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The Concept of Personal Initiative: An Overview of Validity Studies

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Construct validity of an interview measure of personal initiative (PI) is examined in two parts. The first part assembles the results from 11 samples, showing that PI is meaningfully related to a nomological network of variables, based on environmental supports; knowledge, skills, and cognitive abilities; personality variables and orientations; and behavior and performance, confirming our hypotheses. In the second part, the article presents a new analysis that looks at the influence of motivational parameters (control aspiration, self-efficacy, and change orientation) and cognitive ability on PI within a longitudinal study in East Germany.

Personal initiative (PI) can be defined as a behavior syndrome that results in an individual taking an active and self-starting approach to work goals and tasks and persisting in overcoming barriers and setbacks (cf. Frese, Fay, Hilburger, Leng, & Tag, 1997; Frese, Kring, Soose, & Zempel, 1996). One of the consequences of such an active approach is that the environment is changed by the individual (if ever so slightly). This is in contrast to a passive approach, which is characterized by doing what one is told to do, giving up in the face of difficulties, and reacting to environmental demands. PI is an important concept both for practical and theoretical reasons. Practically, PI has been used, for example, in assessment centers. PI will become more important in the future because future work places will require a high degree of self-reliance (Frese, 1997). Companies are interested in PI because it increases organizational and individual effectiveness.

The purpose of this article is to summarize the construct validity evidence on PI. Part of this evidence has been published in various articles (some of it only in German). Another part of the material has not been published yet and, therefore, is presented here for the first time.

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THE CONCEPT OF PERSONAL INITIATIVE

Personal initiative (PI) uses an active approach that is characterized by its self-starting and proactive nature and by overcoming difficulties that arise in the pursuit of a goal. *Self-starting* implies that the goals are not given or assigned by someone else, but that the person himself or herself develops these goals. Some jobs are associated with very broad work goals; for example, managers have broad goals such as to enhance departmental effectiveness. This seems to make own-goal development impossible, because any action the manager takes can be traced back to the broad goal. Therefore, we conceptualize self-starting to mean that there is a great psychological distance from some path taken as part of PI and the "normal" path (Fay & Frese, 2000). If a manager pursues a strategy to enhance effectiveness that is obvious, that is not difficult to do, about which other managers also talk, or about which is discussed in business publications, the psychological distance is small, and the actions are not PI. If the strategy was suggested from one of the rank-and-file workers, this would imply a high psychological distance and we would consider it to be PI. Likewise, if the manager assumes a strategy that is not "in the air," or is unusual for his or her company, then there is a high psychological distance and we would consider it to be PI.

Anticipating future demands and preparing for them or preventing problems are typical goals of initiative. Hence, PI is a *proactive* action. This proactive approach implies that one attempts to get feedback, develops signals that signify future problems, and develops plans to actively prevent these problems from occurring.

Implementation of long-term goals often leads to new problems, barriers, and setbacks. Because new suggestions for work improvement, new procedures to do things, and so on have not been tried before, one will experience difficulties. For example, the supervisor may not like the new idea, or a new work procedure cannot be performed correctly in the beginning. If one does not overcome these difficulties or gives up quickly in the face of barriers, there is no initiative. Initiative, therefore, implies that one will deal with these obstacles actively and *persistently*.

PI is a self-starting action that exceeds the work role. It often implies a certain rebellious element toward the supervisor. However, in the long run PI must be in accordance with overall organizational goals. Actions that lack a pro-company orientation are not PI.

Measurement of PI

We have attempted to measure PI on several levels, from several sources, and with several methods. We also wanted to develop behavioral measures of PI, as well as a questionnaire scale that is more related to a personality construct of PI. To obtain behavioral measures, we decided to develop interview-based procedures that relate to the aspects of PI discussed earlier.

Five scales (described in the following) were assessed within a structured interview (more details and the item wording are given in Frese et al., 1997, Frese et al., 1996.[1] The interviewer rated this interview, and a second rater also rated the interview content based on a protocol (with good interrater reliabilities; cf. Frese et al., 1997).

General initiative at work captures past initiative taken at work. The self-starting nature of these PI behaviors stood in the foreground of this measure. Direct questions on past initiative were asked, for example, "During the last two years, did you submit suggestions to improve work?" The interviewers then probed into the nature of the suggestion and whether it had been developed by the person himself or herself or by other people and whether it was self-started. We also asked whether suggestions were often presented by colleagues to understand the "psychological distance" discussed previously. The raters then coded the behavior on whether it presented extra energy or new ideas that went beyond expected behavior in this job.

The disadvantage of the general initiative at work measure is that it has to rely on past events that are affected by memory effects. Therefore, we also developed a set of measures that pertain to present job behavior and to behavior that can reliably be measured within the interview. *Education initiative* measured interviewees' present participation in continuing work-related education and future plans to do so. Only present behavior that was not triggered by company demands was counted as education initiative. The coding was based on what the interviewees had planned and whether it was based on concrete plans (e.g., if the person knew which course to attend or had already registered).

Overcoming barriers is a measure of persistence in pursuit of a goal. This measure was inspired by the situational interview (Latham & Saari, 1984). The participants were asked to imagine having to deal with a certain problem, for example, "Pretend for a moment that you work as a blue-collar worker on a machine and this machine breaks down." For each problem-solving response given by the participants, the interviewers developed a new barrier and we counted the number of barriers. Some problem solutions were less proactive than others (e.g., some people tended to delegate a problem and did not indicate that they would still attend to it, such as "I ask a repairperson to deal with the broken machine"). To study this active nature of the solutions given, the interviewers rated the *active approach* used in overcoming barriers.

We used the interviewers in an additional way as a data source in our study design. Because the interviewers usually talked to a person for about 2 hr on issues related to initiative and work behavior, we thought that the interviewer would be a good and reliable source for an overall indication of how much PI the person

[1]A description of the PI measures can be received on request from both authors.

showed. Therefore, the interviewers rated on a semantic differential scale how active, initiating, goal- and plan-oriented the participants were; this scale was called *interviewer evaluation*. Frese et al. (1997) showed that these five scales can be usefully aggregated into one second-order scale.

In addition, we developed a questionnaire form of *self-reported initiative* that measured the personality trait of PI. This measure was similar to Bateman and Crant's (1993) proactive personality; a concept similar to PI (we elaborate on the relationship between the two concepts later in this article). Finally, we also asked the participants' spouses in one of the waves of our studies to report on the participants' initiative. This is referred to as *spouse-reported initiative*, and this scale was used as a validity check. Both self-reported initiative and the spouse's assessment correlated significantly with each other ($r = .35$, $p < .01$, $n = 220$) and with the interview-based, second-order initiative scale (for spouse-reported initiative: $r = .23$, $p < .01$, $n = 173$; $r = .25$; cf. Frese et al., 1997; for self-reported initiative: $r = .25$ to .30, always $p < .01$, $n = 330$ to 370; unpublished data).

PART I: OVERVIEW OF CONSTRUCT VALIDITY RESULTS

In the following we present validity results from various studies. Most of these studies have been previously published in more detail but did not have as a primary goal to look at PI's construct validity. Rather, they tested hypotheses concerning the development of PI and its consequences. However, the boundaries between a construct validity study and a hypotheses-testing study are not always clear and, therefore, content-oriented studies can tell us something about the construct validity of the measures as well. Moreover, we report here some unpublished results that are relevant for the validity of PI.

Samples for the Validity Studies

Overall, we discuss results of research conducted in both well-developed (Germany, Holland) and developing (South Africa, Uganda, Zimbabwe) countries. Samples also vary broadly and include community-based samples, university students, blue-collar workers, small-business owners, and midlevel managers.

East German Longitudinal Study. A longitudinal study with six data collection waves started 7 months after the fall of the Berlin wall and 4 months before unification with West Germany (i.e., July 1990). The study was carried out in Dresden, the capital of Saxonia and a university city in the south of East Germany.

The sampling was done by randomly selecting streets, selecting every third building, and, in each building, every fourth apartment (in smaller buildings every third one). The refusal rate of 33% was quite low for a study of this kind. The sample was representative of the Dresden population on relevant parameters (for example, age, social class, male/female percentage at work).

In the first wave, 463 people between the ages of 18 and 65 with full-time employment participated. At wave 2, we enlarged the sample by 202 people.[2] Between waves 3 and 6, the number of participants ranged between 543 and 478. Experimental mortality did not prove to change the makeup of the sample.

Participants took part in a structured interview, in which PI was assessed (see previous discussion). After the interview, participants were given a questionnaire to complete. The questionnaire was picked up by the interviewer 1 to 2 weeks later.[3] This study is rather complex with regard to the variables measured: For research economy reasons, we could not obtain each measure at every wave; therefore, we restricted the collection of measures for construct validity purposes in some cases to one or a few waves.

West German Cross-Sectional Study. For comparison with the East German study, we chose the city of Mainz in the West—a smaller city than Dresden but with similar features. It also houses a university and a state government, is relatively conservative, and contains relatively few foreigners. The selection procedure was the same as in the East (N = 160; cf. Frese et al., 1996).

German Student Study. We developed an interview-based initiative measure for university students by adapting the original interview procedure (as described previously)—where necessary—to the context of the university. Participants of this study were 97 undergraduate psychology students (31 men and 66 women). Additionally, questionnaire-based measures were obtained (cf. Fay, Böckel, Kamps, Wotschke, & Frese, 2000).

Dutch Blue-Collar Worker Study. The sample was drawn from four plants of a steel company in Holland (N = 207, 51% response rate). Nearly all were men

[2]Additional people were added to ascertain whether repeated participation had an influence on initiative. This was not the case.

[3]Because this study was very complex and encompassed an enormous data set, several publications and articles have been based on subparts of the study material or were based on a subset of measurement waves, such as Fay and Frese, 2000; Fay and Sonnentag, 2000; Frese et al., 1994, 1996, 1997, 2000; Frese and Hilligloh, 1994; Frese and Plüddeman, 1993.

(except four), and all were blue-collar workers. The company had a well-developed suggestion system (cf. Frese, Teng, & Wijnen, 1999).

German Business Owner Study. A sample of small-scale business founders and managers (1 to 50 employees, startup during last 3 years) was drawn from Jena in East Germany and from Giessen in West Germany (N = 201, 42% rejection rate). The participants were randomly chosen from lists provided by the local chambers of commerce (registration is mandatory in Germany). The business owners participated in a 1-hr interview and filled out a questionnaire (Rauch, Frese, & Sonnentag, 2000).

African Business Owner Studies. Three samples of African small-scale and micro-business owners were drawn by a random walk procedure in the countries, Uganda (N = 100, 33% participation rate; Koop, De Reu, & Frese, 2000); South Africa (N = 101, 50% rejection rate; van Steekelenburg, Lauw, & Frese, 2000); and Zimbabwe (N = 294, refusal rate 19%; Krauss, Frese, & Friedrich, 2000). Economic success and PI were measured with interview-based methods.

German Midsized Company Study. At least 3 midlevel managers of 47 midsized companies (200 to 900 employees, 17% participation rate) provided company-level aggregated data on climate for initiative and aggregated company-level performance. We also had return-on-assets data from an independent source (cf. Baer & Frese, 2000). In this study, only organizational-level data were analyzed.

Hospital Study. The interview-based initiative measure was obtained from 97 employees from three German hospitals (primarily nurses); additionally we obtained questionnaire measures (Vennekel, 2000).

Dutch Student Study. This study looked at the relation between error orientation and PI in 160 Dutch students (Rybowiak, Garst, Frese, & Batinic, 1999).

NOMOLOGICAL NET OF THE CONSTRUCT PI

Figure 1 displays a nomological net of PI (Cronbach & Meehl, 1955). We differentiate among a responsive environment (environmental supports); knowledge, skills, and cognitive abilities; and motivational factors (background personality

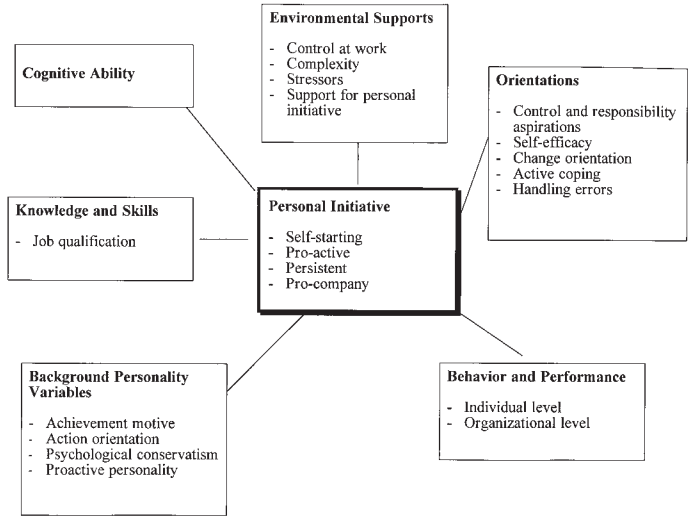

FIGURE 1 Nomological net of PI.

variables and orientations). The motivational constructs are differentiated into distal and proximal (Kanfer, 1991) or generalized and specific constructs (Rotter, 1975)—the distal and generalized constructs being background personality factors and the proximal and specific constructs being orientations. The model assumes causal and reciprocal relationships, but for purposes of this article causal directions are less important than meaningful relations with variables of the nomological network.

Environmental Supports

Three environmental conditions are posited to influence the development of PI: control at work, complexity of work, and the support for PI provided by the company and the immediate supervisor. All three are proposed to activate people and, therefore, to stimulate self-started behavior and to overcome barriers, once they occur. To date, we have found initial support for the role that each of these environmental supports play in determining PI. In terms of effect size and consistency of the effect, the most important work characteristics were shown to be complexity and control. Work characteristics were related to the latent variable PI with cross-sectional correlations of $r = .41$ to .51 in the different waves of the East German Longitudidnal Study (all were significant, $N = 286$; Frese, Garst, & Fay, 2000). However, the "causal" effect was shown to work via a mediator that was a composite of self-efficacy, control expectations, and control aspirations (Frese, et al., 2000).

Another work-related factor contributing to PI was work stressors. Stressors imply that something is not adequate about a process, a procedure, or a design. Therefore, stressors contribute to the feeling that one ought to do something about the work situation to improve it; this leads then to a higher degree of PI. Longitudinal analyses of the East German Study showed that work stressors were positively related to changes in PI: Stressors explained up to 4% of variance in subsequent changes in initiative ($\Delta R^2 = .04$, $p < .05$, $n = 168$ to 193; Fay & Sonnentag, 2000).

Surprisingly, direct supervisor support (as perceived by the employee) did not affect employees' PI, neither in the East and West German data ($r = .04$, *ns*, $n = 378$ for East Germany; $r = .16$, *ns*, $n = 126$ for West Germany) nor in the Dutch study, which used the number of improvement suggestions as a dependent variable (Frese et al., 1999). However, support by top management was a factor that contributed to "taking charge," a concept very similar to PI (Morrison & Phelps, 1999). In addition, company-level climate for psychological safety (a climate in which one feels safe to take interpersonal risks, cf. Edmondson, 1999) was also highly related to PI–climate (German Midsized Company Study; Baer & Frese, 2000), and individually perceived psychological safety in the team context was related to PI in a sample of hospital staff ($r = .25$, $p < .01$, $n = 91$; Hospital Study; Vennekel, 2000).

Knowledge, Skills, and Cognitive Ability

To be able to take initiative, one needs a good and thorough understanding of what one's work is, that is, one needs job-relevant knowledge, skills, and cognitive ability. Otherwise, one is less able to identify aspects of work that need to be improved, to analyze problems, and to develop solutions to them. When job-relevant knowledge, skills, and cognitive abilities are lacking, one might detect that something is not optimal, but due to lack of understanding, one sees no alternatives.

On the other hand, job-related knowledge and skills can be the result of PI. Individuals who have a long-term perspective on work are better able to anticipate future demands and actively seek to prepare for them. Empirically, PI is positively related to job qualifications. The correlations of job qualifications and PI for the different subscales of PI were, in the East German Study sample, $r = .31$ to .48 (always $p < .01$, $n = 525$) and in the West German Study sample, $r = .24$ to .46 ($p < .01$, $n = 150$; Frese & Hilligloh, 1994). We elaborate on the role of cognitive ability in Part II of this article.

Background Personality Variables

Individual differences in both orientations and personality represent action tendencies. Individual differences in personality reflect cross-situational tendencies that exert broad and more general influence over behavior. In contrast, orientations re-

flect more specific, proximal factors that are posited to exert more direct effects on PI and work behaviors (Kanfer, 1992). Important personality factors for PI are needed for achievement, action orientation, and psychological conservatism (as the opposite of flexibility). Moreover, Bateman and Crant (1993) and Crant (1995) introduced the concept of proactive personality, which is equivalent to the concept of subjective PI (more on this later). All of these personality traits are factors activating people and should, therefore, contribute to initiative.

Empirical evidence for the influence of personality variables on PI is provided in several studies (Fay et al., 2000; Frese et al., 1997). Specifically, a positive relation between achievement motivation and PI emerged in the East German Study ($r = .20$, $p < .01$, $n = 332$; Frese et al., 1997) and also in the German Student Study ($r = .39$, $p < .01$, $N = 97$; unpublished data). One could argue that PI is nothing but another measure of achievement motive; this would have implied a high relation between achievement motive and PI, which was not the case. To be on the safe side, we also measured achievement motive with the TAT in the German Student Study and did not find a significant relation between PI and fear of failure ($r = –.04$, *ns*, $N = 97$) or hope for success ($r = .11$, *ns*, $N = 97$; unpublished data). These findings suggest that PI is distinct from the achievement motive, although it is related to at least one measure of the achievement motive on a moderate level.

Showing initiative requires that one acts quickly after one has formed an intention. This is called action orientation (Kuhl, 1992). Accordingly, we found a small but positive relation between action orientation and PI in both the East German ($r = .20$, $p < .01$, $n = 491$) and the West German samples ($r = .14$, $p < .10$, $N = 135$; Frese et al., 1997).

Furthermore, PI implies that one brings about changes, and with changes there is an increase of uncertainty. If one is not able to deal with change and uncertainty, this should lead to a reduction of PI. Psychological conservatism signifies a preference for a society characterized by stability (lack of change) and predictability (lack of uncertainty). Therefore, PI should be negatively related to psychological conservatism (Wilson, 1973). At a conceptual level, psychological conservatism is the opposite of a change orientation. Accordingly, we found psychological conservatism to be negatively related to PI (latent construct correlations, $r = –.35$ to $–.40$, $p < .05$, $n = 330$; East German Study; Fay & Frese, 2000b).

We also investigated whether PI was different from traditional personality constructs, such as the Big Five and negative affectivity, as well as from ill-health measures. Personality, such as extraversion (in the sense of outward curiosity and a need for arousal) and conscientiousness (in the sense of taking work seriously and doing it well), should play a role in the development of PI. However, personality factors should not correlate too highly with PI. The empirical correlations were .33 ($p < .01$, $n = 91$) for extraversion; .29 ($p < .01$, $n = 91$) for conscientiousness; –.09 (*ns*, $n = 91$) for agreeableness; .13 (*ns*, $n = 91$) for openness for experience; and –.14 (*ns*, $n = 91$) for neuroticism in the German

Student Study (unpublished results). Negative affectivity—a construct similar to neuroticism—correlated with cross-sectional average $r = -.09$ for three waves of the East German Study ($n = 327$ to 369). These results suggest that basic personality constructs correlate consistently but not too highly with PI. The same is also true for the ill-health measures. Here the correlations were on average –.03 for PI and psychosomatic complaints and –.11 for PI and depression for four data waves in the East German Study (always $n = 495$ to 330); the respective numbers for the West German Study were –.06 and .02, respectively (always *ns*, $n = 135$; unpublished results).

Orientations

Orientations are behavior tendencies of moderate situational specificity. Thus, all the orientations delineated in Figure 1 refer to work but are general within the work sphere. PI should be influenced by aspiration for control, that is, a desire to "be on top of things" (De Charms, 1968; Deci & Ryan, 1985). Taking initiative implies that one pursues a self-set, nonassigned goal. This presupposes that the individual accepts the responsibility for it. An employee who furthers organizational change will be held responsible for any potential failure or negative effect involved. Consistent with this view, we found that PI is related to control aspirations (measured by reversing the scale of control rejection). The cross-sectional correlations between control aspirations and PI was .32 in the West Germany Study ($p < .01$, $n = 133$) and ranged from .24 to .40 in different waves in East Germany ($n = 328$ to 492, $p < .01$; cf. Frese, Erbe-Heinbokel, Grefe, Rybowiak, & Weike, 1994; Frese et al., 1996[4]); the correlation was .30 in the Hospital Study ($p < .01$, $n = 91$; Vennekel, 2000) and .31 in the German Student Study ($p < .01$, $N = 97$; Fay et al., 2000).

We further proposed that self-efficacy (Bandura, 1977, 1986) would be positively related to PI because a person needs to believe in his or her ability to do things competently to show initiative. People who do not believe that they can do a certain action will not attempt to do this action (Bandura, 1997). Furthermore, PI requires individuals to set difficult goals. Individuals' expectations of self-efficacy have been shown to be positively related to the difficulty of self-set goals both in the laboratory (Locke, Frederick, Lee, & Bobko, 1984) and in a university setting (Taylor, Locke, Lee, & Gist, 1984). We found work-related self-efficacy significantly related to PI in the West German Study ($r = .24$, $p < .01$, $n = 138$) and the East German Study (r ranged from .15 to .25, always $p < .01$, $n = 331$ to 495; unpublished results; cf. Frese et al., 1996; Speier & Frese, 1997[5]), and in the Hospital Study ($r = .27$, $p < .01$, $n = 91$; Vennekel, 2000); in the German Student Study we

[4]Those studies report the correlations of control aspirations with the individual PI scales.

[5]Those studies report the correlations of self-efficacy with the individual PI scales.

looked at a self-efficacy measure of higher specificity, "study-related self-efficacy" (Jerusalem & Schwarzer, 1986), which was similarily positively related to PI (r = . 27, p < .01, N = 97).

Change orientation is necessary because PI usually changes the work situation in one way or another. If one is afraid of such changes, there should be little initiative. Empirically, there is a positive relation of PI with readiness to change in the East German Study (r = .28 to .40, always p < .01, n = 329 to 489) and in the West German Study (r = .28, p < .01, n = 137; unpublished results; cf. Frese & Plüddemann, 1993[6]); further data on this relation are presented in Part II of this article.

Active coping strategies (Folkman & Lazarus, 1980) imply that one actively deals with problems that are perceived to be aversive. Often, a person will show PI because something is bothering him or her at work. PI helps to cope with stressors effectively, as shown by a positive relation with an active and problem-focused coping approach toward stressors in the East German and West German Study (East: r = .20, p < .01, n = 488; West: r = .19, p < .01, n = 131) and a negative relationship with passive emotion-focused coping (East: r = –.17, p < .01, n = 489; West: r = –.25, p < .01, n = 132; Frese et al., 1997).

Another issue refers to error handling. PI often implies that new activities have to be attempted and, therefore, some degree of uncertainty of outcomes exists. Thus, the more a person shows initiative, the greater the chance of making errors. To assess the attitudes toward errors, we used the Error Orientation Questionnaire (see Rybowiak et al., 1999, for a description of the questionnaire). Indeed, confidence in error handling (r = .56, p < .01, N = 160); risking errors (r = .26, p < .01, N = 160); and low levels of strain because of errors (r = –.22, p < .01, N = 160) were significantly related to subjective PI in the Dutch Student Study (Rybowiak et al., 1999). Moreover, in the East German Longitudinal Study we also used the Error Orientation Questionnaire between t5 and t6. LISREL analyses revealed that error competence (significant path of .13, N = 505) and error anticipation (significant path of .16, N = 505) predicted later changes in PI. On the other hand, error strain—becoming strained when an error occurs—was affected negatively by PI (significant path of –.13, N = 505; Stoel, 1998).

Orientations should serve as mediators of the relationship of environmental supports and skills with PI. Control and complexity should allow enactive mastery, which develops self-efficacy (Bandura, 1997), and lack of control and complexity should lead to helplessness, which should reduce control aspirations and control expectations (Seligman, 1975). This should effect PI. This was, indeed, the case with control and complexity at work affecting self-efficacy, control expecta-

[6]Frese & Plüddemann reported the correlations of readiness to change with the individual PI scales.

tions, and control aspirations (the three orientations making up one latent variable), which in turn influenced PI (Frese et al., 2000).

OUTCOMES OF PI: BEHAVIOR AND PERFORMANCE

We argued that PI influences performance on both the individual and the organizational level. We present evidence for both relationships.

Job Insecurity, Finding a Job After Job Loss, and Job Creation

In the East German Longitudinal Study we looked at the significance of PI with regard to job insecurity, finding a job after job loss, and creating jobs. East Germany after the unification was a good field to study these issues. Socialist East Germany was characterized by little job change: Usually, employees remained for their whole working life in one organization. Unemployment was practically nonexistent and deliberate job change was not encouraged. After unification, people were not only able to change their jobs, but changes were often required because companies went bankrupt or needed to massively downsize to survive in the market economy. We assumed that individuals with high initiative would make higher use of this chance and change jobs to find employment they liked better or an organization with a high likelihood of survival. Hence, PI should predict job change.

The East German Longitudinal Study allowed us to test our hypothesis three times with time lags of 1 year each (n = 248 to 308). Prior PI and job insecurity predicted later job changes in two of three analyses (Fay & Frese, 1998a; unpublished data). High initiative people (and people with high job insecurity in their current job) had a higher likelihood to change jobs. Thus, PI leads to taking action more quickly. There was one condition, however, in which this was not the case. There was an interaction between PI and job insecurity (in one of three analyses): Confronted with high job insecurity, the low-initiative individuals were most likely to leave the organization. High-initiative individuals may have stayed with their employer to help their company survive. They could run the risk of becoming unemployed because they knew they had the initiative to quickly find another job. In contrast, individuals low on initiative needed to leave the sinking ship before it was too late.

There is also empirical evidence for the assumption that PI helps people to find a job. PI is highly related to employability as rated by the interviewers of the study in East and West Germany (Frese et al., 1997). PI is also related to having clear career plans, and, more important, longitudinal data demonstrate that PI is related to the future execution of a career plan. Further, if people become unemployed, PI

(measured prior to unemployment) helps the unemployed to find a job quickly in the future (Frese et al., 1997). Finally, PI also helps to create jobs: It is related to wanting to become self-employed in population-based samples in East and West Germany, and those who are already self-employed show a higher degree of PI (Frese et al., 1997).

Active Training Behavior and PI

We also studied PI in the context of training. Because PI implies an active orientation, people with high PI should show a more active and self-reliant approach in a training situation. We compared the behavior of two groups of high (n = 13) and low (n = 15) initiative students, who individually received training on a computer program. The two extreme groups were selected from the German Student Study. In the training, all participants received detailed and comprehensive instruction sheets. They were asked to follow the instructions carefully and told not to address the experimenter in the course of the training, as all relevant information was provided on the instruction sheets. Training sessions were videotaped and later analyzed. Individual differences in self-reliance was measured behaviorally by the frequency with which the participant asked the experimenter for help (e.g. "What shall I do now?") and the frequency with which the experimenter was asked for reassurance (e.g. "Am I doing it the right way?"). Analyses of covariance compared the high-initiative group and the low-initiative group while controlling for a number of potential confounding variables (e.g., previous experience with similar software, number of errors made, verbal activity, sex). High-initiative participants asked significantly less often for help (M = .73, SD = .93) than low-initiative participants (M = 2.93, SD = 2.41, $F(1, 21) = 4.84$, $p < .04$), and they asked significantly less often for reassurance (M = 1.35, SD = .77) than low-initiative participants (M = 6.23, SD = 5.92, $F(1, 21) = 7.92$, $p < .01$; Fay & Frese, 1998b). That is, individuals high in PI tried to find solutions on their own more than individuals low in PI.

PI and Performance

PI should also be related to organizational effectiveness (Motowidlo & Scotter, 1994). There are two reasons why this should be so. First, on the level of the organization and the team, there are no perfect production or service systems. Therefore, there is some need for PI to uphold and improve production or service (similarly, Katz, 1964; Organ, 1988). For example, if a machine breaks down and the worker is able to fix it or is able to tell the repairperson what to do (although not all of this is part of his or her job description), organizational effectiveness is enhanced. Second, there should be a higher degree of task performance of employees with higher

initiative. Hacker (1992; cf. also Frese & Zapf, 1994) and Klemp and McClelland (1986) showed that excellent employees are characterized by a longer time perspective in their work, by a better developed mental model of their work, and by a more proactive approach to work. The long-term orientation and the proactive approach to work is common to our concept of PI and the behavior and action strategies of superworkers.

One specific example of PI is to participate in suggestion schemes. In the Dutch Blue-Collar Worker Study, for example, Frese et al. (1999) studied the relevance of a proactivity measure—a combination of self-reported PI and higher order need strength—to participation in a suggestion scheme. A structural equation analysis revealed that proactivity was positively related to having ideas for work improvement, which in turn was related to submitting ideas and getting a reward for the idea (Frese et al., 1999).

In the German Student Study we looked at the students' study achievements among a subsample of students that already had completed their midmaster's level exams ("Vordiplom"). We found that grades were positively correlated with their level of initiative ($r = .48$, $p < .01$, $n = 41$). Even when controlling for their high school grades, the relationship between PI and study achievements ("Vordiplom") was positive ($r = .44$, $p < .01$, $n = 41$), which suggests that grades did not determine the level of PI but that PI may have been a factor contributing to study achievement.

Up to this point, we have focused our discussion on individual-level characteristics as they relate to individual levels of performance. Now we briefly discuss individual differences in PI and its relation to small-firm performance. The degree of owners' PI was found to be correlated with firms' success in samples from different economic environments. In East Germany (a subset of those people who had become entrepreneurs in the East German Longitudinal Study; Zempel, 1999), this correlation was between $r = .27$ and $r = .44$ (all $p < .05$) for different measures of PI, measured before entrepreneurial success was ascertained. In Uganda the correlation between entrepreneurial success and an interview-based measure of PI was $r = .42$ ($p < .01$, $N = 100$; cf. Koop et al., 2000; r not reported in this article) and in Zimbabwe the correlation was $r = .25$ ($p < .01$, $N = 294$; Krauss et al., 2000). Moreover, PI was a predictor of whether a firm survived (Zempel, 1999).

To go one step beyond the individual level PI measures, Baer and Frese (2000) looked at organizational climate for initiative and its relationship with firm performance (German Midsized Company Study). Three or more midlevel managers in 38 companies filled out a questionnaire on culture, which was then correlated to the profit rate (return on asset) ascertained later from a handbook on business performance. The correlation between the culture for initiative and return on assets was $r = .48$ ($p < .05$, $N = 38$). There was also an interplay between process innovation (e.g., introduction of just-in-time production, business process reengineering, total quality management) and the culture of initiative. Profitability was high only

for those companies that in addition to their high level of process innovation also showed a high degree of culture for initiative.

SIMILAR CONSTRUCTS

Research on proactive forms of work behavior has been very successful in improving our understanding of work performance. Hence, it is not surprising that similar constructs have been developed in the literature. We discuss just two such concepts here—proactive personality and taking charge.

First, proactive personality is defined as a "relatively stable tendency to effect environmental change" (Bateman & Crant, 1993, p. 103). According to Bateman and Crant, people who score high on the proactive personality scale are posited to grasp opportunities to influence and change their environment; the authors suggest them to be agents of change. Proactivity is similar to our concept of PI. However, on the level of measurement, there are differences. We are less concerned with developing a personality concept than with developing a measure of work behaviors. Therefore, our interview measures attempt to measure interindividual differences in behavior, such as giving suggestions, actively participating in training, overcoming barriers, and so on. Because the interviewer is able to question the participants' answers and because there is a common basis for coding the answers, we think that our interview-based measures are less prone to show bias (e.g., common method bias with other questionnaire measures) and that the problem of differential anchor points that often occurs in questionnaire research is reduced considerably (what does the person mean when he or she answers that she or he shows a "high" degree of initiative, compared to whom?). However, we recognized the need to develop a questionnaire measure for purposes of research economy and for developing a personality-type measure. The overlap between our PI self-report (questionnaire) measure and the proactive personality measure by Bateman and Crant suggested that these are two measures of the same basic construct: The disattenuated correlation, corrected for unreliability, was .96 in our German Student Sample (uncorrected $r = .76$, $n = 91$, $p < .01$).The relationship between the Bateman and Crant proactive personality measure and our interview based PI measure was $r = .34$ ($p < .01$, $n = 97$; German Student Sample). The correlations of our self-reported PI measure and our interview-based PI were between .25 and .30 (always $p < .01$, $n = 330$ to 370) in various waves of the East German Longitudinal Study (see previous discussion), $r = .24$ ($n = 91$, $p < .05$) in the Hospital Study, $r = .42$ ($p < .01$, $N = 97$) in the German Student Study (unpublished results).

Another more recent development is the concept of taking charge (Morrison & Phelps, 1999). Taking charge "entails voluntary and constructive efforts, by individual employees, to effect organizationally functional change with respect to how work is executed" (p. 403). The definition of taking charge is similar to the one of

PI: "voluntary efforts" in taking charge is equivalent to "self-starting behavior" as a part of PI; taking charge is behavior-oriented, which overlaps with PI; taking charge must be "constructive"—which is similar to our requirement that PI must contribute to overall organizational goals (cf. Frese et al., 1996, 1997). Furthermore, taking charge has similar relationships to other constructs as PI: Taking charge is positively related to self-efficacy, to felt responsibility (which is roughly the same as our aspirations for control and responsibility), and to expert power (PI is related to job qualification; Morrison & Phelps, 1999). The largest difference of taking charge to PI is that the taking-charge measure is based on a rating by coworkers. Clearly, there is a large overlap of PI and taking charge that needs to be empirically tested.

DISCUSSION OF PART I

Overall, empirical evidence on the nomological net of relationships described in Figure 1 suggests the feasibility of the construct and our measure of PI. PI is consistently related to background personality variables, such as need for achievement, psychological conservatism, and action orientation, and to job qualifications, cognitive ability, and job characteristics. Similarly, PI is positively related to individual orientations, such as control aspirations, self-efficacy, change orientation, active coping, and handling errors. Finally, PI measured on the individual level is related to individual performance and small-scale firm performance; PI measured on the company level as a climate factor is related to the profit rate of a firm. Although many questions remain, we believe that we have identified a practically and theoretically important construct and have developed a measure that captures the construct using multiple sources, such as the participant, behavior in the interview (overcoming barriers), reports on past and present PI behavior, and interviewer ratings.

PART II: ABILITY AND MOTIVATION AS PREDICTORS OF PI: A NEW ANALYSIS

One way to bolster our argument that we have measured behavior at work is to present achievement behavior as a function of ability and motivation. Moreover, we think that it is still necessary to present a bit more comprehensive picture. Therefore, we discuss in this part of the article a detailed analysis of one facet of construct validity: PI being a function of motivation and cognitive ability. The notion that achievement behavior is a function of ability and motivation has a long tradition in psychology (e.g., Campbell & Pritchard, 1976; Kanfer & Ackerman, 1989). It implies that both ability and motivation exert both independent and joint influences on achievement behavior. In this study, we focus on the linear effects.

Cognitive ability is important because taking initiative involves solving tasks of medium to high complexity and difficulty; when taking initiative an individual leaves routine tracks of work, develops new strategies, and solves problems. Thus, PI often requires complex problem solving and good job knowledge, both of which have been shown to be influenced by cognitive ability (Schmidt, Hunter, & Outerbridge, 1986). Whether individual differences in cognitive ability predict PI has not yet been tested. Ford (1992) defined motivation as "the organized patterning of three psychological functions that serve to direct, energize, and regulate goal-directed activity: personal goals, emotional arousal processes and personal agency beliefs" (p. 3). We concentrate on work-related goals and agency beliefs by using the three orientations from Figure 1 that are most clearly motivational: control aspirations, self-efficacy, and change orientation. We hypothesized that cognitive ability and motivational variables predict subsequent changes in PI independently of each other.

METHOD

Participants and Procedure

We used the East German Study sample to test our hypothesis. For this study, we changed the longitudinal study with six data collection waves into a series of three longitudinal studies with two waves each. In each case the waves were separated by approximately 2 years to keep the time lags between the waves constant.

For several reasons, there were missing data. First, cognitive ability could only be ascertained from 373 participants.[7] Second, because we used work-related motivational variables, we had to restrict the analyses to participants who actually were working at the two points of each longitudinal study. Thus, those who were unemployed, retired, housewives, and so on were excluded. These factors decreased the number of participants considerably, as unemployment and early retirement were rather high due to the economic situation of East Germany. Analysis I is based on $n = 151$, analysis II on $n = 169$, and analysis III on $n = 160$.

[7]The Raven test was not presented if the interview took place in an unsuitable place (for example, some interviews took place in a café as the interviewee could not be met at home), or if the condition of the participant, his or her alertness or fatigue, made valid test results unlikely. The decision of whether to present the Raven test was made by the interviewer. Comparison of participants who had not completed the Raven test with participants who had completed it with regard to age, sex, socioeconomic status, and job qualifications did not yield significant differences ($p < .05$).

Measures

PI was assessed using five measures (general initiative at work, education initiative, overcoming barriers, active approach, and interviewer evaluation) based on the extensive interview as described previously (cf. Frese et al., 1996). Scores of the five measures were z-transformed and then summed to provide an overall measure of PI for each participant. One of the scales—general initiative at work—was first measured in the third wave; therefore, the first analysis, which is based on waves 2 and 4, only used four scales.[8]

Cognitive ability. Individual differences in cognitive ability were measured in wave 6 with the Raven Advanced Progressive Matrices Test (APM), developed as a measure of Spearman's general intelligence factor *g* (Vernon, 1960, p. 19). The APM is a valid and economic way to measure cognitive ability (Paul, 1986). As intelligence testing had not been used for personnel selection purposes in former socialist East Germany, study participants had no experience with intelligence testing. A short form of the APM, found to be comparable to the long form, was used (Arthur & Day, 1994). Internal consistency of APM (Cronbach's alpha) was .74, mean test score 5.2, $SD = 2.8$. In contrast to the other measures, we assessed it only once, because cognitive ability is known to have very high stability (Schwartzman, Gold, Andres, Arbuckle, & Chaikelsou, 1987).

Self-efficacy was measured as a generalized work-related expectation with the scale of Speier and Frese (1997). A sample item is "When I want to reach a goal, I am usually able to succeed." The scale has six items; Cronbach's alphas were on average .71 in the different waves.

Control aspirations were measured with the reverse of a scale, which we originally called *control rejection* (Frese et al., 1996). It consists of nine items; a sample item is "I act according to the motto: I follow orders, then nobody is going to reproach me." Cronbach's alphas were on average .87.

Readiness to change at work (Frese & Plüddemann, 1993) measured preference for jobs that allow the change of routines and readiness to participate in qualification. A sample item is "I like it when work changes often and quickly" (five items, Cronbach's alphas were on average .69). This alpha is acceptable given the fact that the scale is based on only five items (Cortina, 1993).

Control variable. Participants' age could be a confounding variable in our analyses because cognitive ability decreases with age (Avolio & Waldman, 1990), and one could argue that age might play a role in the development of PI.

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[8]This was justified as the measure based on four scales had correlations of at least .96 ($p < .001$) with the measure based on all five scales.

Analyses

Hypotheses were tested with hierarchical regression analyses (Cohen & Cohen, 1983). Each analysis was based on two waves with a time lag of 2 years. Because we were interested in the causal influences of motivation and ability on PI, we held earlier levels of PI constant. As prior initiative was controlled in the first step, variables entered in subsequent steps predicted changes in PI in the 2-year lag. Two regression analyses were performed to test whether both predictor groups—cognitive ability and motivational orientations—explained unique variance in PI. In the first analysis, motivational variables were entered into the equation after cognitive ability. The increment in R^2 produced by the motivational variables indicated the unique variance explained by the them. In the second analysis, the order of the predictors was reversed.

Longitudinal analyses allow evaluation of whether the predictor has a contemporaneous or a lagged effect. The decision for using contemporaneous or lagged analyses is theoretically difficult (Dwyer, 1983). On the one hand, a causal argument is more credible if there is a true lagged effect. On the other hand, it is implausible that a certain level of motivation at one point in time should affect PI 2 years later. Therefore, motivation should affect PI contemporaneously because there should be an immediate effect of a motivation on actions. Empirically, we have looked at both effects.

RESULTS

Means, standard deviations, Cronbach's alphas, and correlations of all study variables are presented in Tables 1 through 3, separately for the three analyses. Correlation coefficients indicated that there were at all times significant contemporaneous and lagged correlations of motivational variables with PI, with three exceptions (lagged correlation of self-efficacy with PI). Correlations of PI with cognitive ability were also significant at all times. There was with one exception no significant correlation between cognitive ability and the motivational variables.

Table 4 contains results of the hierarchical moderated regression analyses. Sections 1 to 3 present the results for analyses with contemporaneously measured motivation, sections 4 to 6 the results for the lagged effect of motivation. We predicted that both motivational variables and cognitive ability would explain unique variance in changes of PI. This unique variance was isolated in the third step of the regression analyses.

Motivational variables explained between 7% to 17% of unique variance in changes in PI contemporaneously (Table 4, sections 1 to 3); they explained 4% to 12% of unique variance in PI as a lagged effect (Table 4, sections 4 to 6). Cognitive ability explained between 2% to 7% of the unique variance (Table 4, sections

TABLE 1
Means, Standard Deviations, Intercorrelations, and Cronbach's Alpha Among Study Variables for Analyses I Based on Wave 2 and 4[a]

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Age	38.25	10.32	—								
Cognitive ability	5.88	2.89	–.22**	(.76)							
Control rejection (t2)	2.07	.58	–.22**	–.07	(.85)						
Control rejection (t4)	2.08	.54	–.17*	–.09	.55**	(.84)					
Readiness to change (t2)	3.91	.53	–.15	.01	–.30**	–.24**	(.57)				
Readiness to change (t4)	3.78	.59	–.01	.14	–.25**	–.36**	.49**	(.70)			
Self-efficacy (t2)	3.42	.48	–.08	.04	–.32**	–.21**	.31**	.23**	(.61)		
Self-efficacy (t4)	3.50	.52	–.19*	.00	–.26**	–.27**	.24**	.25**	.51**	(.70)	
Personal initiative (t2)[b]	.63	2.48	.05	.28**	–.27**	–.20*	.27**	.25**	.24**	.08	—
Personal initiative (t4)	.24	3.23	–.11	.27**	–.36**	–.39**	.27**	.40**	.25**	.21**	.31**

[a]N = 152–156. [b]The scale general initiative at work was not assessed in t2 and was therefore not included in the aggregated measure of personal initiative.

TABLE 2
Means, Standard Deviations, Intercorrelations, and Cronbach's Alpha Among Study Variables for Analyses II Based on Wave 3 and 5[a]

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Age	39.26	10.14	—								
Cognitive ability	5.83	2.89	–.27**	(.76)							
Control rejection (t3)	2.07	.64	–.20**	–.09	(.90)						
Control rejection (t5)	2.10	.63	–.15	–.05	.72**	(.88)					
Readiness to change (t3)	3.79	.58	–.12	.07	–.37**	–.42**	(.63)				
Readiness to change (t5)	3.70	.64	–.04	.15	–.45**	–.51**	.62**	(.74)			
Self-efficacy (t3)	3.39	.53	–.16*	.09	–.42**	–.37**	.26**	.29**	(.72)		
Self-efficacy (t5)	3.49	.56	–.20**	.09	–.37**	–.45**	.26**	.42**	.62**	(.76)	
Personal initiative (t3)	.43	3.41	.08	.31**	–.33**	–.39**	.32**	.42**	.18*	.18*	—
Personal initiative (t5)	.39	3.28	–.05	.34**	–.29**	–.39**	.33**	.45**	.07	.17*	.58**

[a]$N = 169$.

*$p \leq .05$. **$p \leq .01$.

TABLE 3
Means, Standard Deviations, Intercorrelations, and Cronbach's Alpha Among Study Variables for Analyses Based on Wave 5 and 6[a]

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Age	40.39	9.24	—								
Cognitive ability	5.80	2.92	–.20*	(.76)							
Control rejection (t5)	2.09	.62	–.12	–.08	(.87)						
Control rejection (t6)	1.98	.66	–.04	–.12	.71**	(.90)					
Readiness to change (t5)	3.71	.66	–.02	.19*	–.52**	–.49**	(.75)				
Readiness to change (t6)	3.65	.69	–.06	.13	–.41**	–.44**	.68**	(.76)			
Self-efficacy (t5)	3.51	.55	–.19*	.09	–.47**	–.37**	.41**	.30**	(.74)		
Self-efficacy (t6)	3.54	.49	–.24**	.00	–.29**	–.32**	.34**	.37**	.73**	(.76)	
Personal initiative (t5)	.38	3.35	–.07	.36**	–.38**	–.39**	.43**	.40**	.19*	.12	—
Personal initiative (t6)	.41	3.60	–.10	.46**	–.36**	–.40**	.45**	.45**	.24**	.24**	.60**

[a]N = 161–163.

*$p \leq .05$. **$p \leq .01$.

TABLE 4
Hierachical Regression Analysis for Mental Ability and Motivational Variables on Personal Initiative (PI)[a]

	1		*2*		*3*		*4*		*5*		*6*	
Variables Entered	R^2	ΔR^2	R^2	ΔR^2	R^2	ΔR^2	R^2	ΔR^2	R^2	ΔR^2	R^2	ΔR^2
Step 1. Personal initiative $t_{x - 2\ years}$, age	.11***	.11***	.34***	.34***	.36***	.36***	.11***	.11***	.34***	.34***	.36***	.36***
Step 2. Cognitive ability	.14***	.03**	.37***	.02**	.43***	.07***	.14***	.03**	.37***	.02**	.43***	.07***
Step 3. Control rejection, readiness change, self-efficacy	.31***	.17***	.43***	.07***	.50***	.07***	.25***	.12***	.41***	.04**	.47***	.05***
Step 2. Control rejection, readiness change, self-efficacy	.18***	.18***	.41***	.07***	.42***	.06***	.23***	.11***	.39***	.04***	.41***	.05***
Step 3. Cognitive ability	.31***	.02*	.43***	.02***	.49***	.07***	.25***	.03**	.41***	.02***	.47***	.06***

Note. Sections 1, 4: prediction of PI wave 4; Section 2, 5: prediction of PI wave 5; Sections 3, 6: prediction of PI wave 6. Section 1-3: contemporaneous effect of motivational variables; Section 4-6: lagged effect of motivational variables. First: Cognitive Ability Entered before Motivation; Second Motivational Variables Entered before Cognitive Ability.

1 to 6). Thus, there was support for the assumption that both motivational variables and cognitive ability account for unique variance in changes in PI; the lagged effect of motivational variables was somewhat smaller than the contemporaneous effect. Overall, the results suggest that cognitive ability was consistently and positively associated with an increase of PI over time.

OVERALL DISCUSSION AND CONCLUSION

In this article, we have presented in the first part a review of studies based on 11 samples on the construct validity of an interview measure of PI. In keeping with our definition—self-starting, overcoming barriers, proactive —we have measured initiating behaviors by general initiative at work and education initiative, by overcoming barriers and an active approach when overcoming these barriers, and by the interviewer evaluation of PI. In addition, we have also developed a questionnaire measure of PI as a personality variable. In all, these results show our PI measures to be lawfully related to the nomological network shown in Figure 1. In the second part of this article, we have looked at whether the PI measure can be conceptualized to be achievement behavior and whether it is influenced by cognitive ability and motivation. Results imply that cognitive ability and motivational orientations determine PI changes independently of each other. The motivational orientations of control aspirations, self-efficacy, and change orientation have both lagged and contemporaneous effects on change in PI.

There are important implications of our studies for understanding work performance, for selection, and for training. Work performance has usually been seen to be simply performance on work tasks. Our results suggest that an active approach to work tasks is important as well. This goes beyond the issue of technical core versus contextual performance (Motowidlo et al., 1997), because high performance both in the technical core and in the contextual area may be high or low on self-starting, proactive behavior that changes the work environment.

Our measures may help to measure PI in assessment centers and in situational interviews. As our results show, the PI measure is influenced by cognitive ability, but it is more than just cognitive ability. Because it is difficult to find selection instruments that have validity beyond cognitive ability (Schmidt & Hunter, 1998), it is of particular importance to do more research on PI as a selection instrument. It has been shown that PI also measures motivated behavior. Furthermore, PI has been shown to be related to performance in various settings. Whether PI can be used as an additional predictor of future performance within a selection setting has not yet been researched.

Finally, it is useful to ask the question of whether PI can be changed through training and whether such training may increase performance. Currently, we are doing our first studies to develop a training course to increase PI. We assume that

orientations, such as self-efficacy, change orientation, active coping, and handling errors, are changeable, specific, and proximally related to PI. We, therefore, take them as the starting point for the training to change PI, as well as self-regulatory skills (Kanfer & Heggestad, 1997).

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