

**SPECIAL ISSUE ARTICLE**

Who stays proactive after entrepreneurship training? Need for cognition, personal initiative maintenance, and well-being

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Summary

Personal initiative training is a promising way to increase entrepreneurial personal initiative, which is a key behavior for successful entrepreneurship. Although personal initiative training has been shown to promote personal initiative, little is known about how this proactive behavior can be maintained over time and what the consequences are. The training transfer literature suggests that training effects usually decline with time. It is not clear, however, which factors contribute to personal initiative maintenance and which benefits go along with it. In a randomized controlled field experiment with 912 microentrepreneurs in Lomé, Togo, we investigate the influence of need for cognition—a cognitive factor driving proactive behavior—on personal initiative maintenance after training. In addition, we examine the effect of need for cognition on the well-being consequences of personal initiative maintenance. We show that people high in need for cognition tend to maintain posttraining personal initiative longer than those low in need for cognition. However, contrary to our predictions, need for cognition has no effect on the level of well-being that results from personal initiative maintenance. Our findings contribute to a better understanding of personal initiative and its maintenance and could be used to increase training effectiveness.

KEYWORDS

entrepreneurship, maintenance, need for cognition, personal initiative, proactive behavior, training, well-being

1 | INTRODUCTION

Entrepreneurship is important for economic development (Acs, Desai, & Hessels, 2008; Baumol, 2002; Hafer, 2013), especially in developing countries (Bruton, Ketchen, & Ireland, 2013; Goedhuys & Sleuwaegen, 2010). To combat poverty in developing countries, business training programs for entrepreneurs have been developed. However, the long-term impact of business trainings seems to be limited (McKenzie & Woodruff, 2014). This is also suggested by the training transfer literature: Training effects usually decrease over time (Arthur, Bennett, Stanush, & McNelly, 1998; Baldwin & Ford, 1988; Blume, Ford, Baldwin, & Huang, 2010). Such a decline is particularly problematic for entrepreneurs, because entrepreneurial success is not the result of single entrepreneurial actions but requires a more constant search

for business opportunities (Shane & Venkataraman, 2000). Thus, trainings that only result in short-term changes in entrepreneurial behavior do not lead to long-term entrepreneurial success. This leads to the conclusion that a critical factor of training is maintenance; maintenance describes to which degree intended training effects are retained over time (Blume et al., 2010).

Our study focuses on personal initiative maintenance, its antecedents, and its consequences subsequent to personal initiative training for microentrepreneurs. Personal initiative is proactive behavior that is self-starting, future-oriented, and persistent (Fay & Frese, 2001; Frese & Fay, 2001; Parker, Bindl, & Strauss, 2010). Individuals high in personal initiative show self-initiated behavior that is meant to change their environment and goes beyond following an obvious idea that is “up in the air” (self-starting behavior), consider future

opportunities and threats and prepare for their occurrence (future-oriented behavior), and strive to achieve their goals despite internal and external obstacles (persistent behavior). Personal initiative constitutes an important behavior for entrepreneurs (Frese, 2009). It might impact entrepreneurs in at least two ways. First, personal initiative contributes to business success, as this behavior implies a drive for differentiation from competitors (Frese & Gielnik, 2014; Lieberman & Montgomery, 1988), and a readiness to deal with the changing and uncertain business environment (McMullen & Shepherd, 2006). Showing personal initiative should help entrepreneurs to consider future threats and opportunities (Parker & Bindl, 2017), to experiment (Frese & Gielnik, 2014), and to persist when facing barriers (Frese & Fay, 2001). Recent research has provided evidence for the positive impact of personal initiative on business success (Campos et al., 2017; Glaub, Frese, Fischer, & Hoppe, 2014). Second, personal initiative might be related to entrepreneurs' well-being. However, the direction of this relationship remains unclear to date. There are two predictions (Cangiano & Parker, 2016): On the one hand, proactive behavior can positively affect well-being via a motivational pathway: Entrepreneurs might increase their well-being due to more success resulting from showing personal initiative. On the other hand, there might also be a negative effect via a resource-depletion pathway: Personal initiative might be associated with a high degree of effort and stress, eventually leading to strain and reduced well-being. Both the positive and negative pathways should be stronger for microentrepreneurs than for employees. Microentrepreneurs set themselves their own goals, which should lead to particularly high satisfaction in case of progress toward the goal and eventually cause strong well-being (Sheldon & Elliot, 1999). On the negative side, microentrepreneurs are usually responsible for their businesses (Frese, 2009) which might make showing personal initiative more effortful and consequential.

At this point, little is known about personal initiative maintenance after training. The training transfer literature (Baldwin & Ford, 1988; Blume et al., 2010; Grossman & Salas, 2011) suggests training effects decrease over time. In the case of personal initiative, this decrease may be particularly strong because proactive behavior is highly context-specific (Grant & Ashford, 2008) and effortful (Bolino, Valcea, & Harvey, 2010). In the following, we will concentrate on personal initiative maintenance; we are not concerned about the impact of personal initiative training on personal initiative per se, as the effects have been shown in previous studies (Campos et al., 2017; Glaub et al., 2014). Instead, we want to investigate the impact of personal initiative training on personal initiative maintenance. Similarly, we are not interested in the relationship between personal initiative and well-being per se. Both the positive and negative relationship between personal initiative and well-being (Fay & Hüttges, 2017; Wang & Li, 2015) as well as the effects of well-being on personal initiative (Hahn, Frese, Binnewies, & Schmitt, 2012) have been shown. Instead, we want to investigate the relationship between personal initiative maintenance and well-being.

One way to enhance the effect of trainings on maintenance is to consider trainee characteristics. So the question is which characteristics should be studied in the context of personal initiative training. Personal initiative takes effort because it implies that entrepreneurs should show a high degree of independent goal setting, planning,

and feedback processing; similarly, maintenance also takes effort—the most important being that people tend to go back to old established routines when they reduce effortful processing. Thus, the common denominator of both personal initiative and the maintenance of it is that the effort lies primarily in the area of cognition. This suggests to examine cognitive trainee characteristics that may be important for dealing with old routines and to enhance the use of newly developed cognitive skills (Burke & Hutchins, 2007; Grossman & Salas, 2011). Need for cognition is such a cognitive trainee characteristic as it is the relatively stable tendency to engage in and enjoy cognitive activities (Cacioppo & Petty, 1982; Cacioppo, Petty, Feinstein, & Jarvis, 1996). Based on the model of proactive motivation (Parker et al., 2010), we argue that need for cognition provides individuals with motivation to maintain personal initiative. People high in need for cognition enjoy the cognitive input that is necessary to establish new goals, better plans, and better feedback processing when entrepreneurs show self-starting, future-oriented, and persistent behavior. Need for cognition should therefore reduce the tendencies of individuals to fall back into noneffortful routinized behavior. It might also counter the possible negative effect of personal initiative maintenance on entrepreneurs' well-being.¹ Need for cognition might buffer the effects of stressors and fatigue that might come along with efforts to keep up personal initiative, thereby reducing potential negative effects on entrepreneurs' well-being.

This study aims to make three contributions. First, the study contributes to the proactive motivation literature (Parker et al., 2010) by showing how a cognitive interindividual characteristic—need for cognition—provides motivation to maintain posttraining personal initiative over time. Second, the study sheds further light on the consequences of proactive behavior by investigating the role of maintenance of proactive behavior for individual well-being and giving first insights into need for cognition as interindividual factor that might impact this relationship. This is important because consequences of proactive behavior on well-being are understudied (Cangiano & Parker, 2016; Strauss, Parker, & O'Shea, 2017), and existing studies mostly ignore the role of intraindividual change in proactive behavior (for a recent exception, see Zacher et al., in press). Third, the study contributes to the broader training transfer literature (Baldwin & Ford, 1988; Blume et al., 2010) as it is based on a sophisticated experimental field design with a large sample size and four measurement waves over the course of 2 years after training, which allows the investigation of training effects over time. Our approach is rare in the field of training transfer research, which does not take into account intraindividual changes in training outcomes over time (Huang, Ford, & Ryan, 2016). Therefore, this study answers the call for studies that “more conclusively examine transfer maintenance” (Blume et al., 2010, p. 1097).

2 | THE DECREASING EFFECT OF PERSONAL INITIATIVE TRAINING OVER TIME

In line with the training transfer literature (Baldwin & Ford, 1988; Blume et al., 2010; Grossman & Salas, 2011), we argue that

¹We are grateful to the action editor of this special issue for suggesting the relationships to well-being to us.

entrepreneurs' posttraining personal initiative decreases over time. Meta-analytic evidence suggests that training effects decrease over time, especially when they are not reinforced after training (Arthur et al., 1998). Entrepreneurs' personal initiative maintenance is particularly challenging, as proactive behaviors are not just a set of predefined skills that once learned can then be used habitually; instead, they need to be continuously and often strenuously adapted to situational specificities (Grant & Ashford, 2008).

Personal initiative maintenance implies that entrepreneurs need to practice newly developed skills in their everyday work environment (Chiaburu & Marinova, 2005; Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012; Tracey, Tannenbaum, & Kavanagh, 1995). Even if the business environment provides numerous opportunities, the usual high work demand makes it difficult for entrepreneurs to seize those opportunities. Entrepreneurs may often continue with "business as usual" by relying on well-known action structures and processes. Old routines may prevail instead of proactively influencing the environment (Frese & Fay, 2001; Frese & Zapf, 1994; Grant & Ashford, 2008). An example would be that entrepreneurs fall back on their pretraining standard approaches to marketing (e.g., word-of-mouth recommendations) instead of continually developing innovative marketing strategies (e.g., regular blog posts on the product of the week).

We assume that this process is exacerbated when environments change. The business environment of entrepreneurs is constantly changing, among other things because other entrepreneurs tend to learn from successful novel ideas. Thus, what was a good and novel approach today may be a common and nondifferentiating approach tomorrow. Thus, environmental changes require additional personal initiative and additional effort and extra-motivation. Showing personal initiative again and again may not become easier but even more difficult the more the environment is fluid. The first ideas that were the basis of being self-starting, future-oriented, and persistent may have provided good results, but every additional personal initiative requires again new ideas, new long-term thinking, and new persistence. All of these demand additional time, effort, and resources (Bolino et al., 2010). Innovative behavior—one part of being self-starting—can be more and more burdensome (Janssen, van de Vliert, & West, 2004). In contrast, using old behaviors is less demanding. This process may contribute to entrepreneurs losing motivation to show personal initiative over and over again. Instead, a strategy of satisficing (in the sense of "good enough" solutions) may appear after having reaped some initial benefits as a result of personal initiative behavior (Simon, 1956). Thus, training may have a positive effect on entrepreneurs' personal initiative; but after some short-term benefits entrepreneurs may go back to earlier patterns of managing their businesses.

Hypothesis 1. *The positive effect of personal initiative training on personal initiative behavior decreases over time.*

3 | THE ROLE OF NEED FOR COGNITION FOR PERSONAL INITIATIVE MAINTENANCE

Proactive behavior might be perceived as burdensome over the long run and lower well-being (Cangiano & Parker, 2016), because

maintenance of proactive behavior may be effortful as entrepreneurs need to constantly fight against falling back into old and well-established routines. For individuals high in need for cognition, keeping up personal initiative should be less burdensome because they find joy in the constant cognitive challenge accompanying personal initiative maintenance.

Need for cognition is a cognitive factor that may drive entrepreneurs' motivation to actively maintain personal initiative subsequent to training. Parker et al. (2010) differentiate motivational states into the capability to show proactive behavior ("can do" motivation), the perception that proactive behavior serves a reason and thereby the will to show proactive behavior ("reason to" motivation) and the emotional drive to show proactive behavior ("energized to" motivation). We argue that need for cognition provides the "reason to" motivation for keeping up personal initiative after training. This is not a trivial hypothesis to test in an experimental setting because other theories have suggested that a tendency to think might hinder an action orientation as implied by personal initiative (Kruglanski et al., 2000). In the context of personal initiative training for entrepreneurs, the "reason to" motivation becomes more and more important over time. First, entrepreneurs are tempted to fall back into old routines; second, the changing environment and past success from personal initiative require more and sometimes more elaborate conscious effort. Need for cognition may make it possible to show personal initiative despite competing routines and extra work. People high in need for cognition tend to engage in cognitively stimulating activities, as they are motivated to think (Martin, Sherrard, & Wentzel, 2005). They possess an active and exploring orientation, and as a consequence, they are motivated to gather and process new information they can use to solve problems (Cacioppo et al., 1996). Need for cognition leads to a positive orientation toward newness and encourages new thinking again and again (Haugtvedt & Petty, 1992; Wu, Parker, & Jong, 2014), particularly deep thinking. Studies have shown the positive influence of need for cognition on performance involving deep thinking and a proactive approach, for example, in the field of problem solving (Coutinho, Wiemer-Hastings, Skowronski, & Britt, 2005), academic performance (Sadowski & Gülgös, 1996), or team performance (Kearney, Gebert, & Voelpel, 2009). However, need for cognition has been studied rarely in the field of entrepreneurship and certainly not in the context of maintenance of proactive behavior.

Deep thinking is particularly important for personal initiative maintenance. Personal initiative is a complex behavior that demands constant differentiation, consideration of future states, and persistence (Frese & Fay, 2001) in a constantly changing environment and in the face of uncertainty. As a result, entrepreneurs high in need for cognition should perceive personal initiative as highly desirable and should therefore be motivated to show personal initiative.

High need for cognition provides entrepreneurs with the necessary motivation to maintain high levels of personal initiative after training when personal initiative becomes more and more effortful and when "low-hanging fruits" have already been "picked." People low in need for cognition tend not to spend cognitive energy on thinking if it is not really required (Coutinho, 2006; Taylor, 1981); in contrast, people high in need for cognition engage in activities that are cognitively challenging without necessarily being externally motivated

(Carnevale, Inbar, & Lerner, 2011; Dornic, Ekehammar, & Laaksonen, 1991; Espejo, Day, & Scott, 2005), because they like to look for and process information to increase their understanding (Coutinho et al., 2005).

Hypothesis 2. *Need for cognition moderates the effect of personal initiative training on personal initiative maintenance such that posttraining personal initiative maintenance is stronger for people high in need for cognition than for those low in need for cognition.*

4 | THE MODERATED EFFECT OF NEED FOR COGNITION AND PERSONAL INITIATIVE MAINTENANCE ON WELL-BEING

The impact of personal initiative on well-being has the potential to be positive but also negative. In line with research on the effect of change in personal initiative on mood and exhaustion (Zacher et al., in press), we argue that the investigation of maintenance is important to understand this dual effect of personal initiative on well-being after personal initiative training. We further suggest that need for cognition may have an influence on the direction of the effect of personal initiative maintenance on well-being.

Proactive behavior can increase well-being because proactivity leads to success and to need satisfaction triggering positive mood (Cangiano & Parker, 2016). Proactive behavior also increases autonomy. Individuals who show personal initiative actively shape their environment to “make things happen” (Bindl & Parker, 2011), leading them to be able to choose from more opportunities to act (Frese, Garst, & Fay, 2007; Zacher et al., in press). The resulting autonomy should lead to increased well-being (Zacher et al., in press).

So far, this describes the direct effect of personal initiative. However, maintaining personal initiative after training may negatively affect well-being, as it may become more and more stressful. Personal resources are limited and showing personal initiative consumes extra resources. This may lead to fatigue and reduced well-being (Fay & Hüttges, 2017). Stress and fatigue may not be a problem right after training, because in the beginning, entrepreneurs can pluck low hanging fruits in the sense of new ideas and exploitation of opportunities. However, maintaining personal initiative over time becomes more and more difficult. One reason for this may be that entrepreneurs' ideas have to become more and more sophisticated in order for them to be different from own past ideas. A second reason may be that other entrepreneurs start to emulate the new ideas and compete; thus, the environment becomes more difficult. As a result, entrepreneurs need to invest extra effort to accomplish additional personal initiative which might consume their personal resources and cause a decrease in well-being due to high stress levels and fatigue (Bolino et al., 2010; Bolino & Turnley, 2005). Possible negative well-being effects resulting from stress and fatigue caused by personal initiative maintenance might counter the positive effects of personal initiative on well-being.

If entrepreneurs are high in need for cognition, the pleasure of thinking deeply should prevail and make it easier for them to keep up personal initiative. The constant need to come up with novel ideas

and acting on them in consideration of their future impact and possible barriers should be perceived as a pleasure rather than a burden. Previous research has for example emphasized that people high in need for cognition show innovation behavior for the reason of enjoyment (Wu et al., 2014). Innovation behavior, in turn, has been shown to be closely related to proactive behavior (Parker & Collins, 2010). People high in need for cognition are also more experienced in cognitive effortful problem solving (Cacioppo et al., 1996). As a result, they should be well prepared for and therefore less strained by the constant need to engage in problem-solving behavior that comes along with personal initiative maintenance. If entrepreneurs are low in need for cognition, thinking is less enjoyable to them. As a consequence, they are more strained by the extra effort in keeping up personal initiative. The overall effect is that need for cognition should moderate the relationship between personal initiative maintenance and well-being.

Hypothesis 3. *Need for cognition moderates the effect of personal initiative maintenance on well-being such that people high in need for cognition show more well-being through personal initiative maintenance than people low in need for cognition.*

5 | THE MEDIATED EFFECT OF PERSONAL INITIATIVE TRAINING ON WELL-BEING VIA PERSONAL INITIATIVE MAINTENANCE, MODERATED BY NEED FOR COGNITION

In Hypothesis 2, we argued that for people high in need for cognition, personal initiative maintenance should be stronger than for people low in need for cognition. In Hypothesis 3, we stated that personal initiative maintenance should lead to more well-being for people high in need for cognition as opposed to people low in need for cognition. It might ultimately follow that personal initiative training indirectly affects well-being through personal initiative maintenance and that the effect of personal initiative training on well-being via personal initiative maintenance is dependent on training participants' level of need for cognition. Figure 1 depicts our theoretical model.

Hypothesis 4. *Need for cognition moderates the effect of personal initiative training on well-being via personal initiative maintenance in two ways. First, posttraining personal initiative maintenance is stronger for people high in need for cognition than for those low in need for cognition. Second, people high in need for cognition show more well-being through personal initiative maintenance than people low in need for cognition.*

6 | METHOD

We conducted our study with entrepreneurs in Togo in a project comparing two different trainings. Both trainings were meant to improve the business performance of microenterprises in developing countries. One of the trainings was personal initiative training; the other training was a management training teaching classical methods of business

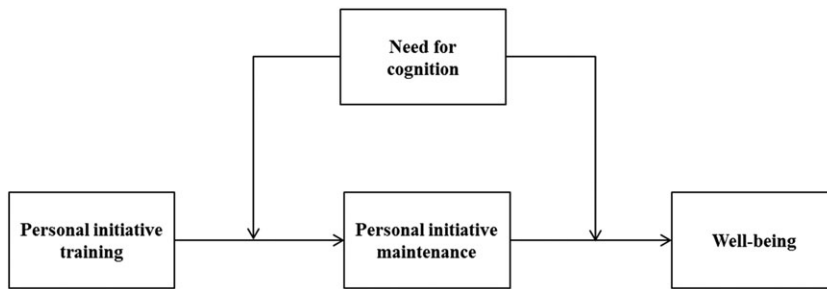


FIGURE 1 Theoretical model

management such as bookkeeping. For the purpose of this study, we only examined the effects of the personal initiative training and compared it to a nontraining control group.²

6.1 | Training approach

The training consisted of twelve 3-hr sessions over the course of four weeks and a 4-month coaching program involving four 3-hr coaching sessions. The theoretical base of the training was action regulation theory (Frese & Zapf, 1994; Hacker, 1998). Action regulation theory states that every action consists of a process of five steps, namely, goal setting, search for information, planning, execution of action, and feedback. The personal initiative training aimed to increase self-starting, future-oriented, and persistent behavior in all steps of the entrepreneurial action process (for a more detailed description of the training methodology, see Mensmann & Frese, 2017). The training approach exclusively focused on the increase in entrepreneurial personal initiative, without teaching any business practices.

We followed the training principles developed by Glaub et al. (2014) as this training was shown to successfully increase personal initiative. The particular challenge of personal initiative training is to train people to become active themselves which seems to be a contradiction in itself as a training typically implies that people follow instructions (Mensmann & Frese, 2017). To overcome this challenge, we combined a top-down training approach providing cognitive input with a bottom-up training approach initiating active behavior. Trainers provided action principles of personal initiative (top-down approach), which are simple rules of thumb of how to show personal initiative in the entrepreneurial action sequence (e.g., "Ask former customers why they stopped buying your products"). Through the action principles, participants created first operative mental models of personal initiative in the context of entrepreneurship (Norman, 1983). Operative mental models are cognitive road maps that contain the necessary knowledge to show personal initiative.

Subsequently, participants refined and internalized their operative mental models of personal initiative with the help of action training. To do so, they first worked on cases of microentrepreneurs that they could identify with. Participants, for example, set business goals that displayed personal initiative for the business owners described in the cases. In the following, they used their learnings to work on their

own businesses. By getting feedback from other participants and learning from their own errors (Keith & Frese, 2008), participants developed more sophisticated mental models of entrepreneurial personal initiative. The training ended with participants' development and presentation of own personal projects (Little, 1983), which were real business projects that involved personal initiative and could be achieved within 3 months. Examples of developed projects were the introduction of additional services and the implementation of marketing strategies that were unconventional in this context (e.g., blogging about products).

The coaching phase aimed at the successful implementation of the personal projects. Trainers visited the participants. Instead of giving advice on managerial practices, they asked questions that helped participants to reflect on whether they have already been active enough in the implementation of their personal projects and on how they could ensure the further successful implementation of the project. Trainers also encouraged participants to compare initial project goals with their actual project status to assist in the monitoring of the project.

6.2 | Procedure

We worked with local trainers, who conducted the training with the participants. Prior to the training phase, we conducted a 1-week train-the-trainer workshop with 20 experienced business trainers, who had applied for the project. We then pretested the training with 20 entrepreneurs and all 20 applicants, who each conducted a part of the training. The participants for this test were chosen from a pool of 3,220 eligible applicants who had applied for training participation but who had not been randomly selected for our research project. After the pilot training, we selected 12 trainers. Selection criteria were their performance in the pilot training and their results in a written test on personal initiative. Every trainer trained two groups of about 20 people. We randomly assigned the groups to the trainers.

The final training phase took place in April 2014. The trainings were conducted in French or in one of the most important local languages, Ewé and Kabiyé. Every training group was accompanied by a training intern, who recorded all training sessions, made sure that participants could follow the training, and reported on problems experienced by members of the training group to the project coordinators. The interns also distributed evaluation forms asking for the participants' satisfaction at the end of every training session. To ensure that illiterate people could also complete the forms, the questions were read out loud, and the participants answered with the help of Kunin scales which had smileys instead of labeled answer options (Kunin, 1955). We checked all training videos and evaluation forms

²To follow recent advice on the avoidance of false-positive findings in experiments (Simmons, Nelson, & Simonsohn, 2011), we tested all hypotheses using all experimental conditions as a robustness check. Using the whole sample did not change the results.

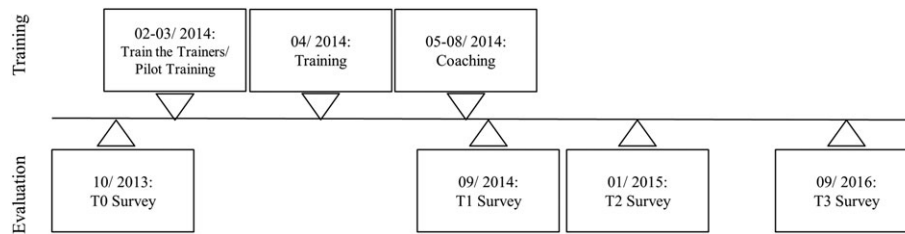


FIGURE 2 Timing of training and evaluation of the study

and visited each training group several times to evaluate the quality of the training.

The coaching phase took place between May and August 2014. Every trainer visited each of their training participants four times to ensure the realization of the personal projects and thereby the application of the training content.

We conducted a randomized controlled field experiment to test our hypotheses. This study design allowed us to control for potential threats to the internal validity of our study (Campbell, 1957). We used a longitudinal pretest–posttest design with four measurement waves. The first measurement wave took place 6 months before the training (T0, October 2013). Three follow-up measurement followed the training: 1 month after the training to assess short-term effects of training (T1, September 2014), 5 months after the training to assess midterm effects of training (T2, January 2015), and 25 months after the training to assess long-term effects of training (T3, September 2016).³ To ensure the participation of control group members in our study, every participant that took part in a measurement wave received the chance to win a prize in a lottery and got a small gift (e.g., a notepad). Figure 2 gives an overview of the timing of the training and evaluation steps.

We collected data with the help of structured interviews. For this purpose, we trained a group of local interviewers at the beginning of every measurement wave. These interviewers were guided by a group of supervisors, who were trained to assess the quality of interviews. All interviewers and supervisors were blind to the conditions and goals of this study. We pretested all interview questions before we used them in the field. The interviews were either conducted in French or in one of the two most important local languages.

6.3 | Sample

The participants of our study were microentrepreneurs with less than 50 employees from sectors other than agriculture in Lomé, Togo. This

sample is particularly representative of a population that benefits from showing personal initiative. First, personal initiative is crucial for entrepreneurship. Microentrepreneurs have to show personal initiative to be successful (Frese, 2009; Glaub et al., 2014; Krauss, Frese, Friedrich, & Unger, 2005) because entrepreneurship takes place in uncertain environments (McMullen & Shepherd, 2006) where unforeseen events are common and demand a proactive approach. Being proactive in view of the uncertain business environment is even more crucial for microentrepreneurs who may not have the financial reserves or help from strong business partners to deal with failure. Second, training for personal initiative for entrepreneurs constitutes a promising bottom-up approach to reduce poverty in developing countries, because it increases the innovative power and economic empowerment of entrepreneurs. This again contributes to the countries' economic development (Frese, Gielnik, & Mensmann, 2016; Pick & Sirkin, 2010).

A total of 3,396 entrepreneurs applied for the training, which was advertised in a 4-month communication campaign via radio, television, and word-of-mouth advertising by local partners. Of the 3,396 entrepreneurs, 3,320 fulfilled the predefined criteria (informal business owner, in business for more than 12 months, less than 50 employees, and operation outside of agriculture). Using stratified sampling based on sector of activity, gender, level of business activity prior to the training, and profits prior to the training, we randomly assigned 500 applicants to our training group and 500 applicants to a nontreatment control group. We excluded 74 entrepreneurs who were assigned to the training group but did not come to any session or who mistakenly participated in the training. Additionally, we excluded 14 entrepreneurs who did not answer our questions on personal initiative in any of the measurement waves, resulting in a final sample of 912 entrepreneurs. Using *t* tests, we checked for pretraining differences between the training group and the control group for all study variables measured during the first measurement wave. We did not find any differences between the groups. The participants' age ranged from 19 to 73 years with a mean age of 41.2 years ($SD = 9.7$). A total of 52.2% of entrepreneurs were female; 27.5% of the businesses were from the manufacturing sector, 47.4% in commerce, and 25.1% in the service sector; 6.9% of the participants have never been to school, and 23.8% never completed primary school, indicating a relatively high percentage of illiteracy. The mean monthly pretraining profit was 97,254 XOF (about 184 USD; $SD = 211,654$ XOF [about 399 USD]), ranging from a monthly loss of 17,607 XOF (about 3,315 USD) to a profit of 22,500 XOF (about 4,236 USD).

³The overall project involved five instead of four measurement waves. When examining the dependent variables for this study and another study that resulted from the project, we noticed a decrease in all dependent variables at the original T3 measurement wave of the project (September 2015). We subsequently interviewed local experts from the Togolese country office of the World Bank and our local cooperation partners to explore these findings. All experts uniformly named the preceding election as a reason for limited business activity during that period, as clients and entrepreneurs were afraid of riots and turmoil. We cross-validated this finding checking the local newspaper articles of that period and found additional support for this claim. We subsequently excluded this measurement wave from our analyses for this study, as the study concentrates on development of business activity over time. Appendix A shows Table 2 when considering all five measurement waves of the project.

6.4 | Measures

To assure accuracy of wording, all measures were translated from English into French and back. The measures were then translated into the two local languages and into French again. A short version of the coding scheme for quantitative and qualitative personal initiative is shown in Appendix B.

6.4.1 | Personal initiative

We assessed personal initiative in the three follow-up measurement waves (T1-T3) with interview questions adapted from Frese, Krings, Soose, and Zempel (1996), which were also used by Glaub et al. (2014). Following Frese et al. (1996), we assessed quantitative and qualitative personal initiative. We measured quantitative personal initiative as the number of changes participants made concerning their business in the previous 6 months. Two independent local coders rated quantitative personal initiative at every measurement wave by counting the changes and taking into account whether the change was rather a minor change that did not require much effort (coded as "1") or a major change that required considerable effort because entrepreneurs had to find the necessary means (information, financial means, or others) to realize the change (coded as "2"). For example, rearranging products on a shelf was regarded as a minor change, whereas purchasing an expensive machine for the business was a major change. The sum of the weighted changes constituted quantitative personal initiative. Intraclass correlation coefficients (ICC; Shrout & Fleiss, 1979) showed good reliabilities (ICC between 0.93 and 0.94). We used the means of the coders' ratings as measures of quantitative personal initiative.

Qualitative personal initiative was measured with interview questions asking for the change requiring the most effort. We asked whether the participants had shown initiative by developing the idea for the change by themselves and by implementing the change on their own and in a different way than other businesses. Answers were coded on a scale from zero (no change, therefore no qualitative initiative at all) to five (high qualitative personal initiative). We used the coding scheme by Glaub et al. (2014) and adapted it to the Togolese context. Similar to the procedure for quantitative initiative, two independent local coders rated the level of qualitative personal initiative. Reliabilities between the coders' ratings were good throughout the different measurement waves (ICC between 0.95 and 0.97). We used their rating means to measure qualitative personal initiative. An example of an entrepreneur showing high qualitative personal initiative is a carpenter who produced decorated doors. After having noticed that the handles of the saws he worked with used to break after a while, he proactively came up with the idea to produce spare handles for saws. This idea was very innovative for an entrepreneur in his sector. In addition, the carpenter produced richly decorated handles which looked different from what he has usually seen on the market. He actively implemented his business idea on his own; he looked for and purchased the best material, adapted the handles to the customers' needs, and started to produce the handles.

6.4.2 | Well-being

We measured well-being during the first (T0) and last (T3) measurement wave using an adapted version of the ladder scale by Cantril (1967). We showed participants a ladder with numbers from "0" (bottom of the ladder) to "8" (top of the ladder). We then let participants imagine their best and worst possible life and that the bottom of the ladder represented their worst possible life and the top of the ladder their best possible life. Afterwards, we asked participants to rate their overall well-being ("Which step of the ladder represents your current situation?") using the ladder. In the third follow-up measurement wave (T3), we additionally asked for professional well-being ("Which step of the ladder represents your current professional situation?") to get a more context-specific measure.

6.4.3 | Training participation

We operationalized training participation as a dummy variable indicating whether the participants were assigned to the training or not. Participants in the control group received the value "0," whereas those in the training group received the value "1."

6.4.4 | Time

The time measure reflected the number of follow-up measurement waves used to examine personal initiative maintenance subsequent to the training. For the first follow-up measurement wave (T1), we coded time as "0," for the second (T2) as "1," and for the third (T3) as "2."

6.4.5 | Need for cognition

In the first measurement wave (T0), we asked for participants' level of need for cognition with nine items adapted from Cacioppo, Petty, and Kao (1984; $\alpha = 0.68$). In a pretest, we identified those items as the items with the highest comprehensibility for our study context. A sample item was "I would prefer complex to simple problems." Answers were rated on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*).

6.4.6 | Control variables

We measured all sociodemographic control variables in the first measurement wave (T0). Female entrepreneurs, especially in developing countries, oftentimes face gender-specific challenges such as greater difficulty in getting finance and a lack of education, which might limit their potential to take entrepreneurial action (Goyal & Yadav, 2014). Thus, we included participants' gender (0 = male, 1 = female) as control variable. We also controlled for age in years, as research reveals changes in proactive behavior and entrepreneurial behavior across the lifespan due to changes in goals, values, and underlying motives of work behavior (Fay & Sonnentag, 2010; Gielnik, Zacher, & Wang, in press). As environments might differ substantially across sectors and as research reveals the crucial role of work environments for proactive behavior (Parker, Williams, & Turner, 2006), we controlled for sector with two dummy variables for commerce (0 = *not in commerce*,

1 = *in commerce*) and manufacturing (0 = *not in manufacturing*, 1 = *in manufacturing*). The reference category for sector is service.

Many bigger business changes require money (i.e., buying a machine, hiring employees); they are easier to realize with the necessary financial means. Therefore, we controlled for business profits in the previous full month (in CFA-Franc [XOF]) in the first measurement wave. As business profits should increase as a consequence of personal initiative training, we also included a measure of mean business profits in the previous full month (in XOF) across all posttraining measurement waves as a control variable.

Proactive behavior does not only depend on the context but also has been shown to be partly influenced by proactive personality (Bateman & Crant, 1993; Bindl & Parker, 2011). To measure personal initiative as a trait (Tornau & Frese, 2013), we included the 7-item scale by Frese, Fay, Hilburger, Leng, and Tag (1997). A sample item was "I take initiative immediately even when others don't." The internal consistency of the scale was good ($\alpha = 0.72$). Answers were rated on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*).

Additionally, we controlled for two further variables that the literature has mentioned as important in the context of training transfer (Grossman & Salas, 2011). First, we controlled for entrepreneurial self-efficacy, that is, entrepreneurs' belief that they are capable of successfully dealing with the roles and tasks associated with entrepreneurship (Chen, Greene, & Crick, 1998). Self-efficacy should provide motivation to show personal initiative as it is an important provider of the necessary confidence to do so ("can do" motivation, Parker et al., 2010). Domain-specific self-efficacy has been shown to be a better predictor for proactive behavior than general self-efficacy (Ohly & Fritz, 2007). Entrepreneurial self-efficacy is changeable (Burke & Hutchins, 2007), and training approaches stimulating active behavior were shown to have an effect on self-efficacy (Eden & Aviram, 1993; Frayne & Latham, 1987). We therefore included posttraining entrepreneurial self-efficacy in our models. We used the measure of entrepreneurial self-efficacy at T2 for this analysis, as we did not have data on entrepreneurial self-efficacy at T1. To measure entrepreneurial self-efficacy, we used nine items developed by Krauss (2003). A sample item is "How confident are you that you can negotiate with other business men well?" We used the mean of the nine items as entrepreneurial self-efficacy score. The scale showed good internal consistency ($\alpha = 0.84$). Answers were rated on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*).

Second, we introduced cognitive ability, that is, the capacity to process information and to learn (Hunter, 1986; Kanfer & Ackerman, 1989a) as control variable into our model. Meta-analytical research reveals that cognitive ability constitutes the strongest predictor for training transfer (Blume et al., 2010). Individuals high in cognitive ability have a higher capacity of attentional resources (Burke & Hutchins, 2007; Kanfer & Ackerman, 1989a) and are better prepared to successfully process what they have learned in a training (Grossman & Salas, 2011), especially in the case of complex behavior. We measured cognitive ability in the first measurement wave (T0) with set B of the Raven's Progressive Matrices Test (Raven, Raven, & Court, 1998). Following previous studies in the context of developing countries (de Mel, McKenzie, & Woodruff, 2008; Rubalcava & Teruel, 2004),

we used the raw scores of the test results as a measure of cognitive ability to ensure easy comparability across studies.

6.5 | Method of analysis

Our data set included 2,736 observations from 912 participants. To test Hypotheses 1 and 2, we conducted growth modeling using random coefficient models with the help of the nonlinear and linear mixed effects program in R to test our hypotheses. By doing so, we took into account that the different measurements of personal initiative were nested within our participants and thus avoided biased parameter estimates (Bliese & Ployhart, 2002). To test Hypothesis 3, we followed the approach described by Chen, Ployhart, Thomas, Anderson, and Bliese (2011). To investigate the effect of personal initiative maintenance on well-being moderated by need for cognition, we extracted each participant's slope of personal initiative from the Bayes slope estimates drawn from the random coefficient models. Higher values in the resulting slope variable reflected greater personal initiative maintenance. We tested Hypothesis 4 with the help of moderated mediation analysis following Tein, Sandler, MacKinnon, and Wolchik (2004) and MacKinnon, Lockwood, and Williams (2004).

We used pairwise deletion to handle missing data in order to make use of all available data in the data set. To investigate whether the control variables included in the models created suppression effects, we also conducted all analyses without the control variables. We found the same patterns of results with and without the inclusion of our control variables.

7 | RESULTS

Table 1 summarizes the descriptive statistics and intercorrelations of our study variables. Measures of quantitative and qualitative personal initiative showed high correlations within each measurement wave (between $r = 0.63$ and $r = 0.71$), suggesting construct validity.

7.1 | Pre-analysis and manipulation checks

Before testing our hypotheses, we followed the model testing steps described by Bliese and Ployhart (2002). In the first step, we assessed whether there was a nontrivial degree of nonindependence (ICC1) for quantitative and qualitative personal initiative. The results suggest that there was substantial within-person variance for quantitative personal initiative (30.4%) and qualitative personal initiative (21.8%).

In a subsequent step, we tested whether allowing the slopes to vary improved the fit of our models. An inclusion of the grand mean centered linear and quadratic time trend significantly improved the model fit compared to a model that did not allow for random slopes (quantitative personal initiative: $\chi^2_{diff}(5) = 41.54$, $p < 0.01$; qualitative personal initiative: $\chi^2_{diff}(5) = 30.22$, $p < 0.01$). Thus, we included the linear and quadratic trend as random effects.

Next, we examined the error structure of our models by contrasting competing models with and without the inclusion of terms that account for autocorrelation and heteroscedasticity. Results indicated

TABLE 1 Means, standard deviations, and correlations of study variables

Variables	Time	N	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1. Quantitative PI	T1 ^a	886	2.10	1.86																				
2. Quantitative PI	T2	851	1.43	1.64	0.38**																			
3. Quantitative PI	T3	801	1.44	1.54	0.35**	0.25**																		
4. Qualitative PI	T1	886	2.42	1.49	0.63**	0.28**	0.25**																	
5. Qualitative PI	T2	851	1.72	1.54	0.32**	0.71**	0.21**	0.35**																
6. Qualitative PI	T3	801	2.07	1.63	0.24**	0.20**	0.68**	0.19**	0.18**															
7. Overall WB	T0	908	3.94	1.38	0.05	0.08*	0.02	0.05	0.07*	-0.01														
8. Overall WB	T3	832	4.48	1.65	0.02	0.05	0.07	0.08*	0.05	0.09*	0.19**													
9. Professional WB	T3	832	4.88	1.76	0.11**	0.04	0.13**	0.11**	0.07*	0.14**	0.12**	0.55**												
10. Training ^b	T0	912	0.47	0.50	0.40**	0.26**	0.19**	0.35**	0.26**	0.19**	-0.01	0.06	0.07*											
11. Need for cognition	T0	910	3.43	0.57	0.12**	0.05	0.06	0.04	0.05	0.05	0.10**	-0.07*	0.00	0.04										
12. Gender ^c	T0	912	0.52	0.50	-0.17**	-0.06	-0.10**	-0.08*	0.00	-0.04	0.10**	0.26**	0.05	-0.01	-0.14**									
13. Age	T0	912	41.21	9.73	-0.15**	-0.09**	-0.14**	-0.12**	-0.08*	-0.13**	0.11**	0.09*	0.00	-0.01	0.02	0.15**								
14. Commerce ^d	T0	912	0.47	0.5	-0.1**	-0.03	-0.08*	-0.02	0.03	-0.05	0.13**	0.14**	-0.04	-0.01	-0.12**	0.48**	0.10**							
15. Manufacturing ^e	T0	912	0.28	0.45	0.08*	0.04	0.00	0.05	0.03	0.00	-0.12**	-0.07*	0.03	0.01	0.05	-0.27**	-0.06	-0.59**						
16. Profits last month	T0	906	97255	211654	0.07*	0.08*	0.07*	0.02	0.06	0.01	0.10**	0.04	-0.04	0.00	0.01	-0.07*	-0.01	0.09**	-0.08*					
17. Profits last month	T1-T3	912	128091	297199	0.12**	0.15**	0.21**	0.12**	0.10**	0.09*	0.14**	0.07*	0.08*	0.08*	0.01	-0.07*	-0.05	0.09**	-0.10**	0.36**				
18. PI scale	T0	910	4.25	0.45	0.10**	0.04	0.10**	0.01	0.04	0.03	0.05	-0.05	0.02	-0.03	0.47**	-0.12**	0.02	-0.09**	0.08*	0.07*	0.03			
19. Ent. self-efficacy	T2	851	4.31	0.55	0.21**	0.12**	0.14**	0.17**	0.15**	0.12**	0.08*	0.09**	0.09*	0.10**	0.11**	-0.11**	-0.07*	-0.06	0.07*	0.15**	0.17**	0.11**		
20. Cognitive ability	T0	903	7.24	3.29	0.11**	0.06	0.07*	0.06	0.03	0.03	-0.12**	-0.17**	-0.10**	0.01	0.13**	-0.18**	-0.15**	-0.08*	0.01	0.10**	0.01	0.13**	0.04	

Note. PI = personal initiative; WB = well-being.

^aT0 = before the training; T1 = first follow-up measurement wave, T2 = second follow-up measurement wave, T3 = third follow-up measurement wave; ^b0 = control group, 1 = training group; ^c0 = male, 1 = female;

^d0 = other, 1 = commerce; ^e0 = other, 1 = manufacturing; reference category for d and e: Service.

* $p < 0.05$; ** $p < 0.01$.

that there was no autocorrelation (quantitative personal initiative: $\chi^2_{\text{diff}}(1) = 0.20, p = ns$; qualitative personal initiative: $\chi^2_{\text{diff}}(1) = 0.02, p = ns$). We also did not find evidence for heteroscedasticity (quantitative personal initiative: $\chi^2_{\text{diff}}(1) = 0.00, p = ns$; qualitative personal initiative: $\chi^2_{\text{diff}}(1) = 0.00, p = ns$). As a consequence, we did not include the error specification terms in our models.

To check whether our manipulation of personal initiative worked, we examined the main effect of personal initiative training on personal initiative (see Model 1.1 and Model 2.1 in Table 2). The results reveal that personal initiative training had a significant positive effect on quantitative personal initiative ($b = 0.84, p < 0.01$) and qualitative personal initiative ($b = 0.78, p < 0.01$), indicating that the training increased participants' level of personal initiative.

7.2 | Test of hypotheses

Hypothesis 1 stated that the positive effect of personal initiative training on personal initiative decreases over time. To test this hypothesis, we included an interaction term of the grand mean centered time variable and the grand mean centered training participation variable in our model.⁴ Model 1.2 and Model 2.2 in Table 2 show that there was a significant negative effect of the interaction term on quantitative personal initiative ($b = -0.48, p < 0.01$) and qualitative personal initiative ($b = -0.23, p < 0.01$), supporting the hypothesized decline. An additional finding was the negative significant main effect of the time variable on quantitative personal initiative ($b = -0.33, p < 0.01$) and qualitative personal initiative ($b = -0.19, p < 0.01$).

To illustrate the interaction effect of the two-way interaction of time and training on quantitative and qualitative personal initiative, we followed the procedures by Aiken and West (1991) and Dawson (2014, see Figures 3 and 4). We plotted the slopes for the training group and the control group. Simple slope analysis revealed that both slopes were negative and significant and that the decrease in quantitative and qualitative personal initiative in the training group was stronger than the decrease in the control group (quantitative initiative: control = $-0.33, t(838) = -9.79, p < 0.01$, training = $-0.82, t(838) = -10.89, p < 0.01$; qualitative personal initiative: control = $-0.19, t(838) = -5.35, p < 0.01$, training = $-0.42, t(838) = -5.36, p < 0.01$).

In Hypothesis 2, we assumed a moderating effect of need for cognition on posttraining personal initiative maintenance. We included a three-way interaction term of the grand mean centered time variable, the grand mean centered training participation variable, and the grand mean centered need for cognition variable in our model to test the hypothesis. Our results regarding the influence of need for cognition on personal initiative maintenance after training were mixed. We could not provide support for the hypothesized effect on the maintenance of quantitative personal initiative ($b = -0.03, p = ns$, see Model 1.3 in Table 2). However, as expected, need for cognition contributed to posttraining maintenance of qualitative personal initiative ($b = 0.30,$

$p < 0.05$, see Model 2.3 in Table 2). As a consequence, we could partially support Hypothesis 2.

The three-way interaction of time, training participation, and need for cognition on qualitative personal initiative is displayed in Figure 5. Simple slope analysis revealed that the slope of training participants high in need for cognition significantly differed from training participants low in need for cognition ($t(838) = 2.18, p < 0.05$), whereas in the control group, people high in need for cognition and people low in need for cognition did not show a significant difference in slopes ($t(838) = -1.35, p = ns$).

In Hypothesis 3, we claimed that personal initiative maintenance would lead to more well-being for people high in need for cognition compared with people low in need for cognition. To test this hypothesis, we regressed overall well-being and professional well-being at T3 on the slopes of quantitative personal initiative and qualitative personal initiative and the interaction term of the grand mean centered slopes of quantitative and qualitative personal initiative and the grand mean centered need for cognition variable. We controlled for the average levels (intercepts) of quantitative personal initiative and qualitative personal initiative, training participation, and well-being at T0. Both the slope of quantitative personal initiative and of qualitative personal initiative did not have a significant effect on overall well-being (slope of quantitative personal initiative: $b = 0.03, p = ns$; slope of qualitative personal initiative: $b = 0.01, p = ns$; see Model 1.1 in Table 3). We also could not find a significant effect of the slope variables on professional well-being (slope of quantitative personal initiative: $b = -0.08, p = ns$; slope of qualitative personal initiative: $b = 0.07, p = ns$; see Model 2.1 in Table 3). Contrary to our expectations, we did not find a significant effect of the interaction between the personal initiative variables and need for cognition on overall well-being (interaction with the slope of quantitative personal initiative: $b = -0.03, p = ns$; interaction with the slope of qualitative personal initiative: $b = 0.03, p = ns$, see Model 1.2 and Model 1.3 in Table 3) and on professional well-being (interaction with the slope of quantitative personal initiative: $b = 0.10, p = ns$; interaction with the slope of qualitative personal initiative: $b = 0.14, p = ns$, see Model 2.2 and Model 2.3 in Table 3). Thus, we could not support Hypothesis 3.

Hypothesis 4 integrated all prior hypotheses by stating that need for cognition impacts the effect of personal initiative training on well-being via personal initiative maintenance such that high need for cognition increases personal initiative maintenance after training, as well as well-being that results from this maintenance. To test Hypothesis 4, we conducted a moderated mediation analysis. We used the approach by Tein et al. (2004). We rescaled the personal initiative training variable and the personal initiative slope variables of qualitative personal initiative and quantitative personal initiative for different levels of need for cognition (one standard deviation below the mean [$-1 SD$] and one standard deviation above the mean [$+1 SD$]). Then, we ran separate moderated regression analyses for the different levels of need for cognition (low need for cognition [$-1 SD$], average need for cognition, high need for cognition [$+1 SD$]). We controlled for the same variables as in our prior hypothesis tests. We subsequently conducted mediation analyses for the effects of the independent variables at the three different levels of need for cognition. Monte Carlo method was used to obtain confidence intervals for the indirect

⁴As a further check of a quadratic time trend, we investigated the impact of all interaction terms when formed with the quadratic time variable. The effects of all two-way and three-way interactions with the quadratic time variable on our dependent variables were nonsignificant.

TABLE 2 Growth models testing the training effect over time and the impact of need for cognition on personal initiative maintenance

Variables	Qualitative personal initiative																												
	Model 1.0			Model 1.1			Model 1.2			Model 1.3			Model 2.0			Model 2.1			Model 2.2			Model 2.3							
	Coeff.	SE		Coeff.	SE		Coeff.	SE		Coeff.	SE		Coeff.	SE		Coeff.	SE		Coeff.	SE		Coeff.	SE		Coeff.	SE			
Gender	-0.12	(0.10)		-0.14	(0.09)		-0.15	(0.09)		-0.14	(0.09)		-0.03	(0.09)		-0.04	(0.08)		-0.04	(0.08)		-0.04	(0.08)		-0.04	(0.08)		-0.04	(0.08)
Age	-0.02**	(0.00)		-0.02**	(0.00)		-0.02**	(0.00)		-0.02**	(0.00)		-0.01**	(0.00)		-0.01**	(0.00)		-0.01**	(0.00)		-0.01**	(0.00)		-0.01**	(0.00)		-0.01**	(0.00)
Commerce ^a	-0.13	(0.11)		-0.00	(0.10)		-0.11	(0.11)		-0.11	(0.11)		0.06	(0.10)		0.08	(0.10)		0.08	(0.10)		0.08	(0.10)		0.09	(0.10)		0.09	(0.10)
Manufacturing ^b	-0.02	(0.11)		-0.00	(0.11)		-0.00	(0.11)		0.01	(0.11)		0.11	(0.10)		0.11	(0.09)		0.11	(0.09)		0.11	(0.09)		0.11	(0.09)		0.11	(0.09)
Pretraining profits	-0.00	(0.00)		0.00	(0.00)		0.00	(0.00)		0.00	(0.00)		-0.00	(0.00)		-0.00	(0.00)		-0.00	(0.00)		-0.00	(0.00)		-0.00	(0.00)		-0.00	(0.00)
Posttraining profits	0.00**	(0.00)		0.00**	(0.00)		0.00**	(0.00)		0.00**	(0.00)		0.00**	(0.00)		0.00*	(0.00)		0.00*	(0.00)		0.00*	(0.00)		0.00*	(0.00)		0.00*	(0.00)
Personal initiative	0.20*	(0.09)		0.20*	(0.10)		0.20*	(0.10)		0.20*	(0.10)		0.03	(0.08)		0.01	(0.09)		0.01	(0.09)		0.01	(0.09)		0.01	(0.09)		0.01	(0.09)
Ent. self-efficacy	0.31**	(0.08)		0.25**	(0.07)		0.25**	(0.07)		0.26**	(0.07)		0.36**	(0.07)		0.29**	(0.07)		0.29**	(0.07)		0.29**	(0.07)		0.29**	(0.07)		0.29**	(0.07)
Cognitive ability	0.02	(0.01)		0.02	(0.01)		0.02	(0.01)		0.02	(0.01)		0.01	(0.01)		0.01	(0.01)		0.01	(0.01)		0.01	(0.01)		0.01	(0.01)		0.01	(0.01)
Training ^c				0.84**	(0.08)		0.90**	(0.08)		0.90**	(0.08)		0.90**	(0.08)		0.78**	(0.07)		0.78**	(0.07)		0.75**	(0.07)		0.75**	(0.07)		0.75**	(0.07)
Time				-0.34**	(0.04)		-0.33**	(0.03)		-0.33**	(0.03)		-0.33**	(0.03)		-0.19**	(0.04)		-0.19**	(0.04)		-0.19**	(0.04)		-0.19**	(0.04)		-0.19**	(0.04)
Time squared				0.33**	(0.06)		0.33**	(0.06)		0.33**	(0.06)		0.33**	(0.06)		0.52**	(0.06)		0.52**	(0.06)		0.52**	(0.06)		0.52**	(0.06)		0.52**	(0.06)
Need for cognition (NFC)				0.06	(0.08)		0.05	(0.08)		0.05	(0.08)		0.05	(0.08)		0.08	(0.07)		0.08	(0.07)		0.08	(0.07)		0.08	(0.07)		0.09	(0.07)
Training × Time							-0.48**	(0.07)		-0.48**	(0.07)		-0.48**	(0.07)		-0.23**	(0.07)		-0.23**	(0.07)		-0.23**	(0.07)		-0.23**	(0.07)		-0.23**	(0.07)
Training × NFC							0.19	(0.14)		0.19	(0.14)		0.19	(0.14)		0.02	(0.12)		0.02	(0.12)		0.02	(0.12)		0.02	(0.12)		0.02	(0.12)
Time × NFC							-0.09	(0.06)		-0.09	(0.06)		-0.09	(0.06)		0.03	(0.06)		0.03	(0.06)		0.03	(0.06)		0.03	(0.06)		0.03	(0.06)
Training × Time × NFC							-0.03	(0.12)		-0.03	(0.12)		-0.03	(0.12)		0.30*	(0.12)		0.30*	(0.12)		0.30*	(0.12)		0.30*	(0.12)		0.30*	(0.12)
-2 × log (lh)	9,246.62			9,034.84			8,989.52		8,993.69			8,986.87		8,753.37			8,745.66		8,745.66			8,745.66		8,747.58		8,747.58		8,747.58	
df	828			826			826		825			828		826			826		826			826		825		825		825	

Note. N = 912; (lh) = likelihood; df = degrees of freedom.
 0 = male, 1 = female; ^a0 = other, 1 = commerce; ^b0 = other, 1 = manufacturing; reference category for a and b: service;
^c0 = no, 1 = yes; profits = business profits in the last month. *p < 0.05; **p < 0.01.

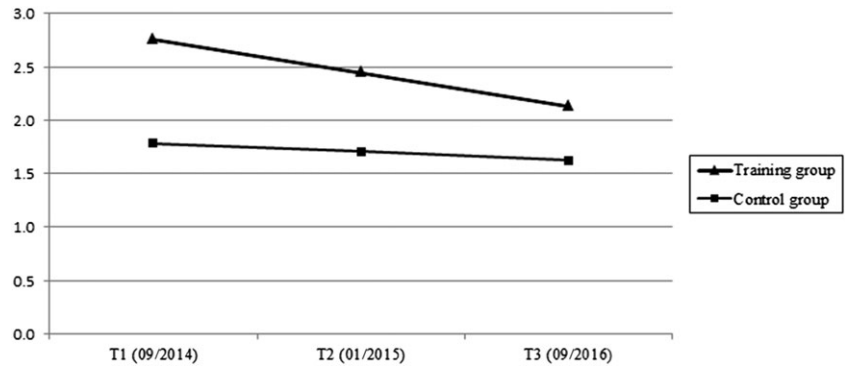


FIGURE 3 The decrease in qualitative personal initiative over time after training

effects of the mediation analyses (MacKinnon et al., 2004). The results of our analyses are shown in Table 4. An interval that does not include zero indicates a significant indirect effect. All indirect effects of personal initiative training on the well-being measures via quantitative and qualitative personal initiative maintenance were insignificant. Thus, we could not support Hypothesis 4.

8 | DISCUSSION

The current study provides insights into posttraining personal initiative maintenance and its consequences. More specifically, it sheds light on the role of need for cognition in personal initiative maintenance for entrepreneurs after personal initiative training. In view of the importance of a constant opportunity identification and exploitation in entrepreneurship (Shane & Venkataraman, 2000), a better understanding of interindividual differences that buffer the decay of proactive behavior subsequent to training is crucial for successful entrepreneurship training. In addition, the study investigates the role

of need for cognition in the well-being consequences of personal initiative maintenance after training and thereby provides new insights into the affective consequences of proactive behavior. The results supported our first hypothesis, as posttraining personal initiative decreased over time (Hypothesis 1), showing that it is difficult to maintain personal initiative after training.

As expected, we found that entrepreneurs high in need for cognition showed a slower decay in qualitative personal initiative after training compared to those low in need for cognition (Hypothesis 2). Contrary to our expectations, we could not show this effect for quantitative personal initiative. One possible explanation for this is that need for cognition might only be relevant for qualitative personal initiative, as it is cognitively challenging and therefore provides a lot of food for thought. Need for cognition plays a role particularly for intellectual task performance (Coutinho, 2006). People high in need for cognition tend to process information more deeply (Graham, 2007). Qualitative personal initiative requires that one constantly comes up with new ideas: This makes the behavior attractive for individuals high in need for cognition. Thus, people high in need for cognition should

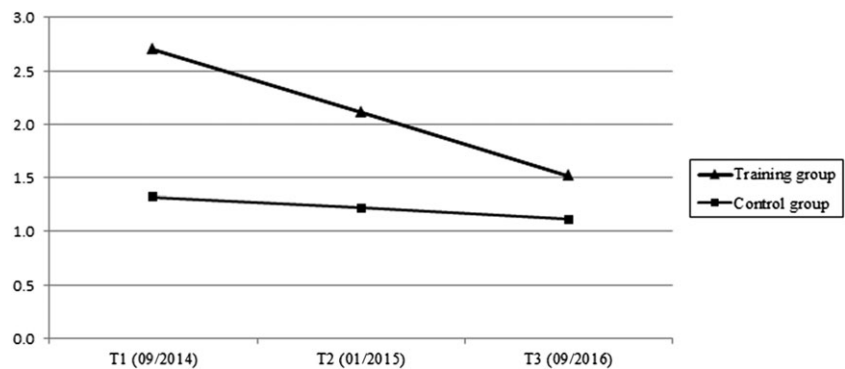


FIGURE 4 The decrease in quantitative personal initiative over time after training

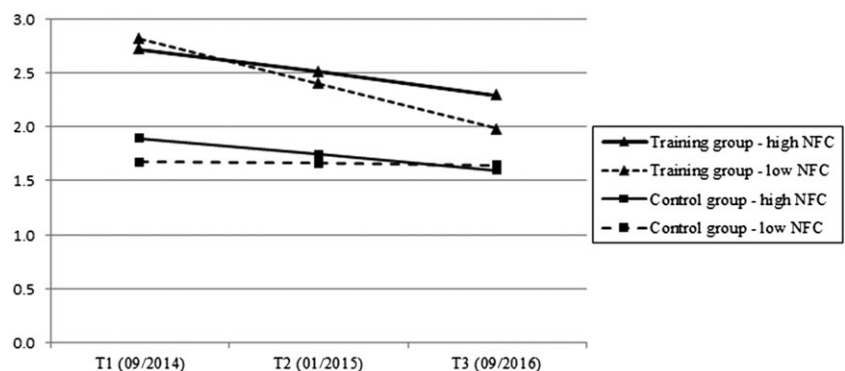


FIGURE 5 The effect of need for cognition on qualitative personal initiative maintenance after training. NFC: need for cognition

TABLE 3 Regressions testing the moderated effect of need for cognition and personal initiative maintenance on well-being

Variables	Overall well-being								Professional well-being							
	Model 1.0		Model 1.1		Model 1.2		Model 1.3		Model 2.0		Model 2.1		Model 2.2		Model 2.3	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Training	0.11	(0.12)	0.13	(0.13)	0.13	(0.13)	0.13	(0.13)	0.08	(0.13)	0.07	(0.14)	0.07	(0.14)	0.06	(0.14)
Overall well-being at T0	0.23**	(0.04)	0.23**	(0.04)	0.23**	(0.04)	0.23**	(0.04)	0.15**	(0.04)	0.14**	(0.04)	0.14**	(0.04)	0.14**	(0.04)
Quant PI intercept	-0.08	(0.06)	-0.06	(0.07)	-0.06	(0.07)	-0.06	(0.07)	-0.00	(0.07)	-0.00	(0.07)	-0.00	(0.07)	-0.00	(0.07)
Qual PI intercept	0.18*	(0.07)	0.16*	(0.08)	0.16*	(0.08)	0.16*	(0.08)	0.21**	(0.08)	0.20*	(0.08)	0.20*	(0.08)	0.20*	(0.08)
Quant PI slope			0.03	(0.07)	0.03	(0.07)	0.03	(0.07)			-0.08	(0.08)	-0.09	(0.08)	-0.08	(0.08)
Qual PI slope			0.01	(0.07)	0.01	(0.07)	0.01	(0.07)			0.07	(0.07)	0.08	(0.07)	0.08	(0.07)
Need for cognition (NFC)			-0.27**	(0.10)	-0.27**	(0.10)	-0.27**	(0.10)			-0.09	(0.11)	-0.09	(0.11)	-0.08	(0.11)
Quant PI slope x NFC					-0.03	(0.10)							0.10	(0.11)		
Qual PI slope x NFC							0.03	(0.10)							0.14	(0.11)
Total R ²	0.05**		0.05**		0.04**		0.04**		0.03**		0.03**		0.02**		0.03**	
df	825		811		810		810		825		811		810		810	

Note. $N = 912$; df = degrees of freedom; Quant PI = quantitative personal initiative; Qual PI = qualitative personal initiative.

0 = no, 1 = yes.

* $p < 0.05$; ** $p < 0.01$.

continue to display qualitative personal initiative. In contrast, high quantitative personal initiative requires a constant effort to act rather than increased deep thinking. This may lead need for cognition to having a weaker effect on quantitative personal initiative. People high in need for cognition might have a greater tendency to commit themselves to the thoughtful implementation of a few changes than to start several changes which in the beginning solely need a first idea and mostly depend on the action of the individual.

We also hypothesized that personal initiative maintenance would lead to more well-being for entrepreneurs high in need for cognition compared with entrepreneurs low in need for cognition (Hypothesis 3). Contrary to our assumption, there were no differences between people high and low in need for cognition. Because need for cognition is primarily related to deep thinking, it may not have an impact on an affective variable such as well-being. Different contextual or methodological factors inherent in our study might also play a role for the nonfinding. One example is that we did not measure well-being during the first posttraining measurement waves. As a consequence, we were not able to investigate possible reciprocal relationships between personal initiative maintenance and well-being. According to the affect-as-information approach (Gasper & Garvin, 2001), affect is not only an outcome but also a possible driver of behavior. It is possible that personal initiative maintenance has increased well-being for entrepreneurs high in need for cognition. However, entrepreneurs might have unconsciously used their higher

levels of well-being as a signal to relax and stop being proactive. This in turn might have led to fewer possibilities for deep thinking, which might have led to less well-being.

We could not support our assumption that the indirect effect of personal initiative training on well-being via personal initiative maintenance is dependent on training participants' level of need for cognition (Hypothesis 4). In view of the fact that we could only partly support Hypothesis 2 and that we could not support Hypothesis 3, this result is not surprising.

8.1 | Theoretical implications

We contribute to the literature on proactive behavior and the training transfer literature in several ways. First, with the help of a rigorous randomized controlled field experiment, we provide evidence for a decay of personal initiative after training and offer first insights into interindividual differences that buffer this decay. We thereby shed light on the motivating factors of proactive behavior subsequent to training (Parker et al., 2010). To date, there are only very few empirical studies on interindividual differences that may contribute to the success of training for proactive behavior, and these examine how trainee characteristics help to generalize training content to the work environment (Strauss & Parker, 2015). To the best of our knowledge, interindividual differences fostering the maintenance of proactive behavior

TABLE 4 Indirect effects of personal initiative training on well-being via personal initiative maintenance for different levels of need for cognition

Indirect effect for:	Overall well-being		Professional well-being	
	Mediator quant PI slope	Mediator qual PI slope	Mediator quant PI slope	Mediator qual PI slope
Low NFC	[-0.113; 0.059]	[-0.088; 0.085]	[-0.026; 0.166]	[-0.095; 0.092]
Medium NFC	[-0.088; 0.051]	[-0.058; 0.044]	[-0.030; 0.121]	[-0.090; 0.023]
High NFC	[-0.105; 0.085]	[-0.061; 0.041]	[-0.084; 0.121]	[-0.113; 0.008]

Note. The numbers in square brackets show the lower limits (first number) and upper limits (second number) of the Monte Carlo 95% confidence intervals for the indirect effects. The intervals are based on 5,000 repetitions.

subsequent to training have not yet been identified. This study is the first one to do so with regard to personal initiative maintenance. Our findings indicate that one key factor to personal initiative maintenance is the motivation to engage in deep thinking, enhanced by a high need for cognition. Our study could be a starting point for more empirical research on interindividual constructs that shape proactive behavior in different contexts.

Second, we add to the knowledge on well-being consequences of proactive behavior (Cangiano & Parker, 2016; Strauss et al., 2017). Our results indicate that the constant retention of personal initiative does not per se foster individuals' well-being, even though individuals high in need for cognition probably enjoy the resulting cognitive challenge. This finding complements existing research on the possible limits and downsides of proactive behavior at work (Bolino et al., 2010) by indicating that entrepreneurs might not necessarily derive emotional benefits from personal initiative maintenance. Our study might serve as inspiration for further research on the boundary conditions of well-being consequences of proactive behavior maintenance. Future studies might investigate other potential moderators that buffer the perceived stress caused by personal initiative maintenance. For example, situational factors such as time pressure might play a role in this regard. According to previous research, time pressure may foster proactive behavior, as it may lead to working at high intensity, as well as high speed (Fritz & Sonnentag, 2007). It is possible, however, that time pressure also contributes to the perception of personal initiative maintenance as stressful, as time resources are already scarce and personal initiative maintenance demands extra resources. Especially in the context of entrepreneurship, where entrepreneurs have to react to environmental demands as soon as possible, time pressure might play a role for the impact of personal initiative maintenance on well-being.

Third, our study contributes to the training transfer literature (Baldwin & Ford, 1988; Blume et al., 2010; Grossman & Salas, 2011). The study applies a rigorous methodological design to test the assumption that trainee characteristics play a role for training effect maintenance in the context of proactive behavior and entrepreneurial action. In contrast to most of the existing studies on training transfer, which give a rather static view (Huang et al., 2016), the current study provides a dynamic test of the principles of training transfer.

8.2 | Practical implications

Our study has important implications for practitioners. As discussed in the attribute-treatment-interaction literature (Gully & Chen, 2010), training is more effective if the training content matches the respective background, capabilities, traits, and interests of participants. The significant effect of need for cognition on personal initiative maintenance suggests that training providers could consider assessing the level of need for cognition if the goal of their training program is to increase proactive behavior. Training providers could use this information in different ways. First, although need for cognition is relatively stable (Cacioppo et al., 1996; Cacioppo & Petty, 1982), scholars have suggested that it might be changeable to a certain degree, for example, by promoting the feeling of competence and mastery (Cacioppo et al., 1996). At this moment, we do not know whether and how much it is

possible to change need for cognition. However, one ready consequence of this study might be to start personal initiative trainings with a few sessions in which participants have to solve entrepreneurial problems so that they acquire mastery experience. The mastery experience that participants gain through the development of suitable solutions might trigger their need for cognition. To the best of our knowledge, there have been no attempts to manipulate need for cognition. Second, training providers could select people high in need for cognition before training because they would maintain personal initiative longer and training would be more efficient.

In light of our findings that show a declining effect of personal initiative training on personal initiative, particularly for people low in need for cognition, practitioners should develop posttraining measures to renew training effects. Research has shown that posttraining interventions such as goal setting interventions or guided reflection can help to reinforce training effects (Lee & Sabatino, 1998; Richman-Hirsch, 2001; Salas et al., 2012). For personal initiative training, offering booster sessions that reinforce training content is a suitable way to renew personal initiative, and participants low in need for cognition would probably benefit most from such sessions. For training participants high in need for cognition, booster sessions might also lead to positive maintenance effects after training.

Our nonsignificant finding of personal initiative maintenance on well-being might lead training providers to critically reflect on the potential downsides of a constant upkeep of personal initiative for entrepreneurs and possible countermeasures. To prevent entrepreneurs from feeling stressed, training programs for personal initiative might for example need additional modules on stress prevention and the prioritization of work tasks.

8.3 | Limitations and future research

Our study shows some important methodological strengths. We conducted a pretest–posttest randomized controlled field experiment with several posttraining measurement waves, allowing for the detection of causal relationships and the analysis of long-term training effects. In order to control for various threats to internal validity (Campbell, 1957), we ensured thorough quality control throughout the experiment and the measurement waves (e.g., by recording the sessions and pretesting the training and measurement instruments). Nevertheless, the study shows some limitations that future research should address.

One limitation of this study is that need for cognition is only one out of many possible influence factors in the area of personal initiative training. Although we have examined a cognitive factor that has been suggested as an important and understudied factor for motivating proactive behavior (Parker et al., 2010), there might be many more relevant trainee characteristics. There is no single best predictor of proactive behavior; proactive behavior is shaped by different individual dispositions (Bateman & Crant, 1993; Fuller & Marler, 2009; Seibert, Crant, & Kraimer, 1999; Tornau & Frese, 2013); situational demands and types of support (Baer & Frese, 2003; Frese et al., 2007; Sonnentag, 2003); and the focus of the behavior (Belschak & Den Hartog, 2010; Parker & Collins, 2010). This study sets

the stage for further research on the role of dispositional factors for proactive behavior training.

Another limitation might be the overall decreasing trend in personal initiative, which indicates that people in the control group also showed a decrease in personal initiative. Although the control group received no treatment during the study period, personal initiative in this group did decrease over time. One possible explanation for this is that people in the control group tried to convey a positive image of themselves and their business in order to get the chance to participate in similar training in the future early in the measurement process. Although we communicated that participation in our study did not come with any benefits in the form of training support, control group participants often told us that they hoped they could take part in future training. This hope may have weakened from measurement wave to measurement wave; leading to a lower degree of personal initiative over time.

Finally, we have to ask ourselves whether our results can be generalized to other work contexts and training approaches. We conducted our study in the context of microentrepreneurship in a developing country. We cannot be sure whether we would find the same effects of training and need for cognition on personal initiative maintenance for employed workers or in industrialized countries. The context of entrepreneurship in developing countries is, however, very suitable for our study, as personal initiative plays a particularly important role in entrepreneurship (Frese, 2009; Glaub et al., 2014; Krauss et al., 2005) and personal initiative training can contribute to the economic development of developing countries (Frese et al., 2016; Pick & Sirkin, 2010). Additionally, similar trainings in the context of employed work and unemployment suggest that personal initiative training should also work in other contexts (Raabe, Frese, & Beehr, 2007; Searle, 2008). Regarding the generalization to other training approaches, we think that need for cognition should play a role for personal initiative maintenance subsequent to every training intervention that focuses on and successfully increases this type of behavior. Personal initiative maintenance takes place outside of the classroom where work routines quickly overwrite training content. Thus, the type of training should, if at all, only play a minor role in the effect of need for cognition on personal initiative maintenance and the resulting consequences.

9 | CONCLUSION

In order to understand personal initiative maintenance after training and its resulting consequences, it is important to comprehend the key influence factors that affect whether and how personal initiative is maintained. Our study constitutes a starting point for the investigation of such influence factors that determine the long-term success of personal initiative training. In addition, the study gives first insight into the influence of posttraining personal initiative maintenance on individuals' well-being.

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REFERENCES

- Acs, Z. J., Desai, S., & Hessels, J. (2008). Entrepreneurship, economic development and institutions. *Small Business Economics*, 31(3), 219–234. <https://doi.org/10.1007/s11187-008-9135-9>
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Arthur, W., Bennett, W., Stanush, P. L., & McNelly, T. L. (1998). Factors that influence skill decay and retention: A quantitative review and analysis. *Human Performance*, 11(1), 57–101. https://doi.org/10.1207/s15327043hup1101_3
- Baer, M., & Frese, M. (2003). Innovation is not enough: Climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior*, 24(1), 45–68. <https://doi.org/10.1002/job.179>
- Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, 41(1), 63–105. <https://doi.org/10.1111/j.1744-6570.1988.tb00632.x>
- Bateman, T. S., & Crant, J. M. (1993). The proactive component of organizational behavior: A measure and correlates. *Journal of Organizational Behavior*, 14(2), 103–118. <https://doi.org/10.1002/job.4030140202>
- Baumol, W. J. (2002). Entrepreneurship, innovation and growth: The David-Goliath symbiosis. *The Journal of Entrepreneurial Finance*, 7(2), 1–10.
- Belschak, F. D., & Den Hartog, D. N. (2010). Pro-self, prosocial, and pro-organizational foci of proactive behaviour: Differential antecedents and consequences. *Journal of Occupational and Organizational Psychology*, 83(2), 475–498. <https://doi.org/10.1348/096317909X439208>
- Bindl, U. K., & Parker, S. K. (2011). Proactive work behavior: Forward-thinking and change-oriented action in organizations. In S. Zedeck (Ed.), *Handbooks in psychology. Selecting and developing members for the organization* (1st ed.) (pp. 567–598). Washington, DC: American Psychological Association. <https://doi.org/10.1037/12170-019>
- Bliese, P. D., & Ployhart, R. E. (2002). Growth modeling using random coefficient models: Model building, testing, and illustrations. *Organizational Research Methods*, 5(4), 362–387. <https://doi.org/10.1177/109442802237116>
- Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2010). Transfer of training: A meta-analytic review. *Journal of Management*, 36(4), 1065–1105. <https://doi.org/10.1177/0149206309352880>
- Bolino, M., Valcea, S., & Harvey, J. (2010). Employee, manage thyself: The potentially negative implications of expecting employees to behave proactively. *Journal of Occupational and Organizational Psychology*, 83(2), 325–345. <https://doi.org/10.1348/096317910X493134>
- Bolino, M. C., & Turnley, W. H. (2005). The personal costs of citizenship behavior: The relationship between individual initiative and role overload, job stress, and work-family conflict. *The Journal of Applied Psychology*, 90(4), 740–748. <https://doi.org/10.1037/0021-9010.90.4.740>
- Bruton, G. D., Ketchen, D. J., & Ireland, R. D. (2013). Entrepreneurship as a solution to poverty. *Journal of Business Venturing*, 28(6), 683–689. <https://doi.org/10.1016/j.jbusvent.2013.05.002>
- Burke, L. A., & Hutchins, H. M. (2007). Training transfer: An integrative literature review. *Human Resource Development Review*, 6(3), 263–296. <https://doi.org/10.1177/1534484307303035>
- Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, 42, 116–131. <https://doi.org/10.1037/0022-3514.42.1.116>
- Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin*, 119(2), 197–253. <https://doi.org/10.1037/0033-2909.119.2.197>
- Cacioppo, J. T., Petty, R. E., & Kao, C. F. (1984). The efficient assessment of need for cognition. *Journal of Personality Assessment*, 48(3), 306–307. https://doi.org/10.1207/s15327752jpa4803_13

- Campbell, D. T. (1957). Factors relevant to the validity of experiments in social settings. *Psychological Bulletin*, 54(4), 297–312. <https://doi.org/10.1037/h0040950>
- Campos, F., Frese, M., Goldstein, M., Iacovone, L., Johnson, H., McKenzie, D., & Mensmann, M. (2017). Teaching personal initiative beats traditional business training in boosting small business in West Africa. *Science*, 357, 1287–1290. <https://doi.org/10.1126/science.aan5329>
- Cangiano, F., & Parker, S. K. (2016, 228–250). Proactivity for mental health and well-being. In *The Wiley Blackwell handbook of the psychology of occupational safety and workplace health*. John Wiley & Sons, Ltd.
- Cantril, H. (1967). *The pattern of human concerns*. New Brunswick, NJ: Rutgers University Press. Retrieved from <https://books.google.de/books?id=M-VEAAAAIAAA>
- Carnevale, J. J., Inbar, Y., & Lerner, J. S. (2011). Individual differences in need for cognition and decision-making competence among leaders. *Personality and Individual Differences*, 51(3), 274–278. <https://doi.org/10.1016/j.paid.2010.07.002>
- Chen, C. C., Greene, P. G., & Crick, A. (1998). Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? *Journal of Business Venturing*, 13(4), 295–316. [https://doi.org/10.1016/S0883-9026\(97\)00029-3](https://doi.org/10.1016/S0883-9026(97)00029-3)
- Chen, G., Ployhart, R. E., Thomas, H. C., Anderson, N., & Bliese, P. D. (2011). The power of momentum: A new model of dynamic relationships between job satisfaction change and turnover intentions. *Academy of Management Journal*, 54(1), 159–181. <https://doi.org/10.5465/AMJ.2011.59215089>
- Chiaburu, D. S., & Marinova, S. V. (2005). What predicts skill transfer? An exploratory study of goal orientation, training self-efficacy and organizational supports. *International Journal of Training and Development*, 9(2), 110–123. <https://doi.org/10.1111/j.1468-2419.2005.00225.x>
- Coutinho, S. A. (2006). The relationship between the need for cognition, metacognition, and intellectual task performance. *Educational Research Review*, 1(5), 162–164.
- Coutinho, S. A., Wiemer-Hastings, K., Skowronski, J. J., & Britt, M. A. (2005). Metacognition, need for cognition and use of explanations during ongoing learning and problem solving. *Learning and Individual Differences*, 15(4), 321–337. <https://doi.org/10.1016/j.lindif.2005.06.001>
- Dawson, J. F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology*, 29(1), 1–19. <https://doi.org/10.1007/s10869-013-9308-7>
- De Mel, S., McKenzie, D. J., & Woodruff, C. M. (2008). Who are the micro-enterprise owners? Evidence from Sri Lanka on Tokman v. De Soto. World Bank policy research working paper series.
- Dornic, S., Ekehammar, B., & Laaksonen, T. (1991). Tolerance for mental effort: Self-ratings related to perception, performance and personality. *Personality and Individual Differences*, 12(3), 313–319. [https://doi.org/10.1016/0191-8869\(91\)90118-U](https://doi.org/10.1016/0191-8869(91)90118-U)
- Eden, D., & Aviram, A. (1993). Self-efficacy training to speed reemployment: Helping people to help themselves. *Journal of Applied Psychology*, 78(3), 352–360. <https://doi.org/10.1037/0021-9010.78.3.352>
- Espejo, J., Day, E. A., & Scott, G. (2005). Performance evaluations, need for cognition, and the acquisition of a complex skill: An attribute-treatment interaction. *Personality and Individual Differences*, 38(8), 1867–1877. <https://doi.org/10.1016/j.paid.2004.10.003>
- Fay, D., & Frese, M. (2001). The concept of personal initiative: An overview of validity studies. *Human Performance*, 14(1), 97–124. https://doi.org/10.1207/S15327043HUP1401_06
- Fay, D., & Hüttges, A. (2017). Drawbacks of proactivity: Effects of daily proactivity on daily salivary cortisol and subjective well-being. *Journal of Occupational Health Psychology*, 22(4), 429–442. <https://doi.org/10.1037/ocp0000042>
- Fay, D., & Sonnentag, S. (2010). A look back to move ahead: New directions for research on proactive performance and other discretionary work behaviours. *Applied Psychology*, 59(1), 1–20. <https://doi.org/10.1111/j.1464-0597.2009.00413.x>
- Frayne, C. A., & Latham, G. P. (1987). Application of social learning theory to employee self-management of attendance. *Journal of Applied Psychology*, 72(3), 387–392. <https://doi.org/10.1037/0021-9010.72.3.387>
- Frese, M. (2009). Towards a psychology of entrepreneurship: An action theory perspective. *Foundations and Trends in Entrepreneurship*, 5(6), 437–496. <https://doi.org/10.1561/03000000028>
- Frese, M., & Fay, D. (2001). 4. Personal initiative: An active performance concept for work in the 21st century. *Research in Organizational Behavior*, 23, 133–187. [https://doi.org/10.1016/S0191-3085\(01\)23005-6](https://doi.org/10.1016/S0191-3085(01)23005-6)
- Frese, M., Fay, D., Hilburger, T., Leng, K., & Tag, A. (1997). The concept of personal initiative: Operationalization, reliability and validity in two German samples. *Journal of Occupational and Organizational Psychology*, 70(2), 139–161. <https://doi.org/10.1111/j.2044-8325.1997.tb00639.x>
- Frese, M., Garst, H., & Fay, D. (2007). Making things happen: Reciprocal relationships between work characteristics and personal initiative in a four-wave longitudinal structural equation model. *Journal of Applied Psychology*, 92(4), 1084–1102. <https://doi.org/10.1037/0021-9010.92.4.1084>
- Frese, M., & Gielnik, M. M. (2014). The psychology of entrepreneurship. *Annual Review of Organizational Psychology and Organizational Behavior*, 1(1), 413–438. <https://doi.org/10.1146/annurev-orgpsych-031413-091326>
- Frese, M., Gielnik, M. M., & Mensmann, M. (2016). Psychological training for entrepreneurs to take action: Contributing to poverty reduction in developing countries. *Current Directions in Psychological Science*, 25(3), 196–202. <https://doi.org/10.1177/0963721416636957>
- Frese, M., Kring, W., Soose, A., & Zempel, J. (1996). Personal initiative at work: Differences between East and West Germany. *The Academy of Management Journal*, 39(1), 37–63.
- Frese, M., & Zapf, D. (1994). Action as the core of work psychology: A German approach. In H. C. Triandis, M. D. Dunette, & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed., Vol. 4) (pp. 271–340). Palo Alto, CA: Consulting Psychologists Press.
- Fritz, C., & Sonnentag, S. (2007). Antecedents of day-level proactive behavior: A look at job stressors and positive affect during the workday. *Journal of Management*, 35(1), 94–111. <https://doi.org/10.1177/0149206307308911>
- Fuller, B., & Marler, L. E. (2009). Change driven by nature: A meta-analytic review of the proactive personality literature. *Journal of Vocational Behavior*, 75(3), 329–345. <https://doi.org/10.1016/j.jvb.2009.05.008>
- Gasper, K., & Garvin, E. (2001). Affect as information. In J. P. Forgas (Ed.), *Handbook of affect and social cognition* (pp. 121–144). Mahwah, NJ: Lawrence Erlbaum Associates.
- Gielnik, M. M., Zacher, H., & Wang, M. (in press). Age in the entrepreneurial process: The role of future time perspective and prior entrepreneurial experience. *Journal of Applied Psychology*.
- Glaub, M. E., Frese, M., Fischer, S., & Hoppe, M. (2014). Increasing personal initiative in small business managers or owners leads to entrepreneurial success: A theory-based controlled randomized field intervention for evidence-based management. *Academy of Management Learning & Education*, 13(3), 354–379. <https://doi.org/10.5465/amle.2013.0234>
- Goedhuys, M., & Sleuwaegen, L. (2010). High-growth entrepreneurial firms in Africa: A quantile regression approach. *Small Business Economics*, 34(1), 31–51. <https://doi.org/10.1007/s11187-009-9193-7>
- Goyal, P., & Yadav, V. (2014). To be or not to be a woman entrepreneur in a developing country. *Psychosociological Issues in Human Resource Management*, 2(2), 68–78.
- Graham, L. M. (2007). Need for cognition and false memory in the Deese-Roediger-McDermott paradigm. *Personality and Individual Differences*, 42(3), 409–418. <https://doi.org/10.1016/j.paid.2006.07.012>

- Grant, A. M., & Ashford, S. J. (2008). The dynamics of proactivity at work. *Research in Organizational Behavior*, 28, 3–34. <https://doi.org/10.1016/j.riob.2008.04.002>
- Grossman, R., & Salas, E. (2011). The transfer of training: What really matters. *International Journal of Training and Development*, 15(2), 103–120. <https://doi.org/10.1111/j.1468-2419.2011.00373.x>
- Gully, S., & Chen, G. (2010). Individual differences, attribute-treatment interactions, and training outcomes. In S. W. J. Kozlowski, & E. Salas (Eds.), *The organizational frontiers series. Learning, training, and development in organizations* (pp. 3–64). New York: Routledge.
- Hacker, W. (1998). *Allgemeine Arbeitspsychologie: [General work psychology]*. Bern: Huber.
- Hafer, R. W. (2013). Entrepreneurship and state economic growth. *Journal of Entrepreneurship and Public Policy*, 2(1), 67–79. <https://doi.org/10.1108/20452101311318684>
- Hahn, V. C., Frese, M., Binnewies, C., & Schmitt, A. (2012). Happy and proactive? The role of hedonic and eudaimonic well-being in business owners' personal initiative. *Entrepreneurship Theory and Practice*, 36(1), 97–114. <https://doi.org/10.1111/j.1540-6520.2011.00490.x>
- Haugtvedt, C. P., & Petty, R. E. (1992). Personality and persuasion: Need for cognition moderates the persistence and resistance of attitude changes. *Journal of Personality and Social Psychology*, 63(2), 308–319. <https://doi.org/10.1037/0022-3514.63.2.308>
- Huang, J. L., Ford, J. K., & Ryan, A. M. (2016). Ignored no more: Within-person variability enables better understanding of training transfer. *Personnel Psychology*, 70, 1–40. <https://doi.org/10.1111/peps.12155>
- Hunter, J. E. (1986). Cognitive ability, cognitive aptitudes, job knowledge, and job performance. *Journal of Vocational Behavior*, 29(3), 340–362. [https://doi.org/10.1016/0001-8791\(86\)90013-8](https://doi.org/10.1016/0001-8791(86)90013-8)
- Janssen, O., van de Vliert, E., & West, M. (2004). The bright and dark sides of individual and group innovation: A special issue introduction. *Journal of Organizational Behavior*, 25(2), 129–145. <https://doi.org/10.1002/job.242>
- Kanfer, R., & Ackerman, P. L. (1989a). Motivation and cognitive abilities: An integrative/aptitude-treatment interaction approach to skill acquisition. *Journal of Applied Psychology*, 74(4), 657–690. <https://doi.org/10.1037/0021-9010.74.4.657>
- Kearney, E., Gebert, D., & Voelpel, S. C. (2009). When and how diversity benefits teams: The importance of team members' need for cognition. *Academy of Management Journal*, 52(3), 581–598. <https://doi.org/10.5465/AMJ.2009.41331431>
- Keith, N., & Frese, M. (2008). Effectiveness of error management training: A meta-analysis. *Journal of Applied Psychology*, 93(1), 59–69. <https://doi.org/10.1037/0021-9010.93.1.59>
- Krauss, S. I. (2003). Psychological success factors of small and micro business owners in Southern Africa: A longitudinal approach (Unpublished Inaugural-Dissertation). Justus-Liebig-Universität Gießen, Gießen, Germany.
- Krauss, S. I., Frese, M., Friedrich, C., & Unger, J. M. (2005). Entrepreneurial orientation: A psychological model of success among southern African small business owners. *European Journal of Work and Organizational Psychology*, 14(3), 315–344. <https://doi.org/10.1080/13594320500170227>
- Kruglanski, A. W., Thompson, E. P., Higgins, E. T., Atash, M., Pierro, A., Shah, J. Y., & Spiegel, S. (2000). To “do the right thing” or to “just do it”: Locomotion and assessment as distinct self-regulatory imperatives. *Journal of Personality and Social Psychology*, 79(5), 793–815. <https://doi.org/10.1037/0022-3514.79.5.793>
- Kunin, T. (1955). The construction of a new type of attitude measure. *Personnel Psychology*, 8(1), 65–77. <https://doi.org/10.1111/j.1744-6570.1955.tb01189.x>
- Lee, D., & Sabatino, K. B. (1998). Evaluating guided reflection: A US case study. *International Journal of Training and Development*, 2(3), 162–170. <https://doi.org/10.1111/1468-2419.00045>
- Lieberman, M. B., & Montgomery, D. B. (1988). First-mover advantages. *Strategic Management Journal*, 9(5), 41–58. <https://doi.org/10.1002/smj.4250090706>
- Little, B. R. (1983). Personal projects. *Environment and Behavior*, 15(3), 273–309. <https://doi.org/10.1177/0013916583153002>
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39(1), 99. https://doi.org/10.1207/s15327906mbr3901_4-128
- Martin, B. A. S., Sherrard, M. J., & Wentzel, D. (2005). The role of sensation seeking and need for cognition on Web-site evaluations: A resource-matching perspective. *Psychology and Marketing*, 22(2), 109–126. <https://doi.org/10.1002/mar.20050>
- McKenzie, D., & Woodruff, C. (2014). What are we learning from business training and entrepreneurship evaluations around the developing world? *The World Bank Research Observer*, 29(1), 48–82. <https://doi.org/10.1093/wbro/lkt007>
- McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31(1), 132–152. <https://doi.org/10.5465/AMR.2006.19379628>
- Mensmann, M., & Frese, M. (2017). Proactive behavior training: Theory, design, and future directions. In S. Parker, & U. K. Bindl (Eds.), *Organization and management series. Proactivity at work: Making things happen in organizations*. New York, NY: Routledge.
- Norman, D. A. (1983). Some observations on mental models. In D. Gentner, & A. L. Stevens (Eds.), *Mental models*. Hillsdale, NJ: Lawrence Erlbaum.
- Ohly, S., & Fritz, C. (2007). Challenging the status quo: What motivates proactive behaviour? *Journal of Occupational and Organizational Psychology*, 80(4), 623–629. <https://doi.org/10.1348/096317907X180360>
- Parker, S., & Bindl, U. K. (2017). *Proactivity at work: Making things happen in organizations. Organization and management series*. New York, NY: Routledge, Taylor & Francis Group.
- Parker, S. K., Bindl, U. K., & Strauss, K. (2010). Making things happen: A model of proactive motivation. *Journal of Management*, 36(4), 827–856. <https://doi.org/10.1177/0149206310363732>
- Parker, S. K., & Collins, C. G. (2010). Taking stock: Integrating and differentiating multiple proactive behaviors. *Journal of Management*, 36(3), 633–662. <https://doi.org/10.1177/0149206308321554>
- Parker, S. K., Williams, H. M., & Turner, N. (2006). Modeling the antecedents of proactive behavior at work. *Journal of Applied Psychology*, 91(3), 636–652. <https://doi.org/10.1037/0021-9010.91.3.636>
- Pick, S., & Sirkin, J. (2010). *Breaking the poverty cycle: The human basis for sustainable development*. New York: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195383164.001.0001>
- Raabe, B., Frese, M., & Beehr, T. A. (2007). Action regulation theory and career self-management. *Journal of Vocational Behavior*, 70(2), 297–311. <https://doi.org/10.1016/j.jvb.2006.10.005>
- Raven, J., Raven, J. C., & Court, J. H. (1998). *Manual for Raven's progressive matrices and vocabulary scales*. Oxford: Oxford Psychologist Press.
- Richman-Hirsch, W. L. (2001). Posttraining interventions to enhance transfer: The moderating effects of work environments. *Human Resource Development Quarterly*, 12(2), 105–120. <https://doi.org/10.1002/hrdq.2>
- Rubalcava, L. N., & Teruel, G. M. (2004). The role of maternal cognitive ability on child health. *Economics and Human Biology*, 2(3), 439–455. <https://doi.org/10.1016/j.ehb.2004.10.009>
- Sadowski, C. J., & Gülgös, S. (1996). Elaborative processing mediates the relationship between need for cognition and academic performance. *The Journal of Psychology*, 130(3), 303–307. <https://doi.org/10.1080/00223980.1996.9915011>
- Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The science of training and development in organizations: What matters in

- practice. *Psychological Science in the Public Interest*, 13(2), 74–101. <https://doi.org/10.1177/1529100612436661>
- Searle, B. J. (2008). Does personal initiative training work as a stress management intervention? *Journal of Occupational Health Psychology*, 13(3), 259–270. <https://doi.org/10.1037/1076-8998.13.3.259>
- Seibert, S. E., Crant, J. M., & Kraimer, M. L. (1999). Proactive personality and career success. *Journal of Applied Psychology*, 84(3), 416–427. <https://doi.org/10.1037/0021-9010.84.3.416>
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217–226. <https://doi.org/10.5465/AMR.2000.2791611>
- Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, 76(3), 482–497. <https://doi.org/10.1037/0022-3514.76.3.482>
- Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin*, 86(2), 420–428. <https://doi.org/10.1037/0033-2909.86.2.420>
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science*, 22(11), 1359–1366. <https://doi.org/10.1177/0956797611417632>
- Simon, H. A. (1956). Rational choice and the structure of the environment. *Psychological Review*, 63(2), 129–138. <https://doi.org/10.1037/h0042769>
- Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology*, 88(3), 518–528. <https://doi.org/10.1037/0021-9010.88.3.518>
- Strauss, K., & Parker, S. K. (2015). Intervening to enhance proactivity in organizations: Improving the present or changing the future. *Journal of Management*, 44, 1–29. <https://doi.org/10.1177/0149206315602531>
- Strauss, K., Parker, S. K., & O'Shea, D. (2017). When does proactivity have a cost? Motivation at work moderates the effects of proactive work behavior on employee job strain. *Journal of Vocational Behavior*, 100, 15–26. <https://doi.org/10.1016/j.jvb.2017.02.001>
- Taylor, S. E. (1981). The interface of cognitive and social psychology. In J. H. Harvey (Ed.), *Cognition, social behavior, and the environment* (pp. 189–211). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Tein, J.-Y., Sandler, I. N., MacKinnon, D. P., & Wolchik, S. A. (2004). How did it work? Who did it work for? Mediation in the context of a moderated prevention effect for children of divorce. *Journal of Consulting and Clinical Psychology*, 72(4), 617–624. <https://doi.org/10.1037/0022-006X.72.4.617>
- Tornau, K., & Frese, M. (2013). Construct clean-up in proactivity research: A meta-analysis on the nomological net of work-related proactivity concepts and their incremental validities. *Applied Psychology*, 62(1), 44–96. <https://doi.org/10.1111/j.1464-0597.2012.00514.x>
- Tracey, J. B., Tannenbaum, S. I., & Kavanagh, M. J. (1995). Applying trained skills on the job: The importance of the work environment. *Journal of Applied Psychology*, 80(2), 239–252. <https://doi.org/10.1037/0021-9010.80.2.239>
- Wang, H., & Li, J. (2015). How trait curiosity influences psychological well-being and emotional exhaustion: The mediating role of personal initiative. *Personality and Individual Differences*, 75, 135–140. <https://doi.org/10.1016/j.paid.2014.11.020>
- Wu, C.-H., Parker, S. K., & Jong, J. P. J. d. (2014). Need for cognition as an antecedent of individual innovation behavior. *Journal of Management*, 40(6), 1511–1534. <https://doi.org/10.1177/0149206311429862>
- Zacher, H., Schmitt, A., Jimmieson, N. L., Rudolph, C. W., Zacher, H., Schmitt, A., ... Rudolph, C. W. (in press). Dynamic effects of personal initiative on engagement and exhaustion: The role of mood, autonomy, and support. *Journal of Organizational Behavior*.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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