ELSEVIER

LINKING TWO DIMENSIONS OF ENTREPRENEURIAL ORIENTATION TO FIRM PERFORMANCE: THE MODERATING ROLE OF ENVIRONMENT AND INDUSTRY LIFE CYCLE

G.T. LUMPKIN
University of Illinois at Chicago, Chicago, IL

GREGORY G. DESS
University of Kentucky, Lexington, KY

EXECUTIVE SUMMARY

The term "entrepreneurial orientation" has been used to refer to the strategy-making processes and styles of firms that engage in entrepreneurial activities. A popular model of entrepreneurial orientation (EO) suggests that there are five dimensions of EO—autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness (Lumpkin and Dess 1996). This paper reports on two of those dimensions—proactiveness and competitive aggressiveness. Proactiveness refers to how firms relate to market opportunities by seizing initiative in the marketplace; competitive aggressiveness refers to how firms react to competitive trends and demands that already exist in the marketplace. Despite these distinctions, prior research has tended to equate these two concepts and argued that they have a similar effect on firm performance. This paper investigates how these two approaches are related to each other, how they are related to performance, and how their function differs in the environments in which firms exhibit these approaches to strategy making. These distinc-

Address correspondence to G.T. Lumpkin, Department of Managerial Studies, University of Illinois at Chicago, 601 S. Morgan Street, Chicago, IL 60607-7123. Tel: (312) 996-8285; Fax: (312) 996-3559; E-mail: tlumpkin@uic.edu

We thank Darold Barnum, Dave Harrison, Jay Janney, Maria Kramer, and Rod Shrader for their helpful comments on earlier drafts of this article. We gratefully acknowledge the funding that was provided for this research by the Center for Entrepreneurial Leadership, Inc. at the Ewing Marion Kauffman Foundation. An early version of this paper was presented at the 1997 Babson-Kauffman Entrepreneurship Research Conference.

Journal of Business Venturing **16**, 429–451

655 Avenue of the Americas, New York, NY 10010

0883-9026/01/$–see front matter
PII S0883-9026(00)00048-3

tions are important because proactiveness and competitive aggressiveness represent distinctly different avenues to entrepreneurial success.

A field study was conducted in which 124 executives from 94 firms were surveyed. These were executives from non-affiliated, non-diversified firms who were actively involved in strategic decision making at the top level of the firm. All firms reporting had at least one respondent who was an owner. Analysis of the data was conducted in two phases. In phase 1, factor analysis was used to examine the distinctions between different dimensions of EO. Proactiveness and competitive aggressiveness emerged as two separate factors indicating that these two strategy-making modes were perceived differently by the executives in the study. In the second phase, the relationship of these two dimensions to performance was analyzed in various contexts. Initial tests found that proactiveness was positively related to performance but competitive aggressiveness tended to be poorly associated with performance.

Subsequent tests of the EO-performance relationship indicated that the stage of industry life cycle tended to favor one entrepreneurial orientation over another. The performance of firms in the early stages of industry development was stronger when their strategy making was proactively oriented. In contrast, a competitively aggressive frame of mind was helpful to firms in more mature stages of industry development. These findings were supported by other tests of the business environment. In dynamic environments, characterized by rapid change and uncertainty, proactive firms had higher performance relative to competitively aggressive firms. In hostile environments, where competition is intense and resources are constrained, competitively aggressive firms had stronger performance.

The findings suggest that these two different approaches to entrepreneurial decision making may have different effects on firm performance. The differences were particularly apparent in the way firms relate to their external environment. Proactiveness—a response to opportunities—is an appropriate mode for firms in dynamic environments or in growth stage industries where conditions are rapidly changing and opportunities for advancement are numerous. But such environments may not favor the kind of combative posturing typical of competitive aggressiveness. Firms in hostile environments, or in mature industries where competition for customers and resources is intense, are more likely to benefit from competitive aggressiveness—a response to threats. A further implication of this research is that the dimensions of an entrepreneurial orientation, often considered to be positively related to performance under all conditions, may not always be associated with successful outcomes. This study indicates that the dimensions of EO often vary independently rather than covary, suggesting that the extent to which an entrepreneurial approach to strategy making is useful will frequently depend on the organizational or environmental conditions under which such decisions are made.

INTRODUCTION

Entrepreneurship writers in both the popular press and the scholarly literature have generally extolled the importance of entrepreneurial activities and often implicitly assumed a positive relationship between entrepreneurship and performance outcomes. Articles in business periodicals such as *Forbes* with titles such as "Innovate or Die" (Young 1994) and "Hooray for Risk" (Postrel 1995) are indicative of this trend. In addition to the inherent "goodness" ascribed to entrepreneurial activity, the academic literature has often conceptualized and operationalized the entrepreneurial process as a unidimensional construct (e.g., Covin and Slevin 1989a). In contrast, we suggest that entrepreneurial processes involve complex phenomena that may not always be associated with strong performance.

To explain these phenomena, we believe that the concept of an entrepreneurial orientation (EO) is potentially important to entrepreneurship research and this paper builds on previous work on the EO construct. We suggest that theoretical development and empirical research directed at this construct is important for the enhancement of both normative and descriptive theory. Earlier theoretical work proposed a contingency

framework for exploring the relationship between EO and organizational performance and suggested the usefulness of considering EO (consisting of autonomy, innovativeness, risk taking, proactiveness and competitive aggressiveness) as a multidimensional construct (Lumpkin and Dess 1996).

In this paper, we investigate two dimensions of EO—proactiveness and competitive aggressiveness. We draw on prior theory and empirical research into these components of EO, as well as examples from business practice, to provide a rationale and justification for exploring three related research questions. These are (1) the independence of the proactiveness and competitive aggressiveness dimensions, (2) their relationship to firm performance, and (3) the role of "fit" in explaining their relationship to performance, that is, the extent to which the relationship of proactiveness and competitive aggressiveness to performance is contingent on the business context in which these processes occur. To address the first question, we use factor analysis. To address the second and third issue, we employ regression analysis and test environment and industry life cycle as moderators. To test our hypotheses, a sample of 124 owners and executives from 94 small firms competing in a wide variety of industries will be examined. In short, we seek to investigate both why (via theory development) and how (via empirical analysis) proactiveness and competitive aggressiveness are differentially related to performance and the implications of this distinction for the entrepreneurial firm.

Earlier theoretical work by Lumpkin and Dess (1996) has argued for the independence of several dimensions of EO—including autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness. Briefly, *autonomy* is defined as independent action by an individual or team aimed at bringing forth a business concept or vision and carrying it through to completion. *Innovativeness* refers to a willingness to support creativity and experimentation in introducing new products/services, and novelty, technological leadership and R&D in developing new processes. *Risk taking* means a tendency to take bold actions such as venturing into unknown new markets, committing a large portion of resources to ventures with uncertain outcomes, and/or borrowing heavily. *Proactiveness* is an opportunity-seeking, forward-looking perspective involving introducing new products or services ahead of the competition and acting in anticipation of future demand to create change and shape the environment. *Competitive aggressiveness* reflects the intensity of a firm's efforts to outperform industry rivals, characterized by a combative posture and a forceful response to competitor's actions.

In this paper, we will focus on proactiveness and competitive aggressiveness for two reasons. First, these two dimensions of EO have generally been investigated less frequently in the entrepreneurship literature, especially relative to risk taking and innovativeness. Additionally, as discussed below, prior theory and research have often treated proactiveness and competitive aggressiveness as if they were interchangeable. We argue here, however, that they are distinct concepts with unique relationships to performance outcomes. Thus, we feel that this research issue is more "interesting" in that it "denies some aspect of the assumption ground of its audience . . . it tells them some truth they thought they already knew was wrong" (Davis 1971: 329). Second, any theory of the social sciences includes tradeoffs involving generalizability, accuracy, and simplicity (Weick 1979). Thus, investigating several EO dimensions at once may increase accuracy in the depiction of the EO construct but might result in a corresponding loss of parsimony. Arguing, for example, how all five (or even three or four) subconstructs relate to each other—as well as to performance—would be quite complex and cumbersome and we prefer, in effect, to "err" on the side of parsimony.

The paper is divided into four major sections. Drawing on prior research and theory, the next section advances hypotheses suggesting the independence of these two EO dimensions and performance relationships. Then, the field research methodology, instrumentation, and analysis are discussed. The final two sections present the findings and discuss the practical and theoretical implications of the research.

THEORY DEVELOPMENT AND HYPOTHESES

The concept of an EO to explain the mindset of firms engaged in pursuing new ventures provides a useful framework for researching entrepreneurial activity. Recently, Lumpkin and Dess (1996) noted a distinction between entrepreneurial orientation and entrepreneurship by suggesting that EO represents key entrepreneurial *processes* that answer the question of *how* new ventures are undertaken, whereas the term entrepreneurship refers to the *content* of entrepreneurial decisions by addressing *what* is undertaken.

The salient dimensions of an EO emerge from a review of entrepreneurship literature (e.g., Kanter 1983; Miller 1983; MacMillan and Day 1987). These attributes and activities are captured in a definition proposed by Miller (1983), which states that an entrepreneurial firm is one that "engages in product market innovation, undertakes somewhat risky ventures and is *first* to come up with 'proactive' innovations, beating competitors to the punch" (p. 770). Building on prior literature and Miller's definition, numerous scholars have used the term "entrepreneurial orientation" to describe a fairly consistent set of related activities or processes (e.g., Ginsberg 1985; Miles and Arnold 1991; Morris and Paul 1987; Smart and Conant 1994). Although Miller's (1983) definition can be broken down into three dimensions—innovativeness, risk taking, and proactiveness—some researchers have used Miller's definition to test a fourth dimension of EO: competitive aggressiveness (Covin and Covin 1990; Dean 1993). Whereas, in several entrepreneurial orientation studies, the notion of competitive aggressiveness has been ignored (e.g., Smart and Conant 1994), other research has placed primary emphasis on this dimension of EO (e.g., Dean et al., 1993). In some studies, competitive aggressiveness and proactiveness have been treated as if they were identical (e.g., Covin and Covin 1990). Lumpkin and Dess (1996), by contrast, suggest that these two dimensions are distinct.

Examples from Business Practice

Two examples from business practice suggest anecdotal support for the problematic nature of the relationship between the proactiveness and competitive aggressiveness dimensions. The first example, Mason and Hanger, supports the idea that these two dimensions are independent whereas the second example, Shaw Industries, implies that the two dimensions covary. Mason and Hanger is a privately-held, Lexington, Kentucky-based corporation with approximately $500 million in annual revenues (Berman 1996). As a prime contractor for U.S. nuclear weapons with revenues closely tied to military procurement, management sensed the need to drastically change their mission once the cold war ended. By redefining their mission to emphasize "high consequence activities," the firm was able to successfully diversify into the *dis*mantling of weapons, the development of high-technology sensors for use in plant security, and the installation of security systems for Saudi oil fields. Clearly, this is a firm that was very proactive in exploiting new areas by leveraging their core competence. Given their capabilities,

however, Mason and Hanger did not appear to have to bid aggressively or "undo-the-competitors" by aggressive pricing and cost cutting. In effect, Mason and Hanger was seeking new opportunities, not responding to a competitive threat (although the declining demand in their core business represented a major *environmental* threat).

The second example relates to the recent history of Shaw Industries, a dominant manufacturer of carpeting products (Server 1994). Although carpet prices in the United States have dropped 10 percent over a recent 5-year period, Shaw's sales and profits have more than doubled to $2.3 billion and $100 million, respectively. Shaw has earned this enviable performance by aggressively striving to dominate the market with strategies that included acquiring competitors who were unable to match Shaw's cost structure and pricing strategies. Shaw also acted proactively by seizing opportunities to increase operating margins by installing state of the art looms and design computers that had recently strengthened the productivity of the carpet industry. Shaw's success can be attributed, in the present context, to both proactive strategic activity *and* competitively aggressive behavior.

Proactiveness and Competitive Aggressiveness: Two Distinct Concepts

In contrast to the examples above, prior studies have often addressed competitive aggressiveness by equating it with proactiveness. For example, Covin and Slevin (1989a, 1991) suggested that proactive firms compete aggressively with other firms. In describing their entrepreneurial strategic posture scale these authors cite three of Miller's (1983) factors—innovativeness, proactiveness, and risk taking—and describe them as follows:

> An entrepreneurial strategic posture is characterized by frequent and extensive technological and product innovation, *an aggressive competitive orientation*, and a strong risk-taking propensity by top management (1989a: 79, emphasis added).

A similar theme is evident in their 1991 paper which describes an entrepreneurial posture as a firm's "propensity to *aggressively* and *proactively* compete with industry rivals" (1991: 10, emphasis added). In fact, the 3-item proactiveness scale used in the Covin and Slevin (1989a) study is identical to the "competitive aggressiveness" scale used in a study by Covin and Covin (1990). Although a proactive stance relative to competitors may be vital to entrepreneurial success, Covin and Slevin's approach appears to minimize important differences between competitive aggressiveness and proactiveness.

We suggest that proactiveness and competitive aggressiveness are separate concepts with distinct definitions. Proactiveness suggests a forward-looking perspective characteristic of a marketplace leader that has the foresight to act in anticipation of future demand and shape the environment. This is consistent with Miller and Friesen's (1978) view of proactiveness as changing the environment by introducing new products and technologies, and with Venkatraman's (1989a) definition of proactiveness as "seeking new opportunities which may or may not be related to the present line of operations, introduction of new products and brands ahead of competition, strategically eliminating operations which are in the mature or declining stages of life cycle" (Venkatraman 1989a: 949).

Competitive aggressiveness, in contrast, refers to the intensity of a firm's efforts to outperform industry rivals. It is characterized by a strong offensive posture directed at overcoming competitors and may also be quite reactive as when a firm defends its market position or aggressively enters a market that a rival has identified. This is accom-

plished by, for example, setting ambitious market share goals and taking bold steps to achieve them such as cutting prices and sacrificing profitability (Venkatraman 1989a), or spending aggressively compared to competitors on marketing, product service and quality, or manufacturing capacity (MacMillan and Day 1987).

Firms create, acquire, and leverage resources to achieve a sustainable advantage (Barney 1991). Once they have developed such resources, they are more likely to try to defend them. We contend that the creation of resources represents proactiveness whereas the defense of existing resources is achieved by a competitively aggressive approach. The transition from creating to defending can be gradual or abrupt, thus we would not be surprised to see either case, or examples of both, occurring in a given firm. We relate this to the work of Helfat (1997) and March (1991), both of whom make arguments for a tradeoff between "exploitation and exploration." Exploitation refers to incremental, minimal refinements to existing resources, while exploration involves creating whole new resource bundles. Firms can take the returns from exploitation and invest them in exploration. Exploration is far riskier, but offers potentially higher payouts. For example, venture capitalists Kleiner, Perkins, Caufeld and Byers invested $200,000 in the Genentech biotechnology firm. When Genentech went public two years later, their stake soared in value to roughly $40 million. During that same time, their similar investments in a dozen other biotechnology firms were written off as worthless.

March (1991) argues that a firm's relative performance may encourage it to adopt an exploration strategy in hopes of hitting a Genentech-sized payoff. That is, less successful firms are more likely to explore new resources, as they often lack defensible resources of any value. Most likely, aggressiveness and proactiveness occur sequentially and dynamically. But they may be present simultaneously since both reflect a firm's future-oriented perspective. Firms seek out an attractive niche (i.e., proactiveness) and once they establish it, they seek to protect it (i.e., competitive aggressiveness). Intel, for example, proactively seeks out new market opportunities, investing billions in the development of new chips. Yet once those markets are established, and the new chips prove successful, Intel aggressively protects its market share by lowering chip prices every quarter.

Development of Hypotheses: Independence of EO Dimensions and Performance Relationships

Drawing on the above, we suggest that *proactiveness is a response to opportunities whereas competitive aggressiveness is a response to threats.* That is, proactiveness refers to how firms relate to market opportunities by seizing initiative and leading in the marketplace; competitive aggressiveness refers to how firms react to competitive trends and demands that already exist in the marketplace. These distinct roles are noted by Chen and Hambrick (1995) who suggest that "a firm should be both proactive and responsive in its environment in terms of technology and innovation, competition, customers and so forth. Proactiveness involves taking the initiative in an effort to shape the environment to one's own advantage; responsiveness involves being adaptive to competitors' challenges." Therefore, we suggest:

> *H1:* Proactiveness and competitive aggressiveness are distinct dimensions of an entrepreneurial orientation.

Chen and Hambrick's (1995) description suggests that successful firms need to be both proactive and competitively aggressive. Numerous entrepreneurship scholars have

suggested that all the dimensions of an EO covary, i.e., that the EO construct is unidimensional (e.g., Covin and Slevin 1989a). Although it is quite possible that a firm would exhibit both competitive aggressiveness and proactiveness, we suggest that these two dimensions may vary independently of each other in a given context and be differentially related to performance.

Looking at entrepreneurial orientation from a resource-based view of the firm may help illustrate this point. Barney (1986, 1991) developed four criteria for evaluating the sustainability of a resource's advantages: resources must be valuable, rare, hard to imitate, and hard to substitute. We contend that sustainable advantage can accrue from both competitively aggressive and proactive behaviors, depending on the stock of a firm's resources. The type of resources available will influence the type of strategic processes firms employ to gain an advantage. Brumagin (1994) proposed a hierarchy of resources, which increase in "combinative complexity." Some resources can be exploited primarily through cost advantages and thus are more likely to be employed within a competitive aggressiveness approach. Other firms might lack the unique and valuable resources needed for low cost leadership, but have developed elements of structural capital (Edvinsson and Malone 1997; Stewart 1997) such as structures and processes that enable them to create new resources more quickly and cheaply than rivals. Proactiveness, then, would rely more heavily on the development of structural capital resources than competitive aggressiveness. In contrast, firms are more likely to employ competitive aggressiveness if they had staked out a niche for themselves, and seek to protect it from the threat of new entrants.

Unlike prior research that has assumed that proactiveness and competitive aggressiveness are either the same or very similar constructs, we suggest that the two dimensions will vary in their relationship to performance. Previous studies have often found a strong positive relationship between proactiveness and performance (e.g., Miller 1983; Miller and Friesen 1983). Fewer studies are available with which to hypothesize the direction of the competitive aggressiveness-performance relationship. Further, to understand these relationships more precisely, the arguments presented below in support of Hypotheses 3 through 8 suggest that the level of performance associated with these two dimensions will be contingent on the conditions in which they occur. To summarize the present argument, we suggest that a firm may exhibit both competitive aggressiveness and proactiveness, but their presence may vary in strength, or change over time, and be differentially related to performance. Thus, the extent to which competitive aggressiveness is related to performance will be independent of the extent to which proactiveness is related to performance, and vice versa. Therefore:

> *H2:* Proactiveness and competitive aggressiveness are differentially related to performance.

Development of Hypotheses: Contingent Relationships

Consistent with the concept of fit in the moderation perspective, the impact that a predictor variable has on a criterion variable is dependent on the level of a third variable called the moderator (Venkatraman 1989b). Similarly, the concept of "elaboration" is particularly relevant in developing further insights into the EO-performance relationship (Rosenberg 1968). Elaboration serves to clarify the relationship between two variables through the introduction of additional variables into an analysis. The process of elaboration leads to richer theoretical models with which researchers are able to explain

or specify relationships with greater accuracy. Therefore, we turn to our third research question: *Under what conditions* will proactiveness and competitive aggressiveness be positively associated with performance?

Numerous entrepreneurship researchers have emphasized the importance of viewing the EO-performance relationship in a contingency framework (e.g., Covin and Slevin 1991; Karagozoglu and Brown 1988). Thus, we have developed hypotheses investigating the performance implications of an appropriate fit between the predictor variables in the study—proactiveness and competitive aggressiveness—and two potential moderators—environment and industry life cycle.

Environment

The environment has long been considered one of the critical contingencies in organization theory and strategic management (cf., Child 1972). Many conceptualizations of the environment are largely consistent with Dess and Beard's (1984) three dimensions—munificence, complexity, and dynamism. These dimensions draw on two commonly used approaches to conceptualizing environments: (1) as a source of information, and (2) as a stock of resources (Aldrich and Mindlin 1978). In essence, dynamism and complexity reflect the degree of uncertainty facing an organization and munificence signals a firm's dependence on those environments for resources.

Our research uses two environmental constructs that are consistent with such earlier research and theory building: dynamism and hostility. Dynamism relates to the rate of unpredictable change in a firm's environment (Duncan 1972; Tosi et al. 1973; Child 1972). Dynamism also indicates uncertainty that erodes the ability of managers to predict future events as well as their impact on the organization (Khandwalla 1977). Hostility—often considered the obverse of munificence—is indicative of the scarcity and intensity of competition for environmental resources (Covin and Slevin 1989a; Zahra and Covin 1995).

We suggest that proactiveness will be positively related to performance in dynamic environments. As noted earlier, proactiveness is associated with the exploration (March 1991) of resources and the creation of new niches. Such opportunity seeking is more likely to be successful in changing and uncertain environments where the cost and risks associated with novelty and originality can be recouped by capturing new product-market niches. Also, more proactivity in the introduction of new products and services helps to minimize the threat of obsolescence—a conditioned heightened in dynamic environments (Lawrence and Lorsch 1967; Miller and Friesen 1983). Therefore, we suggest:

> *H3:* Environmental dynamism will moderate the relationship between proactiveness and firm performance: A firm's proactiveness will be more strongly associated with high performance when environmental dynamism is high than when it is low.

The effect of environmental hostility on the proactiveness–performance relationship, in contrast, is generally unfavorable. In a hostile environment, the intensity of competition exerts more pressure on the firm. Thus, a greater need for interlocking organizational behavior is necessary (Pfeffer and Leblebeci 1973). In addition, less slack for experimentation for new strategies is available (Bourgeois 1981) since such environments force firms to be more oriented toward conserving limited financial resources (Chakravarthy 1982). As argued by Miller and Friesen (1983): "Extensive risk taking, forceful proactiveness, and a strong emphasis on novelty can be very hazardous when

competitive conditions are becoming more taxing" (p. 223). Such conservative use of resources is antithetical to the important role of experimentation and discovery inherent in proactiveness. Thus:

> *H4:* Environmental hostility will moderate the relationship between proactiveness and firm performance: A firm's proactiveness will be more strongly associated with low performance when environmental hostility is high than when it is low.

Whereas proactiveness refers to taking the initiative to recreate an environment to one's competitive advantage (Chen and Hambrick 1995), competitive aggressiveness involves reacting to existing competitive trends and demands in the environment. Under such conditions, exploitation, i.e., the implementation and strengthening of an existing resource base (Helfat 1997), may be more relevant than exploration. Thus, reaction to competitive conditions would be facilitated in a stable and certain environment where the "rules of the game" are more evident and unchanging. Adaptation and reaction are quite difficult if one must chase the constantly moving target associated with dynamic and uncertain environments. Therefore, we propose:

> *H5:* Environmental dynamism will moderate the relationship between competitive aggressiveness and firm performance: A firm's competitive aggressiveness will be more strongly associated with low performance when environmental dynamism is high than when it is low.

Environmental hostility is also hypothesized to moderate the relationship between competitive aggressiveness and performance. As noted by Porter (1980), for example, firms competing in intensely competitive industries—such as fragmented industries—require both "tightly managed decentralization" and "strategic discipline." The absence or limited availability of organization slack (Bourgeois 1981) becomes less critical since decision making and strategic options are quite limited. Consequently, the discipline required to compete successfully in hostile environments would be consistent with a posture of competitive aggressiveness. Thus:

> *H6:* Environmental hostility will moderate the relationship between competitive aggressiveness and firm performance: A firm's competitive aggressiveness will be more strongly associated with high performance when environmental hostility is high than when it is low.

Industry Life Cycle

The industry life cycle may also affect firms' emphasis on proactiveness or competitive aggressiveness. Entrepreneurship scholars have consistently argued that the most successful start-ups are those launched in the growth stages of an industry's life cycle (e.g., MacMillan and Day 1987). There is empirical support for a higher success rate among such growth industry enterprises (Eisenhardt and Schoonhoven 1990; Sandberg and Hofer 1987). Nevertheless, the majority of new business start-ups generally occur in mature industries (*The State of Small Business*, 1992). Is there a link between EO and industry life cycle?

Growth stage industries are regarded as especially attractive for several reasons. When demand is growing in an industry, firms can achieve initial success without the intense competitive threat that firms face in mature industries. In other words, there's enough market opportunity available for multiple entrants to succeed (Porter 1980),

but to achieve lasting success in a growth industry, we suggest that performance will be enhanced when firms behave proactively. Proactiveness suggests acting in anticipation of future demand and Lieberman and Montgomery (1988) have noted the advantages that accrue to firms that obtain "first mover advantages," that is, pioneering firms that profit from proactiveness. These include technological leadership, acquisition of scarce resources, and imposition of switching costs that help firms capture market share and achieve brand recognition. In a study of 84 SBUs (Strategic Business Units) by Miller and Camp (1985), these pioneering advantages also extended to second entrants into new markets, but eroded for subsequent entrants. Thus, proactiveness is likely to be associated with higher performance in growth stage industries.

The same advantages, however, may *not* accrue to proactive firms in mature industries. Mature stage industries typically have slow growth and successful entry is often possible only by taking market share from an existing competitor. Proactiveness that involves scanning and experimentation are costly tactics that may be inappropriate in more established industries. Thus,

> *H7:* Stage of industry life cycle will moderate the relationship between proactiveness and firm performance: A firm's proactiveness will be more strongly associated with high performance during earlier life cycle stages than later stages.

Whereas proactiveness is best aligned with growth stage industries that have rich opportunities, a competitive aggressive approach is, in effect, the opposite. As noted above, the distinction between proactiveness and competitive aggressiveness is comparable to the tradeoff between exploitation and exploration (March 1991; Helfat 1997). Thus, in mature industries, a firm that emphasizes exploitation is more likely to succeed via competitive aggressiveness, that is, by rivalry based on managing resources and enhancing marginal returns to protect gains made by earlier investments. Such an approach is not likely to succeed in growth stage industries where exploration is favored and overly aggressive behavior may be unnecessary. Therefore:

> *H8:* Stage of industry life cycle will moderate the relationship between competitive aggressiveness and firm performance: A firm's competitive aggressiveness will be more strongly associated with low performance during earlier life cycle stages than later stages.

METHOD

To test these propositions, a field study using mailed questionnaires was conducted. This approach is useful for accessing organizational processes in the settings where they naturally occur with minimal intrusiveness by the researcher (McGrath 1982). The data are cross-sectional and factor analysis and regression analysis techniques were used to test the hypothesized relationships.

Research Instrument

A pretest of the research instrument was conducted in order to evaluate new questionnaire items developed for the research. This provided an exploratory approach to aid in operationalizing constructs that need further development, such as competitive aggressiveness, for which a widely recognized set of survey items is not currently available. After preparing written responses, 13 pre-test respondents were interviewed for feed-

back regarding the clarity and intent of the survey items. Results of the pretest were evaluated and implemented prior to finalizing the research instrument.

The research instrument was a mailed questionnaire. Since some researchers have found it difficult to obtain data from small businesses (Sapienza et al. 1988), a procedure developed by Dillman (1978) to increase response rates was followed. Dillman's approach is based on a series of specifically timed mailings including an initial mailing along with a cover letter, a postcard reminder sent out one week after the initial mailing, and, three weeks after the original mail-out, a letter and replacement questionnaire sent to all nonrespondents. In some cases, a final attempt is made seven weeks after the original mailing.

Four dimensions of EO—innovativeness, risk taking, proactiveness, and competitive aggressiveness—were measured using scales developed and tested for reliability by Khandwalla (1977), Miller (1983), Covin and Slevin (1986, 1989a), and Covin and Covin (1990). These scales were supplemented by items developed to capture aspects of the subconstructs that were not included in the previously used scales. For this analysis, only two items—one proactiveness item and one competitive aggressiveness item—was added to the nine-item scale developed and used by Covin and Slevin (1986, 1989a).

Proactiveness was measured using three items with 7-point scales. Two of the items, developed by Covin and Slevin (1986), ask about the firm's tendency to lead rather than follow in the development of new procedures and technologies, and the introduction of new products or services. These two items were supplemented by a third question developed to ask about the firm's tendency to act in anticipation of future changes and needs. Competitive aggressiveness was measured with two 7-point items. One item was developed by Covin and Slevin (1989a) using language originated by Khandwalla (1977). This question asks managers if they prefer to "undo-the-competitors" or to "live-and-let-live." An additional question aimed at identifying the firm's posture relative to industry rivals was also originated for this study (see Appendix).

Environmental dynamism was measured using a 3 item, 7-point semantic differential type scale anchored by descriptive phrases. The scale was developed by Miller and Friesen (1982) who found it to be quite reliable. It has been used in numerous other studies with similarly high reliabilities (e.g., Miller 1983; $\alpha = 0.74$). The items ask about frequency of marketplace changes and the rate of obsolescence of products and services. Environmental hostility was measured with a 3-item, 7-point scale developed by Khandwalla (1977) who found it be highly reliable. Other studies using this scale have also reported high reliabilities (e.g., Covin and Slevin 1989b; $\alpha = 0.70$). These also used semantic differential scales anchored by phrases that ask if the environment is dominating, threatening, and/or stressful.

Industry life cycle was measured by asking respondents to indicate what percentage of firm sales revenues were accounted for by products/services from each of four industry stages: introduction (I), growth (G), maturity (M), decline (D). Respondents were asked to provide amounts that totaled 100 percent. To convert these data, the following weighted average formula was used: $(1 \times I) + (2 \times G) + (3 \times M) + (4 \times D)$. The result was a single continuous stage of industry life cycle variable for which higher totals indicated a firm's involvement in later industry life cycle stages.

Performance was assessed using four items that asked respondents to evaluate "your firm's performance OVER THE LAST THREE YEARS *RELATIVE* TO YOUR COMPETITORS." Seven point Likert-type scales ranging from 1 "Low Performer" to 7 "High Performer" were used. Single item measures were used to assess sales

growth and return on sales. A measure of profitability was derived by averaging the responses to two highly correlated performance items—net profit and gross profit. Sales growth and profitability measures are traditional and contrasting methods of assessing performance that represent two different kinds of firm aspirations (Kirchhoff 1979). Previous research suggests that subjective measures of performance can accurately reflect objective measures, thus enhancing validity and reliability (Dess and Robinson 1984; Venkatraman and Ramanujam 1987). For example, Chandler and Hanks (1993) found that owner/CEO assessments of business activity (such as earnings, business volume and sales growth) were highly correlated with archival data.

Sample

The goal of sampling was to contact executive-level respondents—preferably owners and founders—from a heterogeneous set of non-diversified, non-affiliated firms. The purpose of a heterogeneous criterion was to increase the generalizability of the findings. To obtain a heterogeneous sample, we sought firms that represented a broad selection of industries. A non-diversified criterion was used to help ensure that the respondents were not diverted by multiple strategic processes and environments that might be associated with diversified firms. To achieve this, the study focused primarily on single-business firms (Rumelt 1974). The non-affiliated criterion precluded us from including firms that were subsidiaries or business units of another firm. Our aim was to ensure that we queried respondents who had the greatest knowledge of the business environment and the most to gain or lose from decisions about firm strategy and structure. Thus, we relied on executives who were not influenced by a parent firm but were engaged in strategy making and independent action at the highest level. This was achieved by directing the surveys to the firms' principal executives, including business owners, and by requiring that at least one of the respondents (in the case of multiple respondent firms) be an owner of the business. Such an approach increases the likelihood that the most knowledgeable person(s) in the firm will provide the information (Glick et al. 1990).

Firms were initially selected from the Business Marketing Source, a commercial database of a large southwestern metropolitan area. From a population of approximately 3700 firms, 220 non-diversified, non-affiliated for-profit firms were identified. Thirteen different industries (indicated by three-digit SIC codes) were represented: accounting, advertising, banks and insurance, construction, computer service and sales, education/legal, engineering, hospital/medical, media/communications, management services, real estate, transportation, and wholesale. This listing, however, did not include small manufacturers and small retailers, which are likely to represent a significant portion of our target sample. Therefore, the sample was supplemented using Chamber of Commerce small business lists and the American Business Disk, a yellow-pages based listing, from two southwestern states. These additional sources of businesses added 101 more firms for a total sample of 321 firms.

Seven hundred forty-five surveys were mailed to executives in 321 firms. Survey responses from 167 executives in 133 firms were sufficiently complete and received in time to be included in the study. Thus, the overall firm-level response rate was 41%. After eliminating firms that did not include an owner as a respondent, the final sample investigated consists of 124 executives from 94 firms, a firm-level response rate of 29%. Sauley and Bedeian (1989) have demonstrated that for relatively smaller samples, such as the final sample in this study, a $p < 0.10$ level of significance can be very satisfactory.

Twenty-three of the 94 firms have multiple respondents and *t* tests reveal no differences in the responses of single respondent and multiple respondent firms. All firms include at least one respondent who is an owner. Fifty-four of the firms are new entrants (founded in the previous seven years); the remaining 40 firms are established firms (i.e., >7 years old). The average firm age was 10.5 years old.

Analysis

Factor analysis was conducted to determine whether the dimensions of an entrepreneurial orientation represented distinct constructs (Hypothesis 1). The factor analysis used the principal components method with a promax rotation. Promax employs an oblique rotation technique to obtain a simple factor structure without imposing conditions of orthogonality (Kim and Mueller 1978). The promax technique allows factors to be correlated; it was used because the dimensions of EO are expected to be somewhat correlated. For testing all other hypotheses, the scores of respondents in multi-respondent firms were averaged to obtain firm-level measures (n = 94). Multiple regression analysis was used to test Hypothesis 2, i.e., the differential relationship of proactiveness and competitive aggressiveness to performance. For the contingent hypotheses (Hypothesis 3 to Hypothesis 8), in which environment and industry life cycle were used as moderators, moderated regression analysis was employed (Cohen and Cohen 1983).

RESULTS

Hypothesis 1 explored whether proactiveness and competitive aggressiveness were distinct dimensions of an entrepreneurial orientation. Table 1 shows the rotated principal components solution. Ten of the eleven EO items had significant factor loadings ($\geq \pm$ 0.50) on one of the four factors. Such loadings are consistent with a conservative criterion (Kim and Mueller 1978). The factors of interest to this study—proactiveness (Factor 1) and competitive aggressiveness (Factor 4)—loaded on separate factors as suggested by Hypothesis 1. For this phase of the study, the sample of 124 individual respondents was used. Two supplementary factor analyses were also conducted (available upon request). The first used an orthogonal rotation technique (varimax) and produced no major changes in the loadings on the proactiveness and competitive aggressiveness factors. The second used firm-level measures (n = 94) and produced substantially the same result.

Table 2 reports the correlational and descriptive statistics and the Cronbach alphas for the multi-item scales. It is worthwhile to note that proactiveness and competitive aggressiveness are moderately correlated ($r = 0.28$; $p < 0.01$), as would be expected in this type of research. The Pearson's correlation coefficients indicate that proactiveness had a consistently strong positive relationship with performance. By contrast, the competitive aggressiveness–performance results were equivocal and competitive aggressiveness was not significantly related to any of the performance measures. Table 3 reports the result of a regression analysis that models proactiveness and competitive aggressiveness in relationship to performance. The results indicate that proactiveness has a strong statistically significant positive relationship to all three performance measures; competitive aggressiveness is negatively, but not significantly, related to sales growth. Thus, there is support for Hypothesis 2.

TABLE 1 Factor Analysis of Entrepreneurial Orientation Items[a]

	Factor 1: Proactiveness	Factor 2: Innovativeness	Factor 3: Risk Taking	Factor 4: Competitive Aggressiveness
P1. [In dealing with competitors, my firm] typically initiates actions which competitors then respond to.	**0.84**	0.08	−0.10	−0.10
P2. [In dealing with competitors, my firm] is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.	**0.67**	0.08	0.23	−0.09
P3. [In general, the top managers of my firm have] a strong tendency to be ahead of others in introducing novel ideas or products.	**0.81**	−0.06	0.10	0.04
I1. [In general, the top managers of my firm favor] a strong emphasis on R&D, technological leadership, and innovations.	−0.08	**0.74**	0.16	−0.15
I2. Very many new lines of products/services [marketed in the past 5 years].	0.12	−0.15	**0.90**	0.09
I3. Changes in product or service lines have usually been quite dramatic.	−0.08	0.38	**0.72**	−0.03
R1. A strong proclivity for high risk projects (with chances of very high returns).	0.45	0.36	−0.13	0.23
R2. Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives.	0.07	**0.70**	−0.04	0.15
R3. When confronted with decisions involving uncertainty, my firm typically adopts a bold posture in order to maximize the probability of exploiting opportunities.	0.25	**0.68**	−0.13	−0.04
C1. [My firm] typically adopts a very competitive "undo-the-competitors" posture.	0.27	0.30	0.08	**0.77**
C2. My firm is very aggressive and intensely competitive.	0.15	−0.27	0.07	**0.88**
Eigenvalues	3.14	3.03	2.22	2.13
Percentage of total variance explained	38.3	11.0	9.7	9.1
N = 124[b]				

[a] Factors with loadings greater than or equal to ± 0.50 (boldface) are significant.
[b] An individual-level measure; a very similar solution was achieved using the sample of 94 firm-level scores.

TABLE 2 Descriptive Statistics, Reliabilities, and Correlations

Variables	Means	s.d.	1	2	3	4	5	6	7	8
1. Proactiveness	4.71	1.27	(0.79)							
2. Competitive aggressiveness	4.30	1.59	0.28**	(0.66)						
3. Dynamism	3.87	1.55	0.27**	0.28**	(0.80)					
4. Hostility	3.93	1.18	0.02	0.34**	0.25*	(0.67)				
5. Industry life cycle stage	2.50	0.53	−0.28**	−0.02	−0.17	0.27**	(N.A.)			
6. Sales growth	5.22	1.41	0.38**	0.01	0.19	−0.17	−0.06	(N.A.)		
7. Return on sales	4.83	1.41	0.26*	0.12	−0.02	−0.14	0.10	0.47**	(N.A.)	
8. Profitability	4.72	1.47	0.24*	0.17	−0.03	−0.18	0.11	0.54**	0.88**	(0.91)

Notes: N = 94. Correlations greater than 0.24 are significant at $p < 0.05$. N.A. = not applicable. Reliabilities (Cronbach alphas) are in parentheses.
* $p < 0.05$; ** $p < 0.01$.

TABLE 3 Results of Regression Analysis

	Sales Growth		Return on Sales		Profitibility	
Variables	b	S.E.	b	S.E.	b	S.E.
Proactiveness	0.44***	0.11	0.27**	0.12	0.24*	0.13
Competitive aggressiveness	−0.09	0.09	0.04	0.10	0.10	0.10

Notes: Regression weights shown are unstandardized coefficients. N = 94.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Results of the tests of the moderating influence of environment are reported in Table 4. Hypothesis 3 suggested that firms with a proactive orientation in dynamic environments would be positively correlated with performance and Hypothesis 4 predicted that proactive firms in hostile environments would have lower performance. Table 4 indicates support for Hypothesis 3. Both sales growth and profitability are positively and significantly related to a proactiveness–dynamism link. Hypothesis 4, however, was not supported. In fact, contrary to our hypothesis, the proactiveness–hostility interactions were positively, rather than negatively, related to performance, and profitability was statistically significant.

Hypothesis 5 argued that competitively aggressive firms would suffer in dynamic environments. There is no statistically significant support for this hypotheses and the trend of the findings (indicated by the sign of the beta coefficients) is equivocal. Hypothesis 6 suggested that a competitively aggressive posture would enhance the performance of firms in hostile environment. This hypothesis is supported as both sales growth and return on sales have a statistically significant positive relationship.

TABLE 4 Results of Moderated Regression Analysis—Environment

	Sales Growth		Return on Sales		Profitability	
Variables	b	R^2	b	R^2	b	R^2
Proactiveness	−0.01		−0.03		−0.17	
Dynamism	−0.46	0.15	−0.59	0.08	−0.77	0.07
Proactiveness × Dynamism	0.76†	0.18	0.67	0.10	0.92†	0.11
Competitive aggressiveness	−0.16		0.26		0.48	
Dynamism	0.06	0.04	0.11	0.02	0.27	0.04
Comp. aggressiveness × Dynamism	0.21	0.04	−0.23	0.02	−0.51	0.05
Proactiveness	0.10		−0.08		−0.39	
Hostility	−0.50	0.17	−0.54	0.09	−0.92	0.10
Proactiveness × Hostility	0.44	0.18	0.55	0.10	1.02†	0.13
Competitive aggressiveness	−0.51		−0.54		−0.03	
Hostility	−0.66	0.03	−0.76	0.05	−0.46	0.09
Competitive aggressiveness × Hostility	0.87†	0.07	1.05†	0.08	0.39	0.09

Notes: Regression weights shown are standardized coefficients obtained at the final step. N = 94.
* $p < 0.05$; † $p < 0.10$.

TABLE 5 Results of Moderated Regression Analysis—Stage of Industry Life Cycle

	Sales Growth		Return of Sales		Profitability	
Variables	b	R^2	b	R^2	b	R^2
Proactiveness	0.53		1.58		1.01	
Industry stage	0.16	0.14	1.13	0.09	0.73	0.09
Proactiveness × Industry stage	−0.15	0.14	−1.38*	0.15	−0.79	0.10
Competitive aggressiveness	−0.68		−0.33		−0.11	
Industry stage	−0.45	0.00	−0.17	0.03	0.00	0.05
Competitive aggressiveness × Industry stage	0.79	0.02	0.54	0.04	0.24	0.05

Notes: Regression weights shown are standardized coefficients obtained at the final step. N = 94.
* $p < 0.05$.

Table 5 reports the findings regarding the relationship of industry life cycle stage to proactiveness and competitive aggressiveness. Hypothesis 7 argued that firms with a proactive stance will thrive in early stages of an industry's life cycle but performance will diminish as an industry matures. The hypothesis was supported. Table 5 indicates that proactiveness is significantly negatively related to return on sales; the negative beta on the interaction terms for all three performance measures suggests that a proactive orientation tends to be less favorable as an industry becomes more mature. Hypothesis 8 proposes the inverse regarding competitive aggressiveness. As predicted, competitive aggressiveness is associated with higher performance in more mature industry stages. However, even though the signs of all the beta coefficients are in the predicted direction, none are statistically significant.

DISCUSSION

This research explored the dimensionality of proactiveness and competitive aggressiveness and how these dimensions might be related to each other and to performance. The results from the factor analysis suggest that competitive aggressiveness and proactiveness are distinct dimensions of an entrepreneurial orientation. This finding supports our claim that these constructs represent two different modes by which firms view and act on the business environment. Proactiveness refers to a firm's response to marketplace opportunities. A strong proactive tendency gives a firm the ability to anticipate change or needs in the marketplace and be among the first to act on them. Competitive aggressiveness, by contrast, refers to a firm's response to competitive threats. A strong competitively aggressive stance gives a firm the ability to be a decisive player in a field of rivals and to act forcefully to secure or improve its position.

Although proactiveness and competitive aggressiveness may both be important to firm success, the regression analysis suggests that these two dimensions make unique contributions to firm performance. Proactiveness shows a strong positive relationship to all three measures of performance. Competitive aggressiveness was negatively related to sales growth and only weakly related to profitability and return on sales, though none are at a statistically significant level. Although proactiveness and competitive aggressiveness are correlated at a $p < 0.01$ level of significance (Table 2), there is a large percentage of variance (R^2) that they do *not* share—92%—(calculated as $[1 - (0.28)^2]$).

This indicates that these dimensions tend to vary independently. Additionally, the regression analyses reported in Table 3 suggests that, in their relationship to performance, proactiveness and competitive aggressiveness are divergent.

The results of the contingency hypotheses, which explore how proactiveness and competitive aggressiveness might be differentially related to performance under different circumstances, also lend support to Hypothesis 2. The analysis of the moderating role of stage of industry life cycle provides a compelling set of findings. These findings reveal a fundamental difference between proactiveness and competitive aggressiveness. Early stage industries provide numerous opportunities for firms to launch new initiatives in anticipation of growing demand. Thus, proactiveness is well-suited to the introduction and growth stage of an industry's life cycle as our findings confirm: proactiveness was associated with return on sales at the $p < 0.05$ level of statistical significance consistent with Hypothesis 7. The findings also suggest that proactive actions, such as "constantly seeking new opportunities" (Venkatraman 1989a), may involve costs that don't pay off in more mature industries. A competitively aggressive posture, by contrast, has the opposite effect on performance depending on the industry life cycle. In more mature industries, where few opportunities remain and rivalry has become especially intense, competitive aggressiveness may enhance a firm's efforts to maintain a strong position relative to its competitors. But in early industry stages, aggressive behaviors such as "seeking market share position at the expense of cash flow and profitability" (Venkatraman 1989a) are not likely to be associated with high performance. The trend of our findings with regard to competitive aggressiveness and industry life cycle (Hypothesis 8) support this view, but they are not statistically significant. Other empirical research, however, has found a significant positive relationship between performance and competitively aggressive behaviors such as intense marketing efforts and vigorous cost controls among firms in mature industries (e.g., Woo and Cooper 1981).

The role of environment as a moderator is also revealing. Proactiveness is most effective in a dynamic environment as predicted by Hypothesis 3. But proactiveness was also found to be positively related to performance in hostile environments. Although this was contrary to our hypothesis and to the findings of other EO researchers (Miller and Friesen 1983), this result is consistent with Covin and Slevin's (1989a) findings in their study of 161 small manufacturing firms. The findings in the present study, although contrary to our hypotheses, generally support an earlier point: In some contexts, there may not be a strong difference in how these dimensions of EO relate to performance. However, the different results in this study may also be related to the influence of other contingencies or to measurement issues. Measurement may also have played a role in the rather equivocal findings with regard to the role of dynamism and hostility in the competitive aggressiveness-performance relationship. Future research needs to be directed toward further developing the measurement of competitive aggressiveness.

While the present study has investigated the independence of the proactiveness and competitive aggressiveness dimensions and their contingent relationships to performance, additional research should explore the same questions in the context of other EO dimensions such as risk taking and innovativeness. Theoretically, an argument could also be made for the independence of these two dimensions. For example, a firm could develop new products and services that require very similar resources and resource combinations (Barney 1992) that they already possess by using existing plant capacity. Such

innovation could involve novelty and originality, but at the same time, require relatively low risk taking in terms of allocation and utilization of scarce resources.

Future research should be designed to overcome some of the limitations of this study. The present study is cross-sectional. A longitudinal study could help establish the extent to which the hypothesized relationships might be causal. A larger sample size might also provide a higher degree of statistical significance. Use of $p < 0.10$ level of significance is hardly optimal. Nevertheless, two previous studies—Miller (1983) and Miller and Friesen (1983)—that assessed the relationship between some of the same variables, namely proactiveness and environmental dynamism and hostility, used very similar measures as this study and drew conclusions from findings that included $p < 0.10$ level of significance results. Another concern is that the current study does not provide objective measures of performance to support the perceptual measures used. Future research would benefit from using performance data that could be independently verified.

Future empirical inquiry would also benefit from further development in the measurement of the EO dimensions based on richer, more fine-grained, conceptualizations. One approach to this end would be to more explicitly consider the multiple underlying components of the EO dimensions. For example, earlier research has suggested that innovativeness consists of both administrative and technological innovation (Ibarra 1993). Similarly, two components that could be used to depict the risk taking EO dimension are business risk and financial risk, that is, the proclivity to enter untested new product-markets and the tendency to use relatively high levels of financial leverage, respectively. Such an approach would not only provide a means to increase the number of items used to tap the EO dimensions but also help to ensure a closer correspondence between measurement and theory. Future research using other moderating variables might also shed light on the performance outcomes associated with proactiveness and competitive aggressiveness under different environmental or organizational conditions.

In summary, this study has found that two of the dimensions of EO tend to vary independently of each other, and that their effect on performance is contingent on moderating variables. Future research may benefit, therefore, from considering the independence of other dimensions of EO and from viewing EO as a multidimensional construct in order to explore these complex issues. Our findings suggest that a somewhat finer-grained understanding of an entrepreneurial orientation may be useful to scholars investigating entrepreneurial processes. For owners and managers, it suggests that responding to marketplace opportunities and responding to competitive threats are distinctly different avenues to entrepreneurial success that may require unique entrepreneurial processes.

REFERENCES

Aldrich, H.E., and Mindlin, S. 1978. Uncertainty and dependence: Two perspectives on environment. In L. Karpit, ed., *Organization and Environment.* Beverly Hills, CA: Sage.

Barney, J.B. 1986. Organizational culture: Can it be a source of sustained competitive advantage? *Academy of Management Review* 11:656–665.

Barney, J.B. 1991. Firm resources and sustained competitive advantage. *Journal of Management* 17:99–120.

Barney, J. 1992. Integrating organizational behavior and strategy formulation research: A re-

source-base analysis. In P. Shrivastava, A. Huff, and J. Dutton, eds., *Advances in Strategic Management.* Greenwich, CT: JAI Press.

Berman, P. 1996. A proud record. *Forbes*, January 22:56–58.

Bourgeois, L.J., III. 1981. On the measurement of organizational slack. *Academy of Management Review* 6:29–40.

Brumagin, A.L. 1994. A hierarchy of corporate resources. In P. Shrivastava, A.S. Huff, and J. Dutton, eds., *Advances in Strategic Management: A Resource-Based View of the Firm.* Greenwich, CT: JAI Press.

Chakravarthy, B. 1982. Adaptation: A promising metaphor for strategic management. *Academy of Management Review* 7:35–44.

Chandler, G.N., and Hanks, S.H. 1993. Measuring the performance of emerging businesses: A validation study. *Journal of Business Venturing* 8:391–408.

Chen, M.J., and Hambrick, D.C. 1995. Speed, stealth, and selective attack: How small firms differ from large firms in competitive behavior. *Academy of Management Journal* 38(2):453–482.

Child, J. 1972. Organizational structure, environment, and performance: The role of strategic choice. *Sociology* 6(1):1–22.

Cohen, J., and Cohen, P. 1983. *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (2d ed.). Hillsdale NJ: Lawrence Erlbaum Associates.

Covin, J.G., and Covin, T. 1990. Competitive aggressiveness, environmental context, and small firm performance. *Entrepreneurship: Theory and Practice* 14(4):35–50.

Covin, J.G., and Slevin, D.P. 1986. The development and testing of an organizational-level entrepreneurship scale. In R. Ronstadt, J.A. Hornaday, R. Peterson, and K.H. Vesper, eds., *Frontiers of Entrepreneurship Research—1986.* Wellesley, MA: Babson College.

Covin, J.G., and Slevin, D.P. 1989a. Strategic management of small firms in hostile and benign environments. *Strategic Management Journal* 10:75–87.

Covin, J.G., and Slevin, D.P. 1989b. Empirical relationships among strategic posture, environmental context variables, and new venture performance. In R. Brockhaus, N. Churchill, J. Katz, B. Kirchhoff, K. Vesper, and W. Wetzel, eds., *Frontiers of Entrepreneurship Research—1989.* Wellesley, MA: Babson College.

Covin, J.G., and Slevin, D.P. 1991. A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship: Theory and Practice* 16(1):7–24.

Davis, M. 1971. That's interesting! *Philosophy of Social Science* 1:309–344.

Dean, C.C. 1993. *Corporate entrepreneurship: Strategic and structural correlates and impact on the global presence of United States firms.* Unpublished doctoral dissertation, University of North Texas, Denton, TX.

Dean, C.C., Thibodeaux, M.S., Beyerlein, M., Ebrahimi, B., and Molina, D. 1993. Corporate entrepreneurship and competitive aggressiveness: A comparison of U.S. firms operating in Eastern Europe or the Commonwealth of Independent States with U.S. firms in other high-risk environments. In S.B. Prasad, ed., *Advances in International and Comparative Management.* Greenwich, CT: JAI Press.

Dess, G.G., and Beard, D.W. 1984. Dimensions of organizational task environment. *Administrative Science Quarterly* 29:52–73.

Dess, G.G., and Robinson, R. 1984. Measuring organizational performance in the absence of objective measures: The case of the privately-held firm and conglomerate business unit, *Strategic Management Journal* 5:265–273.

Dillman, D.A. 1978. *Mail and Telephone surveys: The Total Design Method.* New York: John Wiley & Sons.

Duncan, R.B. 1972. Characteristics of organizational environments and perceived environmental uncertainty. *Administrative Science Quarterly* 17:313–327.

Edvinsson, L., and Malone, M.S. 1997. *Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Roots.* New York: Harper Business.

Eisenhardt, K.M., and Schoonhoven, C.B. 1990. Organizational growth: Linking founding team,

strategy, environment, and growth among U.S. semiconductor ventures, 1978–1988. *Administrative Science Quarterly* 35:504–529.

Ginsberg, A. 1985. Measuring changes in entrepreneurial orientation following industry deregulation: The development of a diagnostic instrument. Proceedings of the annual meeting of the International Council of Small Business, Marietta, GA. 50–57.

Glick, W.H., Huber, G.P., Miller, C. C., Doty, D.H., and Sutcliffe, K.M. 1990. Studying changes in organizational design and effectiveness: Retrospective event histories and periodic assessments. *Organization Science* 1:293–312.

Helfat, C. 1997. Know-how and asset accumulation and dynamic capabilities accumulation: The case of R&D. *Strategic Management Journal* 18:339–360.

Ibarra, H. 1993. Network centrality, power, and innovation involvement: Determinants of technical and administrative roles. *Academy of Management Journal* 36:471–501.

Kanter, R.M. 1983. *The Change Masters: Innovation and Entrepreneurship in the American Corporation.* New York: Simon & Schuster.

Karagozoglu, N., and Brown, W.B. 1988. Adaptive responses by conservative and entrepreneurial firms. *Journal of Product Innovation Management* 5:269–281.

Khandwalla, P. 1977. *The Design of Organizations.* New York: Harcourt Brace Jovanovich.

Kim, J., and Mueller, C. 1978. *Factor Analysis: Statistical Methods and Practical Issues.* Beverly Hills, CA: Sage.

Kirchhoff, B.A. 1979. Commentary. In D. Schendel and C.W. Hofer, eds., *Strategic Management: A New View of Business Policy and Planning.* Boston: Little, Brown.

Lawrence, P., and Lorsch, J. 1967. *Organizations and Environment.* Boston: Harvard University Press.

Lieberman, M., and Montgomery, D. 1988. First-mover advantages. *Strategic Management Journal* (Special Issue) 9:41–58.

Lumpkin, G.T., and Dess, G.G. 1996. Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review* 21(1):135–172.

MacMillan, I.C., and Day, D.L. 1987. Corporate ventures into industrial markets: Dynamics of aggressive entry. *Journal of Business Venturing* 2:29–39.

March, J.G. 1991. Exploration and exploitation in organizational learning. *Organization Science* 2:71–87.

McGrath, J.E. 1982. Dilemmatics: The study of research choices and dilemmas. In J. McGrath, J. Martin, and R. Kulka, eds., *Judgement Calls in Research.* London: Sage.

Miles, M.P., and Arnold, D.R. 1991. The relationship between marketing orientation and entrepreneurial orientation. *Entrepreneurship: Theory & Practice* Summer:49–65.

Miller, A., and Camp, B. 1985. Exploring determinants of success in corporate ventures. *Journal of Business Venturing* 1:87–105.

Miller, D. 1983. The correlates of entrepreneurship in three types of firms. *Management Science* 29:770–791.

Miller, D., and Friesen, P. 1978. Archetypes of strategy formulation. *Management Science* 24:921–933.

Miller, D., and Friesen, P. 1982. Innovation in conservative and entrepreneurial firms: Two models of strategic momentum. *Strategic Management Journal* 3:1–25.

Miller, D, and Friesen, P. 1983. Strategy-making and environment: The third link. *Strategic Management Journal* 4:221–235.

Morris, M.H., and Paul, G.W. 1987. The relationship between entrepreneurship and marketing in established firms. *Journal of Business Venturing* 2:247–259.

Pfeffer, J., and Leblebici, H. 1973. The effect of competition on some dimensions of organization structure. *Social Forces* 52:268–279.

Porter, M. 1980. *Competitive Strategy.* New York: Free Press.

Postrel, V.I. 1995. Hooray for risk. *Forbes ASAP* December 4:106.

Rosenberg, M. 1968. *The Logic of Survey Analysis.* New York: Basic Books.

Rumelt, R. 1974. *Strategy, Structure, and Performance in Large Industrial Corporations.* Boston: Harvard University Press.

Sandberg, W.R., and Hofer, C.W. 1987. Improving new venture performance: The role of strategy, industry structure, and the entrepreneur. *Journal of Business Venturing* 2:5–28.

Sapienza, H.J., Smith, K.G., and Gannon, M.J. 1988. Using subjective evaluations of organizational performance in small business research. *American Journal of Small Business* 12:45–53.

Sauley, K.S., and Bedeian, A.G. 1989. .05: A case of the tail wagging the distribution. *Journal of Management* 15(2):335–344.

Server, A. 1994. How to escape a price war. *Fortune* June, 13:88.

Smart, D.T., and Conant, J.S. 1994. Entrepreneurial orientation, distinctive marketing competencies and organizational performance. *Journal of Applied Business Research* 10(3):28–38.

The state of small business: A report of the President, 1992. 1992. Washington, D.C.: United States Government Printing Office, 65–90.

Stewart, T.A. 1997. *Intellectual Capital: The New Wealth of Organizations.* New York: Doubleday Currency.

Tosi, H., Aldag, R., and Storey, R. 1973. On the measurement of the environment: An assessment of the Lawrence and Lorsch environmental uncertainty subscale. *Administrative Science Quarterly* 18:27–36.

Venkatraman, N. 1989a. Strategic orientation of business enterprises: The construct, dimensionality, and measurement. *Management Science* 35(8):942–962.

Venkatraman, N. 1989b. The concept of fit in strategy research: Toward verbal and statistical correspondence. *Academy of Management Review* 14:423–444.

Venkatraman, N., and Ramanujam, V. 1987. Measurement of business economic performance: An examination of method convergence. *Journal of Management* 13:109–122.

Weick, K.E. 1979. *The Social Psychology of Organizing*, 2nd ed. Reading, MA: Addison-Wesley.

Woo, C.Y., and Cooper, A.C. 1981. Strategies of effective low share business. *Strategic Management Journal* 2:301–318.

Young, J. 1994. Innovate or die. *Forbes* February 28: 106.

Zahra, S., and Covin, J.G. 1995. Contextual influences on the corporate entrepreneurship—performance relationship: A longitudinal analysis. *Journal of Business Venturing* 10:43–58.

APPENDIX

Proactiveness Items

In dealing with its competitors, my firm . . .

Typically responds to action which competitors initiate	1 2 3 4 5 6 7	Typically initiates actions which competitors then respond to
Is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc.	1 2 3 4 5 6 7	Is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.

In general, the top managers of my firm have . . .

A strong tendency to "follow the leader" in introducing new products or ideas	1 2 3 4 5 6 7	A strong tendency to be ahead of other competitors in introducing novel ideas or products

Competitive Aggressiveness Items

My firm is very aggressive and intensely competitive	1 2 3 4 5 6 7	My firm makes no special effort to take business from the competition

In dealing with its competitors, my firm . . .

Typically seeks to avoid competitive clashes, preferring a "live-and-let-live" posture	1 2 3 4 5 6 7	Typically adopts a very competitive "undo-the-competitors" posture