What do we know about the psychological make-up of entrepreneurs: Towards developing a new field of inquiry for I/O psychology

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Denver, March 2008

Outline

- Why psychological entrepreneurship research?
- Lessons learnt from editing a book on psychological factors of entrepreneurship research
- Most important issues of work and organizational psychology research in entrepreneurship research
- Examples of our research on entrepreneurship:
  - Giessen - Amsterdam Model and its Uses
  - Intervention: Training

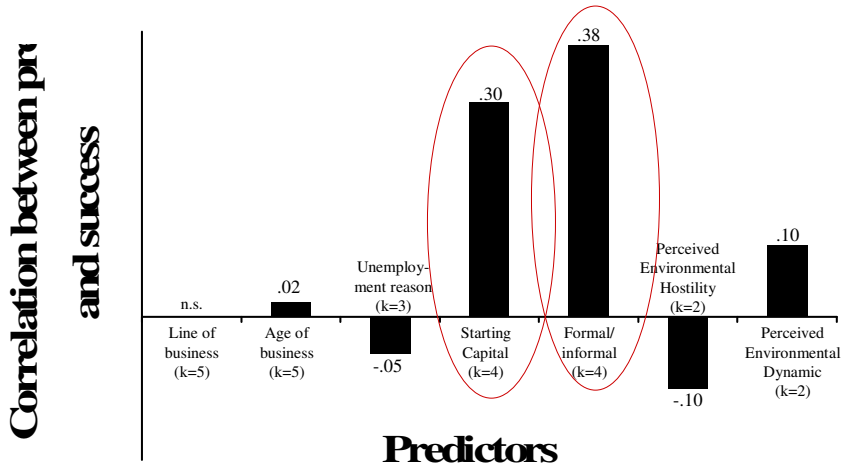
Defining Entrepreneurship

- Shane and Venkataraman (2000): Discovery, evaluation, and exploitation of opportunities

General Importance of Entrepreneurship Research

- Creative destruction and development of innovation (Schumpeter): entrepreneurs
- Large firms also need to become more entrepreneurial to survive
- Small growing firms produce more new jobs than large companies today
- On the other hand: Over 50% of small new businesses fail within 5 years

Sociodemographic Predictors of Success: Correlations (k=Number of Studies – all in Africa)



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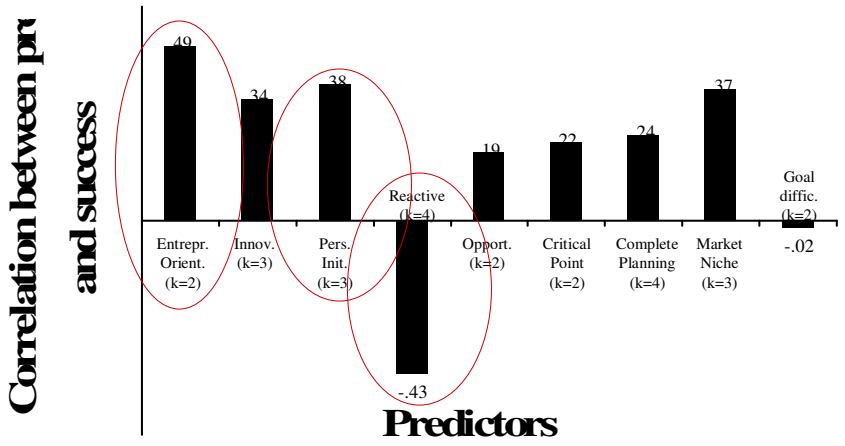

Frese, M. (Eds.) **Success and failure of microbusiness owners in Africa: A psychological approach. Westport, Conn.: Quorum, 2000**

Why Entrepreneurship Research – Basic Factors

- Why should we restrict I/O Psychology to only employees?
- Modern work – more independent practice and more entrepreneurship
- In some countries, e.g., in Africa: More people have jobs as self-employed or as founders of micro-business than in companies
- Poverty alleviation in developing countries

I/O Psychology Profits from Entrepreneurship Research – 1 -

- Where do organizations come from? Entrepreneurship
- Impact of founder on the start-up organizational culture (Schein)
- Performance and well-being are important outcomes

I/O Psychology Profits from Entrepreneurship Research – 2 -

- The problems of performance measures in employee research (supervisor judgments of performance): Very subjective, political, dependent upon impression management more than on "real" performance, many biases

- Better and more meaningful performance measures in entrepreneurship research: start-up, survival, success (growth, size, satisfactory performance); also more meaningful psychological measure of performance: goal

I/O Psychology Profits from Entrepreneurship Research – 3 –

- Issue of generalization: Do models developed for employees (e.g., prediction models, motivational models) generalize to founders start-up companies?

- New and interesting questions that are highly relevant for new work, e.g., opportunity perception and exploitation, planning and proactive strategies

- Highly complex work with many facets

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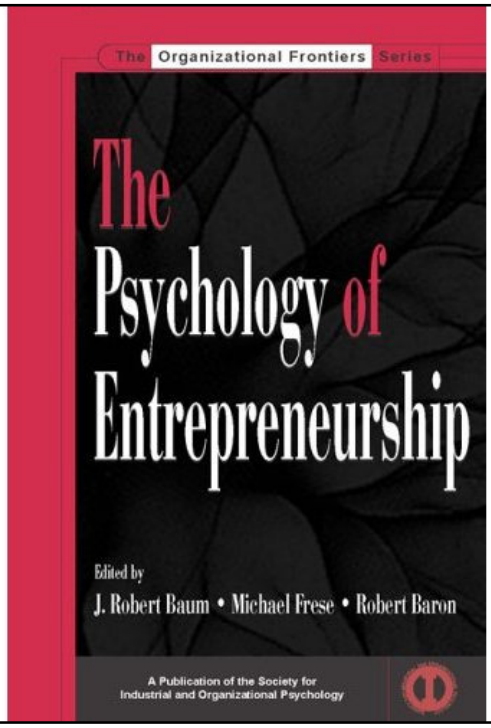

Lessons Learnt from Editing This Book

- Entrepreneurship research is still quite weak, theoretically and methodologically
- Entrepreneurship in need of I/O Psychology – content and methodology
- Content: More and more issues of importance for entrepreneurship refer to psychological concepts, e.g., opportunity detection, intuition, heuristics, emotions, etc.
- Methodological issues: Reliability, validity of scales, design and analysis (longitudinal, structural equation analysis, mediators, moderators, cumulative science (meta-analysis)
- Still: Entrepreneurship develops more and more into an own field of research and inquiry and it is more and more open to psychological approaches

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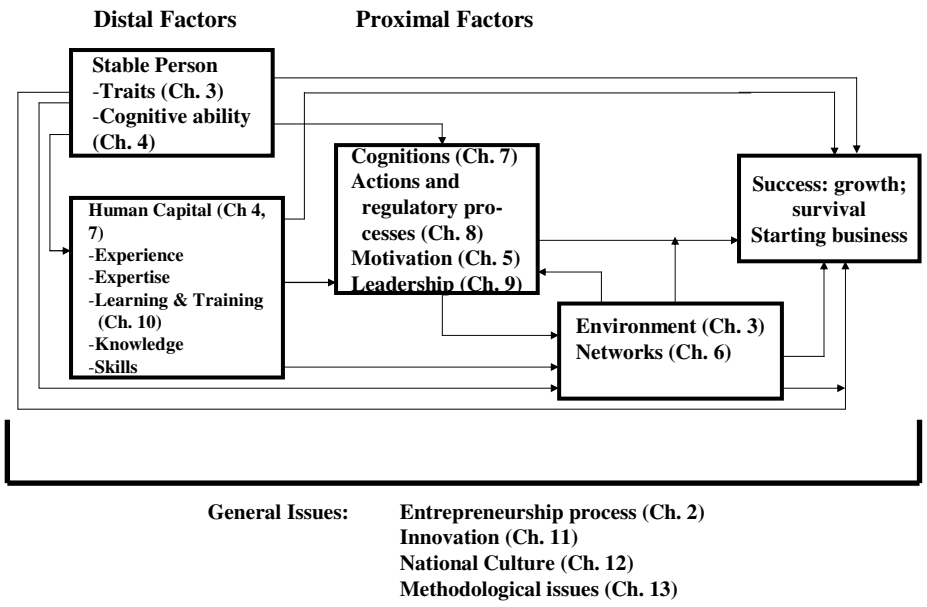
Overview of Book:Entrepreneurship and Psychological Factors



Human Capital (Busenitz & Arthurs, Markman, Katz)

- Renewed emphasis on learning and training
- Importance of social skills/social capital, including network ability (Guanxi)
- Dynamic capability (Busenitz & Arthurs): ability to reconfigure the firm's resource base to meet changing demands
- Business plan as a training device: General question: Should it be done or not, not very useful. Much more useful to ask: for everyone, under which conditions, who learns what from developing a business plan

Cognitions (Busenitz & Arthurs, Frese)

- Utility-maximizing model of rational choice dominant in economics
- Function of heuristics and biases: necessity to make quick decisions in uncertain situations – heuristics even more important than in other occupations; entrepreneur needs to know when to use heuristics and when not.
- Optimistic bias in entrepreneurs (relation to risks)
- Opportunity perception: pattern recognition (chunking), that others ignore; „opportunity“ as prototype; comparisons with exemplars of excellent business opportunities and exemplars of very poor ones, signal detection theory
- Importance of action and action theory approach

Motivation (Locke & Baum)

- Passion for work
- Goals and visions
- Specific self-efficacy
- Self-regulation theories

Network (Audia & Rider)

- Entrepreneurship is a result of organizational life
- Providing confidence that a certain strategy and opportunity will work (vicarious information)
- Giving access to privileged information, both in terms of organizational weaknesses and demand by customers
- Providing networks that help in the establishment of start-ups
- Evidence of the latter: Spatial distribution studies (geographic) and more start-ups from employees of small firms

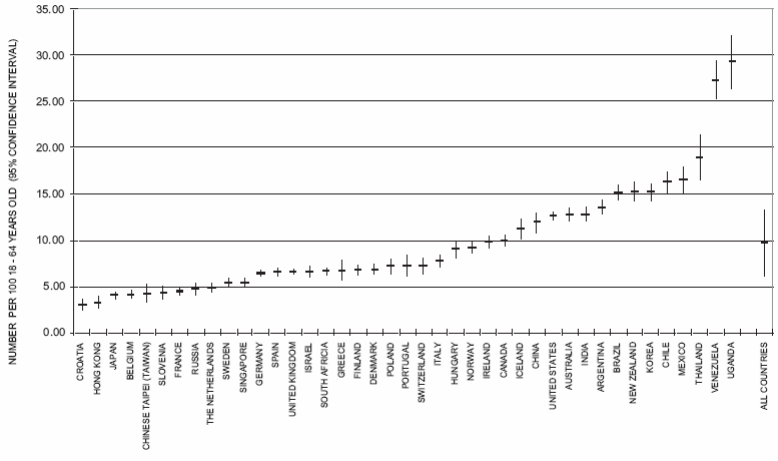
Phases of Entrepreneurship (Baron)

- Pre-launch, launch, post-launch phases
- Different dependent variables relevant
- Different independent variables relevant
- For each hypotheses it must be defined which phase is studied
- Other phase models should also be studied within entrepreneurship, particularly Greiner, L. E. (1972). Evolution and revolution as organizations grow. *Harvard Business Review* (July-August), 2-10.

Cross-Cultural Entrepreneurship (Tung, Walls, Frese)

- Clear differences in rates of start-ups between different countries (Global Entrepreneurship Monitor, GEM)
- However, no easy relationship between cultural factors and rate of entrepreneurship
- More interesting – Match Hypothesis: **Match between an entrepreneur's behavioral tendencies and values to the culture in which entrepreneur operates is needed to be successful.**
- Example: How should entrepreneurs react to cultural factors –Rauch et al., 2000

FIGURE 2 - TOTAL ENTREPRENEURIAL ACTIVITY BY COUNTRY: 2000-2003 AVERAGES

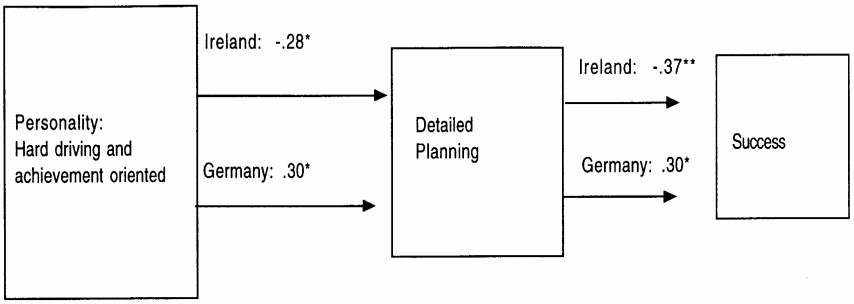


Reynolds, P. D., Bygrave, W. D., Autio, E., & Others, a. (2003). *Global Entrepreneurship Monitor 2003 Executive Report*. London: London Business School.

Uncertainty avoidance (Hofstede):

Ireland: very low : 14

Germany: middle to high : 65



Rauch, A., Frese, M., Sonnentag, S. (2000). Cultural differences in planning - success relationships: A comparison of small enterprises in Ireland, West Germany , and East Germany. Journal of Small Business Management, 38, 4, 28-41.

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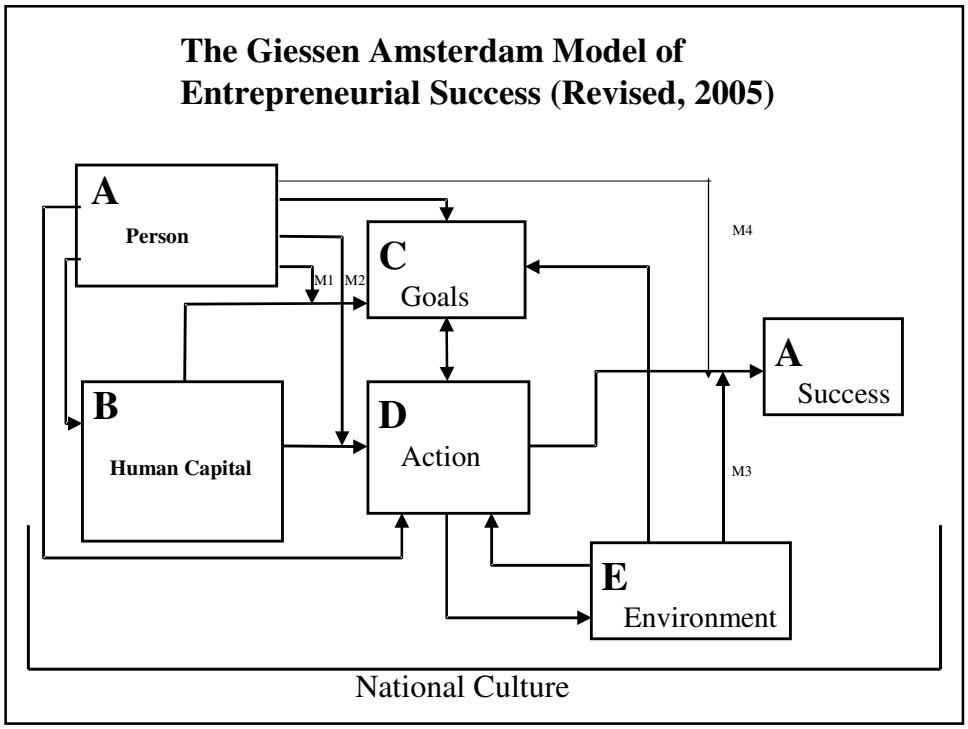
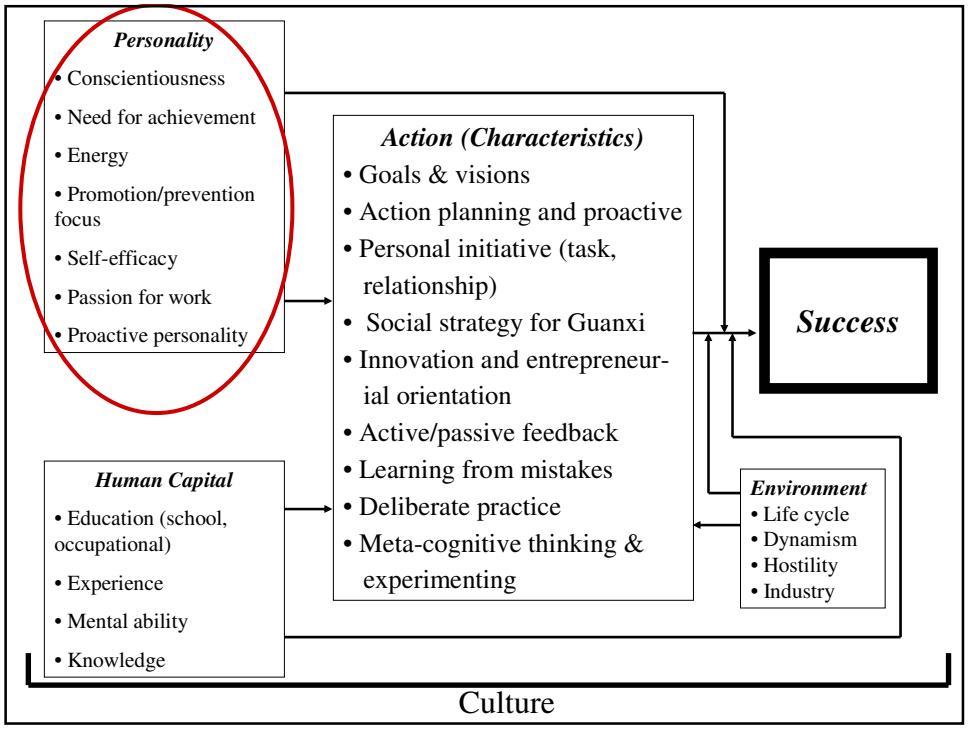
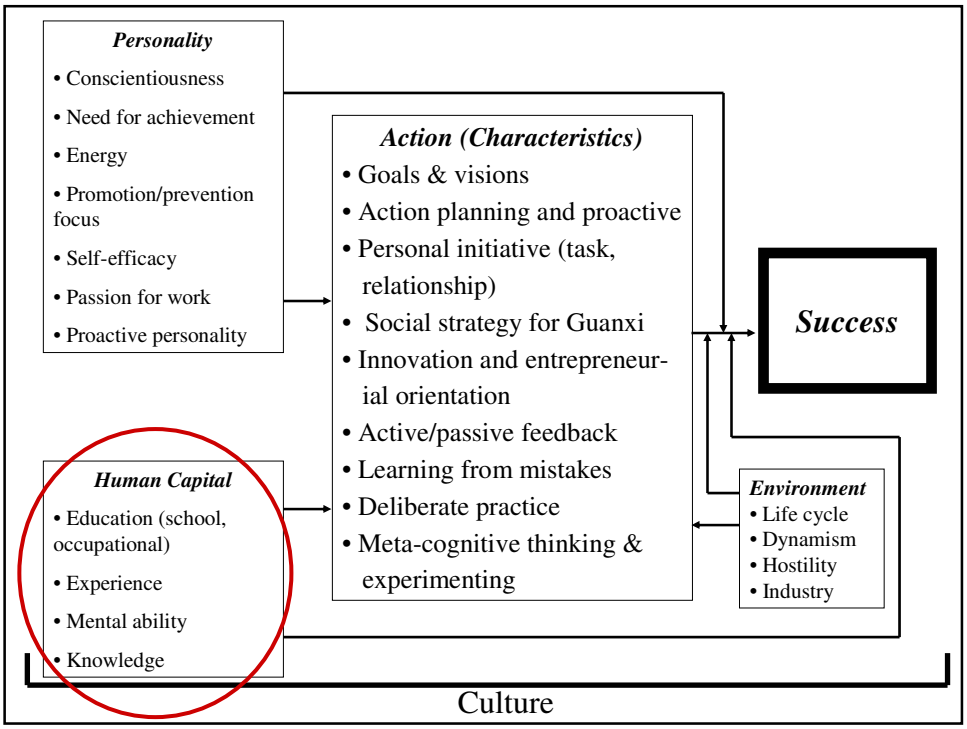

The Giessen Amsterdam Model of Entrepreneurial Success (Revised, 2005)
A
Person
B
Human Capital
C
Goals
D
Action
E
Environment
A
Success
M1
M2
M3
M4
National Culture


Personality
• Conscientiousness
• Need for achievement
• Energy
• Promotion/prevention focus
• Self-efficacy
• Passion for work
• Proactive personality
Human Capital
• Education (school, occupational)
• Experience
• Mental ability
• Knowledge
Action (Characteristics)
• Goals & visions
• Action planning and proactive
• Personal initiative (task, relationship)
• Social strategy for Guanxi
• Innovation and entrepreneur-ial orientation
• Active/passive feedback
• Learning from mistakes
• Deliberate practice
• Meta-cognitive thinking & experimenting
Success
Environment
• Life cycle
• Dynamism
• Hostility
• Industry
Culture

Meta-analytic Relationships between Person Characteristics and Entrepreneurial Success (corr r)

	corr.r	N
All person variables & Succ	.206	7551
All person variables & business creation	.193	13278
Task related traits & Succ.	.334	5293
Non-task related traits & Suc	.051	2743
Task related traits & Creat.	.236	10901
Non-task related traits & business creation	.119	3894

Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation and success. *European Journal of Work and Organizational Psychology, 16*, 353-385.

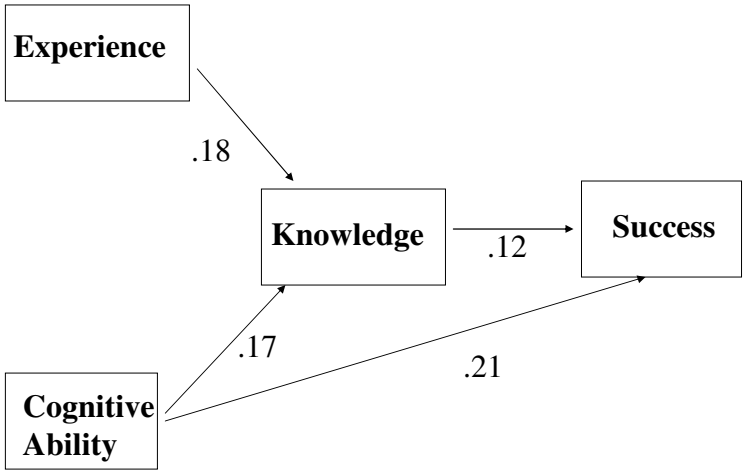


Meta-analytic Relationships between Human Capital and Entrepreneurial Success (corrected r)

	corr.r	N
Overall	*.100*	*21,597*
- Knowledge	.172	2,722
- Experience	.091	20,674
- Old	.053	7,406
- Young	.193	2,094
- Schooling	.084	18,254
- Cognitive Ability	.234	1,154
- Resource Based	.128	14,646
- Developed country	.068	16,359
- Developing country	.132	5,177

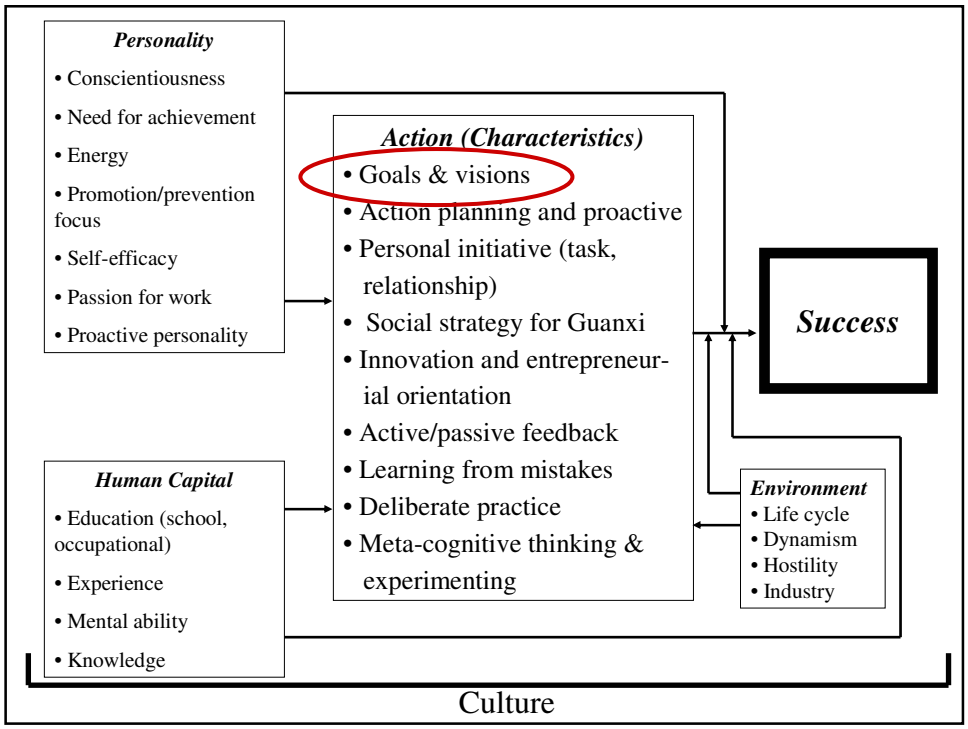
Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2008). Human capital and entrepreneurial success: A meta-analytic review. *Univ. of Giessen: submitted.*

Meta-Analytic Path Coefficients: From Experience and Cognitive Ability to Knowledge to Success



Fit statistics: $\chi 2$ (1, n = 1.529) = 0.36, p = .55; independence model: $\chi 2$ (6, n = 1.529) = 514.86; comparative fit index = 1.00; goodness-of-fit index = 1.00; root-mean-square error of approximation = .000;
*p < .05; **p < .01.

Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2008). Human capital and entrepreneurial success: A meta-analytic review. *Univ. of Giessen: submitted.*



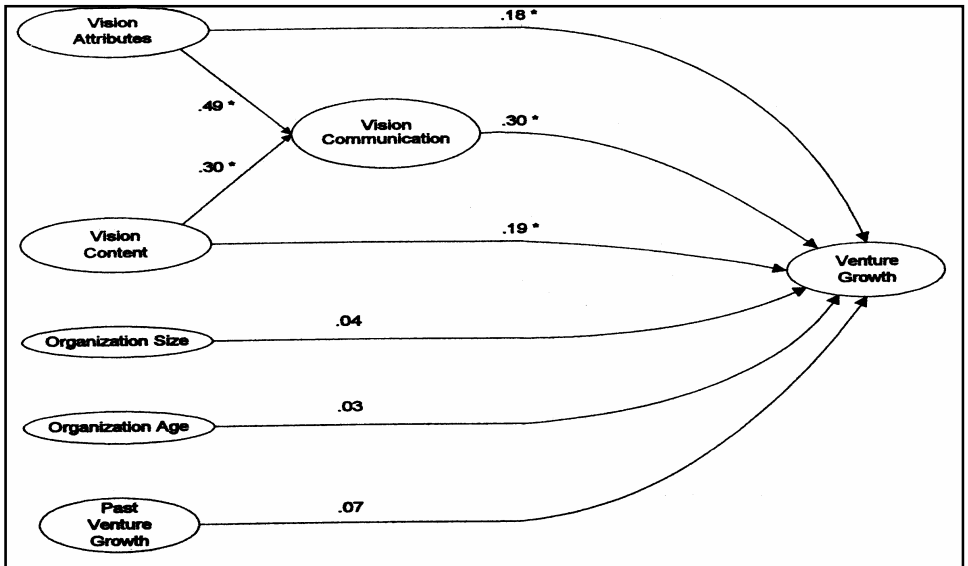
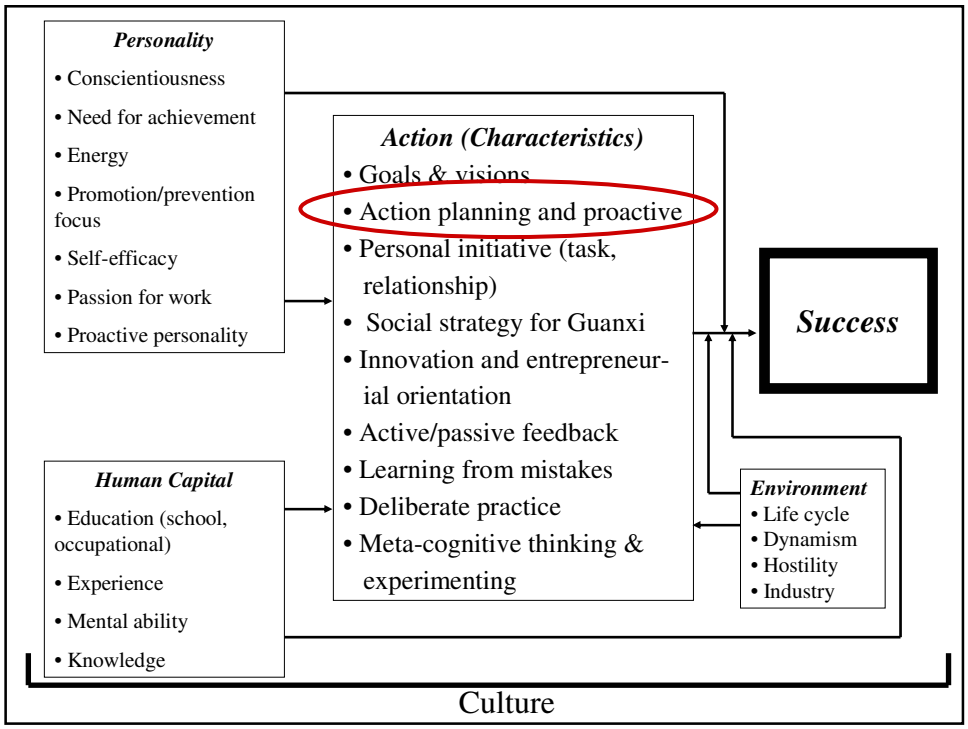


Figure 3. Structural equation indirect effects model. Fit statistics: χ^2 (constrained model) = 65.87; degrees of freedom = 23; p = .00. χ^2 (independence model) = 1,194.69; degrees of freedom = 36; n = 183. Goodness-of-fit index = .95; adjusted goodness-of-fit index = .90; parsimony normed fit index = .47; root-mean-square error = .040; root-mean-square error of approximation = .054. Asterisk denotes parameter estimate/standard error > 2.0.

Baum, Locke & Kirkpatrick, Journal of Applied Psychology, 1998



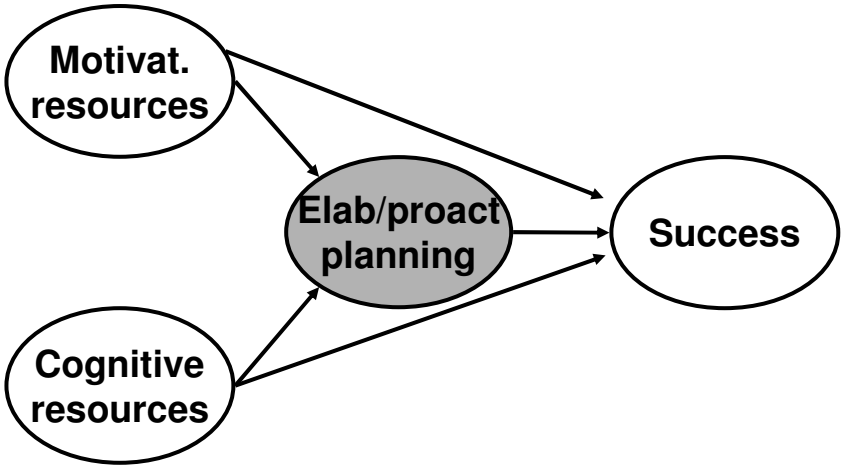
Informal Planning of Business Owners

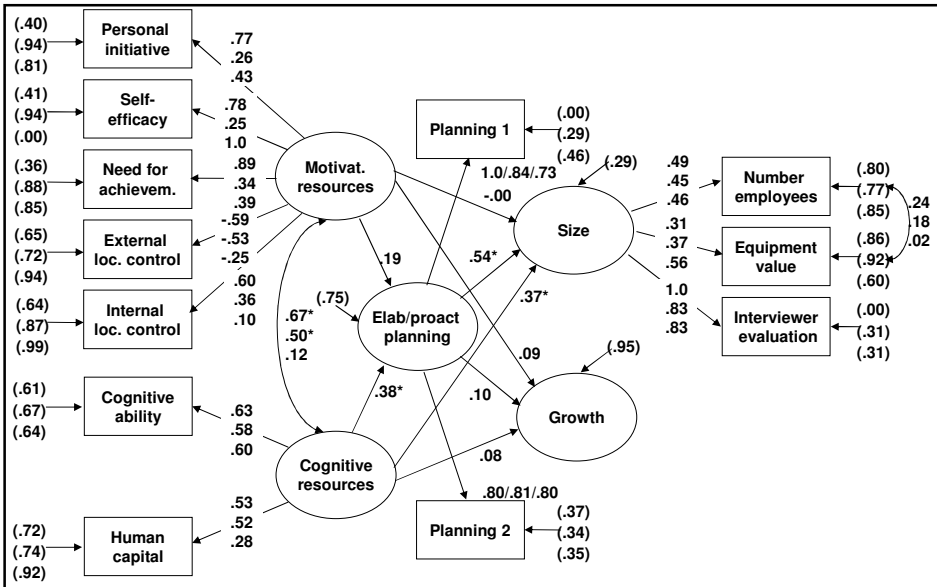
- Business owners work in an unstructured situation → planning more necessary than for employees
- Recently scepticism towards planning; rather intuition, experimentation, improvisation
- Argument: planning takes too long and produces a certain amount of rigidity, environment too erratic (formal planning?)
- Counterargument: Not necessarily contradiction: intuition depends on stored, routinized plans (expertise research); explicit conscious planning may help in experimentation

Measure of Elaborate and Proactive Planning

- In-depth structured interview (max 40 min)
- First, rank order common business goals (e.g., increasing profits used as stimulus material)
- Second, describe the two most important goal areas in detail to understand subgoals (e.g., buying a machine to expand production) – these subgoals loosely related to the stimulus material on cards
- Third, asking owners to describe how they want to go about achieving their goals (2 goals)
- Fourth, prompts, for example, What do you mean by ....? Can you give me an example? What have you done so far to reach…?
- Measures: substeps and number of issues thought about and how much thinking about future opportunities and threats and preparing for them now (high inter-rater reliability and Alphas)

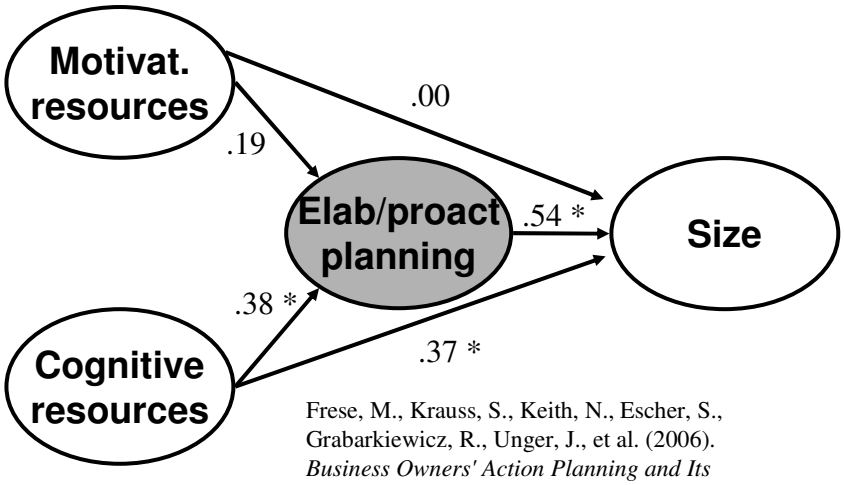
Elaborate & proactive planning: Theoretical mediational model





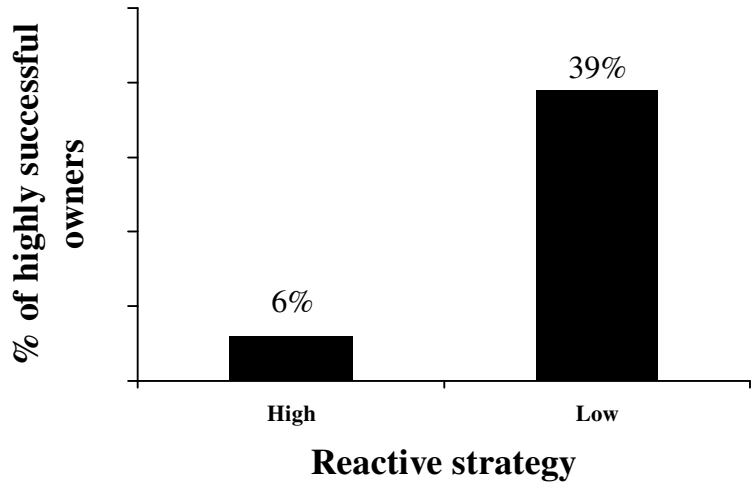
(a) Complete model; Model fit: $\chi^2(192, N_1=215, N_2=123, N_3=70) = 266.12$, $p < .01$; RMSEA=.054, CFI=.95; numbers in measurement models refer to samples from South Africa, Zimbabwe, and Namibia, respectively.

Elaborate & proactive planning as mediator: Results from Namibia, South Africa, and Zimbabwe

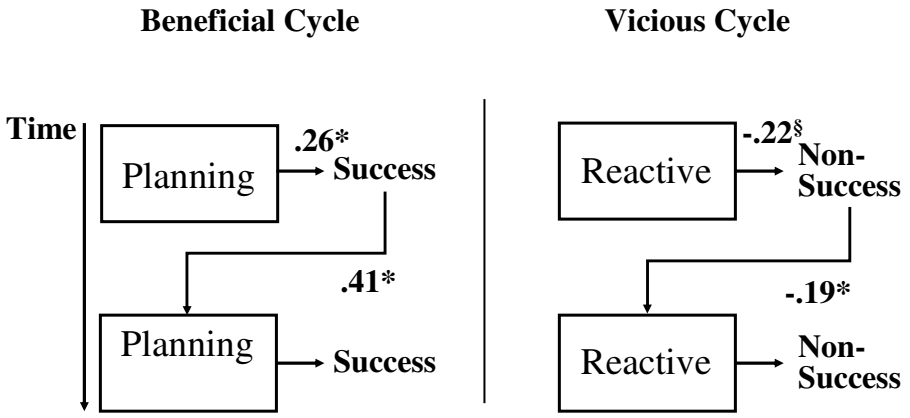


Frese, M., Krauss, S., Keith, N., Escher, S., Grabarkiewicz, R., Unger, J., et al. (2006). *Business Owners' Action Planning and Its Relationship to Business Success in Three African Countries*. Giessen: Dept. of Psychology, submitted.

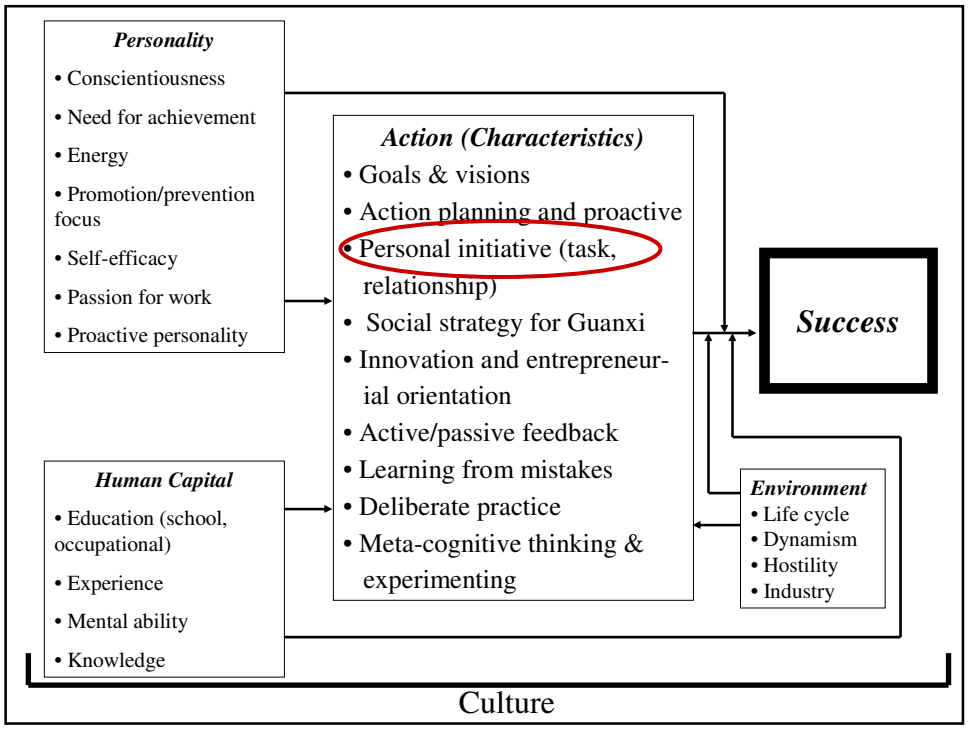
Reactive Strategy in South Africa



Strategies and Entrepreneurial Success – Longitudinal Study – Betas after Controlling for Prior Success (Zimbabwe)



Krauss, Frese, in prep.



Relationship between Personal Initiative and Entrepreneurship

- Personal initiative is company based entrepreneurship
- The most extreme form of personal initiative: become a business owner = self-start an organization
- Proactivity has is an important predictor of entrepreneurial success (entrepreneurial orientation, Lumpkin and Dess)
- Still, there is variance of personal initiative in business owner and personal initiative is related to success of organization

Relationship Between Personal Initiative and Entrepreneurial Success in Uganda (Correlation)

	r with Success
Initiative	.42**

Replicated several times
Relationship of initiative with individual entrepreneurial orientation

(DeReu, Koop, Frese, 1998)

Company Level: Climate for Initiative Items

- People in our company actively attack problems.
- Whenever something goes wrong, people in our company search for a solution immediately.
- Whenever there is a chance to get actively involved, people in our company take it.
- People in our company take initiative immediately – more often than in other companies.
- People in our company use opportunities quickly in order to attain goals.

Climate for Initiative and Return on Assets of Medium-Sized Firms

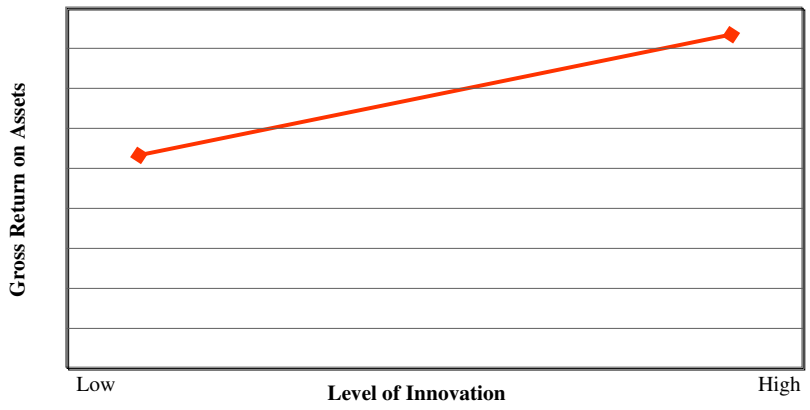
Holding constant Process Innovativeness, Size, and Industry codes, prior Return on Assets → predicting future Return on Assets:

ΔR .30**

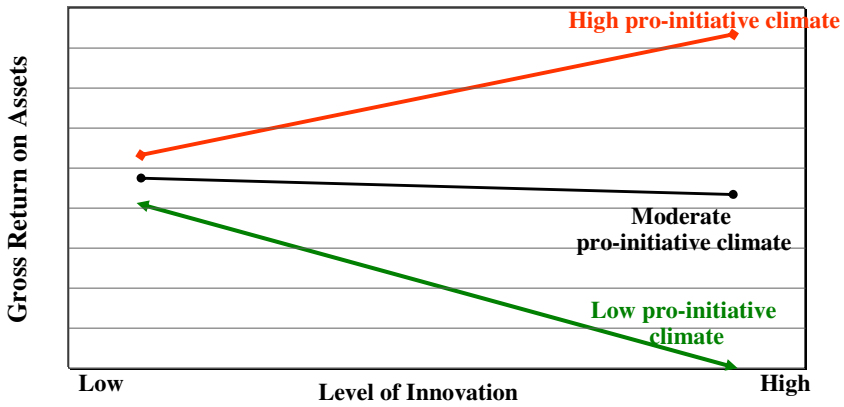
Baer, M. & Frese, M. (2003) Innovation is not enough: Climates for initiative and psychological safety,process innovations, and firm performance; Journal of Organizational Behavior, 24, 45-68

Definitions of Process Innovations

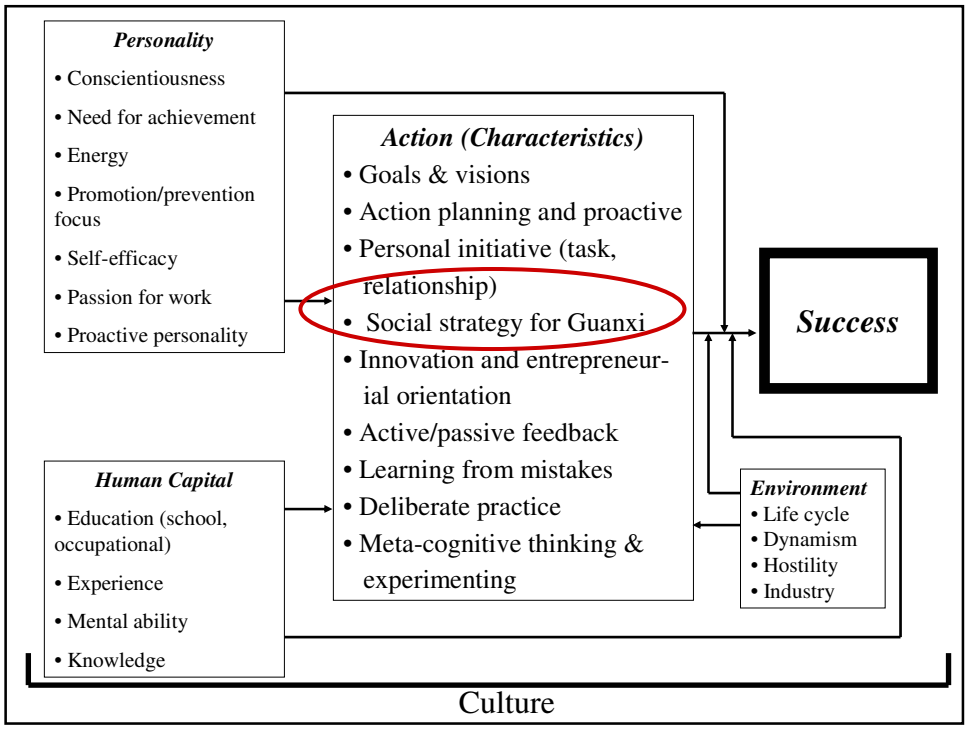
1. Business Process Reengineering (BPR)	**Redesign and slim down operations and production processes to eliminate unnecessary procedures. Characteristics: customer orientation, process-related teamwork, and the transition from highly specialized workers to teams (Hammer & Champy, 1993).**
2. Supply-Chain Partnering	**An informational network with other relevant companies for the purpose of overlapping company improvement in customer orientation and resource utilization (Handfield & Nichols, 1998).**
3. Learning Culture	**A continuously changing company with the goal of facilitating constant learning to its employees (Pedler, Burgoyne, & Boydell, 1991).**
4. Just in time production	**Material and information flow to attain a customer demand-oriented delivery service. Characteristics: integrated information processing, manufacturing segmentation, production-synchronized supply, and reduction of storage costs (Womack, Jones & Roos, 1990).**



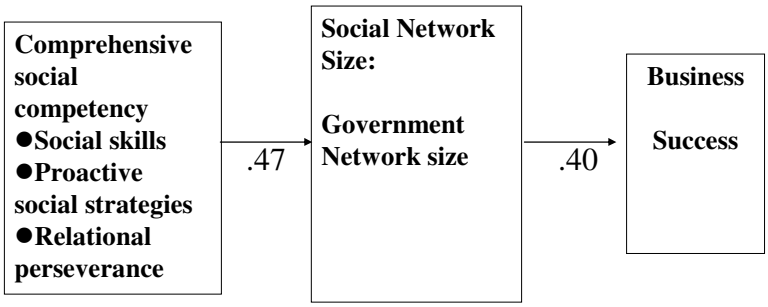
Pro-Initiative Climate Moderating the Relationship between Levels of Process Innovation and Economic Performance of Company



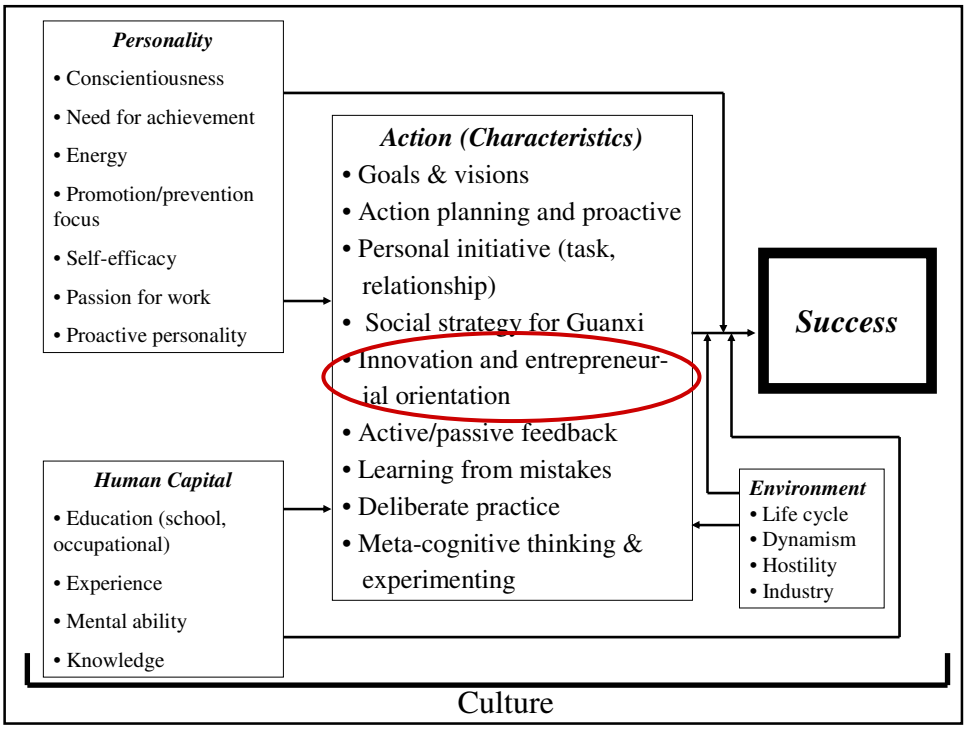
Baer & Frese (2003) Innovation is not enough: Climates for initiative and psychological safety,process innovations, and firm performance; Journal of Organizational Behavior, 24, 45-68



Active Social Strategies - Guanxi



Zhao, X.-Y., Frese, M., & Giardini, A. (2008). Business Owners' Network Size and Business Success in China: A Psychological Perspective. *Giessen: University of Giessen: submitted for publication.*



Entrepreneurial Orientation

- Competitive Aggressivenes
- Autonomy
- Risk Taking
- (Achievement)
- Innovation
- Proactive orientation

Entrepreneurial Orientation and Success

(Controls, e.g. age enterprise, line of business)

	Interviewer	Economic
Zambia	.40*	-.05
Uganda	.58*	.22*

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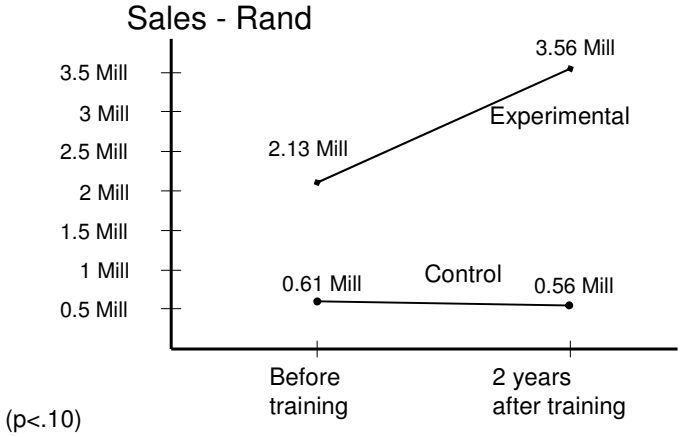
Outline of Training (3 Days)

- **Goal setting: High, specific goals and vision;**
  check realism
- **Motivating employees**
- **Innovation**
- **Proactive planning and initiative**
- **Convincing customers (only Germany)**
- **Time Management**
- **Emotion management**

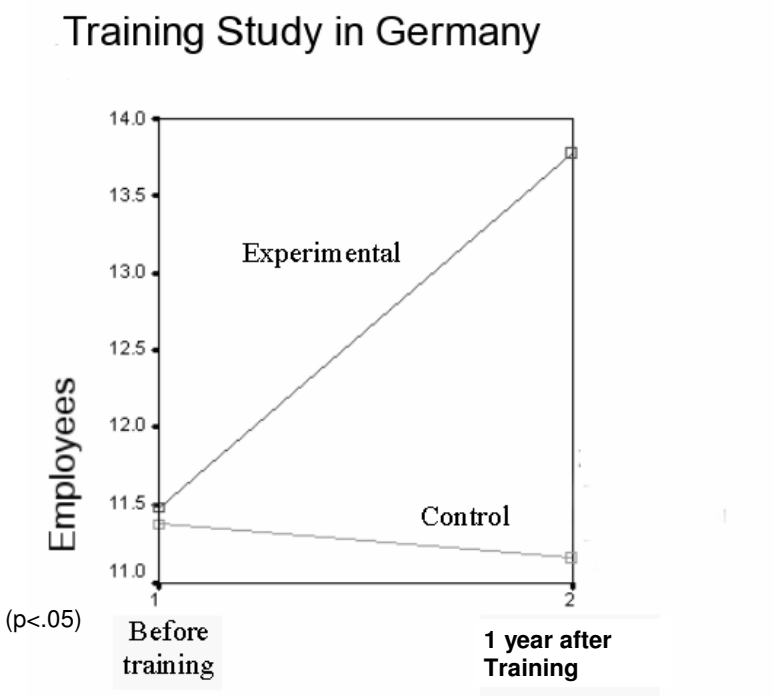
Teaching Initiative

- Business project and planning/goal setting
- Vision
- Check each situation for how you can structure it (strategic focus)
- Love it, leave it, or change it
- Take responsibility for everything you do
- Think of how you can do things differently
- Proactively think of opportunities and problems and prepare today
- You can do it (self-efficacy)
- Don't allow the emotions to dominate you, you should regulate them

Training Study in South Africa



(p<.10)



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Policy Implications

In Germany approx 2 Mill business of the type studied in the German study

If 10% participate in this 3-day training course, the result might be that each participant would employ approx 2 employees more: This might lead to approx 400,000 new employees (which is equivalent to 8% of unemployment rate).
The costs of training should be approx. 1.000 Euro per participants.

Publications can be received from:

www.frese.org

Or: michael.frese@psychol.uni-giessen.de

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  - Intervention: Training
  - Evidence-Based Entrepreneurship

Action Training

- **Empirical evidence**
- **Action oriented mental model (operative Image system**
- **Develop routines**
- **Learn by doing**
- **Motivate by experiencing the difference of wanting to achieve and behavior now**
- **Feedback in training**
- **Support transfer**

Frese, M., Beimel, S., & Schoenborn, S. (2003). Action training for charismatic leadership: Two evaluation studies of a commercial training module on inspirational communication of a vision. *Personnel Psychology, 56*, 671-697

Meta-Analysis

Average effect size across several studies to reduce random effects of individual studies. Each study has its own problems

Also: **Under which conditions** does a certain relationship appear – the issue of **moderator**

Rationale: „With as many as a hundred or more studies on a relationship (such as between cognitive ability and job performance, M.F.) one might think that there would be a resolution of the issue. Yet most review studies traditionally have not concluded with resolution, but with a call for more research on the question... If research never resolves issues, then why spend millions of dollars on research?“ (Hunter and Schmidt, 1990, p. 13)

Meta-Analysis (M-A): Cumulative Development of Knowledge

- Narrative reviews present conclusions based on only some of the relevant data (often "the best studies"), are often biased in their conclusions, and do not deal with the study artifacts adequately
- Cumulative knowledge must present an unbiased summary of the literature that presents the best knowledge at that point – this can only be a quantitative review
- Accumulation of knowledge can take into consideration methodological issues of the study: e.g., different measures (objective vs. subjective), how well study was done methodologically (design) and test these issues (as moderator effects)
- Narrative reviews often rely heavily on significance as most important criterion – problem of power, reliability & type II error

Meta-Analysis (M-A): Overcoming Study Artifacts to Arrive at the "True" Correlation

- Sampling errors – leads to differences in results in studies and search for moderators where there might be none
- Errors of measurement in independent and dependent variables – leads to lower correlations
- Deviation from perfect construct validity in independent and dependent variables
- Range restriction leads to lower correlations: a particular (and unrecognized) problem of entrepreneurship research
- Error due to typical approaches of individual researcher (judgment calls)
- Various errors of data entry and processing – typically reduce correlations

Meta-Analysis (M-A): Support for Search for Moderators

- Meta-Analysis provides quantitative indicators for whether it is useful to search for moderators
- Moderators across studies, e.g., culture, theoretical orientation, methods used, particulars of dependent variable (e.g., more subjective success indicators vs. profit rate, etc.), methodological weakness, published vs. unpublished, etc.

Meta-Analysis (M-A): Policy Recommendations

- The problem of conflicting studies: Which expert should the policy maker believe?
- Entrepreneurship researchers give routinely recommendations to policy makers without sufficient cumulative knowledge
- Irresponsible to give policy recommendations based on one or two studies
- E.g., good to be number 1 or number 2 in the market
- Good to be at the forefront of innovation
- Good to internationalize (early)
- Good to have venture capital support
- Particularly important: adequate moderators
- M-A: What is the best knowledge at current stage of development of science and where are problems

Some Meta-Analytic Results from Medical Research (.10 and .35)

- **Antihistamine use and reduced nose running .11**
- **Non-steroid anti-inflammatory drugs and pain reduction .14**
- **Taking sleeping pills and short term improvements of insomnia .14**
- **Taking Viagra and sexual functioning in men .38**

All taken from Meyer, G. J., Finn, S. E., Eyde, L. D., Kay, G. G., Moreland, K. L., Dies, R. R., et al. (2001). Psychological testing and psychological assessment: A review of evidence and issues. *American Psychologist, 56*, 128-165.

Meta-analytic Relationships between Internationalization and Success (corrected r)

	corr.r	N
Overall	**.099**	**4215**
Small firm	**.121**	**1186**
Large firms	**.086**	**2873**
Young firms	**.228**	**441**
Old firms	**.076**	**2934**
American firms	**.163**	**1796**
European firms	**.060**	**1107**
Japanese firms	**.020**	**718**

Bausch, A., & Krist, M. (in press). The effect of context related moderators on the Internationalization-Performance relationship: Evidence from meta-analysis. *Management International Review*.

Meta-Analysis (M-A): Potential Disadvantages

- Biases in studies included (particularly, published vs. non-published results)
- Garbage in – garbage out
- Only relationships, not causal effects
- Apples and oranges

Intervention and Implementation Handbooks

- **Use of Implementation Manuals**
  - **e.g., how to change culture,**
  - **how to get financing,**
  - **how to internationalize**
  - **how to do planning**
- **Evaluation of these Implementation Manuals: does the intervention work at all**
- **Evaluation of implementation and conformity to manual – better results with higher conformity to manual**
- **Incremental improvement of practice**

Evidence-Based Entrepreneur

- Uses meta-analytic results, but exercises own judgment
- Does experiments
- Tests ideas first before implementing them (but then also tests and evaluates the implementation)
- Does not believe in ideological decisions, but is empirically oriented
- Uses Implementation Manuals to overcome the knowledge-doing gap
- Continuous empirical evaluation and improvement (e.g., development of networks, on introduction of quality circles, time management training, planning, book-keeping, relations with banks)

Publications on Evidence-Based Management

- **Rauch, A., & Frese, M. (2006). Meta-analysis as a tool for developing entrepreneurship research and theory.** ***Advances in Entrepreneurship, Innovation, and Economic Growth, 9*****, 29-51.**
- **Rousseau, D. M. (2006). Presidential Address: Is there such a thing as "evidence-based management"?** ***Academy of Management Review, 31*****, 256-269.**
- **Pfeffer, J., & Sutton, R. I. (2006).** ***Hard facts, dangerous half-truths, and total nonsense*****. Boston, Mass.: Harvard Business School.**
- **Frese, M., Bausch, A., Schmidt, P., Rauch, A., & Kabst, R. (2008). Evidence-based Entrepreneurship: A systematic approach to cumulative science.** ***Univ. of Giessen: submitted for publication*****.**

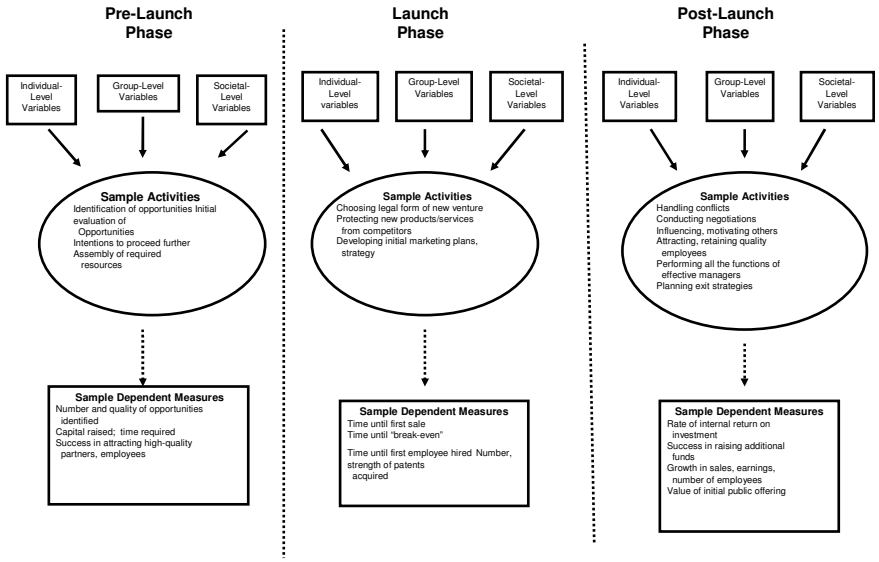
Defining Entrepreneurship

- Cantillon (1680 - 1734): entrepreneurs “are willing to buy at a certain price and sell at an uncertain price”
- Schumpeter: Creative destruction under conditions of new goods, new production methods, new marekts, new sources of material, new organizations
- Gartner: Entrepreneurship is what founders/managers do
- Shane and Venkataraman (2000): Discovery, evaluation, and exploitation of opportunities

Defining Entrepreneurship

- Carland et al: Entrepreneurs are those who grow their business quickly
- Sarasvathy: Effectuation: Entrepreneurs know which things they know something about and what kind of things they can do well and elaborate on those skills
- KSA (Knowledge, skills, abilities) (Busenitz & Arthurs): More complexity, less skill development for what needs to be done as entrepreneur – therefore many decisions have to be made without knowing whether they are right or called for; decisions based on heuristics (intuition): High degree of uncertainty

Baron: Phases of Entrepreneurship



Positive Functions of Informal Planning

- Translates goals into actions and to mobilize extra effort (Gollwitzer, 1996),
- Amplifies persistence and decreases distraction (Diefendorff & Lord, 2004),
- Helps to stay on track and ensures that the goal is not lost or forgotten (Locke & Latham, 1990)
- Leads to focus on priorities (Tripoli, 1998),
- Reduces load during actions because actions are planned beforehand (actions run more smoothly),
- Motivates owners to deal with problems,
- Prepares owners to have Plan B if something goes wrong

Positive Functions of Proactive Planning

- Prepares for future opportunities and problems now
- Leads to earlier presence in important markets
- Makes better use of scarce resources
- Changes and influences the environment
- Leads to original and often unusual solutions – not copies of others
- Helps a person to receive more and better feedback than when using a reactive or passive approach (Ashford & Tsui, 1991).

Antecedents of Elaborate and Active Planning:

Cognitive ability and Qualifications

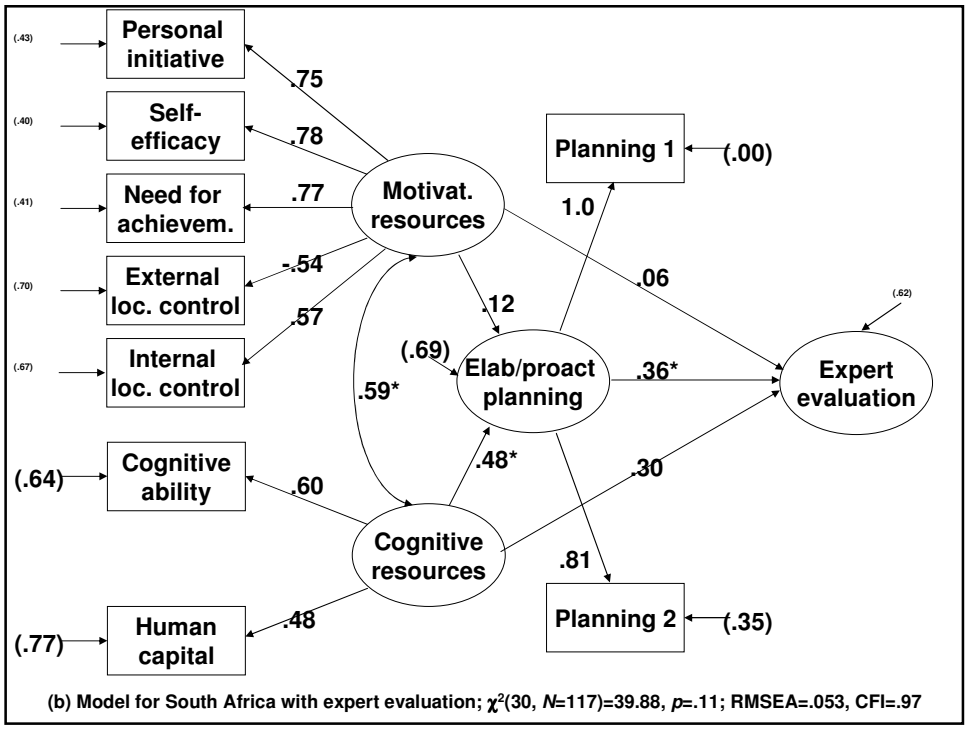
- Working memory,
- Acquisition of knowledge and skills,
- Speeds up decision making (Ackerman & Humphreys, 1990),
- Makes complex planning possible (elaborate and active conscious planning) (Kanfer & Ackerman, 1989).
- Makes it possible to think of more relevant issues and about the relationships between these issues.
- Qualification increases skills: ready-made routinized responses available (Frese & Zapf, 1994)
- Qualifications reduce processing capacity (Kahneman, 1973).
- Frees up cognitive resources which are available to develop elaborate and active plans to achieve goals.

Antecedents of Elaborate and Active Planning:
Motivational Resources

- Feasibility (internal locus of control, self-efficacy) and desirability (achievement motivation and proactive personality)
- Outcome and competency expectancies make it useful to plan well, e.g. an internal locus of control leads to more elaborate and active planning because it makes sense to be active and to plan one's actions (Skinner, 1997), and leads to higher entrepreneurial performance because entrepreneurship requires to be self-motivated and not to wait for others to tell what to do
- *Self-efficacy* - belief to competently perform actions - makes it useful to develop elaborate and active plans which contributes to high performance.

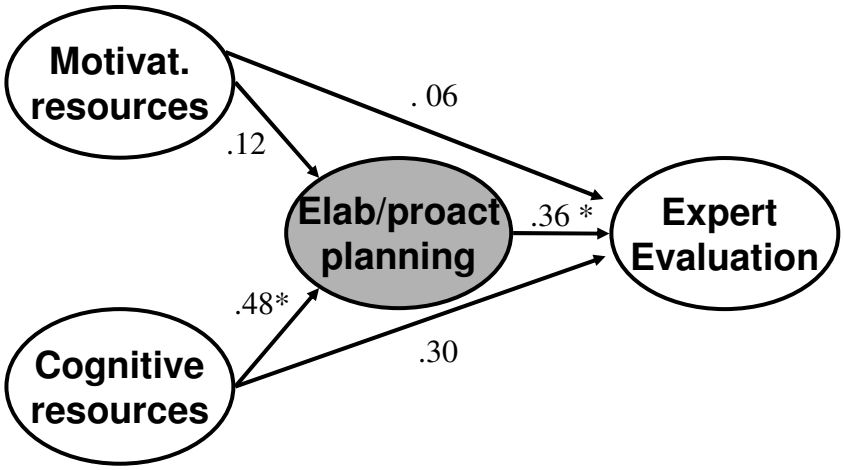
Antecedents of Elaborate and Active Planning:
***Motivational Resources* – 2 –**

- *Achievement motivation* implies to want to have an impact and not to give up easily (McClelland & Winter, 1971); therefore, more develop active plans and guards from switching tasks.
- *Proactive Personality (subjective personal initiative)* makes active and elaborate planning desirable

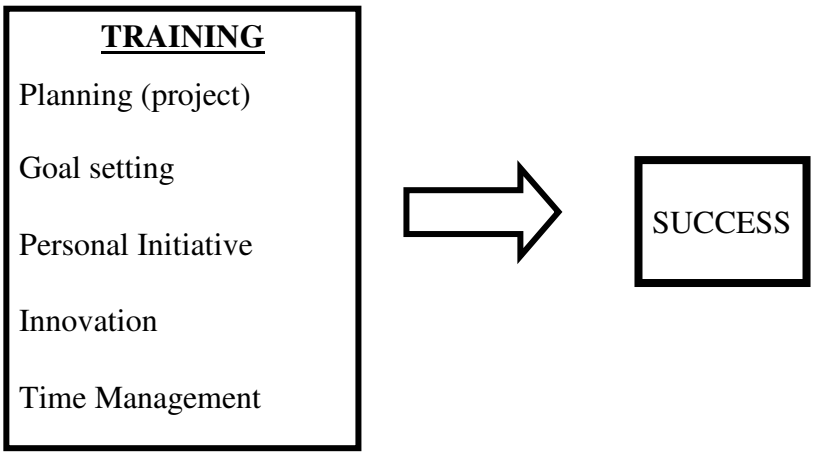


(b) Model for South Africa with expert evaluation; $\chi^2(30, N=117)=39.88, p=.11$; RMSEA=.053, CFI=.97

Elaborate & proactive planning as mediator: Results from South Africa (dependent variable expert evaluation)



Training Model To Increase Personal Inititiave



Training: Evaluation

⇨ The four level approach:

1) Trainees‘ reactions (how useful, how satisfied) - Reactions
2) How much learnt during training course
   – Learning criteria
3) Changes in job proficiency (transfer) – Behavioral criteria, on- and off job
4) Changes in the effectiveness of organization (very seldom done) – Results criteria, e.g. cost reduction, absenteeism, profits, work group morale

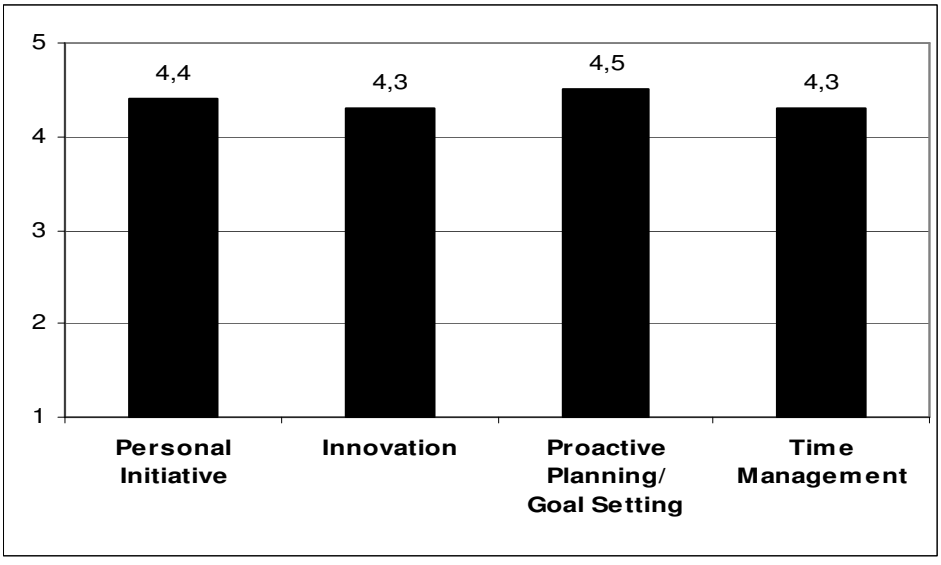
(Kirkpatrick, D.L.(1983). Four steps to measuring training effectiveness. Personnel Administrator, 28, 19-25; Latham & Saari,1997)

Self-Reports (Across One Year t-tests – only business owners who participated in training) - Germany

	Means		d	Significance
	T1	T5		
Planning strategy	**3.75**	**3.90**	**0.31**	**.054+**
Long-term strategy	**3.30**	**3.80**	**0.57**	**.007****
Innovation	**7.31**	**8.02**	**0.57**	**.002****
Growth goals	**2.55**	**2.91**	**0.41**	**.031***
General self-efficacy	**3.15**	**3.36**	**0.60**	**.002****
Success as entrepreneur	**3.75**	**4.00**	**0.32**	**.082+**

* p <.05. +p<.10

Self-Rating of Success 6 Months After Training – South Africa (5-point answer scale)



Results Before and After Training (training/non-training x repeated measures interaction, ANCOVAs) – South Africa

Measures		M(before)	M(after)	Sign.
Learning Measures:				
Goal Setting Knowledge	***TG***	***8.37***	***9.89***	**
	CG	***7.50***	***7.37***	
Behavior Based Measures:				
Personal Initiative	**TG**	**.23**	**.75**	**
	CG	**.34**	**-.52**	
Innovation	***TG***	***2.11***	***2.72***	**
	CG	***2.07***	***2.07***	
Proactive Goal Setting & Planning	***TG***	**2.57**	**3.54**	**
	CG	**2.48**	**2.60**	

TG= Training group, CG= Control Group

Psychology Research Roots

- Schumpeter (1911): Great humans with dreams, impulse to fight, joy of creating, energy
- McClelland (1961): High achievement motivation, little power motivation
- Slow deterioration of psychology's influence after 1970

Meta-analytic Results of the Relationship of Process Characteristics and Various Measures of Success (8-11 Studies, Reliability-Adjusted r)

	Economic Success (K=8-11, N=818 – 1049)	Interviewer (K=6/ N=679)	N of employees (K=6/ N=679)	Growth (K=5/ N=629)	Size (K=4/ N=590)	Success external (K=3/ N=562)
Compreh. Planning	.327**	.484**	.359**	.133**	.360**	.317**
Critical Point	.355**	.302**	.150**	.177**	.236**	.277**
Opportu-nistic	.063*	.047	.018	.121**	-.015	.077*
Reactive	-.484**	-.498**	-.285**	-.232**	-.342**	-.362**

Book on Psychology and Entrepreneurship

- Frontier Series of Society of Industrial and Organizational Psychology (SIOP): Asked us to edit a book on entrepreneurship

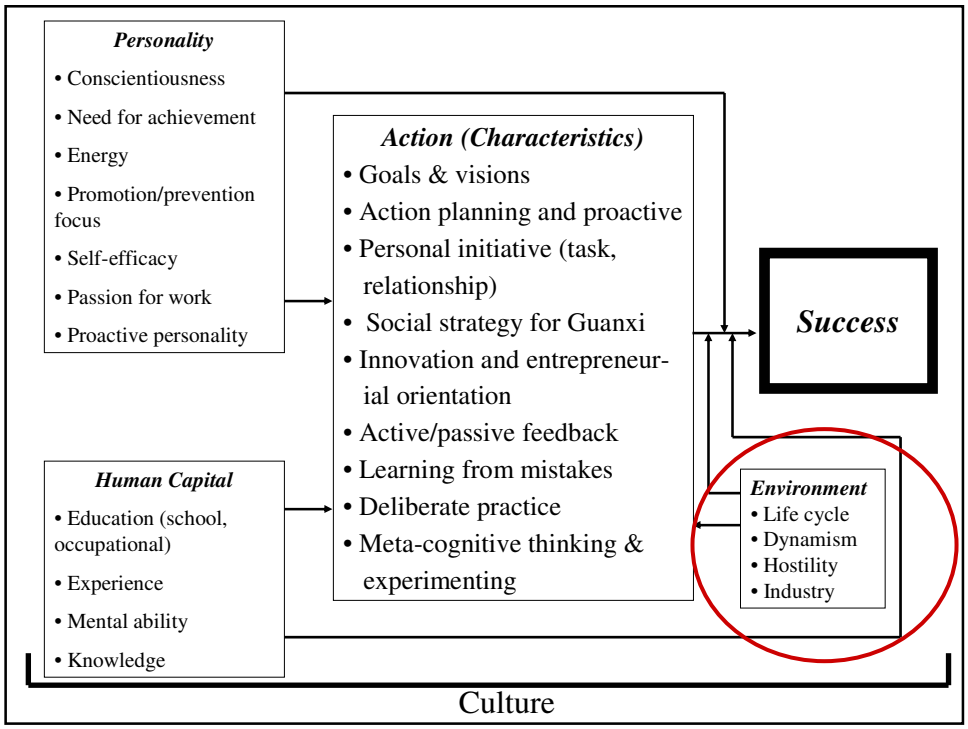
- Editors: J. Robert Baum, University of Maryland, Michael Frese, University of Giessen, Robert A. Baron, Rensselaer Polytechnic Institute
- THE PSYCHOLOGY OF ENTREPRENEURSHIP, Erlbaum, Mahwah, New Jersey, USA, 2007

Action and Action Regulation (Frese)

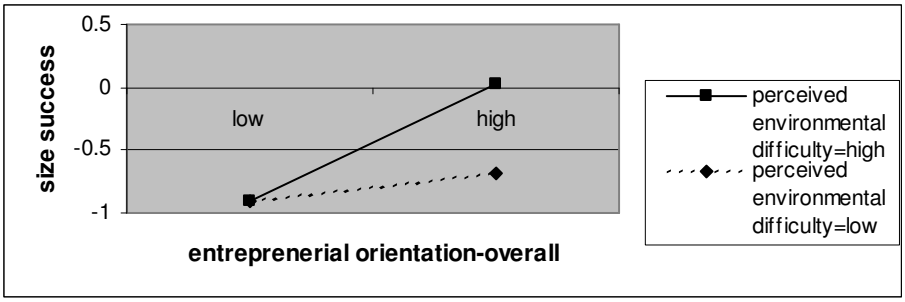
- Action leads to success – no other variable
- Goals and development of goals
- Proactive and planning strategy
- Personal initiative as self-starting, proactive, and overcoming barriers
- Issues of feedback
- Level of regulation – conscious to automatic (function of intuition)
- Automaticity and flexibility (ultrastability – Volpert)
- Entrepreneurship characterized by highly variable work in changing environments – limits of automaticity
- Regulatory focus: task, contextual, self

Planning and Personal Initiative

- Not the same, but related constructs
- Both have the same opposite negative pole: Reactive approach
- Both long term oriented (proactivity: preparing for future opportunities and threats now)
- Planning is necessary but not sufficient for being self-starting, people need a goal and a plan to self-start; however people can plan out externally given tasks and not be self-starting
- Overcoming barriers easier when back-up plans available and when better pre-signals and warnings related to threats and opportunities

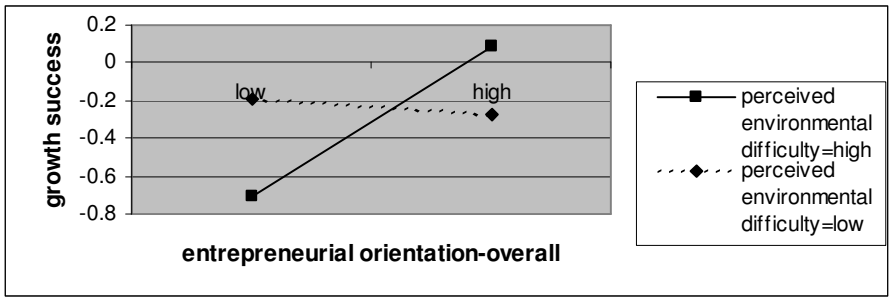


Contingency Viewpoint



Frese, M., Brantjes, A., & Hoorn, R. (2002). Psychological success factors of small scale businesses in Namibia: The roles of strategy process, entrepreneurial orientation and the environment. *Journal of Developmental Entrepreneurship, 7*, 259-282.

Contingency Viewpoint



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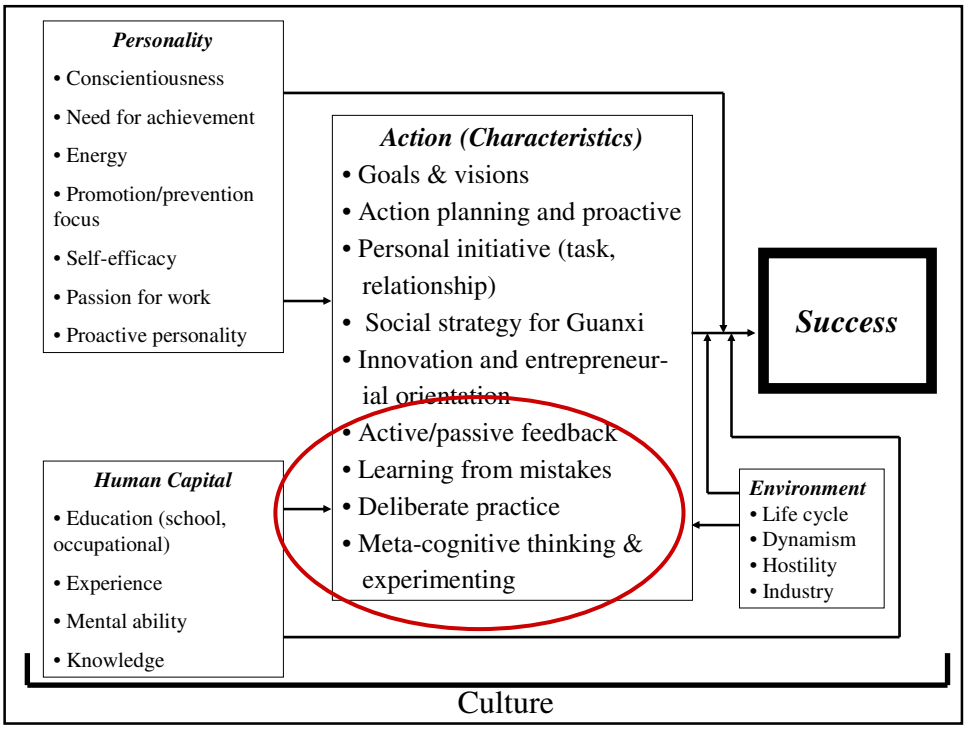


Correlations of Owners' Error Orientation with Firm Performance (Small Scale Start-ups Owners in Germany, N= 196)

Individual variables:	**Firm's performance**
Error strain (EOQ)	-.27**
Learning from errors (EOQ)	.12*
Error competence (EOQ)	.26**
Action orientation after failure (Kuhl)	.30**

* $p < .05$, ** $p < .01$
(Goebel, 1998, based on EOQ – Error Orientation Questionnaire)

Company Level: Error Management Culture – Examples of Items

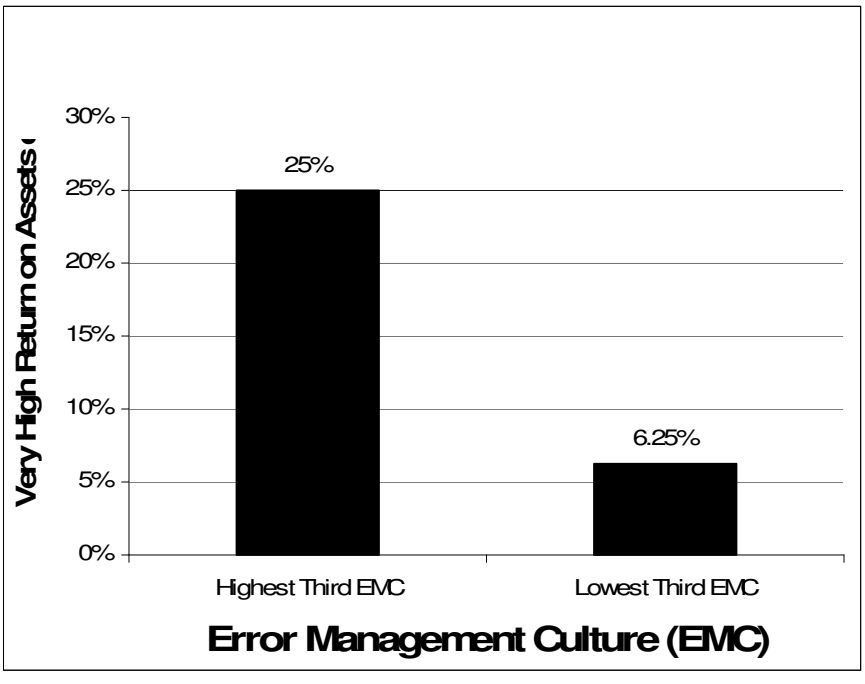
- For us, errors are very useful for improving the work process.
- After an error has occurred, it is analyzed thoroughly.
- When mastering a task, people can learn a lot from their mistakes.
- When an error has occurred, we usually know how to deal with it.

Firm Error Management Culture and Company Performance

In three studies: Strong relationships of organizational error management culture with organizational performance

In the Netherlands: Index of organizational performance: survivability
In Germany: Change in Return on Assets a year later
In China: Organizational performance as perceived by organizational members

van Dyck, C., Frese, M., Baer, M., & Sonnentag, S. (2005). Organizational error management culture and its impact on performance: A two-study replication. *Journal of Applied Psychology, 90*, 1228-1240.



Result on Error Management Culture and Profitability

About 20% of profitability is determined by error management culture

van Dyck, C., Frese, M., Baer, M., & Sonnentag, S. (2005). Organizational error management culture and its impact on performance: A two-study replication. *Journal of Applied Psychology, 90*, 1228-1240.