© *Academy of Management Learning & Education*, 2015, Vol. 2015, No. 1, 21–46. http://dx.doi.org/10.5465/amle.2013.0555

Increasing Personal Initiative in Small Business Managers or Owners Leads to Entrepreneurial Success: A Theory-Based Controlled Randomized Field Intervention for Evidence-Based Management

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We seek to contribute to evidence-based teaching for management by providing an example of translating a theory into an evidence-based intervention by developing action principles; moreover, our work here shows how such an intervention affects the success of firms by way of changing managers' actions. The concept of action principle is central to this intervention, and we describe this concept with the help of action regulation theory. We conducted a randomized controlled field intervention with a theory-based 3-day program to increase personal initiative (using a pretest–posttest design and a randomized waiting control group). The sample consists of 100 small business owners in Africa (Kampala, Uganda). The intervention increased personal initiative behavior and entrepreneurial success over a 12-month period after the intervention. An increase in personal initiative behavior was responsible for the increase of entrepreneurial success (full mediation). Thus, the training led to an entrepreneurial mind-set and to an active approach toward entrepreneurial tasks.

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Evidence-based management (EBMgt) implies that managers use a combination of scientific evidence, evidence from their own firms, and thoughtful use of experience to manage their firms (Briner, Denyer, & Rousseau, 2009). There is a high degree of enthusiasm for evidence-based management because it promises that managers who base their actions on scientific evidence will be better managers, which contributers to higher success of their firms (Pfeffer & Sutton, 2007; Rauch & Frese, 2006; Rousseau, 2006).

We approach teaching evidence-based management from four perspectives: (1) Teaching evidence-based management needs to develop managers' knowledge and skills based on good theory as well as empirical evidence. (2) Managers need to go beyond abstract knowledge—all too often managers have abstract knowledge available but do not necessarily put it into practice. Thus, there is a knowing–doing gap that needs to be overcome—similarly to Rousseau and McCarthy (2007), we suggest the concept of action principles as a bridge for the gap between knowing and doing. We explicate this concept based on action regulation theory, which was originally developed to overcome the knowing–doing gap. (3) Evidence-based management needs to show that teaching action principles leads to changed behavior. (4) Finally, the managers' changed behaviors should produce better outcomes for the companies they are managing. To answer the last two points 3 and 4, we performed a randomized controlled experiment showcasing that teaching a set of action principles for one well-developed area of management science leads to changed behaviors, which in turn lead to improved firm performance.

The study is based on the dissertation of the first author. We gratefully acknowledge partial support from "Psychological Factors of Entrepreneurial Success in China and Germany" FR 638/23-1—a grant of the German Research Foundation (*Deutsche Forschungsgemeinschaft*), from a travel grant of the *Deutscher Akademischer Austausch Dienst* (DAAD, A/07/26080), and from the MOE-National University of Singapore start-up grant (R-317-000-084-133).

Correspondence can be addressed to the second author: Michfrese@gmail.com. We want to thank Audrey Kawuki Kahara, then manager of the Entrepreneurship Center of the Makerere Business School in Uganda, USSIA (Ugandan Small Scale Industry Association), UWEAL (Uganda Women Entrepreneurship Association, Ltd.), Katwe Metal Fabricators Cluster Association, and the Ugandan Chamber of Commerce for their support. In addition, we thank Thorsten Dlugosch, Michael Gielnik, and David McKenzie for comments to improve the paper.

One motive that started the idea of teaching evidence-based management was the fact that there are gaps in translating scientific knowledge into practice. Managers often do not know empirical research results (Rynes, Colbert, & Brown, 2002); this problem can be overcome by teaching knowledge explicitly. However, this may be the easy part of evidence-based teaching—it is more difficult when managers do not use knowledge despite knowing better (Giluk & Rynes-Weller, 2012; Pfeffer & Sutton, 2000). One important theoretical question is how abstract scientific knowledge can be turned into managers' concrete operational behavior. There are many reasons for such a "knowing–doing gap" (Pfeffer & Sutton, 2000): Often scientific knowledge is written in opaque prose or is too abstract, to be adequately translated into concrete action. Managers may not connect their conceptual knowledge to behavioral specifics, or they may too quickly assume that contextual constraints are too formidable to act according to some scientific idea. They may also be unable to adjust a scientific concept to work well in their environment. Sometimes managers may not have the skills available to put an idea into action, or in spite of good action knowledge, managers may not interpret feedback adequately. Managers may be unfamiliar with scientific knowledge, but sometimes they may also know at least vaguely that their actions are inefficient or even faulty, or they may suspect that there is better knowledge "out there."

Rousseau and McCarthy (2007) suggested action principles as a way to teach evidence-based management. We also believe that action principles are the pivot to overcome the knowing–doing gap. For the purpose of evidence-based management, action principles are rules of thumb that have a scientific basis and are teachable, understandable, improvable through practice, and adjustable to circumstances. Here, we showcase a training procedure that is based on a theory of action principles: action regulation theory. This theory was developed to understand the gap between cognitions and actions. The knowing–doing gap managers face is a special case of a more general gap between cognitions and actions (Frese & Zapf, 1994; Hacker, 2003; Miller, Galanter, & Pribram, 1960). Thus, our study helps to fill a theoretical gap of teaching evidence-based management (Rousseau, 2006, 2012) by showcasing how a science-oriented conceptual model and phenomenon can be transformed into a practice-oriented intervention to address real-world management problems.

Theoretically understood scientific evidence can be translated into action principles and those action principles can then be taught in an intervention (Frese, Beimel, & Schoenborn, 2003; Locke, 2004; Rousseau & McCarthy, 2007). Action principles serve as epistemological tools to get from science to evidence-based action and in general from cognition to action. These are then two contributions of our study—the theoretical development of action principles and showcasing their use in one area of management.

As discussed by Rousseau and McCarthy (2007), the very basis of evidence-based management has to be empirically well-developed evidence and theory. There is strong theory and scientific evidence in the area of personal initiative (PI); here PI is used to showcase the translation of scientific knowledge to action principles. Having personal initiative implies showing self-starting behavior, proactive and future-oriented behavior, and overcoming barriers. PI behavior was originally studied as a form of proactive employee performance within organizations; it is also well-developed theoretically (Frese & Fay, 2001), and empirically, there are strong positive relationships with (employee) performance (Baer & Frese, 2003; Brown, Cober, Kane, Levy, & Shalhoop, 2006; Crant, 1995; Grant, Nurmohamed, Ashford, & Dekas, 2011; Griffin, Neal, & Parker, 2007; Seibert, Crant, & Kraimer, 1999; Sonnentag, 2003; Thomas, Whitman, & Viswesvaran, 2010; Thompson, 2005; Tornau & Frese, 2013). PI is particularly important for entrepreneurs because they are often alone as managers of their firms; they need to demonstrate a wide spectrum of proactive activities to achieve entrepreneurial success (Frese, 2009). We transfer the concept of PI to the performance arena of small business owners in Africa who are managers of their firms.

To showcase the use of evidence-based management in the area of personal initiative, it is useful to provide scientific evidence in the sense of a true experiment. By doing this, our study also aims to fill an empirical–methodological gap in the area of evidence-based management. Reay, Berta, and Kohn (2009) argued that the "evidence" on evidence-based management has been primarily anecdotal and weak. "The lack of strong evidence for EBMGT (evidence-based management) leaves us with the clear conclusion that stronger, more rigorous empirical research related to the impact of EBMGT on organizational performance is severely lacking and greatly needed" (Reay et al., 2009: 17). Although this sentence may be somewhat of an overstatement, as prior studies have shown changes in managers' behaviors leading to better outcomes (Latham & Saari, 1979), two points are central here. First, scientific evidence needs to be collected on how managers' behaviors can be changed, and second, these behavioral changes must be shown to be responsible for positive organizational outcomes. This can be done best by an intervention that is evaluated with the help of the "gold standard" for interventions—the randomized controlled field experiment (Reay et al., 2009; Shadish & Cook, 2009). Our intervention targets owner-managers of small firms in a developing country and examines long-term outcomes for their businesses.

Thus, our study is supposed to contribute to the literature in the following ways: (a) we explicate the concept of action principles that is the basis of an intervention for managers of small entrepreneurial firms; (b) we showcase how the science-based concept of PI can be translated into action principles; and (c) we test our intervention with the help of a randomized controlled experiment. Our intervention based on action principles successfully increases the PI behavior of owner-managers, which, in turn, leads to more entrepreneurial success.

EVIDENCE-BASED MANAGEMENT

The knowing–doing gap is a specific instance of the general gap between cognition and action. Action regulation theory is central for understanding this gap and action principles.

An Action Regulation Theory Account of Action Principles

Action principles (rough rules of thumb) are cognitions that help to regulate actions, and thus to overcome the cognition–action or the knowing–doing gap. The content of action principles should be based on scientific evidence and theory.

Action regulation theory helps to understand the function of action principles. Miller and colleagues (1960) pointed to an inherent gap between cognition and action in much of cognitive psychology. Abstract cognitions in the sense of declarative knowledge have to be translated into operational knowledge that guide actions. Cognitions may or may not affect actions adequately (Frese & Zapf, 1994; Semmer & Frese, 1985). An entrepreneur may *want* to explain his or her services to a customer well (this is a "wish"); however, he or she may not be

able to translate this general wish into effective actions—there are many steps from a wish to an action (Heckhausen & Kuhl, 1985), and the discussion of the knowing–doing gap (Pfeffer & Sutton, 2000) is related to this problem. For example, the entrepreneur may know the idea of explaining a service realistically (e.g., providing both pro as well as con arguments), but this cognition may not be applied well in a specific situation—misapplication of this idea may lead to losing customers. Abstract knowledge or wishes do not directly translate into actions.

Cognitions can only regulate actions when they become operational (Miller et al., 1960). To make a cognition actionable and operational, action regulation theory suggests the two processes of sequential and hierarchical regulation (Frese & Zapf, 1994).

First Sequential Process

Action principles need to cover the whole action sequence (Frese & Zapf, 1994). Actions require goals (often based on wishes and values), action-relevant information on the environment, planning, monitoring, and feedback. Whenever only a part of this action sequence is developed, the action is misaligned, and it may not be put into practice. Thus, action principles need to cover all steps of the action sequence. They must also specify how goals are set and how to analyze goals, as well as how to seek action-relevant information. Based on this information, goals can be transformed into (rudimentary) plans. Action plans are if–then rules that tell the actor the steps to be taken to achieve a goal (Gollwitzer, 1999). Feedback is central for improving the action process and to understand whether or not an actor is getting nearer to a goal; feedback can occur while acting (e.g., proprioceptive feedback) and after an action cycle (Kluger & DeNisi, 1996). Errors are also important because they provide negative feedback that carries important information to help improve performance (Frese & Keith, In press).

Second, Hierarchical Regulation

Cognitions can only influence actions when there is some kind of hierarchical regulation of action (Miller et al., 1960). Similarly to a number of cognitive theories (Anderson, 1983; Frese & Zapf, 1994; Hacker, 1998; Miller et al., 1960), and dual process theories, we assume that people can be aware of some actions and not of others (e.g., controlled and automatic processing; Shiffrin & Schneider, 1977); the highest level regulates actions with awareness and self-reflection (Rousseau & McCarthy, 2007). In contrast, the lowest levels regulate operational acts without the need to be aware. If the higher level abstract cognitions do not have regulatory power over actions, there is a cognition–action gap—as there is no connection from upper level to lower level operational control. Thus, it is necessary to train manger-owners in connecting action principles to action-leading cognitions to trigger well-connected lower level operations (sometimes described as *compilation process*; Anderson, 1983). These relationships can also be physiologically described (Gallistel, 1985), but for our purpose it is sufficient to know that cognitions regulate actions only when prior connections between these levels of regulation have been established.

Most important, the gap between upper level thoughts and the lower level operations needs to be overcome by way of a learning-by-doing approach. Only by doing are the abstract cognitions connected to the operational level. Most actions have to be performed repeatedly so that the connection between abstract cognitions and concrete operations is developed (learned; Johnson, Chang, & Lord, 2006). A person may want to ride a bicycle and may even have good ideas about riding a bicycle ("I need to balance"), but he or she is not able to ride a bicycle until the connections between cognitions and actions are established hierarchically (Semmer & Frese, 1985). One problem in adult learning is that newly acquired behavior competes with old, well-rehearsed routines (Ouellette & Wood, 1998). Action principles are often not used if they have not been rehearsed often enough (Wood & Neal, 2007).

A similar issue relates to situational and contextual cues. The abstract cognition of wanting to act is not good enough. People need to practice the action as a response to situational cues to be able to master situations well. Only after the action has been practiced several times are prior rehearsed competing responses less likely (Johnson et al., 2006).

The idea that learning takes place through acting stands in contrast to the idea that managers should primarily learn to make the right decisions, which then leads automatically to better performance. Such a concept may possibly suffice in the regulation of noncomplex actions, but managers and entrepreneurs often perform highly complex (and

often new) actions. Learning by doing is not the same as trial-and-error behavior. The action principles provide guidance. In the beginning of the learning process, this guidance may be based on rough ideas; over time through repeated actions, the action regulation becomes fine-tuned.

The action principles can and should be developed from science (Locke, 2004); however, they are not prescriptions that can be blindly applied. One of the positive ideas of hierarchical regulation is that once the higher level cognitions (understanding of the action principles) have been connected to the lower level of regulation, it is possible to flexibly adjust one's actions to changing circumstances (Johnson et al., 2006) and to develop adaptive forms of action knowledge (Goodman & O'Brian, 2012). Thus, action principles can be adjusted to the specifics of the situation and, thus, the danger of a formulaic use of prescriptive recipes in management is avoided (Briner et al., 2009).

ACTION PRINCIPLES OF PERSONAL INITIATIVE (PI) AND ENTREPRENEURSHIP

It follows from the above, that action principles have to be developed along the lines of the action sequence, and they have to be entrained along the hierarchy to become effective. In the following, we develop principles of action in the area of PI (Frese & Fay, 2001; Parker, Bindl, & Strauss, 2010). To do that, we need to define PI behavior in some detail: PI is characterized by a self-starting, proactive, and persistent approach to work; PI helps to accomplish entrepreneurial tasks successfully. *Entrepreneurship* means to create and develop an organization along new lines with new ideas. Entrepreneurship is about identifying and exploiting opportunities (Shane & Venkataraman, 2000)—here *self-starting* is indispensable as entrepreneurs should take charge of opportunities (Morrison & Phelps, 1999). Owners of small companies have no supervisor and few organizational routines that tell them what to do. Entrepreneurs need to strive to be different from their competitors. By being self-starting they are on the lookout for opportunities and try to exploit them before competitors do, which may lead to first-mover advantages (Lieberman & Montgomery, 1998). Entrepreneurs typically work under resource constraints. Self-starting helps them to take advantage of small resource advantages because they actively approach providers of resources and actively use small advantages to incrementally improve dealing with resource constraints (Kodithuwakku & Rosa, 2002; Winborg & Landstrom, 2000).

Being *proactive* means to think of future opportunities (and problems) and to prepare for them now. For example, proactive information seeking actively searches the environment, seeking new knowledge (e.g., on the Internet or actively acquiring benchmark information from other industries). Proactive planning coordinates different long-term tasks and often includes back-up plans in case a first plan or routines are not effective (Frese et al., 2007).

Being *persistent*, entrepreneurs do not give up when difficulties arise—they overcome barriers on the way toward a goal. Entrepreneurs operate under conditions of uncertainty, risk, urgency, complexity, and resource scarcity (Baum & Locke, 2004; McMullen & Shepherd, 2006), and these conditions may frequently provoke errors and setbacks, which may lead to negative emotions. PI means that entrepreneurs actively approach these challenges (e.g., actively looking for information to reduce uncertainty), that they motivate themselves to be persistent in spite of negative events, and that they use errors as a source of feedback and learn from errors instead of being discouraged by them. Entrepreneurs are more successful if they do not give up too quickly when things do not work out (Johnson & Delmar, 2009; Koop, De Reu, & Frese, 2000; Porath & Bateman, 2006).

We conclude that PI behavior is a central feature in entrepreneurship; therefore, increasing PI leads to actively pursuing entrepreneurial tasks which in turn improves entrepreneurial success and growth of the business (Frese, 2009). Empirically, various forms of proactive behavior have been documented to be correlated with business success (Frese et al., 2007; Koop et al., 2000; Krauss, Frese, Friedrich, & Unger, 2005; Van Gelderen, Frese, & Thurik, 2000). We hypothesize a full mediation model from PI training to entrepreneurial success with PI behavior as mediator.

Developing Action Principles Along the Facets Model of Personal Initiative

PI is used to showcase our model of teaching evidence-based management. Action principles require an easy transfer from cognitions to actions. It is possible to develop the action principles along the facets model of PI and at the same time use PI theory to suggest which action principles need to be learned. The facets model defines the conceptual behavioral space of PI based on the sequence of actions explained above (Frese & Fay, 2001). The PI

facets are based on a matrix that fully crosses the three aspects of PI (being self-starting, proactive, and persistent in overcoming barriers—the PI theory) with the aspects of the action sequence—goal, information collection, plan, monitoring and feedback (the action regulation theory; Frese, 2009; Hacker, 1998; Norman, 1986). Table 1 displays the facets and at least one example of an action principle that follows from the specific facet (Table 1 also presents the content of the training, cf. next section). Each facet consists of 3–6 action principles and all of them are trained in applied settings relevant for entrepreneurs.

The *self-starting* facets in Table 1 are (a) goals are self-set and something new is introduced; for example, an entrepreneur seeks to differentiate his or her firm from others by an innovative product or service; (b) self-starting information-seeking behavior supports the access to and attainment of appropriate information for opportunity identification (e.g., Fiet, 2002; Gaglio & Katz, 2001), and this is done in various task areas (e.g., negotiating with suppliers, establishing customer relationships, or recruiting and retaining employees); (c) the plan includes a self-starting approach to resource providers and an active marketing strategy; (d) monitoring and feedback involve self-starting approaches to obtain feedback (also negative feedback), such as asking potential new customers for feedback on products or services.

The *proactive* facets include (a) setting the goal to introduce a new product to serve an anticipated future trend; (b) the entrepreneur scans the environment for information that indicates future problems as well as solutions for these problems; for example, when the entrepreneur proactively develops ideas of who to turn to in case supply problems occur; (c) back-up plans are developed in case something goes wrong; (d) presignals are developed that let the entrepreneur know when future opportunities or problems might appear; for example, an entrepreneur may find supply problems occur 6 months after the oil price reaches a certain price level.

Finally, the facets of being *persistent in overcoming barriers* include (a) keeping up the goal even when the entrepreneur is confronted with difficulties and the necessity of improvisation (Baker & Nelson, 2005); (b) monitoring in spite of negative emotions; (c) changing plans flexibly when necessary (but not prematurely), and returning to plans that have been interrupted; (d) maintaining feedback search in spite of difficulties that may arise and in spite of negative emotions when receiving negative feedback or after errors occur. Barriers may be internal (such as emotions resulting from frustrations that need to be self-regulated) or external resulting from objective resource constraints and frictions that occur in the course of PI actions (Dorner, 1996).

THE TRAINING CONCEPT

The PI-Facets Model and Training

The PI training includes all facets and action principles of the matrix presented in Table 1. After participants are trained in all action principles based on the PI facets, they spend the last half day developing a project for their business holistically using all action principles for PI.

Training PI Along the Action Sequence

Our training advances through each step of the action sequence: In each case, we present several action principles. Second, we present and discuss positive or negative behaviors from the perspective of the action principles, using case studies involving African entrepreneurs. Third, the participants learn how to apply the action principles through practical exercises (examples are presented in Table 1). Fourth, the participants apply the action principles to their own businesses and receive feedback from the trainer, their peers, and themselves. During this process the participants are aware of what they are doing, they discuss the action principles and how to apply them, but they also learn to adapt them to situational demands (Rousseau & McCarthy, 2007).

In the following, we use the example of planning as one part of the action sequence to explain this approach. First, we present and explain the action principles for "good planning." These principles cover the three facets of PI for planning: (a) the self-starting facet: "make a plan which you have under your control without having to wait for anybody"; "plan for new services or products"; (b) the proactive facet: "make a plan for future opportunities and problems" and "develop back-up plans for opportunities and problems"; (c) the overcoming barriers facet: "anticipate potential problems," "return to plan quickly when disrupted," and "do not let barriers distract you from your main approach." Second, we present two case studies that exemplify

the self-starting and proactive facets of planning: one showing a positive behavioral model (a self-starting business owner with long-range plans) and one presenting a negative behavioral model (a reactive business owner who did not plan for the long term). As a behavioral model for the overcoming barriers facet of planning, we present a case study of an entrepreneur who returned to his plan quickly after being disrupted by various incidents. The cases provide positive and negative examples for the action principles; they help the participants have a differentiated discussion on which actions are examples of good PI behavior and which are not. In this way, participants learn exactly what PI means for planning. Third, the participants practice the principles for "good planning" for another case (group work). They develop an active plan for one of the entrepreneur's goals (self-starting facet of PI). Afterward, they discuss potential future problems that may occur when executing the plan and how the entrepreneur could respond to them; they also develop back-up plans for this entrepreneur (this covers the proactive and overcoming barriers components of PI facets). Fourth, the participants apply the action principles for "good planning" to their own tasks as they developed long-term plans for their businesses, for example, introducing a new product or service or using a new way of advertising. While doing this, they also think of self-starting ideas using creativity techniques for their own business problems (DeTienne & Chandler, 2004). In most instances, they first develop the plans or practice the techniques on their own before they share them with a partner and, subsequently, within a group.

Developing a Project for Your Company by Completing All Facets

At the end of the training program, the participants use all the facets of PI to develop a project to further their own business (exercise "personal project"). They start with the formulation of a PI goal, continue with reflecting on where and how to get helpful information, formulate a plan, and develop signals for feedback and monitoring. All personal projects were discussed in small groups.

Intervention Based on Action Principles

An intervention based on action principles needs to achieve the following: (a) the action principles need to be clearly understood; (b) they need to cover goals, information search, planning, and feedback, and all of these aspects of the action sequence need to be oriented toward increasing PI behavior; (c) they have to be practiced by learning-by-doing exercises so that the hierarchical connection is established; and (d) feedback has to be first given by the trainer, then by peers until self-feedback can take over.

The intervention combines a learning-by-doing approach with the reflection of action principles; this produces a clear cognitive understanding of the action principles and the connection of cognition and action. Practical exercises exemplify the action principle and simultaneously allow the participants to learn through acting, for example, by proactively planning for a case or by correcting a peer's planning to making him or her more proactive. By encouraging people to act based on action principles, we give them the opportunity to examine whether their actions agree with the principles. For example, an entrepreneur may learn in a training session to be concerned about long-term use of information. Without practice, the exact task realm remains unclear: Does it mean that any long-term information is to be stored? And what kind of information should be stored? They may come up with an answer to use a system that is easily handled and useful (e.g., an idea book). Often during the practice of action principles, participants notice that they had not really yet understood a principle fully and did not quite yet know how to make it work practically. Moreover, it is easier to persuade participants of the functional value of action principles when they are using them. The functionality of PI principles becomes plausible and persuasive through action (Brehm, 1960).

To improve actions, feedback is needed, so in the beginning of the learning process, the trainer provides both positive and negative feedback. Positive feedback provides information on which aspects of the action principles have been mastered. Negative feedback informs the recipient about deficiencies. People are motivated by experiencing the difference between where they stand and where they should be in utilizing the action principles (Carver & Scheier, 1998). Errors are a form of negative feedback. Errors in actions help to sharpen the understanding of action principles and to better connect the higher levels of regulation to the correct operational acts. Therefore, learning from errors, and perceiving them as a source for innovation, is a prerequisite of learning by way of action

TABLE 1
The Facets Model of Personal Initiative (PI): Definitions, Examples, and Training Content

Self-starting	Proactive	Overcoming barriers
	1st Step of Action Sequence: Goals	
Active goal, self-set goal, goal implies innovative approach Concrete *example:* Owner of copy shop sets goal to open branch in area where no other copy shops exist	Anticipate future opportunities/problems; convert to a goal Concrete *example:* Owner of copy shop knows university will open in a certain area in 1 year; sets goal to open new branch close to university before competitors do	Protect goals; continue working on goals when frustrated or taxed Concrete *example:* Owner of copy shop ;sets goal to open branch despite first failed attempts to buy/rent adequate premises
Training content *Action principles:* Introduce something new *Model:* Two case studies, one of entrepreneur who develops self-starting goals; one of entrepreneur who only shows reactivity Exercise: Formulate goals that trigger self-starting actions in a group work based on case "Venus' Restaurant" *Application to own business:* Set self-starting goal for personal project	**Training content** *Action principles:* Set long-term goals Model: Case study "Venus' Restaurant" – entrepreneur with proactive long-term goals and short-term goals *Exercise:* Group work based on case study "Venus' Restaurant" – Set additional proactive long-term goals for Venus *Application to own business:* Set long-term goals	**Training content** *Action principles:* When facing barriers. keep your goal; try other ways Model: Two case studies, one of self-starting business owner; Case study business owner; Case study "Overcoming Barriers" – Business owner highly persistent Exercises: Group work based on case study "The Shoemaker" – Find solutions for shoemaker's problems
	2nd Step of Action Sequence: Information Seeking	
Active search, i.e. exploration, active scanning of environment Concrete *example:* Owner of copy shop visits area where university will open; asks people about potential premises suitable for opening new branch	Consider potential future problem areas/ opportunities before they occur; develop knowledge on alternative routes of action Concrete *example:* After identifying potential premises to opening branch, owner considers if locations are adequately connected to infrastructure; asks owners of nearby businesses if interested in starting a co-op	Maintain search in spite of complexity & negative emotions Concrete *example:* Owner of copy shop keeps searching for additional premises to open branch when other potential premises already rented/ too expensive
Training content *Opportunity identification and PI:* Look actively for information (1) Exercise "core competencies" to identify future opportunities; (2) Use creativity techniques to create opportunities; develop self-starting goals *Action principles:* Change your environment *Model:* Two case studies, one of entrepreneur who develops self-starting goals; one of entrepreneur who only shows reactivity *Exercise:* (1) Examples presented by participants of how to use various sources of information actively; (2) Group work based on case study "The Shoemaker" – Actively gather information *Application to own business:* Think of how to actively use sources of information for personal project	**Training content** Action *principles:* Think about information to use in near and far future *Exercise:* Group work based on case study "The Shoemaker" – Consider potential future problems *Application to own business:* Consider potential future problems for personal project	**Training content** Action *principles:* look for information difficult to obtain *Model:* Case study "Overcoming Barriers" – Business owner highly persistent

(*table continues*)

TABLE 1
Continued

Self-starting	Proactive	Overcoming barriers
	3rd Step of Action Sequence: Planning	
Active plan Concrete *example:* Part of the owner's plan is to use active marketing strategy to win students as customers for new branch. Sets subgoals; defines actions, e.g., (1) Approach authorities for permission to advertise inside university; (2) design flyers/posters; (3) distribute in university buildings, etc.	Back-up plans; have action plans for opportunities/problems; long-range plans Concrete example: Owner of copy shop has alternative plan to market actively if permission to advertise in the university buildings in not granted (e.g., plans to distribute flyers in bars/in front of university gates)	Overcome barriers; return to plan quickly when disturbed or distracted Concrete *example:* Acute problems in owner's existing copy shop occur; he keeps his goal to open up new branch; returns to executing plan directly after problems solved
Training content *Action principles:* Ability to execute the plan immediately yourself without having to wait for anything *Model:* Two case studies, one business owner who develops self-starting plans; one of business owner who only shows reactivity Exercise: Group work based on case study "The Shoemaker" – Develop an active plan *Application to own business:* Discuss application of action principles to participants' businesses	**Training content** *Action principles:* Develop back-up plans for opportunities/problems *Model:* Two case studies: Self-starting business owner with long-range plan; reactive business owner without plan Exercise: Group work based on the case study "The Shoemaker" – Develop back-up plans *Application to own business:* (1) discuss applications of action principles to participants' businesses. (2) develop back-up plans for personal project	**Training content** *Action principles:* anticipate potential barriers; Do not let them distract you *Model:* Case study "Overcoming Barriers" – Business owner returns to plan quickly when disrupted Exercise: Group work based case study "The Shoemaker" – Discuss future problems; develop ideas to protect shoemaker's plans *Application to own business:* (1) discuss application with participants (2) back-up plans for personal project
	4th and 5th Steps of Action Sequence: Monitoring and Feedback	
Self-developed feedback; active search for feedback Concrete *example:* Owner checks effectiveness of his marketing activities via customer survey	Develop presignals for potential problems/ opportunities Concrete example: Semester break a presignal for copy shop owner. He anticipates turnover will significantly decrease during semester break.	Protect feedback search Concrete example: If not enough customers participate in owner's survey to evaluate his marketing activities, will expand survey period; give discount to customers who participate
Training content Action *principles:* Look for rare and difficult to obtain feedback *Model:* Two case studies, one self-starting business owner actively looks for feedback; one reactive business owner Exercise: Group work based on case study "The Shoemaker" – Select feedback sources; think about how to use them actively *Application to own business:* Determine sources for feedback on personal project; how to use them actively	**Training content** Action *principles:* actively gather (negative) feedback *Exercise:* Group work based on case study "The Shoemaker" – Develop presignals for potential problems *Application to own business:* Develop presignals for personal project	**Training content** Action *principles:* Do products/services meet future needs? *Model:* Specific case study "Overcoming Barriers" of highly persistent business owner

regulation theory (Heimbeck, Frese, Sonnentag, & Keith, 2003; Keith & Frese, 2008).

Negative trainer feedback is informative when it is specifically related to the action principles (Semmer & Pfäfflin, 1978). Trainer feedback should be more intense in the first phase of learning. In later phases, participants are trained to provide feedback to themselves and to others more actively, so that giving feedback becomes a self-regulatory process. This is done because trainer feedback can backfire when it is kept external to the task and to the person (Kluger & DeNisi, 1996).

Action principles need to be transferable to the reality of the entrepreneurs' situation (Baldwin &

Ford, 1988). To increase learning and retention, generalization and maintenance of skills have been developed within a transfer paradigm (Baldwin & Ford, 1988). Similarly, the following are suggested by action regulation theory: (a) Use normal work tasks as far as possible to practice action principles with exercises related to the participants' normal business requirements, (b) The participants should be encouraged to apply the content of the action principles to their normal business situation, (c) Application contracts (a written contract with another entrepreneur of when and how they are going to use selected action principles in their practice) can be used to strengthen the commitment to the action principles and to generalization and maintenance of skills (Hesketh, 1997). (d) The participants should develop a "personal project" (Little, 1983) that helps them to apply the newly learned action principles to a long-term business project (examples of personal projects are described later), (e) Commitment to transfer can be strengthened by working with an "implementation partner" to serve as a contact person in case implementation problems appear.

METHODS

Design

We used a longitudinal approach, as suggested by entrepreneurship scholars (Hisrich, Langan-Fox, & Grant, 2007). We conducted a long-term field experiment using a randomized control group pretest–posttest design with a waiting control group to control for effects of maturation, history, testing, and self-selection (Cook, Campbell, & Peracchio, 1990). Data were collected at four measurement waves: before the intervention (T1), directly after the intervention (T2, only training participants), 4–5 months after the intervention (T3), and 12 months after the intervention (T4). Measures at T1, T2, and T4 were obtained during personal meetings. T3 data were collected through telephone interviews. Participation in the training course was free of charge. The trainer was experienced in doing business training both in Africa and in Europe (the first author). The waiting control group was trained directly after the last measurement wave at T(4,12) months after T1.

Participants

Participants were business owners operating in Kampala, the capital city of Uganda. To participate, they had to meet the following criteria: (1) They were currently business owners and managed the firm on a day-to-day basis. Owner-managers can make decisions on their own as to whether they implement newly acquired action principles into their business. (2) They had operated for at least 1 year, which served to exclude owners who might have just bridged the time to overcome a period of unemployment (employment in the formal sector is often better paid than being a business owner in Africa (cf. Walter et al., 2005). (3) The business owners had at least one and a maximum of 50 employees. (4) They had to have sufficient command of English (the official language of Uganda)—this was measured roughly by interviewer judgments (yes/no) after the interview.

Four organizations[1] for the support of micro- and small businesses allowed us to draw random samples from their members to recruit participants. To include owners from the informal sector (we called a business informal when it was not registered or did not pay any taxes), we also chose random streets in two typical Kampala markets;[2] there we offered owners, who were present and met the criteria stated above, the chance to participate in the training. Overall, 109 business owners met the criteria for participation and were randomly assigned to the training ($N = 56$) or the control group ($N = 53$). Business owners of the waiting control group were told they would be able to participate in the training program at T4. For various reasons, nine individuals assigned to the training group could not take part in the training and were thus excluded from the sample (we checked their reasons and determined that they were unrelated to the intervention, such as illness, unforeseen business problems). The remaining 47 participants took part in the full training course. We used a number of procedures to reduce the attrition that is typical of such studies (e.g., noting down phone numbers from close relatives, neighbors of the firm, and other network partners, etc.); we were successful and reduced the attrition to zero in our case for the data collection period after the training. At T4, five business owners were out of business (all from the control group). Data from three of these were

[1] USSIA (Ugandan Small Scale Industry Association), UWEAL (Uganda Women Entrepreneurship Association Ltd.), Katwe Metal Fabricators Cluster Association, and the Ugandan Chamber of Commerce.

[2] Small Gate Nakawa Trading Market and Crafts Exposure Market.

obtained in personal interviews. The other exits could not be reached personally at T4 (they had moved to another part of the country), and information on their whereabouts was provided by the organizations they were members of. Table 2 presents the socioeconomic characteristics of training and control group members.

Measures

We used questionnaires and structured interviews. To reduce demand characteristics, the interviewers were blind as to whether the interviewees belonged to the training or control group. The answers to the interview questions were written down and later coded by two independent raters, who again were blind to condition; the mean value of the two raters was used for the statistical calculations. Interrater agreements (two-way mixed effect model of the intraclass correlation coefficient (Shrout & Fleiss, 1979) were adequate, ranging from $r = .64$ to $r = .98$ (details in Table 3). Although our measures were theoretically based, we also added attitudinal measures to broaden the measures to attitudinal and motivational reactions, knowledge, behavior, and success (Kirkpatrick, 1976). The mediator PI was measured on a behavioral level. In addition to quantitative measures, we also utilized qualitative observations (at T4). Table 3 presents details of the measures.

TABLE 2
Sample Characteristics of Training and Control Group

Characteristic	Training group			Control group		
	M	Range	*SD*	*M*	Range	*SD*
Age	39.47	23–59	8.61	39.40	20–60	9.83
Years of education	13.36	6–22	3.38	14.36	7–22	3.24
Age of business	9.23	1–28	6.03	7.26	1–33	6.72
	N	Percentage		*N*	Percentage	
Gender						
Male	25	53		26	49	
Female	22	47		27	51	
Sector						
Formal	38	81		42	79	
Informal	9	19		11	21	
Business location						
Town center	13	28		20	38	
Industrial area/ market	34	72		33	62	
Line of business						
Production	29	62		20	38	
Service	18	38		33	62	

Note. Only one significant difference between training and control groups: Line of business (cf. text); *M* = mean; *SD* = standard deviation; *N* = number of participants.

Background Measures

Background measures (T1) to compare the equivalence of the training and the control groups included gender, age, type of industry, business location, age of business, years of education, membership in business associations, formal versus informal sector, self-efficacy, proactive personality, and cognitive ability (via a questionnaire). *Formality* of business consisted of being registered and paying tax (the business was informal when it was not registered or did not pay tax). *Generalized self-efficacy* utilized a 10-item Likert scale by Schwarzer and colleagues (1997) (e.g., "I am confident that I could deal efficiently with unexpected events," with response options ranging from 1 "*not at all true*" to 4 "*exactly true*"). *Proactive personality* was measured by the 10-item proactive personality scale of Seibert, Crant, and Kraimer (1999, e.g., "I am constantly on the lookout for new ways to improve my life") with a 7-point Likert scale ranging from "*strongly disagree*" to "*strongly agree*." *Cognitive ability* was assessed with Wechsler's digit span test forward and backward, a subtest of the HAWIE-R (Tewes, 1991). It consists of three to nine numbers that interviewers read to the participants who were then asked to recall them. This test is used as a proxy for working memory and correlates highly with general intelligence (Jensen, 1985).

Satisfaction With Training

Satisfaction with training was assessed directly after the training at T2 by using the faces scale (faces ranging from frowning −3 to neutral to smiling +3), which has been found to be the best measure of overall job satisfaction (Wanous, Reichers, & Hudy, 1997). *Qualitative statements* were provided at T2 in the form of written comments on the training.

Knowledge Measure

Our study is on behavior and not so much on declarative knowledge; however, we thought it was useful to measure PI knowledge in the training group, as well. Therefore, we developed a multiple-choice test to assess PI knowledge at T1 and T2. The

TABLE 3
Measures, Reliabilities, Number of Participants, Number of Items, Means, Standard Deviations, and Interrater Agreement

Measure		Time	Internal consistency/Item intercorrelation	Number of participants			Number of items	Training group		Control group		Interrater agreement
				TG	CG	Total		*M*	*SD*	*M*	*SD*	ICC
Background variables (Interview & Questionnaire)	Years of education	T1		47	53	100	1	13.36	3.38	14.36	3.24	
	Cognitive ability	T1		47	53	100	2	2.94	.70	2.95	1.00	
	Generalized self-efficacy	T1	$\alpha = .76$		53	100	10	3.38	.48	3.35	.47	
	Proactive personality	T1	$\alpha = .61$	47	53	100	10	5.73	.71	5.85	.74	
Satisfaction with training (Questionnaire, 21 Item)	Overall satisfaction with training	T2		47	–	47	1	2.91	.28	–	–	
Knowledge measures (Questionnaire)	Personal initiative knowledge (sum score)	T1		47	–	47	4	2.15	.93	–	–	
	Personal initiative knowledge (sum score)	T2		47	–	47	4	3.06	.70	–	–	
Behavior-based measures (Interview)	Initiative behavior	T1	$\alpha = .81$	47	53	100	8	1.44	.58	1.88	.84	$r_{tt} = .75–.94$
	Initiative behavior	T3	$\alpha = .89$	47	53	100	8	2.49	.88	1.47	.84	$r_{tt} = .80–.93$
	Initiative for product/ marketing (3 months)	T1	$\alpha = .78$	47	53	100	4	.84	.72	1.28	1.07	$r_{tt} = .86–.92$
	Initiative for product/ marketing (3 months)	T3	$\alpha = .81$	47	53	100	4	2.58	1.02	1.36	.92	$r_{tt} = .86–.91$
	Overcoming barriers[1]	T1	$\alpha = .83$	47	53	100	6	−.08	.74	.07	.73	$r_{tt} = .70–.98$
	Overcoming barriers[1]	T3	$\alpha = .85$	47	53	100	6	.40	.70	−.36	.62	$r_{tt} = .64–.94$
	Overall personal initiative scale[1]	T1	$\alpha = .63$	47	53	100	3	−.22	.54	.19	.87	$r_{tt} = .70–.98$
	Overall personal initiative scale[1]	T3	$\alpha = .82$	47	53	100	3	.55	.74	−.48	.60	$r_{tt} = .64–.94$
Success measures (Interview)	Sales level (logarithm)[2]	T1		47	51	98						
	Sales level (logarithm)[2]	T4		47	47	94						
	Number of employees	T1		47	53	100						
	Number of employees	T4		47	48	95						
	Failure rate (0 = still in business, 1 = failure)	T4		47	53	100						
	Overall success index	T1	$r = .49^{**}$	47	52	99	2					
	Overall success index	T4	$r = .45^{**}$	47	47	94	2					

Note. T1 = before training; T2 = directly after training; T3 = 4 to 5 months after training; T4 = 1 year after training; TG = training group; CG = control group; M = mean; *SD* = standard deviation; ICC = two-way mixed effect model of intraclass correlation coefficient; r_{tt} = interrater agreement; ** significant at the .01 level (2 tailed); α = Cronbach's alpha; r = correlation coefficient; [1]Standardized scale; [2]scale includes one outlier who is excluded from further calculations.

scale covered the action principles of self-starting and persistence (one item each), and proactive (two items). Sample item: "Mr H. wants to plan for his business. If he showed PI, how would he plan?"

Success Measures

Entrepreneurs in developing countries do not keep archival records according to accounting standards; therefore, we used robust measures of success: growth in sales, number of employees, and business failure rate (T1 and T4).

Sales Level. This is a proxy measure validated in prior economic research in developing countries (McPherson, 1998). Participants described the number of months with low, average, and high sales of the prior year and the sales level in low, average, and high months in the current year. We then calculated the sales level of the past year (logarithm scale). This measure showed good validity in McPherson's (1998) research; moreover, it may be less biased than just remembering last year's or this year's sales level because it is based on real and memorable figures. It also correlates with number of employees in our study (cf. below).

Number of Employees. This measure is frequently used in entrepreneurship research (e.g., Delmar & Wiklund, 2008). It includes the number of full-time employees (fte.), part-time employees (pte.), and the days worked per week in the businesses. We calculated the average working days of a full-time employee in our sample ($M = 5.9$) and included this number in the following formula: *number of employees* = [*(fte * working days of fte)/5.9 + (pte * working days of pte)/5.9*]. Thus, we corrected for different definitions of full- or part-time employees.

Failure Rate. At T4 we obtained the failure rate, that is, the number of firms that had closed down between T1 and T4. In addition, we assessed the reason for the failure: Was the closure due to economic pressure and thus, a reactive response, or was it a proactive action necessary to create the basis for the exploitation of an opportunity or a market niche by starting a new venture or getting a good job?

Overall Success Index. An overall success index was formed from the number of employees and the logarithm of the sales level (intercorrelations were at T1, $r = .49$, $p < .01$ and at T4, $r = .45$, $p < .01$). This is a general indicator of firm growth, which is of particular importance in entrepreneurship research (Davidsson, 1989; Wong, Ho & Autio, 2005).

The Measurement of the Mediator PI

Two behavior-based measures assessed PI in the personal interviews at T1 and in the telephone interviews at T3.[3] Interrater agreement for the behavior-based measures was generally good (cf. Table 3).

Initiative Behavior (T1 and T3). This measure is based on validated interview questions (Fay & Frese, 2001; Frese, Fay, Hilburger, Leng, & Tag, 1997) which were adapted to the entrepreneurial task realm. Four questions on different aspects of past work-related behavior were asked: (1) How were goals approached; (2) How were problems handled; (3) How was the quality of products or services tested; and (4) Whether and how were changes implemented in participants' businesses. The interviewer wrote down the responses. The raters coded qualitative and quantitative initiative on a 6-point Likert scale with 0 ("*no initiative*") when participants did not undertake any action, 1 when the action was low in initiative, and 5 when it was high in initiative. Qualitative initiative (self-starting) was coded as high when the behavior included new ways of doing things and when it differed from competitors in their business environment. Quantitative initiative assessed the amount of actions, the persistence in overcoming barriers, and the amount of energy invested (e.g., time spent). We coded "1" when the participant was reactive and when he or she gave up trying to overcome obstacles after failing the first time. We rated "5" when the participant was very active and when he or she was highly persistent in overcoming barriers. Quantitative and qualitative initiative were combined to form the scale *initiative behavior* (T1 $\alpha = .81$, T3 $\alpha = .89$).

The following example of an entrepreneur in our sample illustrates this approach: The entrepreneur owned a small restaurant in a marketplace in Kampala. The municipality established a small public dumping ground opposite his restaurant. The entrepreneur approached the relevant authority and asked to move the dumping place to another location—nothing happened. He did not give up, however, and went to the municipality several times (investing time as well as money for public transportation). This owner is very active. He is persistent and puts a lot of energy in overcoming the problem. Thus, quantitative initiative is high.

[3] The exact approach used for coding the PI variables can be acquired from the second author (Michfrese@gmail.com).

Qualitative initiative, however, was not so high. He used one type of approach and tried it repeatedly. We would have rated a high degree of qualitative initiative, for example, if the business owner had convinced other owners who also had businesses close to the dump to buy the property together, to remove the dump, and to use the property for a common purpose, for example, for advertising or as a parking lot.

Initiative for Product/Marketing. This area focused on two central aspects of entrepreneurship: PI in product or service and advertising and marketing. We asked participants which products or services they had introduced within the last three months (at T1 and T3). In addition, we asked how marketing/advertising was implemented within the last 3 months (at T1 and T3). Quantitative and qualitative forms of initiative were rated on a 6-point Likert scale from ranging from zero to 5. We coded 0 ("*no initiative*") when participants had not implemented anything new or had not undertaken any marketing or advertising activities. Quantitative initiative was a measure of the number of new products or services and the amount of marketing and advertising as well as the associated costs. We coded "1" for quantitative initiative when only a small fraction of the product range was changed (not more than about 5%) and "5" when at least one third of the product range was changed or when the product range was expanded by about one third or more (similar for marketing and advertising). The degree of qualitative initiative was determined by the innovativeness of the introduced products or services and use of marketing and advertising. Innovativeness was conceptualized as newness for that context (West, 1990). Therefore, the raters recorded how often other participants in that business environment had started similar initiatives (e.g., How much

TABLE 4
Number of Participants, Means, Standard Deviations, and Intercorrelations

Variable	Time	*N*	*M*	*SD*	1.	2.	3.	4.	5.	6	7.	8.	9.	10.
1. Training (0 = No, 1 = Yes)	T1	100	.47	0.50										
2. Gender (0 = Male, 1 = Female)	T1	100	.49	0.50	−.04									
3. Line of business (0 = Production, 1 = Service)	T1	100	.52	0.50	−.22*	.18								
4. Years of education	T1	100	.00	0.95	−.10	.07	.22*							
5. Cognitive ability	T1	100	2.95	0.87	−.01	.27**	.11	.39**						
6. Generalized selfefficacy	T1	100	3.37	0.47	.03	.06	.21*	−.04	.18					
7. Proactive personality	T1	100	5.79	0.73	−.08	.11	.05	.09	.17	.59**				
8. Overall satisfaction with training	T2	47	2.91	0.28	.00	.29	.10	.21	.25	.10	.09			
9. Personal initiative knowledge	T1	47	2.15	0.93	.00	−.06	.01	.36*	.15	.02	.04	.05		
10. Personal initiative knowledge	T2	47	3.06	0.70	.00	.10	−.01	.43**	.18	−.02	.08	.03	.42**	
11. Initiative behavior	T1	100	1.67	0.76	−.19	.00	−.12	.41**	.22*	.02	.26**	.16	.02	−.01
12. Initiative behavior	T3	100	1.95	1.00	.51**	−.14	−.21*	.05	.14	.05	.10	−.19	−.07	−.13
13. Initiative for product/marketing	T1	100	1.08	0.95	−.14	.21*	.04	.13	.13	.11	.24*	.01	−.08	−.08
14. Initiative for product/marketing (3 months)	T3	100	1.93	1.14	.54**	.05	−.18	−.03	.12	.09	.12	−.19	.07	−.10
15. Overcoming barriers[1]	T1	100	.00	0.73	−.10	.01	.01	.32**	.28**	.05	.26*	−.02	−.05	.04
16. Overcoming barriers[1]	T3	100	.00	0.76	.50**	−.08	−.08	.26*	.19	−.01	.08	.10	.01	.04
17. Overall personal initiative scale[1]	T1	100	.00	0.76	−.16	.10	.03	.38**	.28**	.08	.33**	.07	−.06	−.02
18. Overall personal initiative scale[1]	T3	100	−.00	0.84	.61**	.07	.19	.11	.18	.05	.12	−.11	.00	−.08
19. Sales level (logarithm)	T1	98	14.22	1.30	−.03	−.22*	.00	.26**	.02	−.09	.12	−.12	−.01	−.01
20. Sales level (logarithm)	T4	94	14.07	1.38	.21*	−.21*	.02	.34**	.09	−.12	−.01	−.20	.07	−.00
21. Number of employees	T1	100	7.27	8.95	.06	−.09	−.13	.08	−.12	−.13	−.05	−.02	−.04	−.06
22. Number of employees	T4	95	7.80	10.45	.27**	−.14	−.20	.04	−.02	−.11	−.05	−.27	−.14	−.05
23. Failure rate (0 = still in business, 1 = failure)	T4	100	.04	.20	−.22*	.04	.15*	.01	−.02	.04	.07	.00	.00	.00
24. Overall success index[1]	T1	99	−.03	.80	.04	−.23*	−.11	.19	−.05	−.15	.08	−.10	−.03	−.04
25. Overall success index[1]	T4	94	−.03	.79	.33**	−.26*	−.14	.21*	.06	−.16	−.07	−.29	−.06	−.03

(*table continues*)

Note. T1 = before training; T2 = directly after training; T3 = 4–5 months after training; T4 = 1 year after training.
[1]Standardized scale.
*Correlation is significant at the .05 level (2 tailed).
**Correlation is significant at the .01 level (2 tailed).

did participants' products or services and use of marketing and advertising differ from other Kampala owners operating in a similar line of business?). The less frequent a product or service was offered by other business owners and the less frequent a certain marketing and advertising strategy was used, the higher we rated qualitative initiative. When less than 10% of the comparable owners offered the same product or service or used the same marketing and advertising strategies, qualitative initiative was rated high and coded with "5." When the vast majority of the owners (more than 90%) offered the product or service or used the same advertising and marketing strategies, qualitative initiative was coded "1." Quantitative and qualitative initiative were combined to form the scale *initiative for product/marketing* of the past 3 months (T1 $\alpha = .78$; T3 $\alpha = .81$).

Overcoming Barriers. We assessed PI via concrete behaviors within the interviews: First, participants were presented a difficult business situation, for example, "Pretend you are out of money and cannot buy necessary supplies, what would you do?" Each answer to overcome this problem was met by the response of the interviewer: "Assume that this does not work; what else would you do?" Four such questions were divided into two sets that were counterbalanced across measurement waves to prevent biases from recall. The number of problem-solving solutions was recorded. In addition, responses were rated on a 5-point Likert scale on reflecting a self-starting (active approach taken) and proactive stance (long-term solutions). These assessments and the number of overcome barriers formed the standardized *overcoming barriers* scale (T1 $\alpha = .83$, T3 $\alpha = .85$). This measure is similar to the situational interview, which shows very high validity in the selection context (Latham, Saari, Pursell, & Campion, 1980); similarly, we find high validity for the measure of overcoming barriers (Fay & Frese, 2001).

TABLE 4
Continued

11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
.25*													
.42**	.11												
.06	.65**	.26*											
.32**	.18	.36**	.08										
.17	.64**	−.03	.41**	.27**									
.76**	.23*	.78**	.17	.73**	.18								
.19	.90**	.13	.81**	.21*	.81**	.23*							
.18	.04	−.10	−.04	.11	.08	.13	.08						
.12	.32**	−.11	.25*	.07	.32**	.02	.33**	.73**					
.09	.12	−.13	.01	−.16	−.05	−.09	.03	.43**	.37**				
.11	.23*	−.08	.25*	−.10	.04	−.03	.21*	.30**	.39**	.68**			
−.13	−.19*	−.14	−.23*	−.01	−.21*	−.15	−.29**	.12	.00	−.03	.00		
.18	.08	−.20*	−.13	−.04	.05	.02	.02	.85**	.62**	.84**	.54**	.05	
.11	.33**	−.18	.31**	−.02	.27**	.03	.31**	.62**	.84**	.59**	.83**	.00	.70**

The Overall Personal Initiative scale consists of all PI measures: *initiative behavior, initiative for product/marketing,* and *overcoming barriers* (alphas based on the 4 scales as 4 items were $\alpha = .63$ at T1 and $\alpha = .79$ at T3; since each of the scales by itself displays adequate reliability, the low α-at T1 is not problematic).

RESULTS

To establish equivalence between the training ($N = 47$) and control groups ($N = 53$) at T1, we examined background and key variables (cf. also Table 2): age, education, age of business, gender, sector (formal vs. informal), business location, line of business; and, in addition, intelligence, self-efficacy, proactive personality. We also examined whether PI and success measures at T1 were significantly different between the two groups. There were no significant differences between the training and control groups at T1 with one exception, "line of business" (φ-= $-.22$, $p < .05$; TG [training group]: $M = .40$, $SD = 0.50$; CG [control group]: $M = .62$, $SD = 0.49$; 0 = production, 1 = service). Thus, there were no obvious selection effects except for line of business; therefore, we controlled for *line of business* in further multivariate analyses of covariance (MANCOVA) and regression analyses. On the other hand, one significant difference out of 20 significance tests is in line with random variation. Although there was no significant difference between the two initial groups in their sales level, there was a significant difference in the variances of the two groups (Levene test, $F = 9.58$, $p < .01$), suggesting potential outlier problems. An outlier analysis with a box plot identified eight outliers (with values that were located more than three times the interquartile range to the left and right from the first and third quartiles). We, therefore, transformed this variable to the logarithm. Applying box plot analysis to the logarithm of the sales level, we still identified one extreme outlier, and we excluded this outlier from all calculations involving the sales measure.

Table 4 shows the means, standard deviations, and intercorrelations of the study variables. Table 5 displays the means and standard deviations for the two groups before and after the training intervention. The overall effects of the intervention were tested with repeated measures MANCOVA with the following dependent variables and mediators measured before (T1) and after the intervention (T3 or T4): *overcoming barriers, initiative behavior, initiative for product/marketing; number of employees, logarithm of sales level* (at T4). Results revealed significant effects for Group × Time (Training/Nontraining × Repeated Measures: Hotelling's $t = 12.77$, $p < .01$, $\eta^2 = .33$), for time (repeated measures: Hotelling's $t = 10.46$, $p < .01$, $\eta^2 = .29$), and for group (training/nontraining: Hotelling's $t = 10.61$, $p < .01$, $\eta^2 = .29$). Thus, the overall training was effective in changing the experimental group across time in a more positive direction than the control group (significant Group × Time effects).

Satisfaction

Overall satisfaction with the training (only measured in training group) was very high with a mean of 2.91 (response alternatives ranging from -3 to $+3$; cf. Table 3). *Qualitative statements* written directly after the training also indicated positive reaction effects: "Eye-opening experience," "I have realized the mistakes I have been doing in my business." High degree of motivation for transfer: "I will make sure that I will use what I have learned in my business," "I have acquired a lot that I am immediately going to apply," or "I will not wait anymore for problems to occur." Course delivery and methodology were also assessed positively, for example: "The training was excellent in both training and delivery," or "it was great that the training has been very interactive and very practical." Many participants asked for follow-up courses and wanted to recommend the training, for example: "I will recommend my fellows to take part in your training."

PI Knowledge

A univariate analysis of variance (ANOVA) on *personal initiative knowledge* revealed a significant increase due to training (T1: $M = 2.15$, $SD = .93$; T2: $M = 3.06$, $SD = .70$; cf. Table 5; only training group T1 and T2).

PI Behavior

ANCOVAs on the behavior-based PI measures indicated significant interaction effects (effect sizes ranging from $\eta^2 = .25$–$.50$; cf. Table 5); means showed a higher increase in the training than in the control group. The effect size d for the behavior-based measures was sizeable and large with d ranging from 1.15 to 1.53 when comparing the training and control groups after the training.

TABLE 5
Analyses of Covariance: Means and Standard Deviations of Training and Control Groups at Different Measurement Times

				Before training		After training				Effect size	
										Interaction effect	Group effect after training
Measure	T	Group	N	*M*	*SD*	*M*	*SD*	*F* Value	*p*	η^2	d^3
Knowledge: Learning Measures								**F**[1]			
Personal initiative knowledge	T1–T2	TG	47	2.15	.93	3.06	.70	48.05	<.01	.51	
Behavior: Behavior-based measures of PI											
Initiative behavior	T1–T3	TG	47	1.44	.58	2.49	.88	74.93	<.01	.44	1.19
		CG	53	1.88	.84	1.47	.84				
Initiative for product/ marketing (3 months)	T1–T3	TG	47	.84	.72	2.58	1.02	65.30	<.01	.40	1.26
		CG	53	1.28	1.07	1.36	.92				
Overcoming barriers[2]	T1–T3	TG	47	−.08	.74	.40	.70	32.83	−.01	.25	1.15
		CG	53	.07	.73	−.36	.62				
Overall personal initiative scale[2]	T1–T3	TG	47	−.22	.54	.55	.74	94.29	−.01	.50	1.53
		CG	53	.19	.87	−.48	.60				
Success: Success measures											
Sales level (logarithm)	T1–T4	TG	47	14.18	1.18	14.35	1.27	7.20	−.01	.07	.30
		CG	46	14.19	1.41	13.85	1.43				
Number of employees	T1–T4	TG	47	7.88	8.00	10.67	12.45	7.16	−.05	.07	.56
		CG	48	6.64	9.90	4.98	7.09				
Overall success index[2]	T1–T4	TG	47	.01	.72	.22	.89	12.33	−.01	.12	.53
		CG	47	−.09	.85	−.29	.58				

Note. Line of business was included as covariate in all ANCOVAs; [1]Hotellings Trace for the ANCOVAs that tested the interaction effects of repeated measure and group; [2]Standardized scale; [3]effect size *d* was calculated with the formula $d = M_{TG} - M_{CG}/S_{pooled}$, where $S_{pooled} = \sqrt{[(S_{TG}^2 + S_{CG}^2)/2]}$; T1 = before training; T2 = directly after training; T3 = 4–5 months after training; T4 = 1 year after training; TG = training group; CG = control group; *M* = mean; *SD* = standard deviation; *p* = level of significance.

Success

The findings on the success measures provided support for the efficacy of the training on success: An ANCOVA on the logarithm of sales showed a significant interaction effect (Group × Time interaction: *Hotelling's* $t = 7.20$, $p < .01$, $\eta^2 = .07$). Sales level increased for the training group from before the training (T1: absolute sales level $M = 2.660$ million Ugandan shilling) to 1 year after the training (T4: absolute sales level $M = 3.389$ million USh); whereas sales of the control group decreased (T1: absolute sales level $M = 3.951$ million USh; T4: absolute sales level $M = 2.808$ million USh). The same pattern appeared for the number of employees: Number of employees increased for the training group (T1: $M = 7.88$; T4: $M = 10.67$) and decreased for the control group (T1: $M = 6.74$; T4: $M = 4.98$) with an ANCOVA revealing significant interaction effects (Group × Time interaction: Hotelling's $t = 7.16$, $p < .05$, $\eta^2 = .07$). In addition to sales and number of employees, the *failure rate* 1 year after the training also supported a positive effect of the intervention on long-term business success: Of the 100 participants of the study, 5 entrepreneurs had closed their former business before T4 measurement. All five belonged to the control group. One, unfortunately, had an accident and had to quit. The other four entrepreneurs reported that the failure was due to high competition and low sales. In contrast, none of the training participants had closed down (quantitative analyses were based only on the entrepreneurs still owning their businesses; this leads to conservative overestimation of the success of the control group).

Mediation of Personal Initiative

We hypothesized that the intervention affected business success indirectly through increase of PI.

Mediation analysis suggested by Judd and Kenny (1981) and bootstrapping analysis with the SPSS macro developed by Preacher and Hayes (2004) revealed a significant mediation effect. According to Judd and Kenny (1981), four conditions have to be met for a mediation effect (tested by three independent regression analyses): (1) The independent variable must affect the mediator; (2) The independent variable must affect the dependent variable; (3) When regressing the dependent variable on both the independent variable and on the mediator, the mediator must affect the dependent variable; and (4) Perfect mediation holds if the independent variable has a nonsignificant effect on the dependent variable after controlling for the mediator. To test this, we calculated four regression analyses, and in each, we controlled for line of business. Table 6 shows that these analyses supported full mediation: In the first equation, the independent variable training affected the mediator PI ($\beta = .73$, $p < .01$). In the second equation, the independent variable, training, affected the dependent variable, success ($\beta = .29$, $p < .01$). In the third equation, the mediator, PI, affected the dependent variable, success ($\beta = .20$, $p < .01$). In the fourth equation, after PI was held constant, training no longer had a significant effect on success ($\beta = .14$, *ns*). To test the indirect effect of training on success through PI, we employed the bootstrapping technique for significance (again controlling for line of business). A total of 2,000 bootstrap samples were calculated to determine the lower and upper limits of a 95% bias corrected confidence interval for the indirect effect. The confidence interval did not contain 0 with an indirect effect of $ES = .2400$ and an interval of $CI_{95} = .0155, .4750$. Thus, there was a significant mediation effect ($p < .05$).

A descriptive view of the *failed firms* at T4 was also in line with the importance of PI for business success: All four entrepreneurs who had to close down business due to failure had actually decreased their PI from T1 to T3 (*overall personal initiative scale* at T1: $M = -.45$, $SD = .23$, at T3: $M =$

TABLE 6
Mediation Analysis: Results of Four Regression Analyses (Standardized and Unstandardized Regression Coefficients)

Predictor/Step in analysis	*B*	*SE B*	*β*	R^2	ΔR^2
Analysis 1: Effect of training on posttraining overall personal initiative scale (T3)					
1. Controls				.09	.09*
Line of business	−.30	.16	−.18		
Overall personal initiative scale at T1	.25	.11	.23*		
2. Training vs. control group	1.22	.12	.73**	.55	.46**
Analysis 2: Effect of training on posttraining overall success index (T4)					
1. Controls				.49	.49**
Line of business	.00	.11	.00		
Overall success index at T1	.68	.07	.68**		
2. Training vs. control group	.45	.11	.29**	.57	.08**
Analysis 3: Effect of posttraining overall personal initiative scale (T3) on posttraining overall success index (T4)					
1. Controls				.55	.55**
Line of business	−.05	.12	−.03		
Overall success index at T1	.74	.07	.74**		
Overall personal initiative scale at T1	−.00	.08	−.00		
2. Training vs. Control group	.24	.16	.14	.64	.09**
Overall personal initiative scale at T3/T4	.20	.09	.20**		
Analysis 4: Effect of training on posttraining overall success index (T4) and controlling for posttraining overall personal initiative scale (T3)					
1. Controls				.63	.63**
Line of business	.02	.11	.01		
Overall success index at T1	.73	.06	.73**		
Overall personal initiative scale at T1	−.07	.07	−.06		
Overall personal initiative scale at T3	.30	.07	.29*		
2. Training vs. control group	.24	.16	.14	.64	.01

Note. T1 = before training; T3 = 4–5 months after training; T4 = 1 year after training.
* Significant at the .01 level (2 tailed).
** Significant at the .01 level (2 tailed).

−1.01, *SD* = .15) (As described above, all of these failed companies were from the control group.) In addition, they reported that the reason for failure was high competition and low sales. Although three of them opened up new firms, they were not based on innovative and self-starting ideas; rather, their new firms were copy-cat endeavors geared toward overcrowded markets. Thus, again they used reactive action approaches similar to their earlier endeavors in contrast to self-starting and proactive actions that would have allowed them to exploit market niches or profitable opportunities.

Qualitative observations 1 year after the training illustrate the positive effects of the training on PI and business success and the mediating function of PI. The following three examples demonstrate participants' behavior change due to training and subsequent effects on business success: One participant operated in the metal industry and produced cheap aluminum saucepans of low quality. This was a highly competitive market in the Kampala region. Due to his participation in the training, he decided to switch to higher quality production to target a different customer group and to differentiate his business from his competition. He invested in testing his products at the National Bureau of Standard (NBS). Based on detailed feedback of quality deficiencies, he managed to improve the production process (e.g., by applying special tools) and finally was certified by the NBS. With the quality certificate, he approached a wholesaler for household articles and succeeded in securing a large order that was worth about 10 million Ugandan schillings and that kept him and three cooperating firms busy for more than 1 year.

A second participant produced and sold pastries in her small bakery located in a sparsely inhabited and relatively poor neighborhood about three kilometers outside of Kampala Center. After taking part in the training program, she decided to extend her customer base outside her neighborhood to gain independence from the local market and to increase profit. She wanted to reach these goals by displaying her pastries in a big supermarket in the town center. She started out by checking the product range of various supermarkets and found one displaying only a few varieties of cakes. She baked cakes that differed by form, color, and ingredients from those offered by the supermarket and approached the manager with samples. She managed to convince him of the attractiveness of her cakes to potential customers and was permitted to display the cakes in the supermarket on a commission basis. Her plan worked out, and both her turnover and profit increased.

The third participant owned a successful, nationwide funeral service; she had already thought about expanding her services to neighboring countries before participating in the training program. What had kept her from realizing this idea were her worries about facing an uncontrollable business environment in these countries. Her participation in the PI training made her realize how important it is to shape the environment. This was the initial spark for exporting her products to Sudan and Kenya. This led, indeed, to a strong enhancement of success. In addition, one of the participants in the training group received an entrepreneurship award by the Uganda Investment Authority for this entrepreneur's expansion of the business after participating in the training.

DISCUSSION

Our study contributes to the teaching of evidence-based management by developing an example of how to use action principles in detail (Rousseau & McCarthy, 2007). We developed action principles from theory and good scientific evidence and taught them integrating abstract principles with learning by doing. The gap between scientific knowledge and practical use is not just due to inept practitioners and the poor communication of researchers. We think that overcoming this gap needs good theory. We proposed that action regulation theory with its concept of action principles can help us to better understand the processes on how to overcome the knowing–doing gap. Scientists often assume that converting theory into implementation is trivial and easy. We believe that this is not the case. We think that it is useful for the teaching of evidence-based management to concentrate on action principles. By making scientific knowledge actionable, scientific evidence can help to improve managerial and entrepreneurial actions.

Our randomized controlled experiment showcased that teaching one area of evidence-based management leads to positive business effects for the owner-managers (Frese, 2009). This also answers the challenge put forward by Reay and colleagues (2009) to produce good evidence on the use of evidence-based management. The

intervention conducted here is based on developing action principles for the PI facets; PI behavior has been shown to be related to performance in employees (Tornau & Frese, 2013). The facets model is described in Table 1; it allowed us to develop science-based action principles and to train managers using these action principles. This means that the abstract theory of PI could be translated into several teachable action principles for each facet of PI. The training intervention had positive effects on PI behavior and on business success. In addition, PI behavior fully mediated the effect of the training intervention on subsequent change in business success—it is particularly the last issue that helps to make the case that the owner-managers' PI behavior led to the success for their companies. Thus, success is, in this case, a function of evidence-based management.

The results were robust, as all indicators of PI and all indicators of success pointed in the same direction. All PI measures increased due to the training. Participants gained PI knowledge, and each of the behavior-based measures increased strongly for the training group in comparison with the untrained control group—an entrepreneurial mind-set in the sense of a long-term approach (Gollwitzer & Bayer, 1999) was developed. The effects of the intervention on business success appeared for each of the success measures: Sales level of training participants rose from 2.67 million Ugandan shillings before the training to 3.39 million Ugandan shillings 1 year later (an increase of 27%). Similarly, the number of employees per firm increased on average by 2.79 employees from 7.88 to 10.67 (an increase of 35%) in the training group. Our intervention is of high societal relevance because it may reduce unemployment and poverty in the context of a developing country.

In contrast, the control group showed a decrease in sales and number of employees during this period. This decrease in success in the control group may have been due to two incidents that had a direct negative effect on the economy in Kampala during the 6 months before T4 measurement: First, many parts of the city suffered under a weeklong flood, which resulted in a temporal breakdown of revenues for some of the affected entrepreneurs. Second, the Queen of England visited; therefore, the city and parts of the industrial areas were closed for security reasons for a few weeks. Since the sample of the present study was based on random assignment of entrepreneurs to training and control groups, both groups would have been identically affected by these negative circumstances had there not been any intervention.

Qualitative observations suggest that entrepreneurs from the training group actually perceived the above-mentioned negative circumstances as opportunities to proactively undertake business changes: Several training participants reported that they had seen the flood as a chance to move their businesses to better locations, such as those with better infrastructure, consistent availability of electricity, or better access to customers. Some of them also reported that they had used the visit of the Queen for marketing purposes. Entrepreneurs of the control group may have shown a more reactive response toward these circumstances, which led to the decline of their businesses.

How does this study compare with other intervention studies? Reay and colleagues (2009) reported that they could not find any randomized controlled field experiments in their literature search.[4] Our training is based on developing action principles from the facets model of PI. The only other theory-based entrepreneurship intervention is the Achievement Motivation Training that aims to increase the achievement motive (i.e., an individual's urge to excel, consisting of preference for moderate risk, initiative, and a desire for feedback; McClelland & Winter, 1971). McClelland and Winter (1971) reported positive effects in India, and this was replicated (Miron & McClelland, 1979). Unfortunately, the studies in this tradition did not use randomization for the treatment and control groups, and they did not publish details of their statistical analyses; no effect size (*d*-) statistics were reported, and the description of their results is not detailed enough to allow calculating their effect size. Moreover, the achievement motivation training is relatively long (1 week), similar to many other training interventions for entrepreneurs in developing countries (Glaub & Frese, 2011). Since time is costly for most business owners, there may be selection effects by attracting noneffective business owners

[4] We found one such as yet unpublished study (Drexler, Fischer, & Schoar, 2011) by economists on using teaching accounting traditionally and with the help of rules of thumb (as would also be suggested by our approach). They found that the rules-of-thumb approach had more positive effects; however, the study was less ambitious in its intervention and it did not find clear effects on business success. It also did not report the effect size, making it difficult to compare the results; however, their general approach is near enough to action principles that are easy to communicate and thus, reinforces our study results.

into these long programs (because time is not as important for the less effective owners).

Our study also contributes to the literature on proactive behavior by testing a theoretical facets model of PI to change behavior for the first time as suggested in the proactivity literature (Crant, 2000; Parker et al., 2010). By changing PI behavior, the training contributed to an active approach to entrepreneurial tasks (Frese, 2009). Our study shows that it is possible to change PI behavior. This stands in contrast to a study on using PI training to enhance stress management (Searle, 2008). In this case, the training was not successful to increase PI, and PI was not a mediator between the training and strain reduction (however, PI training was successful to reduce strain). The author interprets the lack of hypothesized mediation results of PI to be due to his use of a self-report survey to measure PI. A meta-analysis on proactive behavior concurs with Searle (2008), suggesting different construct validities for the self-report measure (which is more like a personality trait measure) and the interview measure of PI which measures behavior (Tornau & Frese, 2013). Our study utilized the behavioral measures of PI, which is also more objective as it is based on a situational interview with frequent prompts and performance tests.

Strengths and Limitations

To mitigate common method biases and to increase validity of the results, we carefully selected and developed multiple subjective and objective measures of training effectiveness. A randomized waiting control group allowed us to control for possible effects of history, maturation, and self-selection (Cook et al., 1990); the randomized control group approach proved crucial in our case because history effects were present in the study leading to reduced success in the control group (as there were negative economic conditions affecting business negatively in Kampala). In addition, our efforts to reduce attrition made mortality and selection effects unlikely to explain the results (Cook et al., 1990).

The major strength of our study was translating PI theory into action principles which then led to high success, shown by the full mediation effect. The mediation effect is also a strength in comparison with other randomized controlled experiments (Dvir, Eden, Avolio, & Shamir, 2002; Eden & Aviram, 1993; Latham & Frayne, 1989; Latham & Saari, 1979) that did not test whether their theoretically developed constructs were responsible for producing the positive effects of their interventions. The mediation effect also makes it unlikely that a Hawthorne effect may have been responsible for the positive effects of the intervention. The Hawthorne effect, as traditionally conceptualized (Adair, 1984), is a general positive response to the experiment due to positive affect that results from the attention received during the intervention. There is no indication for a generalized response in our data as satisfaction is not highly correlated with PI or with success. The mediator effect is highly specific—the theory-based approach leads to more PI behavior which itself leads to more success. Moreover, had there been a Hawthorne effect, people would have exaggerated their reports of PI behavior; this would actually have reduced the correlation of PI and success—and, therefore, there would have been a conservative effect on the interpretation of our data. Moreover, PI is a behavioral measure within the interview and provides a count of the number of barriers overcome. Such a measure is unlikely affected by positive emotions as a result of a Hawthorne effect nearly half a year ago. PI indicators were ascertained in an interview, and the interviews allowed the interviewers to probe the participants to understand the exact product and marketing that was used so that it could be coded as high or low PI behavior. Both coders as well as the interviewers were blind as to whether the participant was in the experimental or control group. Finally, it is highly unlikely that owner-managers would have employed 35% more workers just because they felt good in a training a year ago.

Although the results were robust in terms of the specifics of measurement, training research would suggest the potential of an aptitude-treatment interaction, such that the treatment is more or less powerful depending upon a personality variable, general mental ability, or motivation to use the training material (Gully, Payne, Koles, & Whiteman, 2002; Kanfer & Ackerman, 1989). We, therefore, examined post-hoc moderator effects of the relationship between the intervention and success utilizing as potential moderators generalized self-efficacy, proactive personality, and general mental ability. None of these moderator analyses showed significant effects. Two explanations are (a) lack of power for a moderator analysis requiring a high number of participants, *N*; (b) the intervention was powerful enough in the sense of a strong situation (Mischel, 1977) to override potential interaction effects. Future studies should continue to examine potential moderator effects.

Our research intervention was conducted in Uganda, a country with one of the highest entrepreneurial activities worldwide (Acs, Arenius, Hay, & Minniti, 2004). Would the training also lead to an increase in PI and through this improve the business success in other countries? Intervention studies are all done in a specific situation and, therefore, the issue of generalizability of results appears in every study of this kind. We believe that, on balance, a good case can be made for the generalizability of our findings, given the centrality of active performance for entrepreneurship (Frese, 2009), the meta-analytic evidence on PI's relationships with employee performance in various countries (Tornau & Frese, 2013), and descriptive studies on PI and business success in different continents (Crant, 1995; Zempel, 1999). In addition, a pilot study in Germany produced similar results; the entrepreneurs added two more employees on average as a result of the training (approximately 20% of their total employment at T1; Frese, Hass & Friedrich, 2014). Although the training was first developed in Germany, the content of the problems presented, the examples provided, and the cases discussed were adjusted to the African environment that is characterized by scarce resources and low education.

An obvious limitation of our study is that we only had a no-treatment waiting control group. Given the complexity and costs of our longitudinal research design, it was at first necessary to test whether the intervention based on action principles would improve firms' performance in comparison with a no-treatment group. Future research may include additional control groups.

Implications and New Directions for Research

Contribution to Evidence-Based Management

Evidence-based management requires the following steps: (1) the intervention should be based on strong empirical evidence for a relationship between the central concept and an important organizational outcome—in our case we used PI and (firm) performance; (2) Developing action principles from theory and basing the intervention on these principles. In our case, we reported action principles based on the facets model of PI; (3) Showing that the intervention increases an important organizational outcome. In our case, this was the success of small business. Finally, (4) Demonstrate that the key concept influenced by the intervention is relevant for the positive outcomes. In our case, PI was an effective mediator for the relationship between the intervention and the positive organizational outcomes. In short, we believe that evidence-based management should rely on long-term field experiments showing behavioral changes by management to produce positive results. There are obviously many features of evidence-based management that we did not touch upon in this study (Rousseau & McCarthy, 2007). For example, learning to scan relevant scientific findings, as well as developing ones' own data and using them to advance companies could be integrated with the action principles approach.

Contribution to Poverty Reduction

In the African environment, the training concept showcased here is important because it helps to reduce poverty. For societal as well as individual reasons, it is important to increase the growth rate of companies, particularly in the developing world with its small firms (Mead & Liedholm, 1998). Entrepreneurship helps to increase innovation, jobs, and economic well-being (Baumol, 2002; Birch, 1987; Van Stel, 2006). An important contribution for fighting poverty and unemployment comes from high growth firms (Davidsson, 1989; Wong et al., 2005). Our results suggest that higher growth is achievable when managers base their actions on good scientific evidence.

The specific emphasis on PI is important in Africa and in Uganda because owner-managers often lack a high degree of PI. They often copy-cat reactively what other owners are doing rather than searching actively for niches. It may be attractive for donor agencies, governments, or for banks and microfinance institutions to utilize management interventions such as ours. Although the overall economic effect of an intervention for individual entrepreneurs is not easy to calculate, the growth of sales of 27% in the trained group and the increase of 35% more employees is likely to contribute positively to the local economy (Mead & Liedholm, 1998). Financial institutions would profit from an increased probability of full repayment of credits and incurring interest. By increasing the number of employees, the training program generates employment—an important goal for most developing countries.

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