IS ENTREPRENEURSHIP LEARNED? INFLUENCE OF MENTAL MODELS ON GROWTH MOTIVATION, STRATEGY, AND GROWTH

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As researchers have begun to regard entrepreneurship more as a characteristic of behavior instead of that of an individual, new approaches are called for when studying the genesis of entrepreneurship (Gartner, 1988). When entrepreneurship is conceived as the creation and pursuit of opportunity (Venkataraman, 1997), with or without regard to control over critical resources (Stevenson & Gumbert, 1985), then the natural focus shifts from traits to behaviors (Lumpkin & Dess, 1996). A direct implication of this emphasis is that there a given individual or firm can, at different times, be considered as entrepreneurial or as non-entrepreneurial. The issue then becomes: what factors regulate the ‘entrepreneurial’ behavior in firms and individuals?

The emphasis of the entrepreneurship research tradition has been overwhelmingly on growth. The pursuit of opportunity has, since times immemorial, been viewed as resulting in growth: “The decision… to investigate the prospective profitability of expansion… is truly the ‘first’ decision, and it is here that the ‘spirit of enterprise’, or a general entrepreneurial bias in favor of ‘growth’ has perhaps its greatest significance” (Penrose, 1959: 33). The growth bias in entrepreneurship research has indeed been so strong that entrepreneurship researchers have tended to ignore or overlook the fact that the majority of new and small firms do not aim for growth (Storey et al., 1987; Reynolds, 1988; Davidsson, 1991; Oakey, 1993). In Finland, for example, a recent national survey showed that only as little as 8% of small and medium-sized firms indicated growth as their primary goal in spite of the favorable economic conditions that prevailed at the time of the survey (MTI, 1998). The general bias for growth in entrepreneurship research is also demonstrated by the fact that the overwhelming majority of all empirical studies, that have attempted to explain the growth performance of firms, have not actually controlled the degree to which the firms concerned actually aspired for growth (Autio, Sapienza, & Almeida, 2000). If growth orientation is assumed rather than controlled, and the majority of SMEs do not actively aspire for growth, then such studies may be more informative about what causes growth orientation than what causes actual growth. In their review of goal-setting studies, Latham and Lee (1986) found 97% of these to indicate that individuals performed better when they set themselves clear, challenging goals as opposed to ‘do one’s best’ or no goals. Clearly, in order to understand growth, one needs to develop a better understanding of what causes growth orientation.

In the present study, our objective is to go beyond the traditional assumption of growth orientation and look at the antecedents and consequences of growth orientation at the firm level. This way, we aspire to shed new light on the ‘genesis’ of ‘entrepreneurship’ (operationalized here as growth orientation of the firm) in new and small, independently-held firms. True to the Penrosian (1959) notion of environment as an ‘image’ in entrepreneur’s mind and her notion of ‘productive opportunity’ as a similar ‘image’ that must be consciously pursued, we will focus on management cognition and on management mental models conducive to growth orientation, growth strategies, and eventual growth of the new firm.

Our primary focus being on owner-manager’s cognition, we drew our empirical data from personal interviews with managers of 77 independently-held software firms in Finland. The focus on a single country and a single industry helped us control variation due to differences in external conditions, increasing our confidence that the variation in the ultimate dependent variable, sales growth, was indeed primarily due to management action. The ultimate dependent variable was validated by cross-checking it against data available from secondary, public:

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1 Penrose (1959:34) already made a similar observation, noting that: "One sometimes does hear businessmen insist that their firm ‘just grew’ ... pressed by circumstances, the firm ‘had to expand’. Such conditions do not last indefinitely and the unenterprising firm ceases to expand as this opportunity declines ... In any case, the decision to search for opportunities is an enterprising decision ... and must precede the ‘economic’ decision to go ahead...”
sources. The model linking mental models, growth orientation, growth strategies, and growth was tested using hierarchical regression and path analyses. The model received good support in our empirical data, supporting the conclusion that mimetic isomorphism between firms is an important influence on growth orientation and the resulting growth of new and small firms (Feigenbaum & Thomas, 1995). Thus, our findings suggest that ‘entrepreneurship’, rather than being an innate characteristic of new firms, is a behavioral orientation that is often learned through imitation.

**THEORY AND HYPOTHESES**

The dominant paradigm in research on the growth of entrepreneurial firms has been to apply a three-level framework that differentiates between strategy, environment, and firm-internal factors, as laid out by Sandberg and Hofer (1987). This framework represented an important step forward from the traditional focus on the entrepreneur, her human capital, and her personality traits, and it has been echoed in growth studies ever since (Storey, 1994). Of firm-internal factors, the human capital possessed by the firm has occupied a dominant share of research attention (e.g., Eisenhardt & Schoonhoven, 1990; Cooper et al., 1994; for an extensive discussion, see Storey, 1994; and Wiklund, 1998).

As the focus of most growth studies has been characteristically on ‘entrepreneurial’ growth and on ‘entrepreneurial’ firms, most growth studies have tended to assume growth orientation rather than control it. In a typical model, growth has been assumed to follow directly from firm-internal factors, strategy, and environment, and the study of mediating and moderating relationships between these has largely been neglected. One such relationship, in which motivation and goal setting play a potentially important role, is between firm-internal factors and strategy. The initial resource endowment of the firm is likely to influence the feasibility of different strategic options, including the choice between, e.g., growth and profitability orientation. When the influence of expectations and aspirations is neglected, this results in a rather myopic view of growth as something that almost automatically results when the right ingredients are mixed. Clearly, such a view implicitly assumes an entrepreneur who is highly rational, a characteristic that is seldom associated with real-life entrepreneurs.

When the rationality assumption is relaxed, the natural focus shifts to expectations and motivations as influences on growth orientation, strategies, and eventual growth. Explicit research on growth motivations has been fairly scant, however (e.g., Miner et al., 1989; Miner et al., 1994; Davidsson, 1989; 1992; Kolvereid, 1992; Wiklund et al., 1997; Orser et al., 1998; Arenius, 1999). Typically, such studies have drawn on the classical motivation and expectancy theories, to which we now turn.

**Expectancy and Motivation Theories and Growth Orientation**

In their classical form, expectancy theories consider the motivation to perform a given act to be a function of the person’s perception of the desirability of the outcomes of the act (valence) and the perceived probability that these outcomes will be forthcoming (expectancy) (Vroom, 1964). The theory can be expressed in a mathematical formula, in which the motivation is the sum of the intrinsic values of different likely outcomes of the act, weighted by the probability of each. In a simplified expectancy theory model, the motivation determines the level of effort invested into pursuing a given goal, and the ability of the pursuer moderates the relationship between effort and eventual performance.

The theory of planned behavior is a slightly modified version of the expectancy theory (Ajzen, 1977; Ajzen & Madden, 1986). The theory specifies three influences on the intent to perform a given act: perceived behavioral control, social norm, and the individual’s attitudes.
toward the act. Of these, the perceived behavioral control represents the individual’s confidence that she is able to control the consequences of a given act. In the case of growth motivation, perceived behavioral control would represent the person’s confidence that she will be able to grow her firm successfully. In many situations this would be the same as the perceived likelihood, or expectancy, of success. Social norm represents the individual’s perceptions regarding the social desirability of the act.

Both the expectancy theory and the theory of planned behavior have been applied in entrepreneurship research. Davidsson (1989) analyzed individual-level influences on growth motivation in a sample of 400 randomly selected Swedish entrepreneurs. He found that certain expected outcomes (employee satisfaction, personal control of the business, personal freedom) did influence growth motivation. Contrary to the received economic theory, however, expected financial gain was not the outstanding determinant of growth motivation. Wiklund et al. (1997) made similar findings. In a later study, Davidsson (1991) found perceived ability, perceived need, and perceived opportunity to be important influences on growth motivation. Davidsson (1989; 1992) and Kolvereid (1992) also found support for both the expectancy theory and the theory of planned behavior in finding that previous growth experience was positively associated with growth motivation in their samples of Swedish and Norwegian entrepreneurs. Previous growth experience was assumed to positively influence both the expectancy of positive growth outcomes as well as perceived behavioral control. Arenius (1999) found positive expected outcomes positively associated with growth motivation in her sample of 136 business service entrepreneurs in Finland. Finally, Orser et al. (1998) used the theory of planned behavior to examine the relationship between expectations of personal and business success with growth intentions. They found growth intentions to be positively associated with owner’s expectations of positive growth outcomes, social norm, and perceptions regarding the feasibility of growth.

The above survey of empirical research shows that expectancy and motivation theories have demonstrated certain robustness in predicting growth motivation. By including social norm and own attitudes toward the behavior, the theory of planned behavior has also begun to address the subjective rationality assumption that the traditional expectancy theory has at times been criticized for (Vroom, 1995). However, both theories still leave some important issues open. Where do the expectations regarding growth outcomes come from? The expectancy theory does not address this question. And in the absence of previous growth experience, how is the perceived behavioral control determined? This question is left open by the theory of planned behavior. As the expectancy theories do not directly address the cognitive limits of rationality, they can be criticized for failing to recognize the effect of cognitive biases, search heuristics, and the framing of alternatives, all of which influence human choice (Kahneman, Slovic, & Tversky, 1982). The more complex the task at hand, the more unrealistic the human information processing assumptions of the expectancy and motivation theories become. Effecting organizational growth clearly is a highly complex task. To understand growth orientation, therefore, we need frameworks that address head-on the information processing limitations of human individuals.

Management Cognition, Mental Models, and Growth Orientation

To arrive at a better understanding of growth orientation, one needs to dig deeper into management cognition. Besides motivation, cognitive abilities represent one of the two most common basic determinants of learning and work performance in applied psychology. Numerous studies have investigated the role of cognitive intellectual abilities and job performance and found cognitive ability related to the direction and performance of action (Kanfer & Ackerman, 1989). In management and strategy research the effects of cognitive
abilities have mainly been analyzed by using behavioral decision theory. According to this theory, executives develop their own cognitive representations of reality, schemata, and mental understandings that are stored and then used as templates to explain and interpret events (Hastie, 1981). These mental structures control the selection of information as well as of its encoding and reconstruction in memory (Starbuck & Milliken, 1988).

The limitations of information-processing capabilities have been found to be not only limited to individuals, but also to organizations. Corner et al. (1998) argue that individuals operate along essentially the same principles. Information processing begins with attention, continues with encoding, turns to storage and retrieval, culminates in choice, and concludes by the assessment of outcomes. Attention determines what information will be processed and what will be filtered out. Encoding gives information meaning, by establishing a fit between the information and existing mental categories. As such categories develop, they become the source of mental frames, or mental models, that are used in the individual sense-making process (Smircich & Stubbart, 1985; Greve, 1998). As emergent frames are constructed in an ad hoc fashion to deal with novel problems and issues as they arise in the course of daily business operations, the mental models become adapted to the context in which the firm operates. This takes time and cognitive energy, but once established, there is a strong incentive for the individual to keep using it. The mental model may be used automatically when interpreting strategic information, whether appropriate or not. Eventually, this cognitive sense-making process gives rise to the perceived dominant logic of the particular business (Hellgren & Melin, 1993; Bettis & Prahalad, 1995). Such a ‘meta-frame’, or perceived dominant logic of the business, helps the manager to deal with the complexities of the everyday business, and to behave consistently in new situations. In the following, we lay out our argument that such mental models help explain variance in the growth orientation, strategies, and eventual growth in new and small firms.

**External Reference Models and Growth Orientation**

Above, we have described how internal sense-making processes give rise to mental models and to the perceived ‘dominant logic’ of the business. Mental models also result from external imitation, particularly in situations in which the manager has little earlier experience of the business. External imitation occurs when the manager picks up and uses external reference models to be used as illustrative models of the dominant logic of a given business. Such processes give rise to mimetic isomorphism, a process by which strategies are diffused in firm populations, as these mimic each others’ strategies (Feigenbaum & Thomas, 1995). Firms often copy the approaches of successful competitors, not only because they associate it with success, but also because they want to convince others that they too are at the cutting edge of best practice. The mean strategy of reference group becomes a focal point that organizations converge towards. Empirical research has shown that the more links the management of the firm establishes across organizational boundaries, the more there will be imitation between firms, and the more rapidly strategies and organizational innovations are diffused across organizational populations (Goes & Park, 1997; Greve 1998; Geletkanycz & Hambrick 1997).

In entrepreneurship research, the importance of role models in explaining entrepreneurial decisions (a decision to start a new firm) has long been established. Here, our argument is that external reference models, through their influence on mental models and the perceived dominant logic of the business, also play an important role in the diffusion of entrepreneurial behaviors, notably growth orientation, across populations of new and small firms. In short, we propose that the more growth oriented the external reference models are perceived to be, the
more growth oriented the new and small firms are likely to become. Distinguishing between firm- and individual reference models, we hypothesize:

**Hypothesis 1a.** The perceived growth orientation of a reference model company will be positively associated with the growth orientation of the management of a new firm.

**Hypothesis 1b.** The perceived growth orientation of a reference model individual will be positively associated with the growth orientation of the management of a new firm.

**Outside Ownership, Mental Models, and Growth Orientation**

The sources used for financing a business have been shown to influence the growth of new firms (Hall 1989). In the studies of fast-growth businesses, those companies which indicated that they either had shared, or were willing to share equity, were more likely to grow or to have grown than businesses which indicated a reluctance to share equity (Cambridge Small Business Research Center 1992). Some studies have found that the relationship between external funding is present in univariate context, but weak in a multivariate context (Kinsella et al 1993). This implies that the major effect of external ownership on growth is through mediating variables. The growth orientation might be a mediating variable between external ownership and growth.

Outside owners are likely to bring with them a network of contacts that cross organizational boundaries. Thus, they provide a channel through which the management of the new firm is exposed to a richer array of mental models. Because external investors seek return for their investment, their external links are likely to reside with firms and communities in which growth oriented mental models dominate. Also the outside investors themselves may be likely to see the growth as the best route to increase the value of their investment in small high-technology firms. So the mental models of management are enriched by new, more growth oriented models.

**Hypothesis 2.** Outside owners of the company increase growth orientation of the management of a new firm.

**Previous Experience, Mental Models, and Growth Orientation**

The importance of previous mastery experience is a well established tenet of expectancy and motivation theories. Here, we argue that previous growth experience will also influence the mental models of the management of a new firm, because the prior experience of a manager is an important source of mental models. Individuals who have have previously worked in the same sector, in which they establish their business, will have developed their expertise and experience about the acceptable norms and practices in that sector (Storey 1994b). Those managers, who have experience from high-growth situations, will have have developed mental models that make high growth expectations naturally understood and implemented. We therefore hypothesize:

**Hypothesis 3.** Previous growth experience increases the growth orientation of the management of a new firm.

**Growth Orientation and Strategic Choice**

According to motivational psychology, there are three different kinds of factors that can affect action: environment, motivation, and cognition. Growth orientation can therefore be assumed
to give rise to actions that are aimed at achieving growth. Goal setting theory claims that goals influence task performance by motivating the search for appropriate performance strategies (Locke & Henne 1986). Growth orientation can be assumed to motivate search of strategies that are believed to lead to growth. Therefore, we hypothesize:

**Hypothesis 4.** Highly growth oriented management selects growth oriented strategies.

**Hypothesis 5.** Growth orientation mediates the influence of mental models on the choice of growth oriented strategies.

**Growth Strategies and Growth**

Competition in the marketplace forces firms to adjust their strategies to survive; firms that do not will be selected out. Only few mismatches between strategy, structure, and environment can be expected (Wiklund, 1998). As high-technology sectors offer good potential for growth, we expect that firms that have selected strategies and structures configured for fast growth are successful in such sectors:

**Hypothesis 6.** Growth oriented strategies are associated with faster growth in technology-based new firms.

Finally, we expect that the choice of growth strategy fully mediates the influence between growth orientation and growth:

**Hypothesis 7.** Growth oriented strategies fully mediate the influence of growth orientation on growth.

**METHODS**

We tested the hypotheses using cross-sectional data from three Finnish regions that constitute the main high-technology hubs in the country. The survey population was defined to include firms in the NACE industry class 77200, software design, production, and consulting. The population was limited to firms that: 1) were operating in the beginning of the year 1997, 2) had announced that they were producing software products, and 3) were independently operating small and medium-sized companies with less than 250 employees in 1996.

We selected firms from the software industry for two reasons. First, focusing on one industry permitted us to control for variation in industry and demand conditions that might influence the patterns and speed of sales growth. Second, the underlying basic technologies are similar, reducing the possibility of variation because of external technological change. Further, we selected firms from only three Finnish regions because the three selected regions, Helsinki, Tampere, and Oulu, have highly similar industry and labor market structures. This permitted us to better control for variation in industry, technology and employee supply, and demand conditions.

Database on firms that might have software products produced in the three regions were collected from multiple sources. They included the databases of the Technology Development Agency of Finland, Tekes; the Finnish Foreign Trade Association, FinnPro; venture capital companies, and a market research firm, Market-Visio, whose database was based on data provided by the Statistics Finland. FinnPro operates the network of commercial councils that offers local support services in all non-negligible export countries for the Finnish industries. Tekes provides R&D funding for the majority of high-technology new firms in
Finland. By using several, partially overlapping sources, we attempted to include all eligible firms into our database.

The total population of eligible firms in the three regions was 115: 70 in Helsinki, 23 in Tampere, and 22 in Oulu. Of these, all Tampere and Oulu firms and 67% of Helsinki firms were selected for the sample. With initial telephone contacts it was found that 8 were no more eligible so our base sample consisted of 84 firms: 44 from Helsinki, 20 from Tampere, and 20 from Oulu.

Because our focus was on management perceptions, our main source of empirical data were the presidents, chairmen, or vice presidents of the sample firms. The data on independent variables were collected in face-to-face structured interviews lasting from one to three hours each. Two persons conducted the interviews. No statistically significant differences in the independent variables were found when the questionnaire data by the two interviewers were compared. Of the 84 firms in the sample, 77 accepted the interview offer. The response rate was thus 92%. The questionnaire was pre-tested and ambiguities corrected in test interviews with several firms before the eventual interviews.

Data on total sales in 1996 and 1998 were collected from independent mail surveys that have been conducted in 1998 and 1999. We were able to verify this information, as well as information pertaining to the age of the sample firms, from an independent source. Independent information on the age of the sample firms as well as on sales was obtained from the database of a credit rating company Asiakastieto Oy. Asiakastieto gets its sales information from the Internal Revenue Service of Finland. No differences were found in the age information between secondary and interview data. The correlation between sales information given in surveys and collected from public sources was 0.994 for the year 1996, and 0.995 for the year 1998.

**Dependent Variable**

In entrepreneurship research, sales growth is by far the most commonly used measure of growth performance. Therefore, in order to examine growth in this study, we tested the effects of our independent variables on total sales in 1998, controlling for sales in 1996. For several reasons, this approach is superior to measuring growth as relative or absolute differences in sales over the 1996-1998 time period. Relative sales growth measures are likely to produce inflated results for small firms, and absolute sales growth measures are likely to produce inflated results for large firms. Put another way, difference scores often result in biased or unreliable error terms because the magnitude of the initial condition is related to the condition being examined (Cohen & Cohen, 1983). Therefore, following Fombrun & Ginsberg (1990) and Young, Smith, & Grimm (1996) we corrected for serial correlation by including the lagged (1996) form of sales as independent variable in our regression equations.

The mean sales in 1996 was 8.59 Million Finnish markka, FIM (US$ 1 = FIM 5.5) and ranged from 0 to 77 Million FIM. Mean sales in 1998 were 16.5 Million FIM and ranged from 0 million to 152 Million.

**Independent Variables**

**Growth orientation of reference model company.** The growth orientation of reference model company was defined by asking which company the respondent was using as a reference model for her own company. We also asked why the respondent respected the reference model company. 100 points were divided between the following reasons for respect: growth, profitability, technological leadership, and stability. The points given for growth were taken as the measure of growth orientation of the reference model company. We used a single-item measure because, first, we were interested in the perceptions of the managers, and
second, because no multi-item scales had previously been developed for this purpose. The mean of point scores was 35 (out of 100), ranging from 0 to 100. Only 2 respondents could not name any reference model companies. For these two respondents, we valued the reference model growth orientation conservatively as 0, since if they could not name any reference models, no reference effect should be expected either.

**Growth orientation of reference model individual.** The growth orientation of a reference model individual was defined in a similar way. We asked the respondents which individual they respected the most in their industry. The value of the growth orientation of the reference model individual was then calculated in a similar manner as the growth orientation of the reference model company. There were 5 respondents that could not name any reference model individuals; for these respondents, we set the growth orientation score conservatively as 0. The mean score for reference individual growth orientation was 35, ranging from 0 to 100.

**Outside ownership.** The respondents were asked whether their firms had any equity holders that came from outside the management team of the company (1=yes, 0=no). We were able to check these responses against data collected independently in a mail survey by another party. No differences were found. There were outside owners in 38 of the sample companies.

**Previous management experience from fast-growth companies.** The respondents were asked how many years they had been working with fast-growth companies as a manager before joining the current company. Following Eisenhardt & Schoonhoven (1990), we defined a fast-growth company as one that experienced an annual sales growth of 20% or greater. The mean time was 2.21 years, ranging from 0 to 17 years.

**Mediating Variables**

**Growth orientation of the sample firm.** *Growth orientation* is a measure of the willingness to achieve growth by the firm’s management. Here, we actually measured attitudes, not actual behavior (Eagly & Chaiken 1993). There has been much controversy concerning the importance of attitudes in predicting behavior. However, recent research has shown that attitudes are able to predict behavior, if certain conditions are met (Kim & Hunter 1993, Doll & Ajzen 1992). The probability of a significant relationship increases when attitudinal and behavioral measures correspond with respect to action, target, context, and time, as is the case in the present study.

We created a four-item (see Appendix A) measure of growth orientation ($\alpha=0.81$). The first three items had been used in previous literature together to measure growth orientation (Autio et al, forthcoming; slightly modified in Yli-Renko 1999). The fourth question had previously been used separately to measure growth motivation (Davidsson 1989).

**Concentration on growth strategy.** The strategic choices most likely to lead to growth have been found to be vary in different industries, so our definition of growth strategy must also be industry-specific. Before we explain our operationalization of growth strategy in the present study, a few clarifying comments regarding the Finnish software industry are necessary. Starting from the 1980’s, Finland has developed a highly centralized and hands-on approach to technology and industrial policy design and implementation. Mainly because of the astonishing success of the Finnish flagship, the Nokia Corporation, the Finnish approach to technology policy enjoys an excellent reputation world-wide. The main instrument in technology policy implementation are a few national agencies, who provide active hands-on support for new and established technology-based firms alike. New firms in particular are given active counseling and support. This approach ensures that good practice recipes are
rapidly and widely disseminated in the closely-knit community of technology-based new firms in Finland. This means that Finnish technology-based new firms are, more than in most other countries, likely to agree which strategies are likely to lead to growth and which are not. This holds true particularly in the software sector, which has been the target of a particularly active policy attention during the past few years.

We carried out extensive discussions with industry experts regarding the identification and merits of alternative strategies in the Finnish software industry. During these discussions, we found the experts and industry practitioners to be in a sweeping agreement with regard to feasible growth strategies in the Finnish software industry. In software business, one of the fundamental choices to be made is one between concentrating on the software product business, as opposed to software project business. By software product business we mean the development and retail of identifiable software products that are not customized for different customers. By software project business we mean the delivery of large customized projects that are tailored separately for each customer. It is generally accepted that the most feasible growth strategy in the software industry is to allocate as much managerial resources as possible to product business and not to spend them on areas that offer less growth opportunities, such as long-run software projects.

Based on the views of industry experts we developed a set of questions describing the level of concentration on the identified growth strategy, software products. A confirmatory factor analysis resulted in a three-item measure ($\alpha = 0.75$) of product concentration strategy (see Appendix A).

**Control Variables**

Several factors beyond reference models, outside ownership, and previous growth experience may have affected the rate at which the firms in our sample grew their sales since 1996. As mentioned earlier, we controlled for the level of sales in 1996 in order to examine the growth since that time. Additionally, potentially important factors include the firm’s age, respondent’s age, her social network, region, and experience from the industry in general.

The age of the firms at that time may have affected subsequent sales growth. Older firms might have experience advantages enabling them to sustain rapid international growth. Alternatively, younger firms might have operated in higher growth sectors. Oviatt & McDougall (1997) also suggest that recent trends might bear an age-mediated influence on international growth, such as the increasing speed and complexity of firm internationalization, and the increased accessibility of international markets for the Finnish software companies (Nukari & Forsell 1999). Therefore, we controlled for firm age.

The recent trends have increased the pace of change and growth in technology-based industries, such as the software industry. The older respondents may have grown used to slower growth expectations and different business models. People may also grow more wary when they get older. Therefore we controlled for the respondent age and for his/her years of experience in the industry.

The social network between the managers within the industry as well as the local social network may provide growth opportunities and as such encourage the growth of the company (Eisenhardt & Schoonhoven, 1996). Local contact network may also offer opportunities to contract project work locally and reduce concentration on project business. New mindsets applicable for the industry may affect the mental models of the management through intra-industry networks. Therefore we controlled for the strength of intra-industry and
regional networks with two-item measures ($\alpha=0.87$ for strength of intra-industry network and $\alpha=0.92$ for strength of local network; see Appendix A).

The size of the population in a region can affect the growth of the firm (Davidsson et al 1996). The economic structure of a region can also affect the way the firms operate, and the regional culture may influence the mindsets of the entrepreneurs. Therefore the location of the firms was controlled.

Table 1 presents summary statistics and zero order correlations among the independent and control variables. Three correlations merit discussion. 1) There exists no statistically significant correlation between growth orientation of reference model company measure and growth orientation of reference model individual. This suggests that the two variables measure different mental gestalts. The missing statistically significant correlation may also have been partly influenced by the way the questions were asked: we asked for an example of a reference model company, and we asked the interviewee to name a reference model individual whom (s)he respected. Still it may be assumed that there is a difference between respondent thinking when referring to reference model companies and individuals. 2) The sign of statistically almost significant correlation between previous experience from fast growth (in years) and growth orientation is, surprisingly, negative. This may be due to several reasons: a) The negative correlation between experience and growth orientation may be explained by the age of the respondent. b) Managers with more experience on fast growth may also have a more realistic view on how fast companies can grow. c) According to the prospect theory, previous growth experience may affect problem framing and cause experienced individuals to behave more conservatively (Sitkin & Weingart, 1995). 3) There is a strong correlation between growth orientation and (software product) concentration strategy. The existence of strong positive correlation between growth orientation and the assumed growth strategy provides some validation for the use of (software product) concentration strategy construct.

The variance inflation factor (VIF) and tolerance values for all independent variables indicated that the effect of the correlated independent variables does not hamper the interpretability of the results from the regression analyses.

Analysis

The hypotheses were tested by regressing three different dependent or mediating variables against the four predictor variables, two mediating variables, and the eight control variables. First, we regressed growth orientation against the four independent variables, using other controls except sales 1996. This approach permitted us to assess the influence of the independent variables on growth orientation. Second, we regressed the concentration strategy against the growth orientation and the four independent variables. This approach permitted us to assess the influence of the independent variables on concentration strategy and the mediating effect growth orientation may have between the independent variables and the strategy. Third, we regressed total sales in 1998 against concentration strategy, growth orientation and the four independent variables. This approach permitted us to assess the influence of the independent variables, growth orientation, and concentration strategy on growth and the possible mediating effect concentration strategy may have.

As mentioned earlier, controlling for 1996 sales is superior to alternative methods. However, interpretation of the results must be carried out with care. First, only if growth orientation of reference models, outside ownership, and previous growth experience are relatively uncorrelated to the 1996 forms of the sales variables, interpretations of the tests will be meaningful. If they are correlated, interpretation may be difficult because such correlation
might suggest that initial sales levels are driving our predictors, which are in turn related to the 1996 levels (Cohen & Cohen, 1983). However, an examination of Table 1 shows that none of the predictors are significantly related to any of measures of sales in 1996. Second, the overall \( R^2 \) for the equations cannot be directly interpreted because the overall \( R^2 \) includes the lagged form of the dependent variables. Rather, as discussed below, we should consider the amount of variance explained by our predictors after the effects of the lagged variable have been removed.

RESULTS

Results of the tests of our hypotheses are presented in Table 2. Hypothesis 1a, that growth orientation of reference model company impacts growth orientation, did not receive support in our data. However, hypothesis 1b (on the importance of the reference model individual) received strong support: the more growth oriented the reference model individual was perceived to be, the more growth-oriented the management itself became, see Table 2 (\( b=0.26, p<.05 \)). Hypothesis 2 was also supported: managers in firms that have outside owners are more growth oriented than their counterparts in firms that do not have outside owners (\( b=0.21, p<.05 \)). Hypothesis 3, on the influence of previous experience from fast-growth companies, was not supported. Contrary to our hypotheses, the relationship between previous growth experience and growth orientation was negative. This may have been caused by, first, the strong correlation between age and experience, and second, the negative correlation between experience and growth orientation.

Hypothesis 4 received strong support in the regression analysis. Table 2 indicates that growth orientation is related to growth strategy: concentrating in software product business (\( b=0.33; p<.01 \)). Also Hypothesis 5 was supported: when growth orientation is entered into the regression model predicting growth strategy, growth orientation of reference model individuals and outside owners loose their significance, suggesting that their influence on growth strategy is fully mediated by growth orientation (\( b=0.26, p < .01 \)).

Hypothesis 6 is also supported. Concentration strategy is related to growth (\( b=0.10; p<.05 \)). However, our data fails to provide support for Hypothesis 7, as we detect no mediation effect between growth orientation, growth strategy, and growth. In fact, we observe a negative, albeit non-significant, relationship between growth orientation and growth when growth strategies are entered into the equation. This effect is the likely result of the influence of age on growth: the older the firm, the slower its growth. Age is also negatively associated with growth orientation in our sample.

As explained in the Method section, growth in total sales is tested by examining absolute figures in 1998, controlling for the levels of these variables at time zero (1996). Not surprisingly, Table 2 shows that the 1996 levels were significantly related to the levels in 1998. If we remove the variance explained by the lagged variable, we find that concentration strategy explains 4% of remaining variance.

The other control variables indicated some strong influences on the dependent variables. As noted, the age of the company was related negatively to both growth orientation and growth. This is expected result as the older companies have been founded during an era of slower industry growth. rate Thus, older firms may have adopted both a slower growth mindset as well as ways of operations most suitable for slower growth. Also the age of the respondents was strongly negatively related to growth orientation. This is also an expected result, and it may be assumed that people get more wary and realistic as they grow older.
Strong local network reduces the strength of concentration strategy. This is also an expected relationship: firms whose managers have strong local ties may be offered local project work more often than other firms. Intra-industry network is positively related to concentration strategy, but this relationship is mediated by growth orientation of the reference model individual.

DISCUSSION

We set out in this study to examine sources of growth orientation in new and small firms. Specifically, using a set of independently held software firms in Finland, we examined the notion that management mental models influence the behavior of new and small firms, and entrepreneurial behavior may therefore be ‘learned’ through experience and external influences. Even though it has been widely recognized that most new firms are not ‘entrepreneurial’, in the sense that they are not aggressively growth-oriented, the sources of growth orientation among new and small firms has received scant research attention. As entrepreneurship has come to be regarded as a characteristic of behavior, then understanding the genesis of entrepreneurial behavior, notably growth orientation, requires explicit research attention on how new and small firms become growth oriented. By focusing on this issue, therefore, we have attempted to shed more light onto the question of what makes firms and individuals entrepreneurial, and where ‘entrepreneurship’ comes from.

Previous empirical research on growth motivation and growth orientation has, almost exclusively, drawn on expectancy and motivation theories. While the previous studies indicate reasonably robust predictive validity for these frameworks, the frameworks themselves have been criticized for unrealistic assumptions regarding the subjective rationality and cognitive capabilities of the individual. In the present study, we drew on cognitive theories that explicitly acknowledge the limited information processing and cognitive capabilities of individuals. These theories have earlier been successfully applied into explaining the diffusion of strategies and organizational innovations across firm populations. We applied these theories to develop a model that predicts that external reference models, outside owners, and previous industry experience, through their influence on management mental models, influences the growth orientation of new and small firms. The more growth-oriented the external reference models are perceived to be, the more growth oriented we predicted the management of new and small firms to become. This prediction received support in our empirical data. We also hypothesized outside ownership, by exposing the management to growth-oriented mental models, to induce greater growth orientation among managers of new and small firms. The prediction was supported. However, our prediction, that previous growth experience should be associated with greater growth orientation, was not supported. This may be due to the negative influence of age on growth orientation. In our data, age of the respondent and previous growth experience were strongly correlated.

In the present study, we also sought to contribute to the understanding of growth of new and small firms by explicating the relationship between mental models, growth orientation, growth strategies, and eventual growth. We predicted that the influence of mental models on growth strategies should be fully mediated by growth orientation; this hypothesis was supported in our data. Further, we predicted that concentration on growth strategies should be associated with faster growth; also this hypothesis was supported. Finally, we predicted that the influence of growth orientation on realized growth should be fully mediated by the choice of growth strategies. However, our empirical data failed to provide support for this final hypothesis, indicating a negative non-significant influence of growth orientation on growth. This negative relationship is likely to have been influenced by the strong negative
correlation between firm and respondent age with both growth orientation and realized growth. We also note that we analyzed growth during a relatively short period of time, from year 1996 to 1998. Perhaps a longer time period would have revealed statistically significant influences.

What do our findings suggest for researchers and practitioners? Clearly, we believe that there has been a tendency in entrepreneurship research to too easily take growth orientation as given, and that the study of the emergence of growth orientation has been given too little attention in previous research. Our study reveals that variation in growth orientation can be explained by both firm-internal and firm-external factors, and that growth orientation constitutes an important influence on the choice of growth strategies and on eventual growth. To better understand the growth of new firms, therefore, one needs to develop a better understanding of growth orientation. Our findings also suggest that growth orientation is not determined by external industry conditions; rather, our empirical findings are more consistent with Penrose’s notion of environment as an image in entrepreneur’s mind, an image that is actively shaped by the entrepreneur’s sense-making processes. Our findings also have implications for practitioners: both managers and policy-makers. Previous research has revealed that strategic choices made early in an organization’s life tend to have long-lasting imprinting influences (Boeker, 1989; Eisenhardt & Schoonhoven, 1990). Thus, if a new firm is exposed to growth-oriented mental models early in its life, this is likely to instil a growth-oriented ethos in the firm and lead to faster growth later in its life. Conversely, if a new firm develops mental models that are not growth oriented, changing these may be difficult later.

Limitations

The generalizability of our findings is limited by sample and method. We have focused on a single country and a single industry in order to control variation due to external conditions. At the same time, the generalizability of our findings is constrained. However, we believe that the findings reported here should be replicable also in other country and industry settings, because the underlying sense-making processes should be similar in different countries and industries. Even though Finland’s high-tech community is fairly closely-knit, and the diffusion of strategies across firms should therefore be easier, we do not believe the Finnish cultural setting to be fundamentally different from other countries in this regard.

Our choice to focus on the software industry is not without implications. This industry has experienced fairly rapid growth during the period that we studied. Therefore, in this industry, growth may have been more clearly the result of managerial choice than in more slowly growing industries. In mature industries, where growth often must be achieved at the expense of other firms, the relationship between the choice of growth strategy and eventual growth may not come out as clearly as it did in the present sample.

As our focus has been on management perceptions, we have used the top managers of new and small firms as our only source of data. This introduces a potential common method problem particularly where the relationship between the perceived growth orientation of external reference models and the growth orientation of the management is concerned. However, this problem is an unavoidable one, as it is the perceptions and orientations that matter here. It would be very difficult to obtain an independent validation for such highly perceptual constructs. Further, we acknowledge that in reality, the relationship between the perceived growth orientation of external reference models and the growth orientation of the management is likely to be a two-way relationship, not unidirectional as hypothesized here. In other words, a growth-oriented management will be more likely to pick growth-oriented reference models. Further, longitudinal research will be required to sort out the direction of causalities hypothesized here.
In conclusion, this study has contributed to entrepreneurship research by providing evidence that the growth orientation of new and small firms may be an acquired, rather than innate, characteristic, and by highlighting the relationships between growth orientation, growth strategies, and realized growth. Our findings support the salience of cognitive theories in explaining the ‘genesis’ of entrepreneurship as firm behavior. We hope that this study will inspire further research on these important but largely understudied processes.
REFERENCES


TABLE 1

Means, Standard Deviations, Ranges, and Correlations of Independent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration strategy</td>
<td>0.98</td>
<td>0.81</td>
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<td>1</td>
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<tr>
<td>Growth orientation</td>
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<td>3.28</td>
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<td>GO of reference model company</td>
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<td>0.42</td>
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<tr>
<td>GO of reference model individual</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Firm has outside owners</td>
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<td>0.33</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Experience from fast growth (years)</td>
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<td>0.17</td>
<td>-0.30</td>
<td>1</td>
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<tr>
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<td>1</td>
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<tr>
<td>Firm location: Tampere</td>
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<td>0.18</td>
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</tr>
<tr>
<td>Age of respondent</td>
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<td>0.39</td>
<td>-0.40</td>
<td>1</td>
</tr>
<tr>
<td>Experience from the industry (years)</td>
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<td>1</td>
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<tr>
<td>Strength of intra-industry network</td>
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<td>0.16</td>
<td>-0.19</td>
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<tr>
<td>Strength of local network</td>
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<td>Total sales 1996</td>
<td>0.30</td>
<td>0.46</td>
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<td>1</td>
</tr>
</tbody>
</table>

Pearson two-tailed correlations between independent variables

a-The Cronbach alphas are listed in parentheses where applicable.

b-Sales are expressed in millions of Finnish Markka (FIM). US$ 1 FIM = $0.18

** p < 0.01, * p < 0.05, two-tailed tests.
<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>Regression Tests of Hypotheses</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Dependent</td>
<td>Growth orientation</td>
</tr>
<tr>
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<td>.26**</td>
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<td>.20*</td>
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<tr>
<td>Local network</td>
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<td>.08</td>
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<tr>
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<td>.98***</td>
</tr>
<tr>
<td>Adjusted R^2</td>
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<tr>
<td>Degrees of freedom</td>
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<td>8,68</td>
</tr>
</tbody>
</table>

The coefficients are presented as standardized beta weights. *** p < 0.001, ** p < 0.01, * p < 0.05, † p < 0.10; one-tailed tests.
APPENDIX 1

Variable Items

Growth orientation (α=0.81)
Please allocate 100 points across the five goals below to indicate how important they have been to your firm in the recent past (points allocated for maximizing sales growth were used in calculating growth orientation):

- Maximizing profitability
- Maximizing sales growth
- Maximizing technical superiority
- Maximizing value of the firm for eventual acquisition
- Maximizing stability and longevity of the firm

100 TOTAL POINTS
(1= strongly disagree, 7= strongly agree)

1 Growing as rapidly as possible is the most important goal of this venture 1 2 3 4 5 6 7
2* Aiming for rapid growth is not what drives this venture 1 2 3 4 5 6 7

The logarithm of relative change from the present to turnover size objective in three years.

Concentration strategy (α=0.75)

1 Answer of the question A divided by the answer to B.
   A Percentage of software engineers not bound to specific customer projects
   B Total number of software engineers

2 Number of separate business areas

3 Weight of product business compared to project, tailoring and consultation business in the cognitive map (estimated by the interviewer in 7-point Likert-type scale)

Strength of intra-industry network (α=0.87)

1 Number of people from software product industry when the respondent was asked to name a maximum 6 friends in business he/she is in closest contact with

2 Percent of people from software product industry of all business friends mentioned in the same response

Strength of intra-industry network (α=0.92)

1 Number of local people when the respondent was asked to name a maximum 6 friends in business he/she is in closest contact with

2 Percent of local people of all business friends mentioned in the same response