

FAST TRACK REPORT

The effect of implementation intentions on transfer of training

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The training industry has evolved in both scope and the amount of money invested in it (Blume, Ford, Baldwin, & Huang, 2010). However, sending employees to a training program does not guarantee they will apply what they learned in their actual work (e.g., Tannenbaum, 2002). This undermines the extent to which training investments generate returns in the form of transfer of training—the degree to which trainees effectively apply the knowledge, skills, and attitudes gained in training context to the job (Baldwin & Ford, 1988). Two experiments were conducted in an attempt to explore the possible contribution of implementation intentions to transfer of training, by prompting trainees to use the learned skills on the job.

TRANSFER OF TRAINING

Transfer of training in the work setting occurs when employees apply on the job what they have learned during training (Yelon & Ford, 1999). Organizations continue to question the yield of training expenditures and the extent to which employees perform differently once back on the job (Blume et al., 2010). In organizational contexts, learning is rarely enough to render any training effective. Rather, it is positive transfer of training—the extent to which learning is generalized to the job context and maintained over a period of time on the job (Baldwin & Ford, 1988)—which promotes

Abstract

Two experiments investigated the effect of forming implementation intentions on transfer of training in two training programs. In the first experiment ($N = 37$), trainees who formed implementation intentions implemented active listening skills sooner, and to a greater degree, than those in the control group. In the second experiment ($n = 28$), conducted in the field, trainees who formed implementation intentions received a higher performance score for implementing the trained behavior compared with those in the control condition. Results from both experiments provide empirical evidence suggesting that forming implementation intentions at the end of a training program increases the likelihood of using the newly acquired skills.

training effectiveness. Managers often express concerns regarding the return they may expect from investing in training, as much of the training conducted in organizations fails to transfer to the work setting (e.g., Baldwin & Ford, 1988; Blume et al., 2010). We strive to contribute to the body of research that explored factors that can affect transfer and enhance the likelihood that acquired knowledge and skills will be applied on the job.

Baldwin and Ford's (1988) theoretical framework of training transfer distinguishes between training inputs (trainee characteristics, training design, and work environment), training outputs (acquisition of knowledge and skills during training), and conditions of transfer (generalization of knowledge and skills acquired in training to the job and the maintenance of that learning over time on the job). Accordingly, we measured retention of knowledge and skill as an output variable. Tews and Tracy (2008) argued that training in self-management is one of two post-training supplements (the other being goal setting) that motivates transfer and equips individuals with skills to overcome obstacles to the transfer of training. Consequently, we explored the effect of forming implementation intentions as a post-training supplement that encourages self-management in the context of organizational training. Relying on previous studies that found implementation intentions affected engagement in learning (Sheeran & Silverman, 2003; Sheeran, Webb, & Gollwitzer, 2005; Webb, Christian,

& Armitage, 2007) and in particular a beneficial effect on actual use of learned material (Varley, Webb, & Sheeran, 2011), we hypothesized that forming implementation intentions has a positive effect on retention of knowledge as manifested by trainees' post-training behavior. Specifically, we examined whether forming implementation intentions facilitates transfer of what is learned in training to on-the-job behavior. The degree to which trainees applied what was learned was measured in terms of both the quantity of post-training behavior, which is the number of occurrences of application, and the quality of application, using a performance score that represents consistency of post-training behavior with the training content. We expected that participants who form implementation intentions at the end of their training will implement trained behavior sooner and to a greater degree than participants who do not form implementation intentions.

IMPLEMENTATION INTENTIONS

In complex tasks, people need to decide when, where, and in what way they will pursue their goal. These plans are termed *implementation intentions*—a strategic process aimed at automating behavior in the service of goal pursuit (Gollwitzer & Schaal, 1998). Typically, implementation intentions take the structure of 'When situation X arises, I will perform response Y!' (Gollwitzer, 1999, p. 494). Forming implementation intentions commits a person to the performance of goal-directed behavior once the critical situation is actually encountered. This is because forming 'if-then' plans facilitates detecting, attending to, and recalling cues that promote the initiation of goal-directed action without the necessity of awareness (Brandstätter, Heimbeck, Malzacher, & Frese, 2003).

Implementation intentions have a strong facilitating effect when action *initiation* is difficult 'by helping people get started' (Gollwitzer, 1999, p. 495). The heightened accessibility of the 'if' part of the plan encourages people to identify and take notice of the specific situation when they later encounter it (Bargh, Gollwitzer, & Oettingen, 2010; Webb & Sheeran, 2004). The initiation of relatively new behavior is relevant to the context of training, where trainees are required to learn and then engage in newly acquired, sometimes unfamiliar and difficult to master, behaviors.

Gollwitzer and Sheeran's (2006) meta-analysis showed a medium to large effect of implementation intention formation on goal attainment (Cohen's $d=0.65$), and that implementation intentions facilitated the attainment of diverse goals (e.g., academic performance, pro-environmental behavior, reducing fat intake, and

increasing physical exercise). Another meta-analysis (Adriaanse, Vinkers, De Ridder, Hox, & De Wit, 2011) showed that implementation intentions are an effective tool for promoting the inclusion of healthy food items in one's diet (Cohen's $d=0.51$). Schweiger Gallo and Gollwitzer (2007) concluded that an implementation intention is an effective self-regulatory tool because it prompts the initiation of behavior and attainment of desired goals.

The effect of forming implementation intentions on training effectiveness in the work setting may be inferred from previous studies. Sheeran and Silverman (2003) found that implementation intentions doubled the rate of attendance at workplace health and safety training courses in the UK. Webb et al. (2007) found that students who formed implementation intentions regarding when, where, and how to attend class were more likely to attend. Webb and Sheeran (2005, Study 2) found that forming implementation intentions was one of three factors (the others being motivation and task focus) that successfully predicted exam performance (i.e., grades) for students taking an introductory psychology course. Sheeran, Webb, and Gollwitzer (2005, Study 1) found that forming implementation intentions affected study behavior (i.e., increased the number of hours students engaged in independent study) for students who had goal intentions that strongly favored performance of the behavior. Parks-Stamm, Gollwitzer, and Oettingen (2010) found that student who experience high test anxiety benefit from forming implementation intentions to ignore distracting commercials when asked to complete as many math problems as possible in the time allotted. Varley et al. (2011) found a substantial beneficial effect of forming implementation intentions in using self-help material learned in a booklet to reduce anxiety. As they explain, these findings point to the importance of not merely knowing self-help exercises but also identifying opportunities to use these exercises, acting upon such opportunities and actually using what is suggested by that material. While the aforementioned studies suggest that implementation intentions contribute to learning, in most, the learning goal was personal. The effect of forming implementation intentions on training effectiveness in the work setting is yet to be established.

Two experiments that used a post-test only control group design with random assignment to conditions (Campbell & Stanley, 1969, design 6) tested the hypotheses that participants who form implementation intentions at the end of their training will implement trained behavior sooner and to a greater degree than participants who do not form implementation intentions. Because implementation intentions are formed

in the service of goals, goals had to be provided to trainees. Research indicates that learning goals are appropriate for obtaining a significant increase in performance in tasks where the person has not acquired the requisite knowledge or skills to perform them (e.g., Seijts & Latham, 2001, 2005, 2011). Accordingly, both experiments were conducted with training programs that included specific learning goals.

EXPERIMENT 1: TRAINING ON ACTIVE LISTENING SKILLS

Method

Participants and Procedure

Participants were 37 undergraduate business students (19 females) who received course credit for their participation. All students were in their first semester of their studies. They were randomly assigned to two conditions: implementation intention ($n=20$) and control ($n=17$).

All participants attended a 60-min training session on active listening skills. Learning goals were set at the beginning of the training (e.g., 'Trainees will be able to identify three distinct categories of factors that obstruct effective communication'; 'Trainees will learn and implement at least three patterns of effective listening'). The training session included a detailed presentation and a short experiential exercise on active listening skills in the context of a university lecture, which is relevant to students (e.g., focusing on the content, neutralizing distractions). At the end of the training session, participants received a written summary that listed the skills and tools that were presented in the training session.

Implementation Intention Manipulation

Participants in the implementation intention condition were asked to plan when, where, and how they intended to practice what was learned in the session. Participants were asked to visualize and write down their implementation plans (Gollwitzer & Brandstätter, 1997) regarding the specific time and place of practicing the trained skills and to give specific details of their actual behavior in that context. Participants answered five leading questions (i.e., (1) Please describe in detail the situation in which you intend to apply what you learned in training: the specific lecture, specific lecturer, where would you sit, what would be the best time, and other conditions that would be the best opportunity to practice the skills of active listening. (2) Please outline the 'listening challenge' you expect in that situation.

(3) Which skills do you intend to use? (4) How do you intend to use them? (5) What do you expect to be the outcome of that application?). Participants in the control condition were asked to write in their own words the specific goals of the training program as well as up to five aspects of the training which they thought were the most important.

Measures

Manipulation Check. Fourteen participants answered all five questions of the implementation intention manipulation, four participants answered two questions, and two participants answered only the first question. All 17 participants in the control condition answered all questions regarding the goals of the training session correctly. Detailed and thoughtful answers suggest that participants understood and followed the instructions of the manipulation.

Transfer of Training. All participants were instructed to e-mail the experimenter, within 6 weeks, a short report in which they described the use of the skills they learned in the training session. In addition, they were asked to report (a) the number of days that passed before they tried to implement effective listening skills, (b) the number of the skills that were listed on the written summary that they received at the end of the training session they applied, and (c) to provide a brief description of one to three incidents in which they used these skills. To ensure that the trainees had implemented the newly acquired skills, the first author read each report, blind to the condition of the participant who wrote it. To be considered valid, a report had to include a description of a problematic situation, the implementation of a specific skill that was taught in the training session, and the consequences of that implementation for the participant. In addition, we measured the number of days that passed before participants tried to implement effective listening skills, and the number of the skills that participants indicated they applied as measures for use of training.

Results and Discussion

All the participants ($N=37$) in the training session submitted an e-mail report. As hypothesized, trainees who formed implementation intentions implemented active listening skills sooner than participants who did not form implementation intentions ($M_{Exp}=7.40$ days, $SD=7.30$; $M_{Con}=13.94$ days, $SD=12.13$; $F(1, 35)=4.08$, $p<0.05$, $d=0.69$). Post hoc power analyses

using GPower (Faul, Erdfelder, Buchner, & Lang, 2009) showed that the power to detect the above effect size is 0.66. In other words, there is a 66% chance of detecting this effect size significant at 5% level. Moreover, 40% of the trainees ($n=8$) implemented the training content on the same day or the day after the training session. None of the participants in the control condition did so ($\chi^2=19.70$, $p<0.05$). In fact, 35% ($n=6$) of those in the control group took 3 weeks or longer to implement. Thus, the first hypothesis was supported.

Trainees reported using more training content ($M_{Exp}=3.10$, $SD=0.79$) than those in the control condition ($M_{Con}=2.23$, $SD=1.30$; $F(1, 35)=6.19$, $p<0.01$, $d=0.85$). Thus, the hypothesis that forming implementation intentions leads to greater use of training content was supported. Post hoc power analyses using GPower (Faul et al., 2009) indicated that the power to detect the aforementioned effect size is 0.56. However, there is an 81% ($1-\beta=0.81$) chance of detecting this effect size significant at $p<0.05$ level.

The results of the first experiment provide evidence that forming implementation intentions at the end of a training session promotes the transfer of training by increasing the application of the learned skills. The trainees did so sooner and to a greater degree than those who only repeated in their own words the goals of the training session. Participants in the implementation intention condition not only accepted the learning goals but had also committed to a particular time and place to try out the newly acquired skills.

EXPERIMENT 2: ORGANIZATIONAL SALES TRAINING PROGRAM

Arguable limitations of the first experiment are that (a) self-report measures may be biased; and (b) results based on a student sample may not generalize to a work setting, as students are not accountable for applying what is learned in an organizational sponsored program. In order to increase the validity and the generalizability of findings, a second experiment was conducted in a field setting, with actual employees, and using objective measures. The field experiment tested the hypothesis that sales supervisors who form implementation intentions at the end of an organizational training program apply the acquired selling skills to a greater degree than sales supervisors who only repeat in their own words the goal of the training program. In this experiment, the implementation of training content was operationalized as an objective performance score that illustrates the degree to which post-training behavior is consistent with training content.

Method

Participants and Procedure

First line supervisors ($N=63$, 37 females) in a large toy chain-store participated in a 3-day organizational training program on sales. The organizational learning goals of the training program focused on the improvement of sales-interactions with customers (e.g., 'Learn five strategies for overcoming buyers' resistance'). The goals were presented explicitly at the beginning of the training program. The training program was conducted by an expert in sales and dealt with different aspects of the sales process (e.g., ways to deal with customer resistance).

At the end of the training program, the experimenter, who had not been involved in the process, addressed the supervisors and asked whether they were willing to participate in an academic study on the effectiveness of sales training programs. The experimenter stressed that no one in their organization would receive their responses to the university's questionnaire and that participation was not obligatory. Sixty three supervisors agreed to participate and were randomly assigned to either the experimental ($n=33$) or the control ($n=30$) condition, thus ensuring that every aspect of the training was identical for both conditions, with manipulation as the only alteration.

Manipulation

Participants in the implementation intention condition were asked to visualize a future interaction with a customer. They were then presented with seven possible phrases that the customer may say in that situation and were asked to describe in detail how they intended to respond to that customer: the content of the response, the tone of voice, the focus of the response, and any other relevant feature. The customers' expressions included resistance phrases such as price resistance (e.g., 'this is too expensive') and hesitation (e.g., 'let me think about it'). This manipulation followed the typical structure of implementation intentions 'When situation X arises, I will perform response Y!' (Gollwitzer, 1999, p. 494). This intervention was designed to engender goal-directed behaviors in response to situational cues. Participants in the control condition were asked to write down in their own words the specific goals of the training program as well as up to five aspects of the training which they thought were the most important.

Manipulation Check

Participants in the experimental condition were presented with seven 'if-then' phrases. Of the 33 participants

in the experimental condition, 19 gave the correct response (i.e., their response repeated that was taught in training) to all seven situations, two responded correctly to six situations, eight responded correctly to five situations, two responded correctly to four situations, and two responded correctly to two situations. Twenty four participants in the control condition repeated the declared goals of the training program correctly. We can therefore assume compliance with the implementation intention manipulation and the goal setting instructions.

Performance Measure

Performance was measured 4 weeks after the end of the training program, using mystery shoppers. Although 63 (out of 66) supervisors expressed willingness to participate in the study, logistic constraints led to a choice of 12 stores in the chain, thus limiting the collection of data to the supervisors that participated in the training program employed in those stores ($n=28$). Performance was measured by mystery shoppers—experienced organizational consultants who were trained in the main skills and behaviors learned in the training process and the rating of observed sales people on behavioral anchored rating scales (BARS) developed by the organization. The BARS comprised five scales (e.g., opening statement in the sales conversation, overcoming resistance, and closing the sale), each ranging from 1 (*poor performance*) to 10 (*excellent performance*). The coefficient α of the BARS was 0.80. The mystery shoppers followed a script of what they should say as customers. The script included price resistance expressions ('why does it cost so much?'), hesitation resistance ('I want to think about it') and buying intentions. Immediately after the interaction with the sales supervisor, the observer documented the selling interaction, including the exact response of the sales supervisor to the pre-planned phrases, and assessed the supervisor on the BARS. The observers were unaware of whether a supervisor was in the experimental or control condition.

Results and Discussion

Scores on the first of the five BARS scales, which referred to whether the supervisor used the opening statement taught in training, were dichotomous: supervisors either received a score of 1 (*poor performance*) or 10 (*excellent performance*), with no significant difference between conditions. Scores on the other four BARS (i.e., questioning the customer about needs, focusing on a specific product and directing the customer, overcoming resistance, and closing the sale) were highly correlated ($r \geq 0.60$, $p < 0.01$). Thus, they were averaged

into a single score that represents the average performance rating score for each supervisor. Table 1 presents the inter-correlations among the four selling skills exhibited by supervisors in the field experiment.

As hypothesized, there was a significant difference between the experimental and control conditions with regard to the application of the sales skills learned in training. Those in the experimental condition performed significantly better ($M_{Exp}=7.04$ out of possible 10, $SD=1.19$) than those in the control condition ($M_{Con}=4.00$, $SD=2.35$; $F(1, 26)=18.78$, $p < 0.01$, $d=1.12$). Post hoc power analyses using GPower (Faul et al., 2009) indicated that the power to detect the aforementioned effect size is 0.68. However, there is a 89% ($1-\beta=0.89$) chance of detecting this effect size significant at $p < 0.05$ level.

The results of the second experiment provide further evidence that forming implementation intentions at the end of a training program promotes the transfer of training to the job. The experiment that was conducted in an organizational setting shows that supervisors who formed implementation intentions executed the sales skills significantly better than those who only repeated in their own words the goal of the training and its importance to their performance.

GENERAL DISCUSSION

The results of the two experiments provide strong evidence that forming implementation intentions at the end of a training program promotes the transfer of training. This evidence was obtained with two different training programs, namely active listening and selling products to customers.

A major strength of both experiments is that they explore authentic training content in naturally occurring contexts (Baldwin, Ford, & Blume, 2009). In experiment 1, although the training was organized for the purpose of the research, both its content (i.e., effective listening skills in post-secondary education) and its process (i.e., a group session in a class room) simulated an authentic training session, which students in their first semester may expect to receive as part of their

Table 1. Correlations between four selling skills in Experiment 2

Selling skill	1	2	3	4
1. Needs assessment	—	0.77**	0.69**	0.61**
2. Product specification		—	0.60**	0.71**
3. Overcoming resistance			—	0.60**
4. Closing the sale				—

Note: $n=28$

** $p < 0.001$

orientation into academic studies. Experiment 2 was conducted in an authentic field setting of an organizational training program targeted at sales supervisors. Furthermore, the experiment overcame the methodological challenge of common source common method bias that affected previous training experiments (Blume et al., 2010). Measuring training transfer did not rely on trainees' perceptions of their transfer but on objective measures.

The study of an intentional post-training intervention employing an authentic training content in naturally occurring context and using objective measures of training transfer contributes to our understanding of training design and implementation (Baldwin et al., 2009). The two experiments demonstrate the contribution of forming implementation intentions as a post-training supplement in an organizational setting, an area that is still lacking in research (Schweiger Gallo & Gollwitzer, 2007). The situational context specified in an implementation intention is thought to elicit the respective goal-directed behavior immediately and efficiently (Brandstätter, Lengfelder, & Gollwitzer, 2001; Brandstätter et al., 2003), similar to the results we witnessed in the experiments. Thus, the results from both experiments suggest that implementation intentions can promote the transfer of training in organizational settings.

One possible explanation for the contribution of implementation intention as a post-training supplement is that forming implementation intentions may have created a mental link between a specific situation on-the-job and the behavioral response that was taught in training. Once the critical situation was encountered on the job, pre-formulated implementation intentions commit the trainee to the performance of a specific skill or behavior that was learned in training. Implementation intentions facilitate goal attainment on the basis of psychological mechanisms that relate to the anticipated situation (specified in the 'if-' component of the plan), the intended behavior (specified in the 'then-' component of the plan), and the mental link forged between the anticipated situation and the goal-directed response (Gollwitzer, Bayer, & McCulloch, 2005; Gollwitzer & Oettingen, 2012; Webb & Sheeran, 2007).

Forming implementation intentions activates a specific situation as a suitable opportunity to act so that mental representations of the relevant situational cues become highly activated and hence more accessible (Gollwitzer, 1999; Webb & Sheeran, 2004). If-then planning is effective because (a) a suitable opportunity for goal striving is rendered accessible and (b) this opportunity primes the selected goal-directed response (Webb & Sheeran, 2008, p. 389). Thus, any procedure that increases the accessibility of the specified opportunity

or promotes a stronger mental link between the 'if-' and 'then-' components of the plan can potentially enhance the impact of forming implementation intentions on goal attainment. The results of the two experiments reported earlier support the possible existence of a mental link between a specific situation and a behavioral response. The 'then-' part of the plan, which requires participants to further think about the 'how, where, and when' they will act may contribute to a concrete mindset (Freitas, Gollwitzer, & Trope, 2004) and enhance the concreteness of the mental representation of the situation. In this sense, implementation intentions may be viewed as the 'concrete' behavioral response to the 'abstract' goal intention.

From an active learning perspective, trainees are viewed as making personal choices to transfer, personalizing the training process to fit their own conception of needs and wants from the experience (Baldwin et al., 2009). In this sense, forming implementation intentions allows trainees to personalize the training content to their professional needs and experience, thus making a personal choice regarding the method by which they will attempt to transfer the trained skill to the job. The study of implementation intentions as one possible cause for making a personalized transfer choice contributes to the issue of personalization of training transfer, which has been relatively ignored in the training literature (Baldwin et al., 2009).

A third possible explanation may be that forming implementation intentions contributes to learning agility—the willingness and ability to learn new competencies in order to perform under first time, tough, or different conditions (Lombardo & Eichinger, 2000). De Rue, Ashford, and Myers (2012) suggested that cognitive processes such as cognitive simulations—prospective visualization of possible future situations and developing strategies that can be applied in these future situations—enhance learning agility. Individuals can think about how they might act in a situation, forecast, and make predictions about potential future situations and through this forecasting come up with possible solutions and behavioral intentions for what they might do in that situation. This pre-planned understanding of how one might apply his or her knowledge to a future scenario is very similar to the formation of implementation intentions.

The findings cannot be explained by alternative explanations. Random assignment ensures that no personal differences (e.g., self-efficacy) or organizational differences (e.g., store performance) have affected the results. Implementation intention effects cannot be explained by increased deliberation but rather evolve from heightened accessibility of specified opportunities and strong opportunity-response links (Webb & Sheeran, 2008).

The results of this line of research may have several practical implications for managers and human resource professionals, given their responsibility for designing training interventions and measuring their effectiveness. When designing training interventions, HR professionals may consider incorporating implementation intentions as a post-training supplement to increase transfer of learning. As a post-training supplement, implementation intentions provide trainees with enhanced skills to overcome obstacles and initiate the newly acquired skill or knowledge.

The limitations of these two experiments must be acknowledged. The generalizability of the results is limited as both training processes centered on interpersonal skills. The contribution of forming implementation intentions for other types of training (e.g., computer skills and highly complex skills) is yet to be explored. Future research may study whether implementation intentions are beneficial to all types of training or whether they contribute to training only in closed, but not in open, tasks (Yelon & Ford, 1999). The small sample size in both studies and the use of self-reported measures in the first experiment may limit the validity of the present research. A power analysis revealed that in order for a large effect ($d=0.8$) to be detected (80% chance) as significant at the 5% level, a total sample of 42 participants, with 21 participants in each condition, would be required. Caution is warranted before generalizing the findings. Ideally, future research would replicate the experimental design on a larger sample. Finally, empirical research provides evidence that personal attributes of trainees influence the effectiveness and transfer of training (e.g., Bell & Ford, 2007) and moderate the effectiveness of the implementation intention intervention (e.g., Webb et al., 2007) whereas the current research does not take into account any of the personal characteristics of the participants. Future research may investigate which personal attributes of trainees are correlated with their ability to benefit from forming implementation intentions in the organizational setting.

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