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TOP MANAGEMENT TEAM TURNOVER AS AN ADAPTATION MECHANISM: THE ROLE OF THE ENVIRONMENT

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Based on an organizational adaptation framework, this study examines the influence of three environmental dimensions—munificence, stability, and complexity—on top management team turnover. In addition to investigating the direct influence of these environmental dimensions, indirect effects through firm performance and strategic change are also examined; the indirect effect of environmental complexity through demographic heterogeneity is also studied. Path analysis indicates that the direct effects of the three environmental dimensions predominate. Indirect effects were nonsignificant except for the effect of instability and munificence through strategic change. By expanding the team turnover context to include environmental and strategic dimensions, in addition to previously examined performance and heterogeneity factors, this study enhances our understanding of managerial turnover as a form of organizational adaptation.

A key theoretical perspective in the strategy and organizational theory areas is that firm performance is highly related to the dynamic, evolutionary nature of the fit between environment and organization (Romanelli and Tushman, 1988). Yet, the adaptation of the organization to shifting external demands does not occur readily. A major debate in the literature revolves around whether leaders can strongly influence this fit through strategic decisions and actions (Child, 1972), or whether resource constraints (Hannan and Freeman, 1977) and institutionalized norms (Zucker, 1983) severely constrain decision-makers.

A growing body of literature offers support for the criticality of executive leadership in creating a fit of the organization with its environment, summarized by Romanelli and Tushman as follows (1988: 130): 'Where environments are changing and/or performance outcomes are low or declining, leadership's primary task is to intervene on ongoing patterns of commitment and exchange to redirect the character of an organization's relationship with its environment.' To be successful in their leadership roles, top executives must be vigilant in their monitoring of environmental conditions to determine whether the current fit with the firm is appropriate or whether strategic interventions are necessary. As the process of interpreting information from the environment is complex and uncertain, the cognition of top managers plays an important role in determining the quality and timeliness of such interpretations, key in forging a viable fit (Schwenk, 1988). Managers' perceptions of reality and problem-solving frameworks reflect their backgrounds and institutional experiences (Mintzberg, Raisinghani, and Theoret, 1976; Starbuck and Milliken, 1988); managers' unique backgrounds thus greatly influence the adaptation and direction of the organization (Selznick, 1957; Donaldson and Lorsch, 1984; Schwenk, 1988).

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While firm success is linked to a good alignment between top team members' cognition and the firm's environment, a poor match might arise if members fail to update their perspectives in a dynamic environmental setting or if teams fail to act upon a shift in environmental conditions because their power base is rooted in existing strategic approaches. Top teams tend to act as stable governance structures that can restrict the firm's ability to change (Tushman and Romanelli, 1985; Brady and Helmich, 1984; Meyer, 1972). When it becomes apparent that the team's cognitions and strategic decision-making behavior do not fit the environmental context, a crisis leading to top executive replacement occurs (Tushman and Romanelli, 1985); a better match through executive turnover is often ensured by the board of directors (Fama and Jensen, 1983). As a result, the replacement of top executives provides an important mechanism for the organization to overcome inertia (Tushman and Romanelli, 1985) and to adapt strategically to changing contexts (Helmich, 1977; Pfeffer and Salancik, 1978; Vancil, 1987).

While turnover within the management team appears to be critical to successful firm functioning, most past research has concentrated solely on CEO turnover, particularly as it relates to the financial performance of the firm. Many studies have established a link between poor performance and an increased rate of CEO turnover (Beatty and Zajac, 1987; Coughlan and Schmidt, 1985; Lieberson and O'Connor, 1979; McEachern, 1977; Salancik and Pfeffer, 1977; Warner, Watts and Wruck, 1988). Furtado and Karan (1990), in their review of the literature, conclude, however, that other factors also play major roles. Other studies have identified such contextual factors as CEO power (Allen and Panian, 1982), ownership and board of directors issues (Goodstein and Boeker, 1991), and socio-political constructs (Fredrickson, Hambrick and Baumrin, 1988) as important influences.

Our focus on the top team is consistent with the 'upper echelon' perspective proposed by Hambrick and Mason (1984) and is supported by recent empirical research on the important influence of top teams on strategic and performance issues (Murray, 1989; Michel and Hambrick, 1992; Wiersema and Bantel, 1992). The theoretical rationale for focusing on the entire team as a unit is based on the collective responsibility members share to determine organizational outcomes. Members interact as a decision-making group; group dynamics and each member's cognitive perspective, personality, and power influence the outcome of the strategic decision process. Further, studies that have compared explained variance using CEOs versus the entire team have found that the team analysis is superior (Bantel and Jackson, 1989; Finkelstein, 1988; Hage and Dewar, 1973; Tushman, Virany and Romanelli, 1985).

Only a few studies to date have focused specifically on turnover within the top team, and these were limited to establishing a link with demographic heterogeneity (Jackson *et al.*, 1991; Wagner, Pfeffer and O'Reilly, 1984), poor firm performance (Wagner *et al.*, 1984), and merger/acquisition activity (Walsh and Ellwood, 1991). This research is aimed at providing an enhanced understanding of the team turnover phenomenon by utilizing an adaptation framework and focusing on the firm's environmental context. A comprehensive model of team turnover as an adaptation mechanism is developed in which the direct influences of three key environmental constructs—munificence, instability, and complexity—are examined. Further, the indirect influence of the environment through strategic change and firm performance is also investigated. Finally, the effect of environmental complexity through demographic heterogeneity is also considered. Such a comprehensive model not only will provide insight into the role of the environment and strategic change in relation to team turnover, but will also clarify previous findings on firm performance and demographic heterogeneity.

An additional analysis will be conducted to examine whether the predictors of turnover in our model have a differential impact on team members based on their hierarchical level within the top team. Beyond our analysis of the entire team, our model will also be examined separately for its influence on members in the first (Chairman, CEO, President, and COO) and second tiers (senior vice presidents).

DIRECT INFLUENCE OF THE ENVIRONMENT ON TOP TEAM TURNOVER

A firm's environment can be conceptualized in terms of elements that influence the performance

and thus the survival of an organization (Dess and Beard, 1984; Starbuck, 1976). The primary unit of analysis in defining an organization's environment has been the industrial level. The industry (industries) in which the firm participates helps define the firm's involvement with its environment as well as the nature of resources needed for firm survival. Based on a review of a variety of authors involved in conceptualizing and measuring the task environment, Sharfman and Dean (1991) conclude that there are three specific environmental dimensions identified as among the most critical in ensuring the firm's survival: munificence, instability, and complexity. Following these authors and the work of Keats and Hitt (1988) and Dess and Beard (1984), these three dimensions were examined in this study for their potential influence on top team turnover.

As shown in Figure 1, these three environmental dimensions are expected to have main effects on top team turnover. Indirect effects through strategic change and firm performance are also examined. Finally, environmental complexity is expected to have an indirect effect through demographic heterogeneity. The following sections provide additional theoretical support for the development of the model.

Environmental munificence

Environmental munificence refers to the ability or capacity of the environment to permit organizational growth (Aldrich, 1979; Starbuck, 1976). Such capacity will buffer organizations within that environment from external and internal hostilities and enable the accumulation of slack resources within the organization (Cyert and March, 1963). Top managers thus are able to exercise high discretion in their strategic planning and decision making, unfettered by external demands (Hambrick and Finkelstein, 1987) and insulated from having to respond to misalignment of the firm with its environment. It is not a surprise that slack has been found to assist the organization in maintaining stability in organizational coalitions (Bourgeois, 1981).

Lack of environmental munificence, by contrast, creates difficult and stressful conditions for managers. Lack of munificence implies little or no organizational slack, conditions of scarcity, and a threat to the firm's survival. Scarcity and threat, in turn, have been associated with a variety of organizational responses, including formalization, centralization, decreased information processing, and restriction of communication and control (Staw, Sandelands and Dutton, 1981; Zammuto, 1983). This results in less decision-making discretion for management, more rigid problem-solving and adherence to traditional routines (Yasai-Ardekani, 1989) and thus decision-making that is based on outdated information and perspectives. As the inappropriateness of strategic decisions becomes apparent, and top managers are perceived as unable to

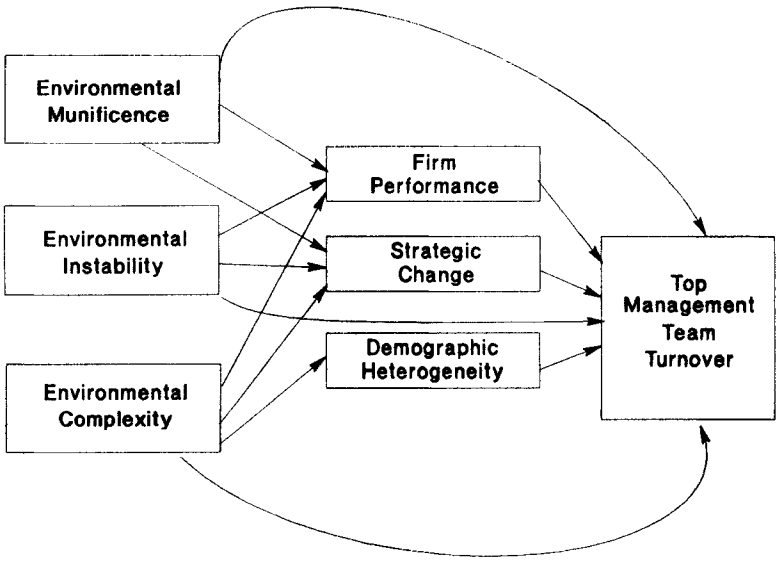

Figure 1. Conceptual Model

manage the firm's affairs, they may feel pressure to leave the firm. Additionally, managers may choose to leave a situation in which their autonomy, creativity, and discretion are severely challenged. Finally, lack of environmental munificence may also motivate cost-cutting on the part of the firm. Industrial environments with limited growth opportunities often lead firms to restructure and rationalize their operations, which may include reducing the size of their top management teams.

Hypothesis 1: Environmental munificence will be negatively associated with turnover within the top management team.

Environmental instability

Environmental instability refers to the rate of unpredictable change or turnover in those environmental factors pertinent to strategic decision-making (Duncan, 1972; Sharfman and Dean, 1991). Stable environments enable organizations to manage by established routines (Aldrich, 1979; Porter, 1980) as learning requirements are minimal (Tushman and Keck, 1990). A key role of top managers in stable environments is to manage symbolically (Ancona, 1990) by legitimating and enforcing the current system and core values (Tushman and Keck, 1990), while relying on routinized problem solving (Eisenhardt, 1989).

Environmental instability, in contrast, places tremendous cognitive demands on executives and can also threaten their power bases. A difficulty inherent in environmental instability is the constant need to adapt one's perception of the environment to fit its current reality. While managers must change their routine problem-solving habits by being more structured and vigilant in environmental scanning and problem solving (Ancona, 1990; Eisenhardt, 1989), many managers will be very reluctant to expend such time and effort (Tushman and Anderson, 1986), because they are unwilling to abandon their past frames of reference (Fiske and Taylor, 1984). This might be particularly true for top managers who have gained their organizational power in part through their ability to handle environmental contingencies (Pfeffer and Salancik, 1978); a shift in those contingencies threatens to decrease the power of top managers (Hambrick, 1981b). Finally, research on organizational groups points out a further reason why established teams might be reluctant to respond to environmental change. Group longevity and cohesion influence information-processing behaviors by reducing the group's willingness to search out and actively internalize new or conflicting knowledge (Caldwell and O'Reilly, 1982; Janis and Mann, 1977; Katz, 1982; Pelz and Andrews, 1966).

It is not surprising, therefore, that environmental instability is the factor mentioned most frequently as leading to externally induced changes within the organization (Aldrich, 1979; Pfeffer and Salancik, 1978). Instability in such factors as the socioeconomic and supplier environments has been linked to CEO turnover (Osborn, Hunt and Jauch, 1980; Pfeffer and Leblebici, 1973; Pfeffer and Salancik, 1978), while Tushman and Keck (1990) found that technological jolts in the environment of the cement industry led to executive team turnover.

Hypothesis 2: Environmental instability will be positively associated with turnover within the top management team.

Environmental complexity

Environmental complexity pertains to the heterogeneity in and range of environmental factors that need to be considered in strategic decision-making (Child, 1972; Duncan, 1972). As organizations in a given industry expand their product and market activity, the variety of inputs and outputs with which they must cope increases environmental complexity (Dess and Beard, 1984), as does the need for increased strategic activities (Aldrich, 1979). Such firms also need to interact with multiple constituencies whose demands often conflict. Thus, a higher information processing demand results from environmental complexity (Dess and Beard, 1984; Pfeffer and Salancik, 1978; Terreberry, 1968; Thompson, 1967), the management of which is an inherently more difficult management task.

As environmental complexity creates demands from a variety of external interest groups, the organization responds by becoming more highly differentiated (Pfeffer and Salancik, 1978; Thompson, 1967), also reflected in the executive team. As members of the top team attempt to respond to the diversity and complexity of the

firm's environment, they will tend to focus more of their attention on scanning the greater variety and number of relevant environmental sectors (Daft, Sormunen, and Parks, 1988). Over time, individual team members will tend to specialize in particular environmental sectors (Hambrick, 1981a) and will become highly differentiated with regard to their experiences, attitudes, priorities, and perspectives (Lawrence and Lorsch, 1967; Pfeffer and Salancik, 1978; Thompson, 1967). As these varying perspectives are juxtaposed and analyzed, the result can be conflict (Dougherty, 1987), difficulty in communication (McCain, O'Reilly, and Pfeffer, 1983), power struggles (Pfeffer, 1983), lack of consensus (Dess, 1987), and lack of attachment to the team (Roberts and O'Reilly, 1979). Greater cognitive differentiation has been linked to lower integration and cohesiveness within a group and, in turn, to higher levels of turnover (McCain *et al.*, 1983; O'Reilly, Caldwell and Barnett, 1989).

Hypothesis 3: Environmental complexity will be positively associated with turnover within the top management team.

INDIRECT INFLUENCE OF THE ENVIRONMENT ON TOP TEAM TURNOVER

Environment, performance, and top team turnover

The three environmental dimensions might also influence top team turnover indirectly through the effect of firm performance. Each of the environmental constructs is expected to link with firm performance. First, an environment lacking in munificence offers limited growth opportunity which leads, in turn, to intensive competitive dynamics as firms seeking to expand must attack competitors' market shares (Porter, 1980). Intensified competitive rivalry accompanied by price competition results in lower profitability in the industry and its firms (Porter, 1980). Second, environmental instability has a similar influence on firm performance in that it reflects competitive instability within the industry. Unstable—thus, highly competitive—market conditions indicate that some firms are gaining market share at the expense of others (Porter, 1980), leading again to lower industry and firm performance. Finally, environmental complexity might also lead to reduced firm performance. Increased variety and diversity of a firm's business operations suggest that a wider range and greater quantity of information need to be processed for effective decision making, creating strains on the organization to achieve high quality decision making outcomes. Differentiation in perspectives and the lack of shared information among team members can contribute to lower consensus within the top team (Dess, 1987) and this, in turn, has been linked to lower performance outcomes (Bourgeois, 1980; Dess, 1987).

Hypothesis 4a: Environmental munificence will be positively associated with firm performance.

Hypotheis 4b: Environmental instability will be negatively associated with firm performance.

Hypothesis 4c: Environmental complexity will be negatively associated with firm performance.

A period of poor firm performance represents a potentially risky situation for the firm as consumers and investors lose confidence in its viability and strength. As the firm's top managers are generally held accountable for firm performance, persistently poor performance is likely to be attributed to the decisions and actions (or the lack thereof) of the top management team. A variety of studies has found that such attributions are made and that turnover of top team members can result. Good performance has been found to result in high levels of CEO tenure, while poor performance is likely to lead to CEO turnover (or firing) (Allen, Panian and Lotz, 1979; Coughlan and Schmidt, 1985; Eitzen and Yetman, 1972; Gamson and Scotch, 1964; James and Soref, 1981; McEachern, 1977; Salancik and Pfeffer, 1977; Warner *et al.*, 1988). Wagner *et al.* (1984) also found a link between poor firm performance and turnover within the top team.

Hypothesis 4d: Firm performance will be negatively associated with turnover within the top management team.

Environment, strategic change, and top team turnover

By developing a coherent strategy, top managers create a fit between the environment and

the firm that is conducive to reasonable success; as such, the nature of the environment largely determines the need for strategic change. To ameliorate the effects of a poor environment, top management can redirect the corporate strategy of the firm through divestment and diversification decisions which shift the business portfolio and, thus, the business environments. Lack of environmental munificence, environmental instability, and environmental complexity all represent difficult and threatening environmental conditions that top managers may decide to withdraw from or, at a minimum, to reduce the firm's involvement in.

Hypothesis 5a: Environmental munificence will be negatively associated with strategic change.

Hypothesis 5b: Environmental instability will be positively associated with strategic change.

Hypothesis 5c: Environmental complexity will be positively associated with strategic change.

A shift in a firm's strategy, particularly at the corporate level where entirely new businesses might be entered and old businesses dropped, represents a change in the requisite managerial operating knowledge, experience, cognition, and perspectives. Prahalad and Bettis (1986) describe how top managers of a diversified firm develop a distinct management skill, which they label the 'dominant general management logic'. It is based on a shared set of managers' mental schemas (Kiesler and Sproull, 1982) and is developed for each set of similar businesses; it enables top managers to conceptualize the businesses and make resource allocation decisions. This 'dominant logic' tends to evolve from the requirements of the largest, or 'core', business from which the firm originally grew. When a shift occurs in the key businesses of the firm, the established 'dominant logic' may limit the managers' ability to shift their management approach (Prahalad and Bettis, 1986). Turnover within the top team is needed to accomplish the shift in managerial perspective necessary to develop a new and more appropriate 'dominant logic' for the changed portfolio of businesses.

Hypothesis 5d: Strategic change will be positively associated with turnover within the top management team.

Past research on the link between strategic change and turnover has tended to emphasize strategy at the business, rather than the corporate, level and to focus on the reverse causality of the one argued here, i.e., turnover among the top team occurs as members' inertia and lack of strategic adaptation become apparent (Tushman and Romanelli, 1985). The assumption made in this prior work is that, over time, members tend to become increasingly specialized and less open to new environmental information (Katz, 1982), which results in more narrow and parochial views of the firm and its main business. Turnover is then linked to strategic change as the new members' perspectives and expertise represent a better and more appropriate fit with the environment (Tushman and Romanelli, 1985).

In contrast, we are suggesting that top managers operating at the level of corporate strategy must focus on the 'big picture' as they manage the firm's portfolio. As the operating results for any individual business tend to be straightforward, these managers are, indeed, able to respond to environmental demands and pressures by reconfiguring the businesses in the firm's portfolio to improve its corporate competitive position. The successful managing of these new sets of businesses then involves the acquisition of the requisite operating 'logics' (Prahalad and Bettis, 1986) supplied by new team members after a turnover.

Environmental complexity, demographic heterogeneity, and team turnover

A further effect on team turnover is expected when environmental complexity is combined with team demographic heterogeneity. As described earlier, environmental complexity leads to increased differentiation of perspective among the firm's managers; one way in which such differentiation occurs is through demographic heterogeneity. An individual's demographic characteristics are indicators of that person's underlying experiences, training, cognitive orientation, attitudes, and perspectives (Dearborn and Simon, 1959; Vroom and Pahl, 1971). Thus, an evolution of the group toward demographic

heterogeneity is likely as it grapples with the demands of a complex environment.

Hypothesis 6a: Environmental complexity will be positively associated with demographic heterogeneity.

Demographically heterogeneous groups, while benefiting from the creativity resulting from cognitive diversity (Wanous and Youtz, 1986), will experience the same difficulties in communication and cohesiveness as were described earlier for differentiated teams. Demographic heterogeneity in top management teams has been shown to link with turnover (Jackson *et al.* 1991; Wagner *et al.*, 1984).

Hypothesis 6b: Demographic heterogeneity will be positively associated with turnover within the top management team.

The differential impact of turnover predictors based on top team hierarchical level

While our theoretical model pertains to the top management team as a whole, it is possible that the predictors might have a differential effect on managers based on their hierarchical level within the team. The top tier (Chairman, CEO, President, and/or COO) might be somewhat more immune to the pressures for turnover we are analyzing; we would thus see a stronger effect for managers at the second tier (managers at some level of vice-president rank).

One potential reason for such a pattern is the higher power of the top tier; the CEO tends to be the most powerful member of the team, although there are exceptions to this (Mintzberg, 1983). Generally, such issues as interpersonal or group dynamics difficulties would be resolved in favor of the top tier member. Vice presidents would also tend to have higher accountability on such specific performance indicators as financial results, market share, and growth of their division(s). If performance on these indicators is insufficient, corporate level strategic change could include divestment of that member's division(s) and loss of his or her job. Vice presidents might be the scapegoats in such a situation as the top tier managers refuse to take responsibility for poor operating results (Boeker, 1992).

Further, there are institutional pressures for retaining the top tier at the helm, except in the case of extreme crisis. Investors, consumers, governmental agencies and other constituents of the firm rely on the image of a stable, competent leadership at the top (Zucker, 1983); only the very top echelon members are generally known to these groups. As such the replacement of a top tier member might be construed by the constituent community as an indication of serious firm trouble, a circumstance the firm would try to avoid.

To investigate the possibility of a differential impact of the predictors based on hierarchical level, an additional analysis will be conducted in which the top team will be segmented into two tiers.

In summary, turnover within the top management team is expected to be influenced directly by the three environmental dimensions of munificence, instability, and complexity. Further, their indirect influence through firm performance, strategic change, and demographic heterogeneity is also examined. These effects are expected to have a differential impact according to hierarchical level within the team, with stronger effects occurring at the second tier.

METHODS

Sample and data

A random sample of 100 firms from the 500 largest manufacturing firms in 1980, as listed in *Fortune*, was selected for study. Availability of the Economic Information System's TRINET line of business data and Census of Manufacturing data determined the choice of time period for this study. From the initial sample of 100 firms, 15 firms were dropped due to lack of data availability, leaving a sample of 85 firms.[1] The sample was distributed by *Fortune* 100 increments as follows: 1–100: 14 firms; 100–200: 14 firms;

[1] Of the original 100 firms in the sample, 15 firms were eliminated because of data collection problems. Several firms lacked TRINET data for the 1980 to 1983 period because they either represented divisions of larger, multinational companies or were no longer individual corporate entities, making financial and strategic data unavailable. The eliminated firms were not statistically different from the sample of 85 firms in terms of either revenue or the rate of top team turnover.

200–300: 17 firms; 300–400: 23 firms; and 400–500: 17 firms.

Our selection of data sources was predicated on the need for detailed industry level data to assess the firm's industrial environment. Our industry level data comes from either the *Census of Manufacturers* or the *U.S. Statistical Abstract*, both of which provide manufacturing sector information at the four-digit SIC level. To maintain compatibility of our data, we chose to utilize the TRINET data base to assess line of business activity, since its establishment level data is also collected at the four-digit SIC level. As Davis and Duhaime (1992: 522) indicate: 'the compatibility of data bases is important when industry trends are studied in conjunction with firm's data.'

This study utilizes a definition of the top team to include the two highest levels of management within a firm, what we call the top and second tier of management. The composition of each team was ascertained by the hierarchical listing of a firm's executives in the *Reference Book of Corporate Managements* (Dun & Bradstreet, 1977, 1980, 1983). The top tier includes the following executive positions: Chairman, CEO, President, and COO. The number of individuals in the top tier varies from one (a combined Chairman, CEO, President) to three, with a firm average of 1.7. The second tier includes only the most senior level of Vice President listed for the firm, thus it could include the following titles: executive vice-president, group vice-president, senior vice-president, or vice-president. The number of individuals in the second tier varied from one (Executive Vice President) to six, with a firm average of 2.8.

By including only the two upper levels of management in our definition of the team, we have maintained consistency in the degree of responsibility and scope of members of the top team. The sample of 85 firms had 380 individuals within the top management team. The average size of the top team was 4.5 members, with a standard deviation of 1.8. The average mean team tenure of the top management team was 9.5 years, supporting our assumption that this set of managers was responsible for dealing with the environment during the time preceding the turnover period under investigation (the dates for data collection for each variables are discussed below).

Measures

Top management team turnover

Turnover within the top management team is defined as the proportion of team members in 1980 who were no longer with the firm in 1983 and were less than 65 years of age in 1983. By eliminating managers equal to or greater than 65 years of age in 1983, we control for the effects of normal retirements, consistent with the approach used by Puffer and Weintrop (1991). The absence or presence of individuals in the top management team was ascertained by the executive listings in the *Reference Book of Corporate Managements* (Dun and Bradstreet, 1980, 1983). The three-year window was chosen because it represents a long enough time period for sufficient turnover to occur within the executive team, yet is short enough to see the effects of demographic heterogeneity measured in 1980.

Environment

In understanding the interaction between the organization and its environment, researchers have focused on defining organization environments in terms of the resources required by the firm (Dess and Beard, 1984). Specifically, the core of a firm's environment is represented by its competitors, suppliers, and customers. This arena represents the firm's industrial environment. We limit consideration of the firm's environment to its industry environment, consistent with Dess and Beard (1984) and with more recent empirical work examining the environment-firm interface (Keats and Hitt, 1988).

In contrast to prior studies concentrating on a single industry, our sample consists of diversified manufacturing enterprises operating in multiple industries. Operationalization of a multibusiness firm's environment necessitates deriving a composite measure that includes all of the firm's industrial environments. For each firm, a measure of the environment was calculated by multiplying the firm's relative sales for each industry by that industry's data; each of these results was then aggregated, resulting in a weighted industry portfolio measure for each firm as follows: Σ *Environment*$_i$ P_i, where *Environment*$_i$ represents the average of the appropriate environmental

characteristics for each four-digit SIC(i) in which a firm participated and P_i is the proportion of sales in the SIC. The time period of 1977–80 was selected as it precedes the examined turnover period (1980–83).

Environmental munificence

Based on Starbuck's (1976) concept, munificence captures the extent to which the environment can provide sustained growth. We utilize a growth-based measure, sales growth, as it reflects abundance in terms of opportunities for market expansion. While this variable represents only one of the measures identified by Dess and Beard in their factor analysis of munificence, it appears to strongly underlie their construct. While Sharfman and Dean (1991) argue that industry competition should be included in the munificence construct, competition does not address the abundance issue. Regardless of the number of players in an industry, higher growth markets generally represent more abundant environments (Porter, 1980), while slow industry growth results in a market share game for firms seeking expansion.

Based on data from the *U.S. Statistical Abstract* for 1977 to 1980, growth in total industry sales was calculated by dividing the regression slope coefficient by the mean value for shipments (1977–80) for the four-digit SIC codes for the firm's three largest lines of business; these, on average, represent 76 percent of the firm's total sales.

Environmental instability

Defined as the rate of change in factors relevant to strategic decision-making (Duncan, 1972), environmental instability depends critically on changes in the economic structure of the industry; such competitive dynamics represent a critical element of the environment (Sharfman and Dean, 1991). We thus measure instability by changes in the number and size of competitors within the industry. This conceptualization and operationalization of environmental instability differs from previous work, in that Dess and Beard (1984) focused on instability in sales and employment growth, and Sharfman and Dean (1991) measured technological instability. We chose to focus on the competitive dynamics of the industry because it is a broader indicator of relevant aspects of instability in a sample of firms in which each firm operates in multiple industries. Further, a measure of technological instability would not be meaningful in a sample with multiple industries since the importance of technology varies widely across industries.

One of the primary elements of industry structure is the number and size distribution of firms within the industry (Bain, 1968), which economic theory suggests is linked directly to the vigor of competition. Industry concentration often has been viewed as an indicator of entry barriers (Bain, 1968), and empirical evidence exists to support the relationship between industry concentration and firm profitability. (See Weiss, 1974, for a review.) The industry's concentration ratio (Sherer, 1980), that is, the percentage of total industry sales contributed by the largest few firms, measures this element. The most common variant is the four-firm sales concentration ratio (the percentage of total industry sales originated by the leading four firms). Gathered from the *FTC Line of Business* data base, instability was measured using absolute changes in the four firm concentration ratio for each business in the firm's portfolio, weighted by that business' relative sales revenue.

Large absolute changes in the firm's weighted concentration ratio would indicate high degrees of environmental instability. Changes in industry concentration reflect shifts in market share due to new entrants, exits, consolidations, and erosion of market share, thus they capture the dynamic nature of the firm's industrial environment.

Environmental complexity

For large multi-business firms, environmental complexity can best be conceptualized by the heterogeneity of activities pursued by the firm, given a broad array of product–market environments. We chose product complexity, or heterogeneity, as the best reflection of the greater information-processing requirements which largely define environmental complexity (Child, 1972; Dess and Beard, 1984). Dess and Beard (1984) point out that firms in industries which produce many different outputs or products, will find the disposal of their output to be more complex due to having to interact with a larger number and variety of firms. Dess and Beard (1984) added

geographic concentration and input/output diversity to their operationalization and found only geographic concentration to be significant. Geographic concentration was not measured here as it is unlikely to be a significant factor in a sample of large, multinational firms. Sharfman and Dean (1991) added technical intricacy to their conceptualization, but it, too, is not meaningful in this multi-industry sample.

Environmental complexity was measured using product specialization ratios. The primary products of a plant are those which determine its industry classification; all other products are referred to as secondary products. The value of a plant's primary products, in comparison to the value of its total production, is referred to as its degree of specialization; thus, high specialization suggests that products are produced exclusively for the industry and represents homogeneity of operating requirements. The specialization ratio for each line of business (subtracted from one so that increasing environmental complexity is indicated by larger values of the variable) was multiplied by its relative firm sales and aggregated for each firm. This results in a weighted average specialization ratio that reflects the average complexity (specialization) faced by the firm across its businesses. Industry specialization ratios at the four-digit SIC code level were gathered from the *U.S. Census of Manufacturers*.

Validation of the environmental measures

Following the approach of Sharfman and Dean (1991), we examined the predictive validity of our environmental measures. We would expect all three environmental measures to be significantly correlated with industry level performance. Environments with high munificence in terms of sales growth should provide opportunity for enhanced industry performance (Porter, 1980); munificence had a highly significant positive correlation of 0.309 with industry average profitability. Environmental instability should have a negative correlation as changes in industry structure indicate competitive rivalry and decreased industry attractiveness and performance (Porter, 1980); the correlation was −0.180, significant at the 0.05 level. A negative correlation is also expected for environmental complexity as greater information processing demands increase decision making difficulty and decrease efficiency and effectiveness; a significant correlation of −0.185 was found.

Organizational performance

Performance was measured using a three-year average of the firm's Return on Assets (ROA) relative to the industry for the time period 1977–80. ROA is one of the most commonly used accounting based performance measures in the strategy literature. This measure controlled for industry by dividing the firm's three-year average ROA by the three-year average industry ROA. The 1977–80 time period was selected as it immediately precedes the turnover period being studied. All data on firm and industry performance were gathered from the COMPUSTAT data base.

Strategic change

Corporate strategy within large, multibusiness organizations reflects diversification decisions on the mix and emphasis of businesses within the corporate portfolio (Ansoff, 1965; Rumelt, 1974). Strategic change was operationalized by using change in the firm's diversification strategy from 1977 to 1980. Based on line of business data from TRINET, the diversification strategy of the organization was measured using the entropy measure (Jacquemin and Berry, 1979), as follows. For a firm operating in N industry segments. Let P_i be the percentage of total firm sales in the ith segment. Then

$$\text{Entropy of total diversification} = \sum_{i=1}^{N} P_i \ln(1/P_i)$$

Demographic heterogeneity

Studies investigating the effects of top team demographic heterogeneity often have focused on the cohort-related traits of age, organizational tenure, and team tenure for their theoretical and empirical importance. As these measures tend to be highly correlated, team tenure heterogeneity was selected as the most relevant to team turnover. Fredrickson *et al.* (1988) point out that as a member's tenure on the top team increases, a closer alignment of managerial values occurs between that individual and board members; the result is an increase in power and influence for

the team member. Heterogeneity on this variable suggests variations in power across team members, which could have a potentially detrimental and destabilizing effect on group dynamics, leading to turnover. Furthermore, greater team tenure heterogeneity has been shown to lead to lower levels of cohesiveness and integration within groups, resulting in a higher incidence of turnover (O'Reilly *et al.*, 1989).

In addition, heterogeneity on education curriculum will be examined. In contrast with the team tenure variable, education curriculum measures a person's cognition more directly: a manager's personality, cognitive style, and training are reflected in curriculum choice (Holland, 1973). Diversity in cognition in a decision-making group has been found to link with creative and change-oriented decision outcomes (Wanous and Youtz, 1986; Wiersema and Bantel, 1992), yet diverse viewpoints can create strains in the decision-making process (Pfeffer, 1983). The selection of these two demographic heterogeneity variables, reflecting both cohort and cognitive issues, allows a broad assessment of the demographic heterogeneity construct.

The demographic heterogeneity variables were measured for the 1980 period. The demographic heterogeneity on team tenure was measured using the coefficient of variation, calculated by dividing the standard deviation by the mean. Allison's (1979) review of inequality measures suggests a preference for the coefficient of variation because of its scale invariant properties, as compared to the standard deviation or variance. For the categorical variable, education curriculum, Blau's (1977) index of heterogeneity was applied.[2] Education curriculum was measured using the specialization of the highest obtained university degree (arts, sciences, engineering, business, and law).

Control variables

Three trait demographic variables—mean age, mean organizational tenure, and mean team tenure—were also considered as potential controls. While there is theoretical rationale for the inclusion of all three, they tend to be highly correlated. Mean team tenure was selected for inclusion, consistent with our earlier decision on demographic heterogeneity.

RESULTS

Table 1 presents the means, standard deviations, and correlations among the variables. Substantial correlations exist between top management team turnover and mean team tenure, firm performance, strategic change, environmental munificence, environmental instability, and environmental complexity. The correlations are positive, as expected, with the exception of mean team tenure, firm performance, and environmental munificence.

The data were analyzed using two steps. First, we used regression analyses to test for the effects of each of the independent variables on team turnover. Second, path analysis was used to test the model illustrated in Figure 1. A path-analytic framework is the appropriate analytical method when both direct and indirect influences are hypothesized (James, Muliak and Brett, 1982) as shown in the model in Figure 1.

The results of the hierarchical regression analysis for top team turnover are reported in Table 2a. Following the causal model set out in Figure 1, we entered the control variable, mean team tenure, first, followed by firm performance, strategic change, and the demographic heterogeneity variables (team tenure and education curriculum). Then each of the environmental variables, munificence, instability, and complexity, were entered.[3]

For a more comprehensive examination of the exact relationships identified in Figure 1, additional empirical investigation using path analysis was conducted. Through a series of multiple regressions of each variable in Figure 1, path analysis allows us to examine the effect of all preceding variables on team turnover. Path coefficients were derived by regressing each variable on all prior variables in the model. In accordance with a theory-trimming approach to path analysis, we excluded all coefficients not

[2] Blau's index of heterogeneity is calculated as follows: Let P_i equal the proportion of the group's individuals in the ith category (the five educational curriculum categories). Then Blau index of heterogeneity = $1 - \Sigma(P_i)^2$.

[3] Additional measures of firm performance were also analyzed including a ten-year time frame (1970–1980), which was both controlled and not controlled for by average industry ROA.

Table 1. Descriptive statistics and correlation matrix

	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Team turnover	0.20	0.23	1.000										
(2) Second tier turnover	0.24	0.29	0.879***	1.000									
(3) Top tier turnover	0.09	0.24	0.519***	0.159	1.000								
(4) Mean TMT tenure	9.51	4.20	−0.343***	−0.067	−0.321***	1.000							
(5) Firm performance	1.08	0.84	−0.217**	−0.113	−0.249**	0.082	1.000						
(6) Strategic change	0.09	0.39	0.193*	0.288***	0.265***	0.144	0.112	1.000					
(7) Team tenure heterogeneity	0.71	0.35	0.028	0.171	0.137	−0.292***	−0.080	−0.041	1.000				
(8) Education curriculum heterogeneity	0.60	0.25	0.106	0.00	0.085	0.082	−0.231**	0.085	0.096	1.000			
(9) Environmental munificence	0.09	0.04	−0.194*	−0.065	−0.176*	0.052	0.200*	0.240**	−0.229**	0.020	1.000		
(10) Environmental instability	0.03	0.05	0.278**	0.317***	0.352***	−0.095	−0.060	0.218**	−0.042	0.115	0.044	1.000	
(11) Environmental complexity	0.10	0.05	0.234**	0.080	0.327***	−0.109	−0.251**	−0.153	0.101	0.028	−0.200*	−0.027	1.000

n=85 *Significant at 0.10 level. ** Significant at 0.05 level. ** Significant at 0.01 level.

Table. 2a. Regression of top management team turnover on organizational, demography, and environmental variables

Independent variables	Beta coefficients[a]	ΔR^2	F value[b]
Mean team tenure	−0.295***	0.092	9.54***
	(0.093)		
Firm performance	−0.140	0.04	3.87
	(0.093)		
Strategic change	0.355***	0.109	11.92***
	(0.093)		
Team tenure heterogeneity	0.000	(0.018)	
	(0.094)		
Education curriculum heterogeneity	0.011		
	(0.091)		
Environmental munificence	−0.177**	0.032	3.44
	(0.093)		
Environmental instability	0.255***	0.051	5.81**
	(0.090)		
Environmental complexity	0.284**	0.071	8.89***
	(0.091)		
R^2	0.437		
Adjusted R^2	0.377		
F	7.36***		

[a] Standardized beta weights are reported; standard errors are in parentheses.
[b] This F statistic refers to the change in R^2 attributable to each variable(s).
n=85 *$p < 0.10$ **$p < 0.05$ ***$p < 0.01$

Table. 2b. Regression of second tier and top tier team turnover on organizational, demography, and environmental variables

Independent variables	Second Tier[a] ΔR^2	Top Tier[a] ΔR^2
Mean team tenure	0.117***	0.000
Firm performance	0.031	0.000
Strategic change	0.049**	0.081**
Team tenure heterogeneity	(0.007)	0.006
Education curriculum heterogeneity		
Environmental munificence	0.030	(0.005)
Environmental instability	0.015	0.061**
Environmental complexity	0.055**	(0.004)
R^2	0.358	0.221
Adjusted R^2	0.290	0.139
F	5.29***	2.70**

[a]The significance of the change in R^2 attributable to each variable(s) is indicated by the asterisks.
n=85 *$p < 0.10$ **$p < 0.05$ ***$p < 0.01$

Table 3. Decomposition table for final path model

	Causal path		
Bivariate relationships	Direct	Indirect	Total
Turnover and munificence	−0.198	(0.230)(0.348) = 0.080	−0.118
Turnover and instability	0.268	(0.207)(0.348) = 0.072	0.340
Turnover and complexity	0.315		0.315

significant at the 0.10 level from the final estimation of path coefficients (James *et al.*, 1982). The final estimates are reported in Figure 2, and the decomposition of the causal relationships is shown in Table 3. The final model explained 38 percent of the variance in top team turnover.

As shown in Figure 2 and Table 3, all three environmental variables have a strong direct effect on top team turnover, providing support for Hypotheses 1, 2, and 3. In addition, strategic change had a significant effect on top team turnover, providing support for Hypothesis 5d. Support was also found for some of the hypothesized linkages between the environmental and mediating variables. Environmental complexity was negatively related to firm performance (Hypothesis 4c). Environmental instability had the expected significant positive relationship with strategic change (Hypothesis 5b). Environmental munificence also has a significant positive relationship with strategic change, contrary to our expectation. The overall results, however, offer little support for the indirect linkages illustrated in Figure 1. Indirect effects of environmental factors through firm performance were not supported, primarily because performance was not significantly associated with turnover. Only indirect effects of environmental munificence and instability through strategic change were found. The decomposition reported in Table 3 indicates that 80 percent of the effect of

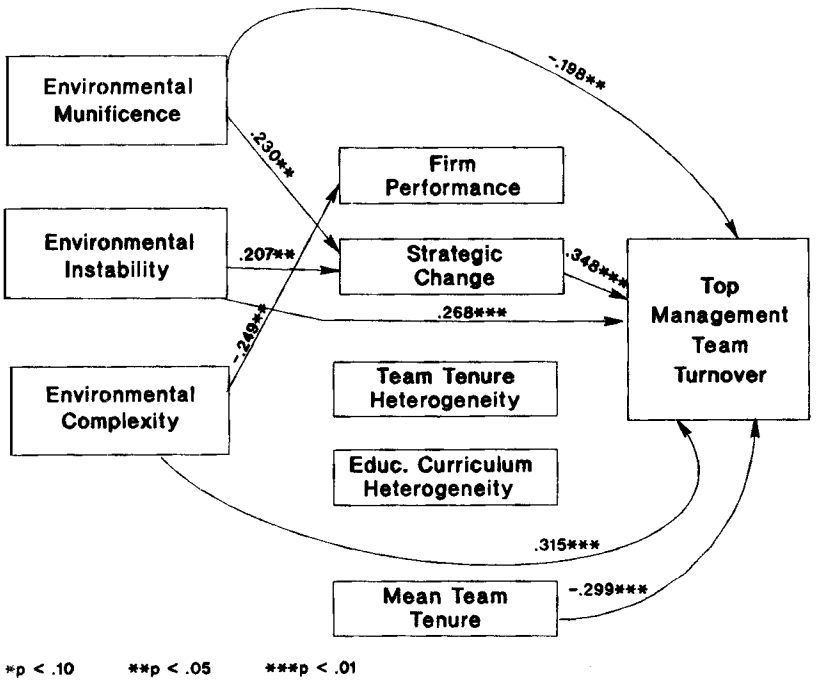

Figure 2. Final path mediation model

environmental instability on top team turnover was direct and that 20 percent was mediated by strategic change. Finally, environmental complexity had no indirect effect through group demographic heterogeneity. Neither heterogeneity variable was significantly related to either team turnover or complexity. Based on our analyses, the direct effects of environmental factors on top team turnover predominate the model, while the indirect effects represent a very small proportion of the total effect of the environmental factors on turnover.[4]

In light of the asymmetric distribution of the dependent variable, top team turnover, additional analyses were conducted to examine the robustness of the model. The results of these analyses basically confirm that strategic change, environmental instability and complexity have significant effects on the incidence of team turnover.

Additional analyses were conducted to examine top and second tier turnover as shown in Table 2b. While the overall regression results proved to be significant, the model explained far less variance when we examined turnover within the top and second tiers of management separately. For the second tier, mean team tenure, strategic change, and environmental complexity contributed significantly to the explained variance in team turnover (adjusted R^2 of 29%). For the top tier, only strategic change and environmental instability contributed significantly to the explained variance in team turnover (adjusted R^2 of 14%).[5]

DISCUSSION

This research was based on an organizational adaptation framework in which top executives are responsible for forging a link between the firm and its environment; such a role necessitates a good alignment between the executives themselves and the firm's environmental conditions. Consistent with this framework, we found that the key determinants of turnover within the top management team are environmental—lack of munificence, instability, and complexity. Each of these environmental conditions represents a difficult and stressful context for executive decision-making, one that is unlikely to be sustainable for a long period of time. Top managers leave their firms as they experience stress, threats to their power, outdated perspectives, conflicts, cost-cutting, and/or the desire for higher autonomy and challenge.

Additional analysis by hierarchical level within the team indicates that our model predicts turnover better for the second tier than for the top tier. By the time managers attained positions in the top tier (Chairman, CEO, President, and/or COO), they are likely to have established more entrenched power positions and to have greater symbolic importance as figureheads, attributes which make them less vulnerable to losing their jobs as a result of factors examined here. Holding the second tier managers directly accountable for poor operating results, even if some scapegoating occurs as a result (Boeker, 1992), also occurs. While this analysis is useful in helping to pinpoint the adaptation dynamics for two subsegments of the top team, it is also important to note that the best explanation of top team turnover is based on an analysis of the team as a whole. This is consistent with other studies that demonstrate that an analysis of the entire team is superior to one based solely on the CEO in terms of explained variance (Bantel and Jackson, 1989; Finkelstein, 1988; Hage and Dewar, 1973; Tushman *et al.*, 1985).

A more complex investigation of team turnover within an adaptation viewpoint requires a consideration of the role of firm performance and strategic change. First, indirect relationships between the environment and turnover through performance were investigated. Some support for the link between the environment and firm performance was found: environmental complexity was related to poor firm performance in this sample. However, the lack of a link between firm performance and turnover resulted in no confirmation of the indirect linkage between the environment and turnover through performance. Our lack of findings on firm performance is consistent with Puffer and Weintrop (1991) but contrary to the Wagner *et al.* (1984) study and attributable, in part, to our

[4] Additional analysis examined turnover for the top management team not controlling for age. The result of the full model depicted in Table 2 was an adjusted R^2 of 0.09, with significant coefficients for mean team tenure and strategic change, only. The overall model was significant at the 0.10 level.

[5] Additional analysis examined turnover separately for the CEO only. This analysis was not significant.

inclusion of environmental complexity; performance was significant in our regression model until complexity was added. This points out the importance of examining team turnover within an environmental context. Other major differences between our study and that of Wagner *et al.* (1984) are our measure of firm performance (three-year average ROA controlling for industry ROA versus a ten-year average of firm ROA), our use of an elite definition of the top team (mean of 4.5, range from 2 to 8) versus an inclusive definition (range from 5 to 41), and our control for retirements.

Our model also investigated the role of strategic change, based on the theory that threatening environmental conditions can be managed through changes in corporate strategy that shifts the environments with which the firm interacts and necessitates some turnover in top management. While strategic change had a significant relationship with team turnover, only environmental instability had a significant indirect linkage with team turnover through strategic change, as predicted. It appears that managers cope with an unstable environment through strategic changes, that may, in turn, necessitate some turnover within the top team to improve the alignment of managers' cognitions with the new environment. These findings extend our understanding of the link between strategic change and team turnover beyond the more conventional assumption of turnover bringing fresh perspectives to the strategic management task, leading to strategic change (e.g., Tushman and Romanelli, 1985). This study demonstrates that the opposite causal relationship can occur, particularly at the level of the corporate strategy.

Team demographic heterogeneity was also investigated as mediating the relationship between environmental complexity and turnover and was not supported; heterogeneity was not linked with either complexity or turnover. It appears that at the level of the top management team, the issue of demographic diversity is not a critical factor in an individual's decision to remain on the team. This may be due largely to the nature of selection processes to management positions at the very top echelons of elite U.S. corporations. Strong norms exist within such firms regarding who is promoted to the top levels, with sponsorship ensuring their inculcation of firm values and perspectives and their ultimate success. The addition of such managers to the executive team either contributes to demographic homogeneity or adds heterogeneity that is not dysfunctional.

The lack of findings here of a dysfunctional effect of team heterogeneity is consistent with Bantel and Jackson (1989), who found that age and tenure heterogeneity neither assisted nor hindered the ability of bank top management teams to reach consensus on and implement innovations for their firms. Jackson *et al.* (1991) also had generally consistent results in their analyses of elite subgroups (most comparable to our definition of the top team) of bank holding companies. With the exception of heterogeneity on college alma mater, none of their other heterogeneity variables (age, tenure, education level, education curriculum, experience outside industry, and military experience) predicted turnover.

An important methodological change was made in this study compared to past research. This study controlled for the effect of age, and thus of retirements, on turnover; none of the other studies on team turnover (Jackson *et al.*, 1991; Wagner *et al.*, 1984; Walsh and Ellwood, 1991) did this. A lack of control for age makes it difficult to disentangle those influences on turnover that are independent of an individual's retirement decision. When age was not controlled for in our regression model, only mean team tenure accounted for a significant increase in explained variance, while the adjusted R^2 for the entire model dropped from 0.38 to 0.09 (see footnote 4).

A limitation of the current study pertains to the time periods over which our analyses were conducted. Our model examined environmental and firm (performance, strategic change, and demographic heterogeneity) predictors of turnover that were all measured over the same time period. Perhaps new insights would be gained if a study were designed in which the relationships among predictors could be examined more closely by postulating a causal sequence among them. For example, environmental predictors could be measured as causally prior to performance, which in turn could precede the measure of strategic change. This approach would allow a disentangling of the causal sequencing of these factors, enhancing our understanding of the dynamics of the process we have examined in this study. Of course, researchers would need to grapple with

the difficulties inherent in longitudinal research, such as controlling for prior turnover.

Future research directions

While this study demonstrated a relationship between environmental influences and top executive turnover, it does not shed much light on how the environment triggers turnover nor on whose responsibility it becomes to initiate executive replacement. Are executives leaving voluntarily to extricate themselves from situations that are stressful and/or lacking in creativity and autonomy, or are the decisions about their leaving being made for them? Do managers proactively leave when it becomes apparent that industry performance is suffering yet before the effects are felt by their firm, or are there better indicators of performance that would show that poor firm performance actually does precede turnover? What is the role of the board in the process of initiating and selecting the removal of members from the top management team?

Investigation could also focus on the issue of congruence of environmental perceptions across team members. As individual managers seek to specialize in their respective environmental subsegments, a lack of congruence or differentiation across members might evolve; the implications of such lack of consensus with regard to both dysfunctional group process and turnover could be examined.

Finally, a potentially important variable in understanding team turnover is the interaction patterns among members, specifically, interaction frequency and intensity. For the highly differentiated teams that evolve in response to environmental complexity, interactions among members can be difficult and stressful. If team members meet frequently, the effects of high differentiation might be mitigated as more thorough information processing and better conflict resolution occurs. On the other hand, high interaction might highlight the incompatibilities among team members, exacerbating the dysfunctional effects. Interaction patterns could be ascertained through observation or questionnaire.

This study should provide further encouragement to researchers to focus on the effects of environmental factors on various facets of organizational adaptation. Further studies examining top team turnover from the standpoint of group dynamics would also appear to be warranted.

REFERENCES

Aldrich, H. (1979). *Organizations and Environments*. Prentice Hall, Englewood Cliffs, NJ.

Allen, P. A. and S. K. Panian (1982). 'Power, performance, and succession in the large corporation', *Administrative Science Quarterly*, **27**, pp.538–547.

Allen, T., S. K. Panian and R. C. Lotz (1979). 'Information flow in research and development laboratories', *Administrative Science Quarterly*, **14**, pp.12–19.

Allison, P. D. (1979). 'Measures of inequality', *American Sociological Review*, **43**, pp.865–880.

Ancona, D. (1990). 'Top management teams: Preparing for the revolution'. In J. Carroll (ed.), *Applied Social Psychology and Organizational Settings*, Erlbaum, New York, pp.99–128.

Ansoff, H. I. (1965). *Corporate Strategy*. McGraw-Hill, New York.

Bain, J. S. (1968). *Industrial Organization*, 2nd ed. Wiley, New York.

Bantel, K. and S. Jackson (1989). 'Top management and innovations in banking: Does the composition of the top team make a difference?', *Strategic Management Journal*, **10**, (special issue), pp.107–124.

Beatty, R. and E. Zajac (1987). 'CEO change and firm performance in large corporations: Succession effects and manager effect', *Strategic Management Journal*, **8**, pp.305–318.

Blau, P. M. (1977). *Inequality and Heterogeneity*. Free Press, New York.

Boeker, W. (1992). 'Power and managerial dismissal: Scapegoating at the top', *Administrative Science Quarterly*, **37**, pp.400–421.

Bourgeois, J. (1980). 'Performance and consensus', *Strategic Management Journal*, **1**, pp.227–248.

Bourgeois, J. (1981). 'On the measurement of organizational slack', *Academy of Management Review*, **6**, pp.29–39.

Brady, G. F. and D. L. Helmich (1984). *Executive Succession*. Prentice Hall, Englewood Cliffs, NJ.

Caldwell, D. and C. A. O'Reilly, III (1982). 'Boundary spanning and individual performance: The impact of self-monitoring', *Journal of Applied Psychology*, **67**, pp.124–127.

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

Coughlan, A. T. and R. M. Schmidt (1985). 'Executive compensation, managerial turnover, and firm performance: An empirical investigation', *Journal of Accounting and Economics*, **7**, pp.43–66.

Cyert, R. and J. March (1963). *A Behavioral Theory of the Firm*. Prentice-Hall, Englewood Cliffs, NJ.

Daft, R., J. Sormunen and D. Parks (1988). 'Chief

executive scanning, environmental characteristics, and company performance: An empirical study', *Strategic Management Journal*, **9**, pp.123–139.

Davis, R. and I. M. Duhaime (1992). 'Diversification, vertical integration, and industry analysis', *Strategic Management Journal*, **13**(7), pp.511–524.

Dearborn, D. C. and H. A. Simon (1959). 'Selective perception: A note on the department identifications of executives', *Sociometry*, **21**, pp.140–144.

Dess, G. G. (1987). 'Consensus on strategy formulation and organizational performance: Competitors in a fragmented industry', *Strategic Management Journal*, **8**, pp.259–277.

Dess, G. and D. Beard (1984). 'Dimensions of organizational task environments', *Administrative Science Quarterly*, **19**, pp.52–73.

Donaldson, G. and J. Lorsch (1984). *Decision Making at the Top*. Basic Books, New York.

Dougherty, D. (1987). 'New products in old organizations: The myth of the better mousetrap in search of the beaten track'. Unpublished doctoral dissertation, Sloan School of Management, MIT, Cambridge, MA.

Dun & Bradstreet (1977). *Reference Book of Corporate Managements*. Dun & Bradstreet, Parsippany, NJ.

Dun & Bradstreet (1980). *Reference Book of Corporate Managements*. Dun & Bradstreet, Parsippany, NJ.

Dun & Bradstreet (1983). *Reference Book of Corporate Managements*. Dun & Bradstreet, Parsippany, NJ.

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

Eisenhardt, K. (1989). 'Making fast strategic decisions in high-velocity environments', *Academy of Management Journal*, **32**, pp.543–576.

Eitzen, D. S. and N. Yetman (1972). 'Managerial change, longevity, and organizational effectiveness, *Administrative Science Quarterly*, **17**, pp.110–116.

Fama, E. F. and M. C. Jensen (1983). 'Separation of ownership and control', *Journal of Law and Economics*, **26**, p.301–325.

Finkelstein, S. (1988). 'Managerial orientations and organizational outcomes: The moderating roles of managerial discretion and power'. Unpublished doctoral dissertation, Columbia University.

Fiske, Susan T. and S. E. Taylor (1984). *Social Cognition*. Addison-Wesley, Reading, M;A.

Fredrickson, J., D. Hambrick and S. Baumrin (1988). 'A model of CEO dismissal', *Academy of Management Review*, **13**, pp.255–270.

Furtado, E. and V. Karan (1990). 'Causes, consequences, and shareholder wealth effects of management turnover: A review of the empirical evidence', *Financial Management*. Summer, pp.60–75.

Gamson, W. A. and N. Scotch (1964). 'Scapegoating in baseball', *American Journal of Sociology*, **70**, pp.69–72.

Goodstein, J. D. and W. Boeker (1991). 'Turbulence at the top: A new perspective on executive level dynamics and organizational change', *Academy of Management Journal*, **34**, pp.306–330.

Hage, J. and R. Dewar (1973). 'Elite values versus organizational structure in predicting innovation', *Administrative Science Quarterly*, **18**, pp.279–290.

Hambrick, D. C. (1981a), 'Specialization of environmental scanning activities among upper level executives, *Journal of Management Studies*, **18**, pp.299–320.

Hambrick, D. C. (1981b). 'Environment, strategy, and power within top management teams', *Administrative Science Quarterly*, **26**, pp.253–276.

Hambrick, D. and S. Finkelstein (1987). 'Managerial discretion: A bridge between polar views of organizational outcomes'. In L. L. Cummings and B. Staw (eds.), *Research in Organizational Behavior*, Vol. 9. JAI Press, Greenwich, CT, pp.269–406.

Hambrick, D. and P. A. Mason (1984). 'Upper echelons: The organization as a reflection of its top managers', *Academy of Management Review*, **9**, pp.193–206.

Hannan, M. T. and J. Freeman (1977). 'The population ecology of organizations', *American Journal of Sociology*, **82**, pp.929–963.

Helmich, D. L. (1977). 'Executive succession in the corporate organization: A current integration', *Academy of Management Review*, **2**, pp.252–264.

Holland, J. (1973). *Making Vocational Choices: A Theory of Careers*. Prentice-Hall, Englewood Cliffs, NJ.

Jackson, S., J. Brett, V. Sessa, D. Cooper, J. Julin and K. Peyronnin (1991). 'Some differences make a difference: Individual dissimilarity and group heterogeneity as correlates of recruitment, promotions, and turnover', *Journal of Applied Psychology*, **76**(5), pp.675–689.

Jacquemin, A. P. and C. H. Berry (1979). 'Entropy measures of diversification and corporate growth', *Journal of Industrial Economics*, **27**(4), pp.359–369.

James, D. R. and M. Soref (1981). 'Profit constraints on managerial autonomy: Managerial theory and the unmaking of the corporation president', *American Sociological Review*, **46**, pp.1–18.

James, L. R., S. A. Muliak and J. M. Brett (1982). *Causal Analysis: Assumptions, Models and Data*. Sage Publications, Beverly Hills, CA.

Janis, I. and L. Mann (1977). *Decision Making: A Psychological Analysis of Conflict, Choice, and Commitment*. Free Press, New York.

R. Katz (1982). 'The effects of group longevity on project communication and performance', *Administrative Science Quarterly*, **27**, p.81–104.

Keats, B. W. and M. A. Hitt (1988). 'A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance', *Academy of Management Journal*, **31**(3), pp. 570–598.

Kiesler, S. and L. Sproull (1982). 'Managerial response to a changing environment: Perspectives and problem sensing from social cognition', *Administrative Science Quarterly*, **37**, pp.548–570.

Lawrence, P. and J. Lorsch (1967). *Organization and Its Environment*. Harvard University Press, Boston, MA.

Lieberson, S. and J. O'Connor (1979). 'Leadership and organization performance: A study of large corporations', *American Sociological Review*, **37**, pp.117–130.

McCain, B., C. A. O'Reilly, III and J. Pfeffer (1983). 'The effects of departmental demography on turnover', *Administrative Science Quarterly*, **26**, pp.626–641.

McEachern, W. (1977). *Managerial Control and Performance*. D. C. Heath, Lexington, MA.

Meyer, M. (1972). 'Size and the structure of organizations: A causal analysis', *American Sociological Review*, **37**, pp.434–440.

Michel, J. G. and D. C. Hambrick (1992). 'Diversification posture and the characteristics of the top management team', *Academy of Management Journal*, **35**, pp.9–37.

Mintzberg, H. (1983). *Power in and around Organizations*. Prentice-Hall, Englewood Cliffs, NJ.

Mintzberg, H., D. Raisinghani and A. Theoret (1976). 'The structure of unstructured decision processes', *Administrative Science Quarterly*, **21**, pp.246–275.

Murray, A. (1989). 'Top management group heterogeneity and firm performance', *Strategic Management Journal*, **10**, pp.125–141.

O'Reilly, C. A. III, C. Caldwell and D. Barnett (1989). 'Work group demography, social integration, and turnover', *Administrative Science Quarterly*, **34**, pp.21–37.

Osborn, R., J. Hunt and L. Jauch (1980). *Organization Theory: An Integrated Approach*. Wiley, New York.

Pelz, D. and F. Andrews (1966). *Scientists in Organizations*. Wiley, New York.

Pfeffer, J. (1983). 'Organizational demography'. In L. Cummings and B. Staw (eds.), *Research in Organizational Behavior*, Vol. 5. JAI Press, Greenwich, CT, pp.299–537.

Pfeffer, J. and H. Leblebici (1973). 'Executive recruitment and the development of interfirm organizations', *Administrative Science Quarterly*, **18**, pp.449–461.

Pfeffer, J. and G. Salancik (1978). *The External Control of Organizations*. Harper & Row, New York.

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

Prahalad, C. K. and R. A. Bettis (1986). 'The dominant logic: A new linkage between diversity and performance', *Strategic Management Journal*, **7**, pp.485–501.

Puffer, S. M. and J. B. Weintrop (1991). 'Corporate performance and CEO turnover: The role of performance expectations', *Administrative Science Quarterly*, **36**, pp.1–19.

Roberts, K. and C. A. O'Reilly III (1979). 'Some correlates of communication roles in organizations', *Academy of Management Journal*, **22**, pp.42–57.

Romanelli, E. and M. Tushman (1988). 'Executive leadership and organizational outcomes: An evolutionary perspective'. In D. Hambrick (ed.), *The Executive Effect: Concepts and Methods for Studying Top Managers*. JAI Press, Greenwich, CT, pp.129–140.

Rumelt, R. P. (1974). *Strategy, Structure, and Economic Performance*. Harvard University Press, Cambridge, MA.

Salancik, G. R. and J. Pfeffer (1977). 'Effects of ownership and performance on executive tenure in U.S. corporations', *Academy of Management Journal*, **23**, pp.653–664.

Schwenk, C. (1988). 'The cognitive perspective on strategic decision making', *Journal of Management Studies*, **25**(1), pp.41–55.

Selznick, P. (1957). *Leadership in Administration*. Harper & Row, New York.

Sharfman, M. P. and J. W. Dean (1991). 'Conceptualizing and measuring the organizational environment: A multidimensional approach', *Journal of Management*, **17**, pp.681–700.

Sherer, F. M. (1980). *Industrial Market Structure and Economic Performance*, 2nd ed. Rand McNally, Chicago, IL.

Starbuck, W. (1976). 'Organizations and their environments'. In M. Dunnette (ed.), *Handbook of Industrial and Social Psychology*, Rand McNally, Chicago, IL, pp.1069–1123.

Starbuck, W. and F. Milliken (1988). 'Executives' perceptual filters: What they notice and how they make sense. In D. Hambrick (ed.), *The Executive Effect: Concepts and Methods for Studying Top Managers*, JAI Press, Greenwich, CT, pp.35–65.

Staw, B., L. Sandelands and J. Dutton (1981). 'Threat–rigidity effects in organizational behavior: A multilevel analysis', *Administrative Science Quarterly*, **26**, pp.501–524.

Terreberry, S. (1968). 'The evolution of organizational environments', *Administrative Science Quarterly*, **12**, pp.590–613.

Thompson, J. (1967). *Organizations in Action*. McGraw-Hill, New York.

Tushman, M. and P. Anderson (1986). 'Technological discontinuities and organization environments', *Administrative Science Quarterly*, **31**, pp.439–465.

Tushman, M. and S. Keck (1990). 'Environmental and organizational context and executive team characteristics: An organizational learning approach'. Working paper, Columbia University, Graduate School of Business.

Tushman, M. and E. Romanelli (1985). 'Organizational evolution: A metamorphosis model of convergence and reorientation', *Research in Organizational Behavior*, **7**, pp.171–222.

Tushman, M., B. Virany and E. Romanelli (1985). 'Executive succession, strategy reorientation, and organizational evolution', *Technology in Society*, **7**, pp.297–314.

U.S. Department of Commerce (1970–1980). *U.S. Statistical Abstract*. Washington, DC.

Vancil, R.F. (1987). *Passing the Baton*. Harvard Business Schoool, Boston, MA.

Vroom, V. and B. Pahl (1971). 'Relationship between age and risk-taking among managers', *Journal of Applied Psychology*, **55**, pp.399–405.

Wagner, W., J. Pfeffer and C. A. O'Reilly III (1984). 'Organizational demography and turnover in top

management groups', *Administrative Science Quarterly*, **29**, pp.74–92.

Walsh, J. and J. Ellwood (1991). 'Mergers, acquisitions, and the pruning of managerial deadwood', *Strategic Management Journal*, **3**, pp.201–218.

Wanous, J. and M. Youtz (1986). 'Solution diversity and the quality of group decisions', *Academy of Management Journal*, **31**, pp.873–896.

Warner, J. B., R. L. Watts and K. Wruck (1988). 'Stock prices and top management changes', *Journal of Financial Economics*, **20**, pp.461–492.

Weiss, L. W. (1974). 'The concentration–profits relationship and antitrust'. In H. Goldschmid et al. (eds), *Industrial Concentration: The New Learning*. Little, Brown, Boston, MA, pp.201–220.

Wiersema, M. and K. Bantel (1992). 'Top management team demography and corporate strategic change, *Academy of Management Journal*, **35**, pp.91–121.

Yasai-Ardekani,M. (1989). 'Effects of environmental scarcity and munificence on the relationship of context to organizational structure', *Academy of Management Journal*, **32**, pp.131–156.

Zammuto, R. F. (1983). 'Growth, stability, and decline in American college and university enrollments', *Educational Administration Quarterly*, **19**(1), pp.83–99.

Zucker, L. (1983). 'Organizations as institutions'. In S. Bacharach (ed.), *Research in the Sociology of Organizations*, Vol. 2. JAI Press, Greenwich, CT, pp.1–47.