common sense as "selling the training," care should be given to provide the specific attributional elements that were found to drive motivation to learn and subsequent transfer.

As applied psychologists, one of our primary functions is to create theory and conduct research on individuals at work that can benefit both individuals and the organizations that employ them. The model presented here represents an initial attempt to create a theory of learning states that impact training motivation that will hopefully help both organizational trainers and trainees. As more complex and complete theories are constructed and tested, we will undoubtedly develop the capacity to help motivate individuals to learn and perform better by creating efficient interventions to target the most critical learning states.

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