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Strategies, uncertainty and performance of small business startups

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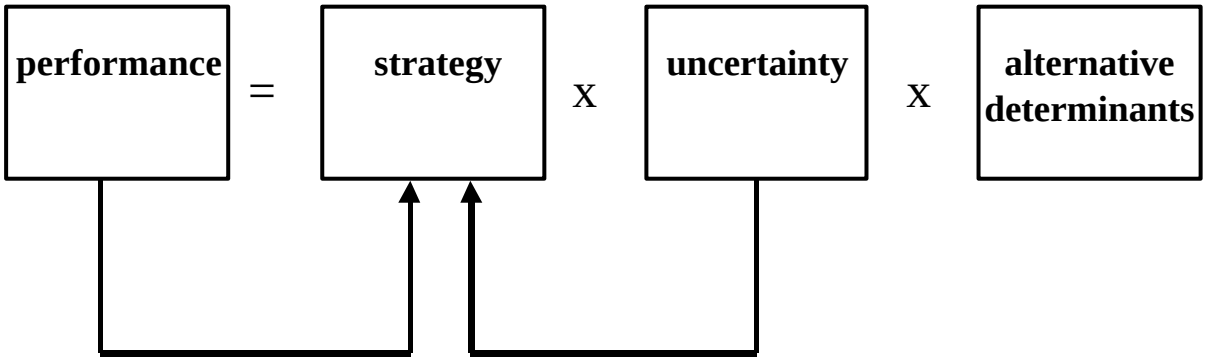
Abstract

Personal strategies of owners/founders of small business startups are related to performance and to environmental uncertainty. This is done using a longitudinal data set. Personal strategies are operationalized by a behavioral measure of the manners in which small business founders deal with situations. The results suggest a dynamic process between strategy and performance. Business owners that perform poorly employ a Reactive Strategy, with poor performance leading to increased use of reactive behavior. High performing business owners start out focussing on the most crucial issues (Critical Point Strategy), with high performance leading to a more top-down (Complete Planning) approach. These relations are controlled for characteristics of the environment of the firm. Strategy use is dependent upon the type and level of environmental uncertainty. Complete Planning strategy is used less frequently in a fast changing environment and more often in a complex environment. Use of Opportunistic Strategy is negatively related to the complexity of the environment, while the Reactive Strategy is used more frequently in a non-munificent environment.

1 Theory

This paper deals with the explanation of performance of small business start-ups. Strategies employed, forms of uncertainty encountered and alternative determinants are used as explanatory concepts. It is recognized that there are feedback mechanisms from performance to strategy and from uncertainty to strategy. The feedback mechanism from performance to strategy is justified as follows: failure may lead to specific strategies because crisis and stress put additional strain on the decision making process. Moreover, success may lead to specific strategies involving more sophisticated management and control techniques because of expanding activities and hiring new employees. The feedback mechanism from uncertainty to strategy is justified by that different forms of uncertainty require different strategic approaches. The model used is given in Figure 1 where the dynamic influence between strategies and performance is shown, as well as at the influence of environmental uncertainty on strategy use. The dynamic flavor of the setup necessitates the use of a longitudinal data set. Our PERSUADE model dealing with **per**formance, **s**trategy, **u**ncertainty, and **a**lternative **de**terminants allows for such an analysis.

Figure 1 PERSUADE (PERformance, Strategy, Uncertainty, and Alternative DEterminants) model



The relationships will be explored both theoretically and empirically. This chapter starts out with introducing a psychological conceptualization of strategy. Because of the dominant influence of the founder on his business, we argue that how the business starter goes about things, can be regarded as the strategy of his business (section 1). The personal strategies that s/he uses influence the performance of his or her firm. In turn, performance is bound to influence strategy use (section 2). Strategy use is not only psychologically determined but is also influenced by the environment the business is operating in. For characterizing the environment, we have chosen the concept of environmental uncertainty which we think is fundamental to studying entrepreneurship (section 3) The environment of the business is operationalized by distin-

guishing between different forms of environmental uncertainty (section 4) which have consequences for the strategy chosen (section 5). These relationships were tested on a sample of 49 entrepreneurs. The relation between performance and strategy is investigated in a longitudinal setting; the relation between uncertainty and strategy in a cross-sectional one.

1.1 Psychological strategies in entrepreneurship

Most research on strategies has focussed on organizational strategies and their relationships with success (Hart & Banbury, 1994). This has been criticized as one-sided. For example, Rajagopolan, Rasheed, and Datta (1993) suggested looking at the individual and psychological level as well. The pervasive influence of founders on their firms, and their dominance in making decisions, enables to assume a high degree of equivalence between the individual and the organizational levels of analysis (Dickson & Weaver, 1997). On the individual level, strategies can be regarded as plans for actions that influence how we are doing things (Hacker, 1989). When people deal with situations, they are following a strategy of action, regardless of the degree of rationality and explicitness. Strategy in the psychological sense is defined as a sequence of means to achieve a goal (Miller, Galanter, & Pribram, 1960). The function of a strategy is to deal with uncertain situations because a strategy presents a template that can be applied in various situations. Thus, it helps to deal with the limited processing capacity of the human mind (Frese & Zapf, 1994; Hacker, 1989; Kahneman, 1973). These psychological process characteristics are not the same as personality variables nor are they completely determined by the situation. People use strategies in different combinations and according to different situations. However, people do have preferences for certain strategies.

Our concept of strategy emphasizes *how* an entrepreneur tries to reach a goal, and therefore takes a process approach to strategy (Austin & Vancouver, 1996; Dess, Lumpkin & Covin, 1997; Hart, 1992; Olson & Bokor, 1995; Rajagopolan et al, 1993). By doing so we disregard strategy content, for example low costs, differentiation or niche (Porter, 1980). Instead we focus on how one formulates and implements strategy content. There are four important - albeit at first sight superficial - differences between strategy in a psychological sense and strategy as used in the strategic management literature. *First*, our concept of strategy applies a different time frame when compared to what strategic management implies. In the present study on strategy of business owners, we are concerned both with very short (finding good customers immediately) as well as long term time frames (finding customers during the next ten years). In contrast, strategic management is usually concerned primarily with a long-term orientation of the business. *Second*, in strategic management, strategy is usually conceived to be the result of a choice. A company can either have a strategy or not. A strategy hinges on having made a decision which goals are important to reach. In the psychological sense, it is impossible to have no

strategy. For example, even in the case where there is no a priori plan what to do on a Sunday morning, the mere thought of going out to each brunch is already a rudimentary strategy in this sense. In this view, any goal directed behavior is connected to some kind of strategy (Miller et al., 1960). *Third*, our concept of strategy is not necessarily related to matters of value or importance. Whether a goal is important or not, in the psychological sense a strategy is used. In the strategic management sense, strategy is about important or fundamental goals only. *Fourth*, strategy in the sense of strategic management is usually externalized in a written strategic plan. In our view, we call it strategy both in the case of a carefully followed written down plan of and in the case of a loosely followed sketch in the mind of the business owner. In fact, he or she may not even be aware that there is a certain type of strategy underlying his or her behaviors.

By using a psychological process conceptualization of strategy, we hope to learn more about strategy processes of small business founders, eventually leading to a better knowledge of the micro processes of organizational strategy development (Rajagopolan et al., 1993).

1.2 Proposed psychological strategies and their relationships with performance

Cognitive and action theories have differentiated the following process characteristics of strategies (Hacker, 1986; Hayes-Roth & Hayes-Roth, 1979; Zempel, 1994): Reactive, Complete Planning, Opportunistic, and Critical Point Strategies. *Reactive Strategy* implies that one is driven by the situation, makes little proactive use of information and that actions are not planned. In contrast, a person using a *Complete Planning Strategy* plans ahead and actively structures the situation. Thus, Complete Planning Strategy implies a comprehensive representation of the work process, a long time frame to plan ahead, a large inventory of signals, clear knowledge and anticipation of error situations, and a proactive orientation (Frese & Zapf, 1994; Hacker, 1986). An *Opportunistic Strategy* starts out with some form of rudimentary planning. The person using an Opportunistic Strategy deviates from these plans easily when opportunities occur (Hayes-Roth & Hayes-Roth, 1979; Palatano & Seifert, 1997). Plans are constantly being adjusted. Thus, this strategy is not top-down and systematic. On the other hand, Opportunistic Strategy is not completely driven by the situation as is the Reactive Strategy. It is much more proactive. The *Critical Point Strategy* (Zempel, 1994) starts out with the most difficult, the most unclear, and the most important point and plans and acts departing from this main point without any planning of other points. Only after solving the first critical point, further steps may be taken. Thus, one has a clear goal in mind and one concentrates on it and on the main issues of one's tasks - it can be conceived of as main-issue-planning.

The four strategies - Reactive, Opportunistic, Complete Planning and Critical Point - are differentially geared toward the situation or toward one's goals (Frese, Stewart & Hannover, 1987). If one is oriented toward the situation, there are two opportunities: one can either be reactive to the situation (Reactive Strategy) or one can have a multidirectional planning with an emphasis on using opportunities which one proactively searches for (Opportunistic Strategy). If one is goal oriented, one can have either a top-down approach using a completely worked out plan (Complete Planning Strategy) or one can plan locally for things of particular importance (Critical Point Strategy).

Our categorization of strategies shows some resemblance to typologies of organizational strategy processes (Hart & Banbury, 1994). For example, Miles and Snow (1978) developed a typology with the Reactor using a Reactive Strategy, the Prospector using an Opportunistic Strategy, and the Analyzer using a Complete Planning Strategy (Doty, Glick & Huber, 1993). Their concept of Defender has no equivalence in our categorization. There are also similarities to a typology suggested by Mintzberg (1978) with the Rational Mode being similar to our Complete Planning and the Entrepreneurial Mode being similar to our Opportunistic Strategy. The third mode – the Bargaining Mode- only pertains to large companies and, therefore, has no equivalence in our categorizations.

Strategies should be differentially related to success of small business entrepreneurs. Frese, van Gelderen and Ombach (2000) found the Critical Point Strategy to be positively related to performance. However, we also assume that this relationship will be modified by the life cycle situation (Kimberly & Miles, 1980) of a firm. Complete Planning and Critical Point Strategies share an emphasis on structure and goal setting. However, for start-up firms the first years are usually fraught with a high degree of uncertainty and the necessity to make quick decisions (Bhide, 1994). Therefore, the Critical Point Strategy will be useful particularly in the early phase of a business when entrepreneurs are constantly working at a high level of load of their processing capacity. Lumpkin & Dess (1996) argue similarly for the superiority of a simple strategy for young firms. In this period a pure Complete Planning Strategy carries costs as it takes time and effort to plan for all sorts of eventualities (Bhide, 1994). Later, there may be advantages to using a Complete Planning Strategy, as it helps dealing with a more complex organization.

An Opportunistic Strategy may be useful in the early phase of one's career as a small business owner. Here it is important to be susceptible to opportunities. However, many small business entrepreneurs are forced to produce some kind of plan to obtain financing from a bank. Therefore, opportunistic strategies may actually be used prior to borrowing money. In a later phase acting in a proactive way on opportunities can be a good strategy too. However, an Opportunistic Strategy carries the risk of losing sight of ones goals if one is jumping from one opportunity to another. Thus, it is hard to develop a specific hy-

pothesis for the relation between Opportunistic Strategy and firm performance. For this strategy our research has an exploratory character.

The Reactive Strategy should be the least effective strategy, regardless of the stage of the success cycle a business is in. (We prefer the term success cycle over life cycle, since conceptually the amount of success of a business is meant, not the age of a business). Here people do not choose a plan of action and do not have clear-cut plans but are at the mercy of situational influences without anticipating them. Blue and white-collar employees using this strategy have been shown to be less effective (Hacker, 1992).

Our first pilot interviews convinced us that we needed to have a fifth category. As opposed to the strategies discussed up to this point, people sometimes rely only upon their routines without any explicit decision for a strategy. For this reason, we added routine or *Habit* as a fifth category. This category refers to a standardized approach that has been developed in redundant environments. When using this approach, there is little learning, because one essentially does things "the same way as always". This fifth category has a justification also in the framework of action theory (Frese & Zapf, 1994).

The unfolding of process characteristics of strategies over time is complex. We already referred to the expectation that differences in the effectiveness of strategies depend on the stage of the business success (or life) cycle. Additionally, we assume that success is not only a dependent variable. Changes in the success status of firms should also affect their strategies. For example, failure may lead to reactive strategies, because crisis and stress put additional strain on the decision making process. This leads one to be cognitively parsimonious by simply reacting to situational demands. Similarly, success may lead to an increased use of the Complete Planning Strategy because expanding activities and hiring new employees leads to the necessity to develop more sophisticated management and control techniques (Ketchen, Thomas & McDaniel, 1996). Also, success provides feedback about which practices are successful and which are not. This results in planning succesful practices. Organizations show an upward or downward spiral (Hambrick & D'Aveni, 1988; Weitzel & Jonsson, 1989) leading to exceptional success or organizational death.

Our conceptualization of process characteristics of action strategies leads to the following hypotheses:

Hypothesis 1: There is a circular process of Reactive Strategy and failure; a Reactive Strategy leads to less success and failure leads to Reactive Strategies.

Hypothesis 2: Similarly, there is a circular process of Critical Point or Complete Planning Strategies and success with Critical Point being connected to success at an earlier phase and success leading to a higher use of Complete Planning Strategies.

No specific hypotheses are advanced with regard to Opportunistic Strategies and Habit.

1.3 Uncertainty in entrepreneurship

Uncertainty is a concept that is central to entrepreneurship, as emphasized by eminent economists such as Cantillon, Mangoldt, Knight and Keynes (Hebert & Link, 1989; Ekelund & Hebert, 1990). It can be argued that without uncertainty, entrepreneurship would be unnecessary. The East European socialist commando economies have shown this. Here, one aimed at a system of complete planning that would result in optimal resource allocation. However, since uncertainty is a fact of economic life entrepreneurs are needed to arbitrage, to take risks and to innovate (van Dijk & Thurik, 1998). Entrepreneurs are considered to be the primary agents dealing with uncertainty in the economy. Entrepreneurs are called for in the fast changing economic reality of today's society (Audretsch & Thurik, 1997 and 2000; Wennekers & Thurik, 1999; Carree, van Stel, Thurik and Wennekers, 2000; Audretsch, Carree, Van Stel & Thurik, 2000).

Given the importance of uncertainty, it is striking that in neoclassical economics the role of entrepreneurship is limited to the entry that follows profit opportunities (Carree & Thurik, 1995). Neoclassical economics suggests that there are a set of possible outcomes and a set of probabilities that each of these outcomes will actually occur (Varian, 1992). Then, a distinction is made between risk and uncertainty. The distribution of probabilities says something about the amount of risk. If the probabilities are not known, the term true uncertainty is used. In neoclassical economics, the probabilities are usually assumed to be known. With regard to entrepreneurship and entry, the profit opportunities are supposed to be known and accessable to everybody. Therefore, pure uncertainty is commonly disregarded (Choi, 1993; Wubben, 1993).

Economists like Knight and Keynes and economic schools like the Austrians and the Post-Keynesians have given uncertainty more emphasis (Wubben, 1993). They define uncertainty in similar terms, but state that "especially entrepreneurs do not know the full range of outcomes nor their possibilities of occurring" (Lachmann, in Wubben, 1993). In particular, this might be true for start-up entrepreneurs (Bhide, 1994). The new business founders often can not calculate their future profits in advance. For example, someone who plans a new McDonalds outlet might have a fair estimate of the degree to which this outlet will be a success, due to experiences with all previous outlets. For new business starters this does not hold.

1.4 Proposed forms of uncertainty and their relationships with performance

The uncertainty encountered by the entrepreneur can be conceptualized on the industry level, the firm level, and the personal level. On the industry level there are forms of uncertainty the small scale starter usually can not influence and just has to deal with. *First*, there is uncertainty as caused by change and

the unpredictability of the economic environment (Miller & Friesen, 1982). Change can be the result of developments in technology, consumer preferences, behavior of competitors, etc. In this sense, uncertainty is related to the passage of time (Choi, 1993). *Second*, man's processing capabilities are limited (Simon, 1956; Kahneman, 1973). Practically, it is not possible to calculate all probable outcomes and their probabilities of occurring. Therefore, entrepreneurs reduce complexity by filtering the information they receive. Complexity refers to the diversity of environmental elements an entrepreneur has to deal with, as well as to the sophistication of knowledge and information required (Vaessen, 1993). *Third*, there is the uncertainty caused by striving with competitors for limited resources. This form is linked up with the construct of munificence (Castrogiovanni, 1991), which refers to the availability of resources relative to the amount of competition.

On the firm level, there is the uncertainty of the entrepreneur about whether his firm will succeed or fail. This is how entrepreneurs commonly understand uncertainty. As with any firm, the start-up firm will try to make success as likely as possible. Efforts to do so concern the control of resources, resulting in a smaller amount of resource uncertainty. Unfaithful customers, unreliable suppliers, lack of finance, opportunistic employees are all examples of resource uncertainty. On the personal level, uncertainty about success or failure can be caused by uncertainty of the entrepreneur about his own entrepreneurial capacities (Jovanovic, 1982). Issues of self-efficacy have been well researched by Bandura (1977). Finally, uncertainty can be regarded at the information and knowledge level. This last form of uncertainty, information uncertainty, can be regard as a 'meta' category of uncertainty, as all other forms of uncertainty will influence the level of information uncertainty (see Figure 2). Milleken (1987) discerns three forms of uncertainty relating to knowledge. She calls uncertainty about what is currently happening state uncertainty. Uncertainty about the impact of environmental changes on one's firm is called effect uncertainty. Uncertainty about what response options there are and what their impact will be is called response uncertainty. Summarized, this sixth form of uncertainty can be called knowledge uncertainty as it is concerned with a lack of (confidence in) information and knowledge about the economic environment and a lack of knowledge about cause-effect relationships in that environment (Milleken, 1987; Gerloff, Muir & Bodensteiner, 1991; Buchko, 1994).

Figure 2 Form of uncertainty related to level of analysis

level of uncertainty	form of uncertainty (all are forms of information uncertainty)
individual	self confidence
firm	resource uncertainty
industry	change, complexity, munificence

The forms of uncertainty will be differentially related with firm performance. On the one hand resource uncertainty and a non-munificent environment can be expected to have a negative effect on firm performance. Resource uncertainty approximates being a success measure, as it reflects directly the hold a firm has on resources, and firms can be expected to perform worse in an environment with many competitors relative to limited profit and investment opportunities. Changing or complex markets on the other hand should not be more or less profitable than average, a priori. Knowledge uncertainty will be influenced by change and complexity on the one hand and by performance on the other, as performance gives feedback on the value of the knowledge one has (Miner, Smith and Bracker, 1989).

1.5 Relating forms of uncertainty to psychological strategies

How do entrepreneurs react to uncertainty? According to Shackle, uncertainty is a fertile ground for creativity and imagination (Wubben, 1993). Knight proposes that intuition and imagination will supplement the incomplete information one has. On the other hand, Keynes wrote that when feeling uncertain, entrepreneurs are in an "intermediate domain where one follows conventions, customs and rules of thumb" (Keynes, in Wubben, 1993). Hence, uncertainty can lead to habitual and conventional behavior but also to creative and unconventional behavior. This is reflected also in the unequivocal empirical results in this area. For example, Matthews and Scott (1995) found less planning in an uncertain environment, while Shrader, Mulford and Blackburn (1989) found the opposite.

In relating psychological strategies to forms of uncertainty we limit ourselves to forms of uncertainty on the industry level. These are the dimensions of the environment (Dess & Beard, 1984; Vaessen, 1993) independent of the behavior of the entrepreneur: change, complexity and munificence. Knowledge uncertainty and resource uncertainty are influenced by performance and therefore by the activities of the entrepreneur. Relating psychological strategies to forms of uncertainty dependent on the entrepreneur would introduce a tautology. In developing our hypotheses we would like to build on the conflicting results mentioned in the previous paragraph, which might be due to disregarding that there are different forms of uncertainty. We propose that a Complete Planning Strategy is a reasonable approach to deal with complexity, but not with change for which an Opportunistic Strategy is more suitable. Concerning a lack of munificence, we assume that it is connected to a Reactive Strategy, as it is more difficult under adverse circumstances to remain proactive and goal-oriented.

This leads to the following hypotheses:

Hypothesis 3: Complexity of the environment will lead to increased use of the Complete Planning Strategy; changeability of the environment will lead to less frequent use of the Complete Planning Strategy.

Hypothesis 4: Changeability of the environment will lead to the increased use of the Opportunistic Strategy; complexity of the environment will lead to less frequent of the Opportunistic Strategy.

Hypothesis 5: A lack of munificence in the environment will lead to more use of the Reactive Strategy.

No hypothesis is developed with regard to Critical Point Strategy and Habit.

2 Method

2.1 Sample

Our sample consists of small business founders in Amsterdam, the Netherlands. We concentrate our efforts on starters because usually start-up firms are small and the owner's influence is high. We selected a sample of firm owners with less than 50 employees and who had founded their firm during the previous five years. This selection was made from a random list of firms supplied by the chamber of commerce. All entrepreneurs in Holland are required to register with the chamber of commerce. Business owners came from various industries. We did not differentiate between "entrepreneurs" and "shopkeepers" (Carland, Hoy, Boulton & Carland, 1984), as the sample was selected without regard of growth orientation. However, we did exclude retail, repair shops, bars, and restaurants because we chose industries that allowed a high degree of freedom to maneuver and that were of moderate to high complexity.

Of the 236 contacted, 60 did not fall into our sample description and 76 declined to participate. This led to a sample of 100 founders. Additionally, we excluded 20 who were no founders, had no employees, or who set up shop only recently. Of the 80 participants of the initial sample (t1), 49 participated again in the follow up (t2) that took place 16 months later. Our sample was mainly male, highly educated, and starting with a small amount of start-up capital.

Table 1 Characteristics of the initial sample

Variable	Percentage
Sex:	
- Male	85
- Female	15
Education:	
- Academic	52
- Non academic	39
- not known	9
Industry	
- Production	32
- Trade	28
- Service	37
- not classifiable	3
Innovativeness	
- Technologically innovative	21
- Not technologically innovative	79
Number of employees	
- 1 to 10	82
- 11 to 50	18
Amount of start-up capital	
- less than $ 50.000	55
- $ 50.000 - $ 1.5 Million	35
- not known	10
Average age of the founder	35 years
Average age of the company	4 years

2.2 Operationalization of the Variables

Structured and coded interviews as well as questionnaires were used. All the means, standard deviations and ranges of the variables are included in Table 2. Some descriptive statistics for the initial full sample at t1 (n=80) are given in Frese, van Gelderen & Ombach (2000). By and large the alphas and interrater reliabilities are adequate (Nunnally, 1978). A procedure of mean substitution of items in scales was used to reduce the problem of missing data. Below we will discuss the variables according to the classification of Figure 1.

Success variables. Both economic and personal success measures were used. The use of multiple measures of success in entrepreneurship research is advocated because any one measure is prone to errors due to the fiscal structure, to memory problems, reporting biases (e.g., social desirability), etc. *Economic success* includes growth of turnover, profit, investments, personnel, and personal income since the start of the company. Changes in turnover, profit and investment were measured by asking the business owners to represent the changes from the start of the company to the present time using a graph. This

measure was modeled after a measure used by Brüderl et al., 1992. These curves were rated on a scale from 1-5 (the interrater reliability was r=.96). Data on the amount of employees and on the business owner's personal income were ascertained in the questionnaire for each year since start-up. These numbers were also transformed into numbers between 1 and 5. *Personal success* was assumed to depend upon the extent of start-up goals realized. In addition, nine questions on success were asked. We combined the personal and economic success into a total success score. This final total success scale consisting of six variables - turnover, profit, personnel, personal income, goal reaching and subjective success - had a Cronbach alpha of .73 at t1 (n=80) and .65 at t2 (n=49), with investments being excluded because of a low item-rest correlation.

Action strategies. Following Gartner (1988), a measure of strategy use was developed reflecting actual behavior. We used a behavior event procedure (Spencer & Spencer, 1993) to analyze action strategies in an interview. This procedure means that interviewees are asked about past events. The strategies could be better ascertained in an interview because the interviews allowed us to probe into the answers. Moreover action strategies are better described in stories told by the interviewees than by the sole use of questionnaire items. Structured interviews often have very good validities as meta-analyses show (Wiesner and Cronshaw, 1988).

In the first wave (Frese, van Gelderen & Ombach, 2000), the business owners were asked to report upon common aspects of running a business, like getting customers, acquiring personnel and product development. They were asked to give concrete examples of what they were actually doing. In the second wave, the use of action strategies was ascertained by asking the participants how they dealt with economic uncertainties. The interviewers asked several questions to force the interviewees to become more concrete and to make it possible to decide on the differential diagnosis of the strategies.

The coding was done by two (t1) or one interviewer (t2) who listened to the tapes and gave ratings on the action strategies. For details see Frese, van Gelderen & Ombach (2000). Interrater reliability for the five strategies was on average .75 (between .63 and .90) at t1. These are adequate reliabilities. Our measurement approach is ipsative (forced choice) as the subjects and the interviewers were supposed to add up all the action strategies to a total of 100%. An ipsative measurement has advantages and disadvantages (Bartram, 1996; Baron, 1996; Cornwall & Dunlop, 1994; Saville & Willson, 1991). The advantage is that people are forced to make deliberate comparisons and that the scaling of the strategies is done on the same dimension with the same meaning (% of time used). It also makes intuitive sense to the subjects because it mimics the practical situation that one has to make (sometimes hard) decisions between alternative approaches (Baron, 1996). Moreover, impression management toward the interviewer is reduced when using this approach.

The disadvantage is based on the fact that the answers are not independent of each other. For this reason, the correlations amongst the strategies are nearly all negative (if one adopts one strategy very strongly, others are getting a lower percentage automatically). This means that regression weights in a regression analysis that includes all strategies cannot be interpreted. Therefore, we calculated several regression analyses, including one of the strategies in at a time.

Forms of uncertainty. The Miller & Friesen (1982) dynamism scale is taken as a measure of change. For complexity we developed a measure ourselves. Measures of complexity are mentioned in the literature (Miller & Friesen, 1982; Sharfman & Dean, 1991), but refer to the turnover ratio of side products to main products. Starting entrepreneurs usually have no side products. Items of our scale related to the amount, the heterogeneity, and the sophistication of elements in the task environment. A measure of munificence was constructed from a scale on the degree of competition by Miller & Friesen (1982) combined with the hostility scale of Khandwalla (Covin & Slevin, 1989).

Control variables. Research on entrepreneurial success requires that certain controls should be included (Dess, Ireland & Hitt, 1990). For this reason we have asked single questions on the age of the company, on industry experience of the owner, on industry type (manufacturing, trade, services), and the amount of start-up capital. Additionally, we thought it necessary to develop a set of control measures on the self-reported environment. Two self-report items, industry risk and industry profit, were significantly correlated with firm success and were, therefore, also included as controls. Furthermore munificence was correlated with success, so munificence was used as a control too. Hence munificence was used in two functions: as control variable in the relation between strategy and success, and as dependent variable in the relation between strategy and uncertainty.

3 Results

Table 2 provides the correlations between as well as some descriptive statistics of the variables of the longitudinal study. The correlation matrix for the initial full sample at t1 (n=80) is given in Frese, van Gelderen & Ombach (2000). The results for t1 are given above the diagonal; the results for t2 are given below the diagonal. On the diagonal are the stabilities (correlation of the same variable between t1 and t2). The correlations of the action strategies are mainly negative because of the ipsative nature of measurement. The means for the three strategies Planning, Critical Point, and Opportunistic are of equal size, both for t1 and for t2. Reactive Strategy and Habit were used less frequently.

Table 2 Correlation matrix and descriptive statistics of strategies and success (n=49). Results t1 above the diagonal; on the diagonal t1 x t2; under the diagonal t2

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. complete planning	.36*	-.27	-.61**	-.30*	-.07	-.12	.12	-.08	.02	.14
2. critical point	-.43**	.35*	-.01	-.23	-.37**	.24	.05	-.12	-.02	.02
3. opportunistic	-.54**	.10	.30*	-.21	-.12	.15	-.04	.07	.14	-.22
4. reactive	-.22	-.28	-.18	.39**	-.24	-.32*	-.18	-.10	-.04	.02
5. habit	-.03	-.48**	-.29*	-.11	.59**	.12	.04	.29*	-.15	.03
6. total success n=49	.24	.16	.06	-.59**	-.02	.70**	.37**	-.13	.05	-.12
7. age of company	-.00	.03	-.00	.13	-.14	-.01	—	.18	-.02	.04
8. experience of founder	-.01	.06	-.04	.02	-.03	-.09	.19	—	-.16	.07
9. industry dummy one	.12	-.13	-.07	.08	.00	-.08	.17	-.08	—	-.45**
10. industry dummy two	.05	-.25	.02	-.04	.25	-.12	-.18	-.02	-.47**	—
11. industry margins	.02	-.02	.24	-.24	-.02	.31*	.22	-.29*	.07	-.02
12. industry risk	.03	-.08	-.22	.17	.12	-.28	.11	-.11	-.04	.06
13. lack of munificence	.03	-.09	-.03	.39**	-.26	-.45**	.07	-.00	-.02	.19
14. change	-.21	.18	.11	-.07	.02	-.01	.06	-.25	.14	-.04
15. complexity	.22	-.23	-.19	-.13	.30*	.06	-.03	-.13	.23	-.36*
16. resource uncertainty	-.04	-.24	-.01	.51**	-.12	-.53**	.15	-.10	-.20	-.10
17. information uncertainty	-.32*	-.18	.04	.26	.35	-.23	-.09	-.16	-.28	.10
M t2	20.0	33.5	28.2	10.5	8.0	3.92				
SD t2	17.8	16.3	14.4	12.5	13.8	.55				

Note: ** p < .01 and * p < .05.

Table 2 (continued)

	11.	12.	13.	14.	15.	16.	17.	M t1	SD t1	range
1. complete planning								23.1	21.6	1 - 100
2. critical point								33.5	15.1	1 - 100
3. opportunistic								26.9	18.6	1 - 100
4. reactive								10.4	17.2	1 - 100
5. habit								6.1	13.6	1 - 100
6. total success n=49								3.90	.53	1 - 5
7. age of company								3.55	1.53	0 - 6
8. experience of founder								9.14	9.23	0 - 34
9. industry dummy one								.59	.50	0 or 1
10. industry dummy two								.76	.43	0 or 1
11. industry margins	—									1 - 5
12. industry risk	-.13	—								1 - 5
13. lack of munificence	-.39**	.24	—							-1 - 1
14. change	.04	.02	.29*	—						1 - 7
15. complexity	-.05	.09	.22	.30*	—					1 - 5
16. resource uncertainty	.01	.28*	.60**	.30*	.09	—				2.2-4.2
17. information uncertainty	.03	.14	-.03	.16	-.22	.27	—			-1.6-1.5
M t2	3.10	3.51	-.02	4.34	3.78	3.00	.00			
SD t2	1.08	1.12	.50	1.18	.66	.39	.57			

Note: ** p < .01 and * p < .05.

The correlations with success clearly set out the different forms of uncertainty. Resource uncertainty correlates significantly with performance (p=-.53). Also, the measure of munificence correlates significantly with success (p=-.45) as well as with resource uncertainty (p=.60). Change and complexity have correlations with success around zero and information uncertainty falls in between (p=-.23).

Table 3 shows the results on the longitudinal hierarchical regression analyses of the effects of strategies on success (t2). This was done by holding prior success (at t1) constant (in step 1), adding the seven control variables in a second and third step, and finally adding strategies in the final step (again in separate analyses). Clearly, we are most interested in the betas and the increments of R2 (Rsq.Δ) after we have added the strategies. The lower left block of step 4 in Table 4 shows that strategy use at t1 made no impact on success status at t2. The lower right block of step 4 in Table 4 shows that Complete Planning (t2) had a positive effect on changes in success at t2 (albeit this effect is only marginally significant) and that the beta and the R2 change for success at t2 were significant for Reactive Strategy (t2). There was no significant effect for Critical Point. We will come back to that in the discussion.

Table 3 Strategies (t1+t2) as longitudinal predictors of success (t2) (N=49)

	success t2	
	ß	Rsq.Δ
step 1: success t1	.70**	.49**
step 2: controls t1		
age of company	-.33**	
experience of the founder	.07	
industry type dummy one	-.11	
industry type dummy two	-.13	.10*
step 3: controls t2		
environmental munificence	-.06	
industry risk	-.03	
industry profit margins	.26*	.07

				ß	Rsq.Δ
step 4 (separate analyses)			step 4 (separate analyses)		
complete planning t1	.03	.00	complete planning t2	.16#	.02#
critical point t1	.07	.00	critical point t2	.04	.00
opportunistic t1	-.07	.00	opportunistic t2	-.07	.00
reactive t1	.00	.00	reactive t2	-.27*	.05*
habit t1	-.06	.00	habit t2	.00	.00

Note: ** p < .01, * p < .05 and # p < .10.

Table 4 shows the second part of the dynamic process: the effects of success on changes in strategies. The method is the same as used for the analysis displayed in Table 4. First, prior (t1) strategies are entered separately, then the 7 controls, and in the final step success (t1, respectively t2, in separate analyses). The results for success t1 (lagged effects) are shown in the second last row, the results for success t2 in the last row (contemporaneous effects). Changes in Planning Strategy are predicted significantly by success (positive beta) and failure led to an increase of Reactive Strategy (negative beta). The lagged effects are marginally significant and the contemporaneous effects are fully significant.

Table 4 Strategies t2 explained by success at t1 and success at t2 (N=49), respectively

	complete planning		critical point		opportunistic		reactive		habit	
	ß	Rsq.Δ	ß	Rsq.Δ	ß	Rsq.Δ	ß	Rsq.Δ	ß	Rsq.Δ
step 1: strategy t1	.36*	.13*	.35*	.12*	.30*	.09*	.39**	.15**	.59**	.35**
step 2: controls t1										
age of company	-.07		-.03		.05		.19		-.12	
experience of the founder	.04		.08		-.08		.03		-.18	
industry type dummy one	.15		-.30#		-.10		.07		.27	
industry type dummy two	.05	.02	-.40*	.15#	.05	.02	.02	.05	.33	.16*
step 3: controls t2										
lack of munificence	.05		-.04		.08		.25		-.10	
industry risk	-.11		-.08		.09		.09		.11	
industry profit margins	.02	.01	.02	.01	.23	.04	-.12	.11	-.12	.02
final step: (separate analyses)										
success t1	.33#	.07#	-.06	.00	.00	.00	-.30#	.05#	-.14	.01
success t2	.41*	.12*	-.02	.00	-.06	.00	-.48**	.16*	-.05	.02

Note: ** p < .01, * p < .05 and # p < .10.

By and large, our hypotheses are supported: Success leads to a higher use of Planning Strategy and Planning Strategy leads to higher success, with Critical Point being connected to success at an earlier phase. Similarly, Reactive Strategy leads to failure and failure leads to a higher degree of Reactive Strategy.

This suggests the following interpretation. There is a stronger effect of the Critical Point Strategy in the early phase of the success cycle of a firm. In this phase, the founder is bombarded with the need to make quick decisions under a high degree of uncertainty. Thus, the most economic form of planning - the Critical Point Strategy - is the most effective one in this phase. Later (16 months later as in our study), the uncertainty is reduced to a certain extent, the business has grown and division of labor sets in. In such a phase, Planning Strategy becomes more effective. This Planning Strategy is actually brought forward by the success that may have resulted from the use of the Critical Point Strategy in an earlier phase. There is also a marginally significant lagged effect of prior success on later Planning Strategy use.

The differences between the cross-sectional results at t1 and the longitudinal results for the Critical Point Strategy add to the notion that Critical Point Strategy precedes Complete Planning Strategy in the success cycle. This becomes clear when one looks at the 21 business owners who participated at t1 but who did not participate at t2 because they either could not be traced or were out of business. As it turns out, these non-participants used the Critical Point Strategy significantly less often than those who participated in the second wave ($F_{1,68} = 13.00$, $p<.01$) (there was no significant differences for the other strategies). Thus, in the second wave we had a higher participation of successful firms ($F_{(1,68)} = 10.51$, $p<.01$). At the same time, the variance of the Critical Point Strategy was reduced which diminishes the chance to find significant correlations with success.

Given the influence that success has on strategy use, we analyzed the effect that the dimensions of the environment - change, complexity, munificence - have on strategy use. A regression model is set up where success at t1 and success at t2 are included as control variables. Three further controls (age of company, industry experience of owner, two dummy variables describing the three industry types involved) are included in the second step. In the final step, the three dimensions are added to the equation. The results are given in Table 5.

Table 5 Strategies at t2 explained by change, complexity and lack of munificence (N=49)

	complete planning		critical point		opportunistic		reactive		habit	
	ß	Rsq.Δ	ß	Rsq.Δ	ß	Rsq.Δ	ß	Rsq.Δ	ß	Rsq.Δ
step 1: success t1	-.10		.07		.13		.17		-.24	
success t2	.39#		.10		.00		-.61*		-.07	
		.06		.03		.00		.36		.01
step 2: controls t1										
age of company	.03		-.04		-.04		.06		-.01	
experience of the founder	-.03		.09		-.02		-.09		.03	
industry type dummy one	-.19		.27		.07		.10		-.23	
industry type dummy two	-.05		.27		-.10		.13		-.28#	
		.05		.12		.01		.02		.09
final step:										
change	-.33**		.25		.17		-.18		.11	
complexity	.29#		-.28#		-.32#		-.11		.39**	
lack of munificence	.20		.01		.01		.26#		-.52*	
		.14#		.09		.08		.06		.25

Note: ** $p < .01$, * $p < .05$ and # $p < .10$.

The results show that even when controlling for success both at t1 and at t2, there is still variance of strategy use that can be explained by uncertainty. As

predicted by hypothesis 3, the use of the Complete Planning Strategy is negatively influenced by the changeability of the environment. Complexity is positively connected with the Complete Planning Strategy, and negatively with the Critical Point Strategy and the Opportunistic Strategy, all at the $p<.10$ level. Hypothesis 4 is not confirmed, as the Opportunistic Strategy is also not used more in a changing environment. As predicted by hypothesis 5, a lack of munificence in the environment causes use of the Reactive Strategy. Strikingly, Habit is significantly connected with a complex environment and with a munificent environment.

4 Discussion

The relationships between strategy use and performance are studied longitudinally using a sample of 49 small business startups interviewed at t1 and t2. We do so in the framework of our PERSUADE model (see Figure 1). We discriminate between five forms of strategy: Reactive, Opportunistic, Complete, Critical Point and Habit Planning. Finally, in our setup we devote much attention to different forms of uncertainty and to the influence of some environmental controls.

Our results show that process characteristics of action strategies predict entrepreneurial success and vice versa. In line with our second hypothesis, our results suggest that Reactivity has a circular (or dynamic) relationship with failure. This supports Miles & Snow's (1978) hypothesis that reactors are the least successful in the market (Doty, Glick & Huber, 1993). Our results reinforce the argument that at least some restricted form of planning is necessary for success.

Our hypotheses with regard to the Complete Planning and Critical Point strategies are also confirmed by the results. First, we find a positive and significant relationship between Critical Point Strategy and success at t1. This is not reproduced at t2. At t2, we find a marginally significant prediction of success by Complete Planning. Interestingly, this relationship is also dynamic as success predicts Complete Planning at t2. The non-lagged (contemporaneous) effects are stronger for Complete Planning and Reactive Strategies. Thus, the results for t2 are in line with our second hypotheses on Planning Strategy.

Schwenk & Shrader (1993) and Miller & Cardinal (1994) pointed out that the relationship between strategic planning (as customarily defined in the management science literature) and success is not as high as one would expect. Often only formal planning is considered in research (Matthews & Scott, 1995; Olson & Bokor, 1995). Our more differentiated conceptualization of what planning means might prove helpful. This can be explained when distinguishing between three forms of planning: Complete Planning Strategy which attempts to use a top down approach; Critical Point also implies some degree of planning, albeit only for the main issue at stake; and Opportunistic Strategy which interjects periods of planning into acting on opportunities. The results suggest a success cycle pattern, in which the Critical Point Strategy is related to success at an earlier phase. Success in turn may lead to the necessity to use a more structured and top down planning approach (Complete Planning). Using this approach helps increasing success. Opportunism has been deemed to be an important strategy in cognitive science (Hayes-Roth & Hayes-Roth, 1979), but does not seem to be so clearly related to business ownership success. One reason may be that despite its advantages it leads one to loose sight of one's goals.

Entrepreneurship is related in an ambivalent way to uncertainty. On the one hand, entrepreneurs work for an uncertain income; on the other hand the entrepreneur will attempt to minimize his uncertainty. Our results show that uncertainty will be dealt with in different ways, depending on the type of uncertainty. In a changing environment, a Complete Planning Strategy is not of much use. In a complex environment, entrepreneurs tend to use a Complete Planning Strategy but not to use a Critical Point or Opportunistic Strategy. In an environment with many competitors and few resources one finds it difficult to plan in whatever form and a Reactive Strategy will be used more often than not.

Our measures of environmental conditions and age show only partly familiar patterns. Industry margins are clearly related to success and give additional evidence for the validity of the success measures (see Table 4). The standardized regression coefficient of -.33 for age of company with success at t2 may be surprising (see Table 4). However, this may be a pure suppressor effect as shown by the non-significant zero order correlation of company with success t2 (see Table 2).

Our study shows the relationship between firm performance and a process concept of action strategies that differentiates various forms of planning and reacting to the environment by individual business owners. This is made possible by the longitudinal nature of the study, which provides an opportunity to make assumptions about a circular (or dynamic) process of strategy and success. Moreover, the betas in Tables 4 and 5 can be interpreted such that strategies predict *changes in success* and that success predicts *changes in strategies*. This comes nearer to a full causal analysis and is superior to typical cross-sectional studies in this area. Unfortunately, we would need three waves of data material and more subjects to be able to more fully establish a circular process.

As in any study, there are limitations. We could not calculate the interactions between strategies and environmental factors because the number of observations is too small for such an analysis (Aiken & West, 1991). Another interesting interaction would be the interaction between strategy process and strategy content. Olson & Bokor (1995) provide an example of the interaction between formal planning and innovation. For example, it is a reasonable hypothesis that a niche strategy should be planned formally (using Complete Planning or Critical Point Strategies), while individualized customer orientation may work better within the framework of an opportunistic process.

A problem of many business ownership studies is the survivor bias. All businesses in our sample were successful in the sense that they survived. We attempted to control for this problem, in restricting our sample to new start-ups that were on the market for less than 6 years. However, there is a selection effect, which clearly shows up in our study. Those who could not be reached or who (we learnt from neighbors or themselves) were out of business at t2,

made use of the successful strategy of Critical Point less frequently. This may also suggest an alternative explanation of why Critical Point predicted success significantly at t1 but not any longer at t2: Possibly, the variance of this variable was reduced so its correlation with success decreased as well.

One could argue that since we ascertained both strategies and success from one source (the owner) our approach leads to a common method variance problem. However, our interview techniques avoided some of the single source problems. We ascertained strategies by asking the participating owners to give us concrete examples of how they proceeded and we prompted them to provide details on how they operated. Further, we think that strategies do not have obvious differential social desirability implications. For example, even reactive strategies were seen by some owners as sufficient because it meant that they showed to be geared toward situational problems and prospects. Since the interviewer coded the answers after probing the participants, it was also possible to "find" reactive strategies of people who wanted to present themselves as complete planners and vice versa. Generally, structured interviews of this type have been shown to show good reliability in selection research (Wiesner & Cronshaw, 1988).

Nevertheless, we believe that social desirability plays a role in success measures. Unfortunately, it is practically impossible to get good and reliable archival measures from small business starters. Most of them are not required to submit an official public statement of their financial performance. Even if archival measures are available, problems remain (Boyd, Dess, & Rasheed, 1993). For example, a measure like archival profit rate cannot be used since most owners try to reduce profit as much as possible because of fiscal reasons (and they are usually able to do that). On the other hand, in our success measure we have included items on growth of turnover and personnel, which are unlikely to be biased, and which show high correlations with the overall success measure.

Practically, our results mean that the undifferentiated prejudice by advisors and banks as well as other influential agencies that top down planning is always good has to be modified. While it is true that the direct opposite of planning - Reactive Strategy - turns out to be bad in our study as well, different concepts of planning may lead to different results at different points along the success cycle of a firm.

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