Second-order Imitation: Uncovering Latent Effects of Board Network Ties

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This study examines whether board interlock ties facilitate second-order imitation, in which firms imitate an underlying decision process that can be adapted to multiple policy domains, rather than imitating specific policies of tied-to firms (first-order imitation). Longitudinal analyses of archival data for a large sample of Forbes/Fortune 500 companies, as well as analyses of survey data on mimetic processes among these firms, show that network ties to firms that use imitation to determine a particular policy can prompt use of imitation by the focal firm in determining both that policy and a different policy. Firms that have board network ties to firms in other industries that imitate their competitors' business strategy are likely to imitate their own competitors' business strategy, as well as their competitors' acquisition activity and compensation policy. Thus, the findings reveal network effects that are not visible with extant perspectives on interorganizational imitation. We discuss implications for institutional theory and research on interorganizational networks.●

A long tradition of research in organization theory has examined the diffusion of technology, policy, and strategy through social networks (Burt, 1987; Mizruchi, 1996). One of the most important propositions in this literature is that, under conditions of uncertainty, social influence processes will lead firms to imitate the individual policy decisions of other firms to which they are connected by social network ties (DiMaggio and Powell, 1983; Galaskiewicz, 1985). Empirical studies in the board interlocks literature, in particular, have examined how overlapping board memberships between firms may facilitate the imitation of particular organizational structures, such as the multidivisional form, or individual policy decisions, such as the adoption of poison pills (e.g., Davis, 1991; Palmer, Jennings, and Zhou, 1993; Haunschild, 1993; Westphal and Zajac, 1997). Prior research may have underestimated the magnitude of network effects, however, by restricting its focus to first-order imitation, or the act of imitating the content of a particular policy decision, such as the level of spending on research and development (R&D). Second-order imitation, or the imitation of an underlying decision process or script that can be adapted to multiple policy domains (e.g., business strategy, compensation policy, acquisition activity, etc.), has been ignored in the interlocks literature, despite a body of literature on second-order effects.

In general, second-order phenomena are characterized by an underlying process mechanism that can explain multiple discrete first-order effects (e.g., Bartunek and Moch, 1987; Farmer et al., 1997). In the organizational behavior literature, for instance, researchers have invoked the notion of second-order change to describe cases in which a firm or unit adopts a decision-making routine such as participative management that leads to organizational changes in multiple policy domains (e.g., information systems, customer service, reporting practices, etc.): the underlying process represents a second-order factor that can explain multiple discrete first-order changes in policy content (Manz and Sims, 1987; Cohen, Chang, and Ledford, 1997; Farmer et al., 1997).

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Although prior research has found some evidence for the network diffusion of structures and policies that are widely applicable in varying industry environments, such as takeover defenses and the multidivisional form of organization, several researchers have noted that there is less evidence for the diffusion of strategic policy decisions (e.g., the level of spending on R&D or advertising) through board network ties (Davis, 1994; Fligstein, 1995; Westphal and Zajac, 1997; Palmer and Barber, 2001). Most board ties, including ties examined in this study, link firms in different industries (Zajac, 1988), which in turn present different strategic threats and opportunities; thus, the extent of first-order imitation of strategic policy decisions (i.e., in which firms imitate the specific content of strategic decisions made by their interlock partners) may be limited. But decision-making processes may spread through network ties that bridge industries. For instance, the propensity for a firm to formulate strategic policies by imitating its competitors is a more generalizable component of the decision-making process that can be applied in many different industries, such that interlock ties may spread underlying mimetic processes, without necessarily diffusing the content of individual policy decisions. Thus, for instance, a pharmaceuticals firm may not imitate the level of R&D at a tied-to firm in a less technology-driven industry, such as cosmetics. Yet the tendency for the tied-to cosmetics firm to determine its expenditures by imitating its competitors may influence the propensity for the pharmaceuticals firm to imitate the R&D spending of its pharmaceutical competitors. In this way, network ties may facilitate second-order imitation in which a focal firm imitates the mimetic decision process of a tied-to firm, without imitating the policy content of that firm.

Second-order imitation is related to, but distinct from, second-order learning or double-loop learning. Argyris and Schön (1978: 2–3) described second-order learning as "modification of an organization's underlying norms or objectives," which then leads to a variety of (first-order) policy changes in the organization. Similarly, second-order imitation involves changes in an underlying decision-making process that can lead to multiple changes in individual policy domains. Moreover, Tushman and Romanelli (1985; Virany, Tushman, and Romanelli, 1992: 73) described second-order learning as fundamental organizational change that creates a "new relationship of the firm to its environment." Similarly, second-order imitation results in fundamental change in a firm's relationship to its environment by increasing similarity between a focal firm and its competitors across different policy domains. The difference between the two is that while second-order imitation involves change in underlying mimetic processes that result from network ties to firms that have made similar changes in their decision processes, second-order learning is typically conceived strictly as change in underlying processes; that is, the source of the change is not addressed or is assumed to result from factors internal to the organization (Weick, 1979; Miner and Mezias, 1996). In effect, therefore, second-order imitation can be viewed as a particular type of second-order learning.

Institutional and social learning theorists have made considerable progress in advancing our understanding of imitation (Ingram and Clay, 2000), but they have not considered all possible dimensions to firm mimicry. In particular, while the distinction between strategy process and content is fundamental to the strategy and policy literature (Miles et al., 1978; Eisenhardt and Zbaracki, 1992), institutional theorists have focused their attention strictly on the imitation of policy content, without considering that underlying decision-making processes might also be subject to imitation. The concept of second-order imitation contributes to the institutional literature not only by introducing the potential for process vs. content imitation but also by suggesting how the social learning that underlies imitation, particularly the imitation that occurs through interfirm network ties, may actually be more pronounced for decision processes than for policy content. Examining the diffusion of decision-making rules or processes may uncover network effects that are effectively masked by an exclusive focus on policy content.

SECOND-ORDER IMITATION THROUGH BOARD NETWORK TIES

Neo-institutional theorists have suggested that uncertainty about the consequences of adopting a new structure or policy will encourage imitation, and network ties such as board interlocks can channel mimetic processes by determining who firms imitate (March and Olsen, 1976; DiMaggio and Powell, 1983; Galaskiewicz and Wasserman, 1989; Burns and Wholey, 1993; Chaves, 1996). In effect, social network ties, and board appointments in particular, enable managers to learn about normative behavior (Galaskiewicz, 1997; Westphal, Gulati, and Shortell, 1997). From this perspective, interlock ties can encourage imitation not only through conscious choice but also through less explicit socialization processes (Galaskiewicz and Wasserman, 1989). Boards may provide the locus for social construction processes whereby participating directors persuade each other that certain structures and policies have merit, even if evidence for their efficiency is lacking. This social influence process then leads to more widespread diffusion. This view is consistent with social modeling theory, which would suggest that directors may develop beliefs about appropriate courses of action by observing firsthand the decision making of their peers at other firms (Bandura, 1977; Haunschild, 1993; Kraatz, 1998). Institutional theorists view social modeling as a primary mechanism underlying mimetic isomorphism (DiMaggio and Powell, 1983: 151).

Research on interlocking directorates has focused on how these social processes facilitate the diffusion of individual corporate policies and structures, such as poison pills, donations to nonprofit organizations, and multidivisional organizational structures (e.g., Galaskiewicz and Wasserman, 1989; Davis, 1991; Palmer, Jennings, and Zhou, 1993). But a different kind of mimetic process may operate through board network ties to influence strategic change. In contrast to organizational structures such as the multidivisional form or corporate policies such as donations to charity, which may be similarly applicable in different industry environments, strate-

gic policies, by definition, are means of adapting to threats and opportunities in a firm's environment (Rumelt, Schendel, and Teece, 1991; Zajac, 1992). Moreover, top managers generally assume that strategic policies (e.g., advertising and R&D, acquisition activity, and executive compensation policy) should help the firm adapt to threats and opportunities in its particular industry environment (Grinyer and Spender, 1979; Hambrick, 1981; Kopp, 1990; Gomez-Mejia, 1992). Thus, given that most board network ties cross industry boundaries (Zajac, 1988), the content of strategic decisions may be less likely to spread through board interlock ties. Board network ties may have a stronger influence on imitation of decision-making processes that determine how firms adapt to their particular environment.

From a neo-institutional perspective, which highlights the role of cognitive processes in organizational action, mimetic isomorphism occurs to the extent that organizational phenomena have become taken for granted as normatively appropriate (Scott, 1992, 1995). While individual policies can acquire normative status as more firms adopt them over time (Tolbert and Zucker, 1983; Fligstein, 1991; Edelman, 1992; Haveman, 1993), organizational rules or scripts of behavior are particularly likely to become taken for granted through experience and/or social interaction (Scott, 1995). Meyer, Scott, and Strang (1987: 13) characterized organizational action as "the enactment of institutional scripts," and Scott (1995: 44) suggested that mimetic processes are driven by taken-for-granted decision-making rules, or preconscious "guidelines for choosing meaningful actions." According to Scott (1995: 45), such rules may be derived from the larger social structure, which can operate as a repository or "carrier" of normative behavior. From this perspective, decision-making scripts emerge (i.e., they are socially constructed) and become taken for granted through the social interaction fostered by network ties (Scott, 1995). Thus, from a cognitive, institutional perspective, when managers observe and/or participate in decision-making processes as directors at other firms, they may reflexively enact those processes at the focal firm. In effect, decision-making rules or processes may acquire taken-for-granted status more readily than particular policy contents, such that board network ties may be particularly likely to facilitate their spread through mimetic isomorphism. Moreover, while the imitation of particular policies may be constrained by the industry environment, decision-making rules or processes can generalize more readily across industry boundaries.

Research on social learning has also shown that individuals who observe or participate in decision-making activities tend to learn the behavioral processes or procedures that lead to a decision outcome more deeply than they learn the decision outcome itself (Bandura, 1986; Chickering and Gamson, 1987; Stanton, 1989; McKeachie, 1994). The specific behaviors and actions that lead to a decision are more vivid and immediate than the eventual outcome and, consequently, decision routines are encoded more deeply in memory and are more likely to be recalled and enacted later. Such process learning can occur vicariously through social modeling or

directly through participation. In learning vicariously, people may encode and remember scripts of behavior that lead to an outcome, rather than focusing on the outcome itself (Schank and Abelson, 1977; Gioia and Manz, 1985; McKeachie, 1994), particularly when they participate in the decision-making process (Chickering and Gamson, 1987; Wood and Bandura, 1989). Social learning is more likely to occur when individuals have the opportunity to rehearse the routine in question, and active participation allows an individual to observe and then rehearse specific behaviors in the decision-making process (Bandura, 1977). In such cases, the routines that make up a decision-making process are more likely to be recalled and enacted in other, similar situations. While directors can learn decision-making scripts vicariously through monitoring management decision making, they can also learn directly through participation. Research on corporate boards has shown that directors are increasingly involved in the process of formulating strategic decisions (Lorsch and MacIver, 1989; Judge and Zeithaml, 1992; Useem, 1993; Westphal and Zajac, 1997). Given that direct participation in decision making is particularly likely to encourage social learning, managers' appointments to other boards may be particularly likely to influence their approach to decision making at a focal firm. Moreover, in contrast to network ties that rely on verbal or second-hand communication, network ties such as board ties that involve direct participation and observation may transfer even relatively tacit decision-making processes.

The spread of mimetic decision processes may occur through the board ties of outside, or non-employee directors, as well as the ties of inside directors. In studies of network diffusion, some researchers have focused on the board ties of inside directors, under the assumption that outside directors have little influence and involvement in the decision-making process, in which case their experience on other boards would have little effect on policies of the focal firm (Haunschild, 1993; Geletkanycz and Hambrick, 1997). Recent empirical evidence suggests, however, that outside directors have become significantly involved in strategic decision making at large U.S. companies (Useem, 1993; Westphal and Zajac, 1997; Westphal, 1999). Thus, the experience of both outside and inside directors with imitation at other firms could influence mimetic decision processes at the focal firm.

Research on social learning indicates that specific actions in the decision-making process are often learned and enacted subconsciously (Bandura, 1986). In effect, consistent with the institutional perspective discussed above, behavioral scripts become taken for granted more readily than decision outcomes and are thus enacted in other situations more routinely. The related literature on group norms has shown that people routinely use their past experiences in similar social settings as scripts for determining appropriate behavior in the current situation (Bettenhausen and Murnighan, 1985). This carry-over effect has a particularly strong influence on group decision-making processes, as group members bring taken-for-granted scripts from their prior experiences about the appropriate sequence of actions to arrive at a decision (Feld-

man, 1984). This research suggests that directors may enact decision-making scripts internalized from their participation on other boards without necessarily reflecting on whether the specific routines that make up the script are optimally suited to the current situation. This supports the institutional perspective that "action is the enactment of institutional scripts rather than a matter of internally generated and autonomous choice, motivation, and purpose" (Meyer, Scott, and Strang, 1987: 13). Conversely, directors may weigh the suitability of different strategic policies or goals (vs. processes) more consciously (i.e., such analysis may be a component of the taken-for-granted decision-making routines they enact). Thus, decision-making processes may be more likely to diffuse through board interlocks than the content of particular decision outcomes.

Decision-making processes are often defined as the "mechanism by which [policies] are determined" (Chandler, 1962; Segev, 1987: 259). In this study, we examine intraindustry imitation (i.e., the imitation of competitors) as one possible component of the process by which policy decisions are made. We examine such imitation with respect to three different policy outcomes: business strategy, acquisition activity, and executive compensation. Beyond selecting the chief executive officer (CEO), the primary responsibilities of boards are to oversee strategy and compensate top executives (Fama and Jensen, 1983; Zajac, 1990). Although boards may become involved in decision making on a variety of issues, the research literature on corporate boards suggests that board involvement in policy-making is largely confined to three arenas: (1) overseeing business strategy, which involves the allocation of resources to key functional activities in the firm, including production, marketing, research and development, and finance; (2) overseeing acquisition activity, as a primary aspect of corporate strategy (Demb and Neubauer, 1992; Hayward and Hambrick, 1997; Phan, 2000; Palmer and Barber, 2001), and (3) compensating top executives (Lorsch and MacIver, 1989; Demb and Neubauer, 1992; Phan, 2000). Thus, the decision-making processes that determine these policies, including mimetic processes, should be particularly susceptible to diffusion through board network ties.

Business strategy. Research in the strategy literature has shown that firms vary in the extent to which they consider the strategies of industry competitors, formally or informally, in determining their own strategic posture (Ghoshal and Westney, 1991; Porter, 1998). A mimetic decision process in this context may involve collecting data from archival sources such as COMPUSTAT on the level of resources allocated by competitors to key functional activities of the firm (e.g., production, marketing, R&D, etc.), comparing those spending levels with resource allocation at the focal firm, and then planning changes in spending to ensure that practices are in line with other firms in the industry (Ghoshal and Westney, 1991). Such comparative processes could play an important role in decision making in a variety of different industries (Daft, Sormunen, and Parks, 1988; Porter, 1998). This raises the prospect of second-order imitation through board net-

work ties. While firms may not necessarily imitate the content of strategic decisions made by interlock partners in different industries, they may be influenced by the mimetic decision process of tied-to firms. Thus, mimetic scripts may be diffused through interlock ties across industries even if firms do not directly imitate the strategic content of tied-to firms.

As an example of second-order imitation, consider a scenario in which a focal firm, in the most recent time period, spent 4 percent of sales on R&D and its competitors spent an average of 1 percent of sales on R&D, while a tied-to firm in a different industry spent 4 percent of sales on R&D and its competitors spent an average of 12 percent. Second-order imitation by a focal firm would be evident if, at time t, the tied-to firm determines its R&D spending by imitating others in its industry such that it increases spending by 8 percent, to the level of its competitors, and the focal firm, having learned this method for determining R&D spending through its connection to the tied-to firm, then changes its R&D spending to match its own competitors, decreasing R&D spending by 3 percent. In this case, the outcomes in each of the interlocked firms is different because the average R&D spending differs between their two industries. In fact, the firms move apart in the level of their R&D spending. Nevertheless, the process used to determine the outcomes is similar. By contrast, first-order imitation would be evident if a particular decision were made by the tied-to firm and then echoed by the focal firm, e.g., if the tied-to firm increased R&D by 2 percent, perfect first-order imitation by the focal firm would lead to an increase of R&D by 2 percent.

Given that intraindustry imitation is manifested by greater or lower strategic similarity between the focal firm and other firms in its industry, after controlling for common industry-level factors, we hypothesize:

Hypothesis 1a (H1a): Greater similarity in business strategy between tied-to firms and other firms in their industries will lead to greater similarity in business strategy between the focal firm and other firms in its industry.

Acquisitions. Research on acquisition waves suggests that firms may be influenced by the acquisition activity of competitors (Browne and Rosengren, 1988; Kopp, 1990). The use of a mimetic decision process in this context is analogous to the use of mimetic processes in determining business strategy, although certain elements are unique to each context: firms sometimes collect information on the acquisition activity of competitors from archival sources such as the M&A Database and reference these data in deciding whether to modify the firm's policy toward acquisitions (Kopp, 1990; Phan, 2000). Although the occurrence of such mimetic behavior is well-established empirically, theoretical explanations for the imitation of competitors' acquisition activity are not well developed. Haunschild (1993) invoked social learning theory in proposing that the level or amount of acquisition activity at tied-to firms provides a concrete model that encourages imitation by the focal firm. Our theory, in contrast, suggests that social learning through board ties is more

pronounced for decision-making processes than for policy content. Thus, social learning through interlock ties may be especially likely to facilitate second-order imitation of acquisition activity, wherein ties to firms that imitate the acquisition activity of their competitors prompt similar mimetic processes at the focal firm. As in the case of business strategy, intraindustry imitation is likely to be manifested by greater or lower similarity between the focal firm and other firms in its industry with respect to acquisition activity, after controlling for common industry-level factors:

Hypothesis 1b (H1b): Greater similarity in acquisition activity between tied-to firms and other firms in their industries will lead to greater similarity in acquisition activity between the focal firm and other firms in its industry.

Executive compensation. A central aspect of executive compensation policy concerns the use of performance-contingent compensation (Seward and Walsh, 1996; Finkelstein and Boyd, 1998). Various forms of long-term incentive compensation, such as stock options and performance shares, are used to align executive compensation with shareholder performance. Empirical studies have found considerable variance in the extent to which boards design compensation policies that link executive pay to firm performance, and researchers in the organizational literature have begun to explore how social processes might predict whether firms design such policies (cf. Barkema and Gomez-Mejia, 1998). O'Reilly, Main, and Crystal (1988) suggested that social comparison processes may lead boards to consider the compensation policies of other firms in their industries in developing a policy for the focal firm. This proposition is consistent with qualitative and descriptive research on boards, which indicates that firms sometimes collect data from archival sources such as Compact Disclosure or surveys on executive compensation polices at other firms to inform their own policies, such as the level of performance-contingent compensation for top executives (Crystal, 1991).

Recent research by Westphal and Zajac (1997), however, provides little evidence that firms consistently imitate the compensation policies of their interlock partners. They found that board interlock ties to companies in other industries that had recently increased their use of performance-contingent executive compensation did not necessarily lead to similar change at the focal firm. The theoretical perspective developed in this study suggests that network ties may influence compensation policy more strongly when imitation is conceived as a second-order process: while firms may not necessarily imitate the level of performance-contingent compensation of their interlock partners, they may still adopt the mimetic processes used in determining compensation policies. Thus, we hypothesize:

Hypothesis 1c (H1c): Greater compensation similarity between tied-to firms and other firms in their industries will lead to greater compensation similarity between the focal firm and other firms in its industry.

Application of Mimetic Processes to Different Policy Decisions

The potential for second-order imitation raises the possibility that network effects could extend across individual policy decisions. To the extent that the comparative practices that underlie imitation can be adapted to various policy domains (Daft, Sormunen, and Parks, 1988), the imitation of such practices may influence multiple different policy outcomes. Our theoretical perspective suggests that if a firm is tied to other firms that compare their policies on a particular dimension against those of competitors, directors of the focal firm are more likely to accept such comparisons as a normatively appropriate component of the decision-making process. As discussed above, because such decision-making rules or scripts are more likely than decision outcomes to become taken for granted, or accepted on a preconscious level, such experience may lead directors to enact mimetic scripts in other policy arenas reflexively.

The adoption of an underlying mimetic script, resulting from a director's experience with imitation on other boards, can be viewed as a meta-construct that gives rise to mimetic processes in different policy domains at the focal firm. This perspective is consistent with the notion of a meta-script or abstract script invoked in social psychology and micro-sociology (Goffman, 1967; Nisbett and Ross, 1980: 34; Fletcher, Simpson, and Thomas, 2000). From this perspective, individuals learn abstract scripts that can be adapted to particular contexts, or instantiated in more specific forms in those contexts. Nisbett and Ross gave the example of general assumptions about appropriate customer service as an abstract script that is instantiated as more concrete scripts in different contexts (e.g., fast food restaurants, fine restaurants, airplanes, etc.). With respect to board decision processes, an abstract mimetic script, learned from a director's experience with imitation on other boards, can be instantiated as more concrete mimetic processes in different policy domains at the focal firm, resulting in greater similarity between the focal firm and competitors on multiple policy dimensions. Recent studies using second-order factor analysis suggest that such underlying, abstract scripts can be conceived as meta-constructs that give rise to more concrete scripts as first-order constructs (Feldt et al., 2000; Fletcher, Simpson, and Thomas, 2000). Concrete scripts are "quasi-independent" constructs that are "partially subsumed" by a more general or abstract script (Fletcher, Simpson, and Thomas, 2000: 343). In this case, the concrete mimetic scripts are partially subsumed by a common, abstract script that includes a general sequence of events (e.g., obtain information on policies at competitor firms, compare those policies with the focal firm's policies, and plan changes to ensure that practices are in line with other firms in the industry), but they are also quasi-independent because specific features of the scripts are adapted to the particular policy context (e.g., the source of information on competitor practices). This leads to our final hypothesis:

Hypothesis 2 (H2): Greater similarity on a particular policy dimension between tied-to firms and other firms in their industries will

lead to greater similarity on different policy dimensions between the focal firm and other firms in its industry.

METHOD

Our primary methodology involves longitudinal analyses of imitation using archival measures. In addition, we conducted supplementary analyses of imitation using original survey data from CEOs and outside directors to provide a more proximate test of the behavioral processes that underlie the hypothesized effects.

Hypothesis Tests Using Longitudinal Archival Data

Sample and data collection. Our sample was drawn from all firms listed in the 1989 Forbes and Fortune 500 indexes. Firms were dropped from the sample if complete data on business strategy, acquisition activity, and executive compensation were not available throughout the time period. The final sample included 433 companies. We conducted Kolmogorov-Smirnov two-sample tests to determine whether firms in the initial sample were significantly different from firms in the final sample with respect to size and profitability. Firms in our sample were not significantly different in size (total sales or assets), profitability (return on assets or return on equity), or annual stock returns from firms in the larger sample frame (p-values range from .43 to .89). Moreover, sample firms come from 31 different industries (measured by two-digit SIC code) that are representative of all industries in the population of Forbes and Fortune 500 firms with respect to major attributes of industry structure, including concentration and industry constraint (Burt, 1983).

We collected sufficient data to analyze similarity in business strategy, acquisition activity, and compensation policy over a five-year period, 1990–1994. To lag our dependent variables appropriately, while also measuring prior levels of the similarity variables (discussed further below), we collected data for the years 1986 to 1995. Data on business strategy and financial characteristics came from COMPUSTAT. We collected executive compensation data from proxy statements and information on board characteristics and interlock ties from both proxies and *Standard & Poor's Register of Corporations, Directors, and Executives*. Acquisition data came from COMPUSTAT and the Securities Data Corporation.

Measures. We followed several prior studies in measuring business strategy according to key resource allocations across the primary functional areas of the firm (e.g., Finkelstein and Hambrick, 1990; Thomas, Litschert, and Ramaswamy, 1991; Geletkanycz and Hambrick, 1997). The following strategic dimensions are included (cf. Finkelstein and Hambrick, 1990): advertising intensity (advertising expense/sales), plant and equipment newness (net plant and equipment/gross plant and equipment), research and development intensity (R&D expense/sales), overhead efficiency (selling, general, and administrative expense/sales), and financial leverage (total debt/equity). The first three dimensions capture marketing, technology, and capacity expansion activities, while overhead efficiency reflects the cost structure of the firm, and the firm's capital management is indicated by

financial leverage. This set of strategic dimensions effectively captures the "competitive profile" of the firm (Geletkanycz and Hambrick, 1997: 667). As several authors have noted, this measurement approach is based on Mintzberg's (1978) conception of strategy as a pattern of actions (e.g., Finkelstein and Hambrick, 1990; Thomas, Litschert, and Ramaswamy, 1991; Geletkanycz and Hambrick, 1997). A viable alternative approach to measuring business strategy classifies firms into discrete configurations of resource deployments (e.g., Porter, 1998). Although this approach has some face validity, our continuous measure captures gradations in strategic change that range along a continuum from relatively modest adjustments in spending levels to relatively large changes in resource allocation.

We operationalized similarity in business strategy (*business strategy similarity*) using the following Euclidean distance measure, which has been used in prior studies to measure similarity at both the individual and firm levels (Westphal and Zajac, 1997):

$$SS_{it} = \sum_{d=1}^{5}\left(\text{norm}\sum_{j=1}^{N=1}\left|S_{idt} - S_{jdt}\right|\right)$$

where SS_{it} is the strategic similarity of firm i to the other N – 1 firms in its primary industry in period t and S_{idt} is a specific strategic dimension d of firm i in period t. Industry is measured at the two-digit SIC code level, given evidence that when firms make performance comparisons (e.g., for the purpose of determining executive salaries), they compare themselves against other firms in the same two-digit SIC code (Antle and Smith, 1985; Gibbons and Murphy, 1990). This measure adjusts for the number of competitors and differences in metrics across individual strategy dimensions in developing an overall similarity score. We conducted two separate analyses to ensure that our results were not contingent on primary SIC code classifications. In the first analysis, we measured similarity for each industry in which the firm was present (i.e., including secondary SIC codes) and then developed a weighted measure according to the firm's relative sales in each industry. In the second analysis, we excluded conglomerates, for which the primary SIC code classification may be less meaningful (conglomerates were defined as firms that make less than 75 percent of their sales from one industry). In each case, the results presented below were substantively unchanged. We conducted a confirmatory factor analysis to examine whether the individual business-strategy-similarity variables loaded on a single, underlying construct. All variables loaded on one construct as expected, with loadings of .5 or greater. Reliability of the measure was also acceptably high (alpha = .81).

In the primary analyses, we analyzed similarity using change scores. Change in strategic similarity (SC) was measured for the focal firm as strategic similarity at time t+2 (SS_{it+2}) minus strategic similarity in the current year (SS_{it}). This value was subtracted from the highest value in the sample, so that higher values indicate greater increases in similarity (Finkelstein and Hambrick, 1990). We then developed an analogous

measure for each tied-to firm, lagged by one year, and computed the average value. Several prior studies have measured strategic change over two- or three-year time periods (e.g., Wiersema and Bantel, 1992; Haveman, 1993; Boeker, 1997; Geletkanycz and Hambrick, 1997; Greve, 1998). Large firms can make significant changes in their internal resource allocation within two years. Although some have argued that firms should make significant strategic changes gradually, allowing the organization time to adjust (cf. Quinn, 1980), several scholars in the strategy literature have noted that firms rarely do so, tending instead to make major strategic changes in relatively concentrated periods of time (Quinn, 1980; Tushman and Romanelli, 1985; Abrahamson, 2000).

Two potential problems with change scores are low reliability and biased coefficients that result from correlations between the independent variables and the initial state of the dependent variable (i.e., y_1 in the change score $y_2 - y_1$) (Allison, 1990; Edwards, 1995). As noted above, however, the alpha for our measure of change in business strategy is acceptably high. Moreover, correlations between the independent variables and the initial state of the change variables (i.e., similarity to competitors in the prior period) are consistently nonsignificant (at alpha = .05). Under these circumstances, the use of change scores is not inferior to the regressor variable method (i.e., regressing y_2 on y_1 and the independent variables). In fact, the change variable method may be superior under these conditions. When the distribution of the dependent variable is stable from t_1 to t_2 and does not covary with the independent variables, results using change scores can be less biased than results from the regressor variable method (Kenny, 1975; Kenny and Cohen, 1979; Allison, 1990). Our data satisfy these conditions. In any event, separate analyses confirmed that results for our hypotheses are nearly identical using either approach. We report the results of analyses using change scores below. The set of tied-to firms includes all companies at which a director from the focal firm had a board appointment. We included the board ties of both inside and outside directors. We did not include indirect ties (i.e., ties between two firms resulting from a common tie to a third party) because our theory suggests that it is direct participation in decision-making processes on other boards that will influence social modeling processes. Nevertheless, we conducted separate analyses including indirect ties and discuss these further below.

Similarity in acquisition activity. Two major dimensions of acquisition activity have been examined in the literature: the level of such activity, typically indicated by the number of acquisitions over a period of time, and the kind of acquisition (i.e., related or diversified) (Haunschild, 1993; Brush, 1996; Kochhar and Hitt, 1998). Firms can be influenced by the acquisition activity of competitors on both dimensions. As noted above, we followed prior research in measuring the level of acquisition activity as the number of acquisitions over a two-year period (Haunschild, 1993; Brush, 1996). An acquisition was classified as related when the two-digit SIC code of the acquiring firm matched that of the acquired firm; an acquisition was classified as diversified when these codes

did not match (Haunschild, 1993; Kochhar and Hitt, 1998). Each type of acquisition indicates a particular conception of corporate strategy. Related acquisitions have the strategic purpose of leveraging and extending the firm's existing capabilities, while diversifying acquisitions reduce product-market risk (Hopkins, 1987; Brush, 1996; Kochhar and Hitt, 1998). The strategic importance of related acquisitions is suggested by the resource-based view of strategy, which, as espoused by Barney (1991) and Dierickx and Cool (1989), suggests that because rent-generating resources are non-fungible, they cannot be easily applied to different market settings. An important implication of this perspective is that diversified acquisitions should tend to be less profitable than related acquisitions, and recent evidence generally supports this perspective (Anand and Singh, 1997). We conducted separate analyses for each type of acquisition, using similarity measures that directly parallel our measures of business strategy similarity (*acquisition activity similarity*).

Compensation similarity. As discussed above, the relative use of performance-contingent compensation is a central aspect of executive compensation policy (Seward and Walsh, 1996; Finkelstein and Boyd, 1998). The use of performance-contingent compensation was measured for each year as the total value of long-term incentive grants to the CEO divided by the CEO's total direct compensation (Westphal and Zajac, 1997; Sanders and Carpenter, 1998). Long-term incentive grants include stock options, restricted stock, and so-called performance incentives (granted in shares, units or cash). We used the Black-Scholes method to estimate the value of stock options. Other stock-based grants were valued using the market price on the date of grant (see Crystal, 1984; Westphal and Zajac, 1997). We then developed measures of *compensation similarity* that directly parallel measures of strategy similarity described above.

Control variables. To account for industry-specific trends of standardization or specialization, we measured change in similarity at the industry level by calculating the coefficient of variation among firms in the industry (excluding the focal firm) in each year (Allison, 1978) and then created industry change variables to parallel the independent variables discussed above. We also controlled for change in similarity at tied-to industries, averaged across the industries of tied-to firms, to control for any possible confounding effects of similarities between the focal firm's industry and tied-to firms' industries that might prompt imitation by both the focal firm and tied-to firms. Moreover, given that mimetic processes may tend to become routinized over time (Levitt and March, 1988; Ocasio, 1999), we controlled for prior change in business strategy similarity, similarity in acquisition activity, and compensation similarity at the focal firm over the prior three-year period. The hypothesized effects were unchanged when this variable was measured over shorter or longer periods of time (e.g., two or four years). These controls minimize left truncation in our analyses, as recommended by Carroll and Hannan (2000: 149–150).

Neo-institutional perspectives would suggest that relatively high levels of environmental uncertainty could lead to greater

use of imitation in the decision-making process (DiMaggio and Powell, 1983; Haunschild and Miner, 1997). Thus, we included a control variable to capture environmental uncertainty. We used the measure developed by Wiersema and Bantel (1993), which gauges uncertainty according to changes in the industry concentration ratio (i.e., the percentage of an industry's sales, at the two-digit SIC level, accounted for by the four largest firms). The concentration ratio is a primary determinant of competitive dynamics in an industry, and large absolute changes in this variable indicate a high level of environmental uncertainty (Wiersema and Bantel, 1993; Porter, 1998).

Some research has provided evidence that central firms may be more susceptible to institutional processes such as mimetic isomorphism (Gartrell, 1987). Because board centrality might therefore be associated with the level of imitation, we controlled for board centrality in the network of interlocking directorates, measured as the natural log of the total number of nonduplicated ties between the focal board and all other boards in the larger sample (Davis, 1991; Haunschild, 1993).

We also controlled for several governance variables that have been hypothesized in prior studies to influence the level of board involvement in decision making. The first two capture key aspects of board structure and composition: the portion of the board composed of outside directors appointed after the CEO (Wade, O'Reilly, and Chandratat, 1990) and board leadership structure, coded as 1 if the CEO and board chair positions are separate in a particular year (Mallette and Fowler, 1992). These variables are thought to indicate the level of board independence from management. Independent directors might be considered more likely to imitate the policies of competitors in determining the focal firm's policies because, according to some governance researchers (e.g., Lorsch and MacIver, 1989), outside directors have less firm-specific knowledge than inside directors and are therefore less able to develop policies that exploit the firm's unique assets or market position. In addition, we controlled for the level of ownership by institutional investors. Although empirical evidence is mixed, some authors have suggested that powerful institutional investors may pressure independent directors to exert influence over strategic decision making (Useem, 1993). We measured institutional ownership as the number of shares held by pension funds, banks and trust companies, savings and loans, mutual fund managers, and labor union funds divided by total common stock (Hill and Hansen, 1991).

Given that firm size has been shown to predict mimetic tendencies (Fligstein, 1991; Deephouse, 1999), we controlled for size in all models, measured as the log of sales. Because poor performance could lead firms to change their decision-making processes, including their propensity to imitate competitors in determining strategy or compensation policies (Cyert and March, 1963; Fredrickson and Mitchell, 1984), we included two measures of firm performance in all models: return on assets and market-to-book value of equity. In separate analyses, we operationalized performance relative to his-

torical levels (i.e., the average over the prior three years) and performance relative to other firms in the same industry (averaged across firms in the industry) using spline functions (see Greve, 1998), and the hypothesized results were unchanged. Given that acquisition activity may be constrained by debt-service requirements, we also controlled for the debt-to-assets ratio in analyses of acquisition activity. Finally, we controlled for time-specific determinants of imitation by including year dummy variables in all models.

Although it might be supposed that firms would be more likely to imitate competitors in relatively concentrated industries, industry concentration is not correlated with our independent variables, and separate analyses confirmed that the hypothesized effects were unchanged when concentration was included in the models. Separate analyses also showed that a focal firm's diversification was not correlated with our independent variables and had no effect on imitation of compensation or acquisition activity (diversification was marginally related to imitation of business strategy). Industry concentration and diversification generally had a stronger effect on imitation when control variables for prior imitation were omitted, suggesting that the effect of the former variables, which are relatively stable over time, are reflected in prior imitation by the focal firm.

While we focus on board interlock ties in this study, a variety of other social network ties could influence acquisition activity. In a recent study, Palmer and Barber (2001) found that certain social ties held by CEOs, such as membership in an exclusive social club, had strong effects on the likelihood of completing a diversified acquisition. While membership in elite social clubs may provide information and influence that facilitates acquisition activity (Palmer and Barber, 2001), we did not control for such network variables in our analysis because it seems less likely that such ties would spread information about underlying mimetic processes. It is also not clear why a CEO's social influence, as indicated by membership in an elite social club, would affect an organization's mimetic propensity.

We also did not control for the length of a director's tenure. It might be supposed that the effect of director ties to another firm on practices at the focal firm would depend on the length of a director's tenure at the other company, to the extent that directors learn decision-making processes better over time. Given that directors typically participate in monthly board meetings and often monthly or bimonthly committee meetings, however, they can be expected to learn decision-making processes relatively quickly. Moreover, the average tenure of directors in our sample is relatively long (approximately seven years, with a standard deviation of about five years). Thus, it seems unlikely that director tenure would explain much variance in the extent of social learning of decision-making processes.

Analysis. Given the potential for autocorrelation in our pooled cross-sectional dataset, we used generalized least squares (GLS), random-effects models to predict movement of business strategy similarity, acquisition similarity, and com-

pensation similarity. These models are based on the following equations:

$$y_i = \alpha + x_i\beta + \nu_i + \varepsilon_i \quad (1)$$

$$(y_{it} - y_i) = (x_{it} - x_i)\beta + (\varepsilon_{it} - \varepsilon_i) \quad (2)$$

where ν_i is the unit-specific residual and ε_{it} is the standard residual. The fixed-effects or within estimator essentially uses ordinary least squares to estimate equation 2, the between estimator uses OLS to estimate equation 1, and the random-effects estimator is a (matrix) weighted average of the estimates produced by the between and fixed-effects estimators. The random-effects estimator, unlike the fixed-effects estimator, assumes that ν_i is not correlated with x_i in equation 1 above. To determine whether our use of the random-effects estimator is appropriate, we conducted the Hausman specification test (Greene, 1993). This tests whether coefficients estimated by the fixed-effects estimator and those estimated by the random-effects estimator are significantly different. The null hypothesis is that there is no systematic difference in coefficients generated by the two estimators. In this case the χ^2 was not significant (at $\alpha = .10$), suggesting that our models are correctly specified and that ν_i is not correlated with x_i.

Using lagged versions of dependent variables as control variables in the models (i.e., prior change in similarity) as we did can create additional serial correlation that is not addressed by the random-effects estimator. To adjust for this, we specified the lagged dependent variables as instruments (Greene, 1993). In addition, to correct for heteroskedasticity resulting from industry differences, we used the Newey-West robust variance estimator for clustered data (Newey and West, 1987; Rogers, 1993). This procedure generates robust estimates when observations are not independent within clusters or groups. In this case, observations involving firms in the same industry may not be independent. The robust variance estimator allows us to correct for such biases. It essentially treats each cluster (i.e., firms in the same industry) as a "super-observation" that contributes to the variance estimate.

We measured similarity over five time periods, yielding a total of 2,165 organizational spells. The measure assesses movement by the focal firm toward other firms in the industry, net of movement by other firms, to isolate the effects of actions taken by the focal firm. In other words, if all of the other firms in the industry moved closer to the focal firm, without the focal firm changing its strategic posture, the dependent variable would be zero. In separate analyses, we tested the hypotheses using two-stage least squares regression models (Johnston and DiNardo, 1997), which estimate similarity on a particular policy dimension y_1 by first generating reduced-form estimates of similarity on each of the other two dimensions, y_2 and y_3, and then including predicted values from those equations as instruments in a second-stage

equation estimating similarity on y_1. The results were substantively unchanged from the results presented below. This indicates that any observed relationship between similarity at tied-to firms on a particular policy dimension y_2 and similarity at the focal firm on a different dimension y_1 is not an artifact of concurrent changes in y_2 at the focal firm.

Hypothesis Tests Using a Combination of Survey and Archival Data

To provide an additional test of our theoretical perspective that complements our longitudinal, archival methodology, we included questions about mimetic practices in a large sample survey of CEOs and outside directors at firms in our sample frame. The survey was sent to CEOs of 600 firms listed in the 1998 Forbes/Fortune 500 listings. Two hundred and fifty-seven CEOs responded, and complete archival data were available for 241 of those cases (40 percent of the initial sample frame). Kolmogorov-Smirnov two-sample tests showed that respondents were not significantly different from nonrespondents with respect to business strategy similarity, compensation similarity, performance, size, or board centrality (N = 562).

The survey items were designed to assess the extent to which firms have adopted a mimetic script (i.e., a sequence of steps that can lead to similarity to competitors) in different policy domains, thus permitting a relatively direct test of the decision-making processes that underlie second-order imitation. One survey measure assessed the use of a *mimetic decision process* in determining business strategy. For instance, one item asked respondents to assess to what extent the firm's strategic decision-making process involved the following actions to determine the level of spending on R&D: acquiring data on how much competitors spend on R&D; comparing the spending of competitors with spending at the focal firm; and using this analysis, planning changes in spending levels to ensure that practices are in line with other firms in the industry. Five additional items asked about the use of mimetic processes in determining other dimensions of business strategy, and an analogous set of questions gauged the use of imitation in making decisions about CEO compensation and acquisitions. Factor analysis showed that these items loaded on three different factors, as expected, with acceptably high reliability for each scale (alpha = .86 for the business strategy scale, .87 for the acquisition activity scale, and .91 for the compensation scale). Analogous survey scales were included in a second questionnaire sent to all outside directors at firms whose CEOs had responded to the initial survey. For the sample of firms with a responding CEO and at least one responding director (N = 196), there was strong evidence for interrater reliability of the survey measures (kappa coefficients exceeded .75 for all scale items but one). These items were based on 5-point Likert-type response formats.

We used LISREL (Joreskog and Sorbum, 1993) to examine whether these perceptual measures of mimetic processes mediated the effects of interlock ties on change in business strategic similarity, compensation similarity, and similarity in

acquisition activity at the focal firm. The exogenous constructs were measured in the prior year (t-1), and the ultimate endogenous constructs (change in similarity at the focal firm) were measured in the year subsequent to the survey (t+1). A primary advantage of structural equation modeling is that it permits a stronger test of validity by estimating the direct structural relation between a latent variable and its purported indicator, allowing relationships between that indicator and other indicators and constructs to vary (Bollen, 1989). We used a two-stage approach to model fitting and assessment in which measurement properties of the model are assessed prior to considering structural relationships between constructs.

RESULTS

Results of Hypothesis Tests Using Longitudinal Archival Data

Table 1 presents descriptive statistics and correlations for the variables used in our analyses. Table 2 presents results of GLS models predicting change in business strategy similarity, similarity in acquisition activity, and compensation similarity at the focal firm. H1a suggested that change in business strategy similarity would be positively influenced by imitation of business strategy at tied-to firms. This hypothesis is supported in model 1, which shows that change in the business strategy similarity of tied-to firms had a significant positive effect on change in such similarity at the focal firm. Similarly, model 1 indicated support for H2: change in similarity in acquisition activity and compensation similarity at tied-to firms also had a significant positive effect on change in business strategy similarity at the focal firm.

In model 2 of table 2 results are presented for diversified acquisition activity, and very similar results were obtained for related acquisition activity. The results support H1b: change in acquisition activity similarity of tied-to firms has a significant, positive effect on change in such similarity at the focal firm. H2 is further supported in this model. Change in similarity of tied-to firms on the other two policy dimensions, business strategy and compensation, has a significant and positive effect on change in acquisition activity similarity at the focal firm.

Model 3 of table 2 presents results of a GLS model predicting change in compensation similarity at the focal firm. In general, results in these analyses mirrored those in models 1 and 2. Change in compensation similarity at tied-to firms had a significant and positive effect on change in compensation similarity at the focal firm, supporting H1c. H2 was partially supported. Change in business strategy similarity at tied-to firms had a significant, positive effect on change in compensation similarity at the focal firm, but change in acquisition activity similarity at tied-to firms was not significantly related to change in compensation similarity at the focal firm. Overall, the results provide strong evidence in support of hypothesis 2, which predicted cross-policy imitation through board ties: imitation of competitors on a particular policy dimension by tied-to firms increased imitation by the focal firm on a different policy dimension in all cases but one (i.e., the effect of imitation of acquisition activity by tied-to firms on imitation of compensation by the focal firm).

Table 1

Descriptive Statistics and Pearson Correlation Coefficients

Variable	Mean	S.D.	1	2	3	4	5
1. Change in business strat. similarity of tied-to firms	0.01	1.01					
2. Change in comp. similarity of tied-to firms	0.05	0.16	.08				
3. Change in acquisition activity similarity of tied-to firms	0.05	1.14	.14	.10			
4. Prior change in business strat. similarity of focal firm	0.02	0.62	.06	.04	.03		
5. Prior change in comp. similarity of focal firm	0.06	0.02	.03	.09	.01	.12	
6. Prior change in acquisition activity sim. of focal firm	0.04	0.68	.04	.03	.04	.15	.09
7. Variance in business strat. similarity of tied-to firms	0.82	0.34	.02	.03	.02	.01	−.01
8. Variance in comp. similarity of tied-to firms	0.12	0.06	−.01	.02	.01	.02	.01
9. Variance in acquisition activity sim. of tied-to firms	0.72	0.29	−.01	−.02	.04	.00	.00
10. Return on assets	5.05	7.06	.01	−.01	.05	.01	−.02
11. Market-to-book value	1.73	1.66	.02	−.01	.01	.03	.00
12. Log of sales	8.11	1.17	−.02	.00	.01	−.02	−.03
13. Environmental uncertainty, focal firm	0.02	0.03	−.01	.01	−.02	.05	.02
14. Board centrality	1.79	0.95	.02	.05	.02	.02	.04
15. Directors appointed after the CEO	0.31	0.26	.00	−.01	−.01	−.02	.02
16. CEO/board chair separation	0.77	0.42	.03	.01	.00	.02	−.02
17. Institutional ownership	0.34	0.20	.01	.01	.02	.05	−.01
18. Change in business strat. similarity, focal industry	−0.03	0.10	.02	.01	−.01	.02	.01
19. Change in business strat. similarity, tied-to industries	−0.02	0.04	.03	.04	.05	.00	−.02
20. Change in comp. similarity, focal industry	0.03	0.03	.01	.01	.00	.04	.03
21. Change in comp. similarity, tied-to industries	0.01	0.02	.03	.06	.02	−.01	.00
22. Change in acq. activity similarity, focal industry	−0.01	0.09	−.01	−.02	.01	.04	.02
23. Change in acq. activity similarity, tied-to industries	0.00	0.04	.04	.02	.06	−.01	.01
24. Change in business strat. similarity	0.02	1.92	.35	.24	.20	.12	.22
25. Change in comp. similarity	0.03	0.31	.21	.28	.14	.18	.09
26. Change in acquisition activity similarity	0.05	1.76	.20	.15	.23	.19	.06

Variable	6	7	8	9	10	11	12	13	14	15
7. Variance in business strat. similarity of tied-to firms	.01									
8. Variance in comp. similarity of tied-to firms	.00	.06								
9. Variance in acquisition activity sim. of tied-to firms	.01	.08	.05							
10. Return on assets	.09	.02	.00	.03						
11. Market-to-book value	.12	.01	.01	−.02	.17					
12. Log of sales	.13	−.03	.00	.01	−.05	−.04				
13. Environmental uncertainty, focal firm	.03	.01	.02	.03	−.06	−.03	−.07			
14. Board centrality	−.02	−.02	−.03	.02	.03	−.01	.03	.00		
15. Directors appointed after the CEO	−.01	.02	−.01	.02	.08	.02	.13	.11	.02	
16. CEO/board chair separation	.04	−.01	.00	.04	.06	.03	.10	.09	−.03	−.21
17. Institutional ownership	.10	−.03	.04	.01	.12	.05	.14	.02	.02	.05
18. Change in business strat. similarity, focal industry	.03	.02	.04	−.01	−.02	.02	−.03	.05	−.01	−.02
19. Change in business strat. similarity, tied-to industries	.01	.00	.05	.04	.01	−.01	.01	.00	−.02	−.03
20. Change in comp. similarity, focal industry	.02	.01	.01	.01	−.04	−.01	−.02	.08	−.02	−.01
21. Change in comp. similarity, tied-to industries	−.01	.00	−.01	.00	.03	.01	−.01	.01	.00	.02
22. Change in acq. activity similarity, focal industry	.06	−.01	.03	.02	.02	.05	−.06	.03	−.03	.01
23. Change in acq. activity similarity, tied-to industries	.02	−.01	.00	.04	.01	−.01	.00	−.01	.01	.04
24. Change in business strat. similarity	.15	.27	.12	.12	−.06	−.32	.28	.13	.07	.04
25. Change in comp. similarity	.19	.15	.27	.12	−.06	−.03	.25	.06	.13	.03
26. Change in acquisition activity similarity	.20	.09	.10	.20	.02	.17	.14	.05	.13	.01

Variable	16	17	18	19	20	21	22	23	24	25
17. Institutional ownership	.03									
18. Change in business strat. similarity, focal industry	−.01	.01								
19. Change in business strat. similarity, tied-to industries	.00	−.01	.05							
20. Change in comp. similarity, focal industry	−.01	.05	.08	.02						
21. Change in comp. similarity, tied-to industries	.03	.00	.01	.01	.01					
22. Change in acq. activity similarity, focal industry	.07	−.01	.10	−.02	.05	.00				
23. Change in acq. activity similarity, tied-to industries	.02	.02	.03	.02	.01	.03	.01			
24. Change in business strat. similarity	.21	−.03	.12	.04	.08	.02	.07	.02		
25. Change in comp. similarity	.10	.04	.05	.06	.13	.08	.04	.03	.18	
26. Change in acquisition activity similarity	.14	.06	.07	.02	.05	−.01	.09	−.01	.25	.21

Among the control variables, the most consistent predictor of imitation is firm size. Larger firms are more likely to imitate competitors across all three policy domains, consistent with

Table 2

GLS Regression Analysis (N = 2,165)*

Independent variable	Model 1 Business strategy similarity	Model 2 Similarity in acquisition activity	Model 3 Compensation similarity
1. Change in business strategy similarity of tied-to firms	.208••••	.063••	.027•••
	(.035)	(.034)	(.011)
2. Change in compensation similarity of tied-to firms	.676••••	.802••	.231••••
	(.226)	(.346)	(.074)
3. Change in acquisition activity similarity of tied-to firms	.059•••	.086•••	.010
	(.024)	(.030)	(.008)
4. Return on assets	–.008	.003	–.003+
	(.006)	(.006)	(.002)
5. Market-to-book value	–.096••••	.064••	–.002
	(.026)	(.029)	(.008)
6. Log of sales	.094••••	.155••	.021••
	(.028)	(.061)	(.009)
7. Environmental uncertainty	1.813••	1.179	.423
	(.761)	(1.841)	(.250)
8. Board centrality	.043•	.101	.018••
	(.026)	(.069)	(.008)
9. Directors appointed after the CEO	.037	–.057	.022
	(.110)	(.279)	(.036)
10. CEO/board chair separation	.290••••	–.268	.035
	(.084)	(.180)	(.027)
11. Institutional ownership	–.119	.526	.055
	(.157)	(.351)	(.052)
12. Debt/assets		.297••	
		(.116)	
13. Prior change in business strat. similarity of focal firm	.078•	.125 •••	.033••
	(.045)	(.043)	(.015)
14. Prior change in comp. similarity of focal firm	8.702•••	3.270	1.530
	(3.398)	(4.098)	(1.077)
15. Prior change in acquisition activity similarity of focal firm	.075•	.207 ••	.029••
	(.040)	(.102)	(.013)
16. Change in acquisition activity similarity–focal industry	.440••	.255	.432••
	(.189)	(.489)	(.207)
17. Change in acquisition activity similarity–tied-to industry	.587	–.213	.744•
	(.457)	(.466)	(.425)
18. Year 1	–.016	–.097	.003
	(.073)	(.065)	(.023)
19. Year 2	–.102	–.042	–.001
	(.073)	(.068)	(.024)
20. Year 3	.034	.013	.017
	(.072)	(.067)	(.023)
21. Year 4	.013	.082	–.011
	(.073)	(.067)	(.023)
Constant	1.544	9.676••••	.346
	(2.103)	(2.609)	(.654)
Chi-square	343.16••••	141.89••••	124.05••••

• $p \leq .10$; •• $p \leq .05$; ••• $p \leq .01$; •••• $p \leq .001$; one-tailed tests for hypothesized effects.
* Standard errors are in parentheses. Model 2 results are for diversified acquisitions.

past research (Fligstein, 1991; Deephouse, 1999). The results also indicate that firms with poor market-to-book value are more likely to imitate their competitors with respect to business strategy and acquisition activity. Finally, there is some evidence that prior imitation by the focal firm on a particular policy dimension increases the likelihood of subsequent imitation in different policy domains, although the evidence is not consistent across models. Imitation of a particular policy is not strongly associated with subsequent imitation of the same policy: firms may significantly increase similarity to competitors in one period and then, having adjusted their strategy as desired, make little or no

change in subsequent periods. Overall, the most consistent effects in the analyses, aside from firm size, are the hypothesized effects of change in similarity and variance in similarity at tied-to firms. The insignificant effects of change in similarity at tied-to industries is not inconsistent with our hypotheses. Given that this control variable is included in the models together with change in similarity at tied-to firms, a significant effect would have indicated that changes in similarity among firms in other industries that are not tied to the focal firm through board interlocks are correlated with changes in similarity at the focal firm, which is not suggested by our theory.

As noted above, prior studies have generally not found evidence for first-order imitation of strategic policies, including business strategy and compensation policy, through board interlock ties that lead to similar changes at the focal firm (Davis, 1994; Fligstein, 1995; Westphal and Zajac, 1997; Palmer and Barber, 2001). Moreover, we replicated these (non) results in separate analyses; in particular, we modeled simple change in the level of compensation and business strategy variables as a function of prior change in those variables at tied-to firms. The results were consistently non-significant, suggesting that companies in this sample did not appear to imitate the content of business strategy and compensation policies of interlock partners in other industries.

We also assessed first-order imitation of acquisition activity, given that Haunschild (1993) did find evidence for the diffusion of acquisition activity through board interlocks. The results of these analyses are provided in table 3. Model 1 essentially replicates Haunschild's (1993) primary finding: change in the level of acquisition activity by tied-to firms predicts change in the level of such activity at the focal firm. We then examined first-order imitation together with second-order imitation by conducting a two-stage regression analysis of acquisition activity (model 2), in which the first-stage equation estimates similarity in acquisition activity based on similarity at tied-to firms (i.e., the second-order imitation model shown in table 3), and parameter estimates from this equation are included as an instrumental variable in estimating the level of acquisition activity. The second-order effect remains significant when the instrumental variable from the second-order model is included together with the first-order variable. The first-order effect becomes nonsignificant, which suggests that what appeared to be first-order imitation of acquisition activity (i.e., simple imitation of acquisition strategies of tied-to firms) may actually mask second-order imitation (i.e., imitation of the propensity for tied-to firms to imitate their competitors with respect to acquisition activity and other policy outcomes).

We also conducted separate analyses to explore the possible role of indirect ties in second-order imitation. Mizruchi (1992) found that indirect ties through financial institutions strongly predicted similarity in political behavior between firms. He suggested that boards of financial institutions provide a forum for the exchange of information, including information about political contributions, leading to similar political behavior between firms that share board ties to the

Table 3

Supplementary Analyses of Acquisition Activity (N = 2,165)*

Independent variable	Model 1	Model 2
1. Change in acquisition activity at tied-to firms	.051••	.032
	(.023)	(.035)
2. Instrumental variable from model of acquisition similarity		.092••••
		(.026)
3. Return on assets	.003•	.004•
	(.002)	(.002)
4. Market-to-book value	.011•••	.015•••
	(.004)	(.006)
5. Log of sales	.016	.016
	(.010)	(.013)
6. Environmental uncertainty	.228	.568
	(.298)	(.421)
7. Board centrality	.020•	.033••
	(.012)	(.016)
8. Debt/assets	.067••	.086••
	(.033)	(.041)
9. Prior change in acquisition activity at focal firm	.026•	.037•
	(.015)	(.022)
10. Year 1	−.003	−.037
	(.034)	(.043)
11. Year 2	−.014	−.060
	(.034)	(.043)
12. Year 3	−.009	−.019
	(.034)	(.043)
13. Year 4	.031	.036
	(.034)	(.043)
Constant	1.109••••	.709••••
	(.093)	(.182)
Chi-square	30.72•••	42.02••••

• $p \leq .10$; •• $p \leq .05$; ••• $p \leq .01$; •••• $p \leq .001$; one-tailed tests for hypothesized effects.

* Standard errors are in parentheses. Results are presented for diversified acquisitions. Model 1 is estimated with Poisson regression, as the dependent variable is a moving count of the number of acquisitions in the last two years minus the number of acquisitions in the previous two-year period; the model includes control variables that were significant in Haunschild's (1993) analysis of acquisition activity. Model 2 is estimated with two-stage regression.

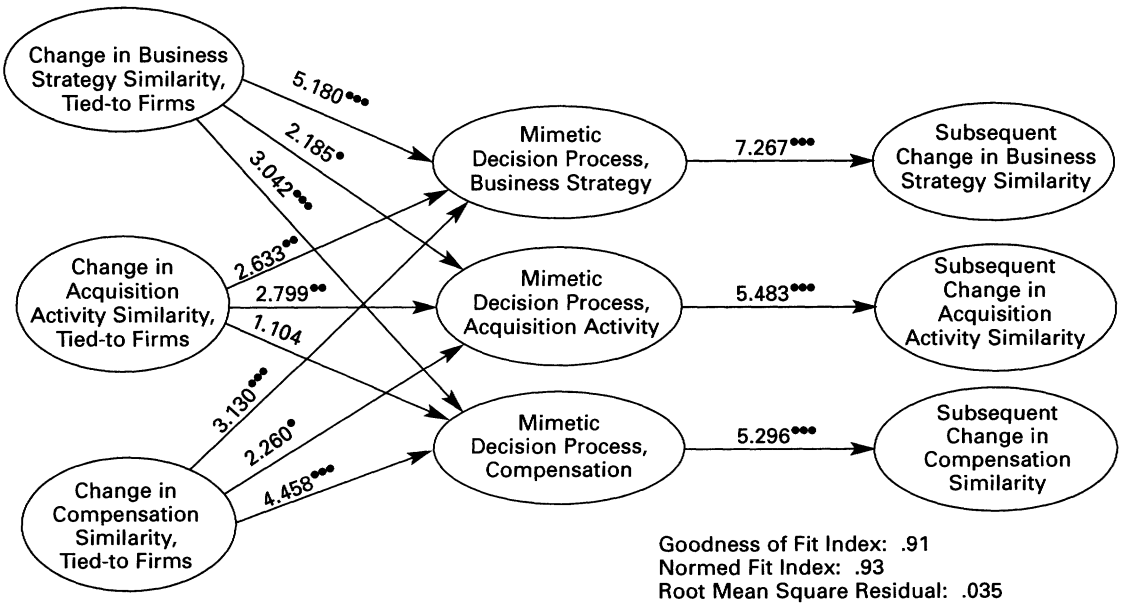
same institutions. As noted above, we did not expect indirect board ties to have strong effects on second-order imitation; such ties facilitate diffusion through explicit information sharing among corporate leaders, and while directors may discuss individual policy decisions that were made on other boards, they seem less likely to discuss tacit decision-making processes that occur elsewhere, such as mimetic processes. Nevertheless, to ensure that our results were not driven by indirect ties, we estimated separate models that included control variables for change in similarity of tied-to firms based on indirect ties through financial institutions. Given that institutional investors can also transfer strategic information and advice between firms, we also included control variables for change in similarity at other firms that had the same institutional investors. The results were substantively unchanged with these control variables included. Importantly, this also indicates that our findings are not driven by structural equivalence between the focal firm and tied-to firms (Burt, 1987; Mizruchi, 1992).

Results of Hypothesis Tests Using Survey and Archival Data

In our tests of the mediating effects of survey measures of mimetic process using LISREL, fit indices for the measurement model showed acceptable model fit: the goodness of fit index and normed fit index were .91 and .92, respectively. This provides further evidence that survey indicators of mimetic decision processes in each of the three policy domains—business strategy, acquisition activity, and compensation policy—loaded on three different factors, as expected. Results also showed that a meta-factor model, with first-order factor estimates (i.e., mimetic decision processes in each of the three policy domains) determined by a single meta-factor, fit the data well (goodness of fit index and normed fit index greater than .9). By contrast, a single-factor model, in which all mimetic process items are specified as indicators of a single, underlying construct, did not show adequate model fit. This supports our theoretical assumption that mimetic processes in each policy domain are quasi-independent constructs that are enacted from an underlying abstract mimetic script. We did not operationalize the meta-construct in the regression models (Bollen, 1989; Feldt et al., 2000) because this construct would simply mediate the relationships between imitation on a particular policy dimension at tied-to firms and imitation on each dimension at the focal firm.

Results of the path analyses are displayed in figure 1 (N = 241). They show that the survey measures of mimetic process mediated the effects of change in similarity at tied-to firms on subsequent change in similarity at the focal firm for all three policy dimensions (the control variables discussed above are included in the LISREL model but are not displayed

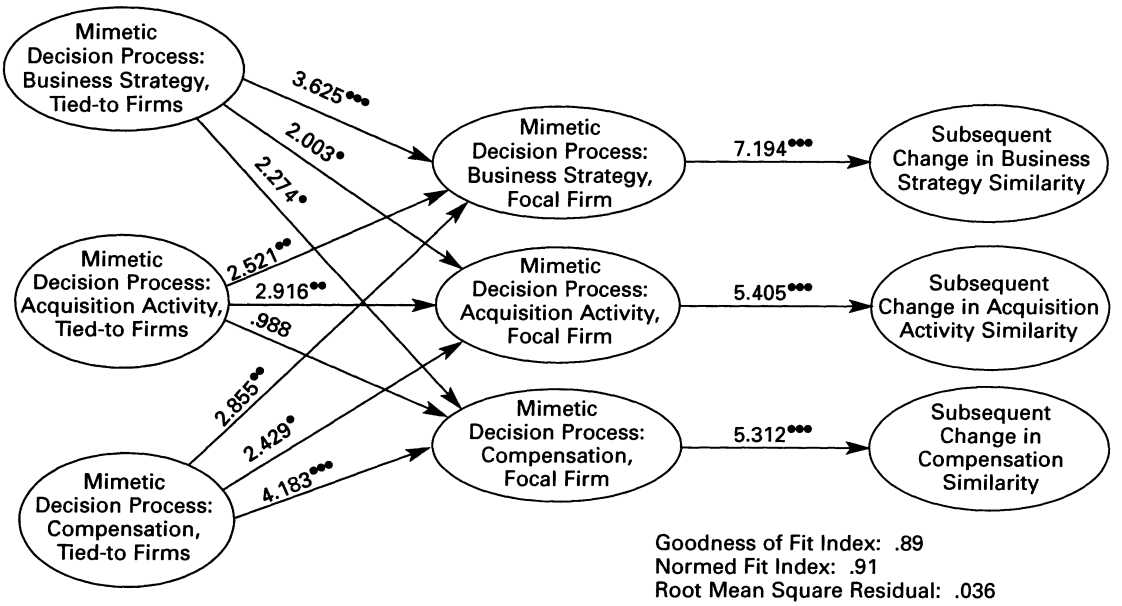
Figure 1. LISREL results (t-statistics).



• $p \leq .05$; •• $p \leq .01$; ••• $p \leq .001$; significance levels are one-tailed for hypothesized paths; control paths are not displayed.

in the figure). These results provide further support for H1a–H1c. Moreover, the results were also generally consistent with H2: greater similarity on a particular policy dimension (x) between tied-to firms and their competitors led to greater similarity between the focal firm and its competitors on a different policy dimension (y) through the use of a mimetic decision process in determining policy y. There was one exception to this pattern of results: the use of a mimetic decision process in determining compensation did not mediate the effect of similarity in acquisition activity of tied-to firms on similarity in compensation at the focal firm. In further analysis, we used the survey measures to operationalize imitation at tied-to firms, as well as imitation at the focal firm. Results of this analysis are shown in figure 2. They mirror the results of our primary analysis shown in figure 1: the relative use of a mimetic decision process in determining a particular policy at tied-to firms generally has a positive and significant effect on the use of a mimetic process in different policy domains at the focal firm, which in turn predicts subsequent change in similarity to competitors. This analysis has the limitation of being purely cross-sectional (i.e., imitation at the focal firm and tied-to firms is measured concurrently), but it has the advantage of providing a more direct test of the effect of mimetic processes at tied-to firms on mimetic processes at the focal firm. These results complement findings of the longitudinal, archival analyses by providing a relatively direct test of the behavioral processes that underlie the hypothesized effects of board interlock ties on imitation across different policy domains. Given that the LISREL analyses and the GLS analyses use data from different time periods, the consistent results also show that our findings generalize to different time periods.

Figure 2. Supplemental LISREL results of effects of mimetic decision processes at tied-to firms (t-statistics).



• $p \leq .05$; •• $p \leq .01$; ••• $p \leq .001$; significance levels are one-tailed for hypothesized paths; control paths are not displayed.

DISCUSSION

Overall, the findings provide consistent support for our theoretical perspective on second-order imitation through board interlock ties. Analyses indicated that individual changes in the content of business strategy and compensation policy did not appear to spread through interlock ties to firms in other industries. Instead, the results supported our view of interorganizational imitation as a second-order process in which firms adopt the underlying propensity for their interlock partners to imitate other firms, rather than merely imitating the content of individual strategic policies. Results of longitudinal, archival analyses suggested that increased use of imitation on a particular policy dimension among interlock partners was associated with greater use of imitation at the focal firm on multiple different policy dimensions, including business strategy, executive compensation, and acquisition activity. Moreover, analyses of large-sample survey data showed that these effects were mediated by the perceived use of mimetic practices in determining business strategy, acquisition activity, and compensation policy, providing relatively direct evidence for process imitation through board network ties. Thus, network effects were uncovered when imitation was conceived as a second-order process.

These findings contribute to the literature on institutional processes and interorganizational networks, as well as research on strategic decision making. Prior research on interlocking directorates has focused on how overlapping board memberships can promote mimetic isomorphism in a population by facilitating the diffusion of individual policies and structures between firms. The findings of this study show how the propensity to imitate other firms in determining different policies can itself spread through board ties, suggesting that mimetic isomorphism can occur at the level of underlying decision processes or scripts, and not merely at the level of individual policy content. The findings are also consistent with research on social learning, which has shown that individuals who observe or participate in decision-making processes tend to learn the actions that generate decision outcomes more deeply than they learn the final outcome itself, as behavioral processes are more likely than outcomes to be learned and enacted subconsciously (Gioia and Manz, 1985; Bandura, 1986; Chickering and Gamson, 1987; McKeachie, 1994). Accordingly, to the extent that imitation of industry competitors is an important aspect of the policy-making process, directors who observe or participate in mimetic practices on boards of other firms may be more likely to accept them as normatively appropriate components of the decision-making process. Having done so, they are more likely to initiate or support imitation at the focal firm. Given that direct participation in decision making is particularly likely to encourage social learning, board network ties, which allow managers to actively participate in the process of formulating strategic decisions, may be particularly likely to foster process imitation.

While our hypotheses and results examine the extent to which firms imitate industry competitors, our theoretical argument does not assume that when firms make compar-

isons, they always compare themselves with competitors. Rather, our theory suggests that when a focal firm has network ties to other firms that compare themselves with competitors, the focal firm is more likely to make such comparisons as well. It might still be supposed that the power of our hypotheses to explain decision-making outcomes is reduced to the extent that firms compare themselves with firms outside their industries. Porac, Wade, and Pollock (1999) found evidence, however, that firms typically compare themselves with competitors. Moreover, while we examined the imitation of competitors in this study, our theoretical arguments should generalize to other mimetic processes as well. Porac et al. (1995) showed that firms often view larger firms in their industry as closer rivals, which would suggest that firms may differentiate on the basis of firm size in making comparisons. Future research could extend our findings by examining whether network ties to firms that refine their mimetic decision process to focus on relatively large competitors might cause focal firms to make similar refinements to their decision process.

This study contributes to the strategy literature by offering a new perspective on how board network ties can influence strategic decision making. Past studies provide little evidence that board network ties facilitate the imitation of strategic policies (Davis, 1994; Fligstein, 1995; Westphal and Zajac, 1997; Palmer and Barber, 2001). In a recent study, Westphal and Fredrickson (2001) found evidence that directors' past strategic experiences at their home companies (i.e., firms where they serve as full-time managers) can influence subsequent change in corporate strategy at the focal firm immediately following a CEO succession event. There is less evidence, however, for such network effects during an incumbent CEO's tenure. Our theoretical perspective and supportive findings suggest that board networks can have significant effects on strategic decision making by facilitating the spread of underlying mimetic decision processes, which in turn influence a relatively broad range of strategic policy outcomes, including R&D spending, advertising, and other elements of business strategy, as well as acquisition activity and executive compensation policy. Analyses of our survey data suggested that mimetic processes that are spread through board ties can be viewed as meta-scripts that are instantiated as more concrete scripts in these different strategic policy domains. These findings contribute to a growing body of research that examines how interorganizational networks can influence strategic decision making (Powell, Koput, and Smith-Doerr, 1996; Gulati, 1998; Gulati, Nohria, and Zaheer, 2000). A limitation to our analysis is that our measure of business strategy does not directly reflect the resource-based perspective on strategy (Dierickx and Cool, 1989; Barney, 1991). Future studies could examine second-order imitation of strategic change using measures of business strategy that gauge more directly the extent to which firms seek to build or exploit sustainable resources.

The findings of this study suggest that greater theoretical and empirical attention should be focused on underlying decision-making processes in research on social networks, organiza-

tional learning, institutional processes, and corporate governance. Theory and research in these literatures that address second-order phenomena could yield important new insights. For instance, existing research on social networks in organizations has emphasized how formal network connections such as cross-functional teams lead to the diffusion of information about specific innovations (Monge and Contractor, 1997). Future efforts might also examine how such connections may lead to the modification of underlying approaches to problem solving (e.g., collaborative, participative approaches), which may lead to further innovations. Building on our finding that mimetic routines were applied across different decision domains, research on innovation might examine how problem-solving routines are created at R&D departments and then applied across multiple unrelated problems.

Researchers might also examine how interorganizational network ties affect other institutional processes that underlie multiple policy domains. Network ties to firms that engage in symbolic action in a particular policy domain may influence a focal firm's general propensity toward symbolic vs. substantive action, thus leading to similar symbolic actions across different policy domains. Moreover, studies might investigate the potential for second-order effects in other aspects of decision making besides imitation, such as the relative formality of decision-making processes. Just as mimetic tendencies in decision making may be enhanced by network ties to other firms that use imitation, board ties to firms that use a relatively informal process in one area of corporate governance, such as executive selection (e.g., using referrals from trusted friends rather than a search consultant to fill executive positions), may lead a focal firm to use a similarly informal process in other areas of corporate governance and strategy, such as screening acquisition candidates, determining market rates for executive compensation, and other decision processes that can be expected to vary in formality. Thus, the notion of second-order imitation could be extended to help explain the impact of networks on a broad array of strategic and organizational policies.

REFERENCES

Abrahamson, E.
2000 "Change without pain." Harvard Business Review, July/August: 75–80.

Allison, P. D.
1978 "Measures of inequality." American Sociological Review, 43: 865–880.
1990 "Change scores as dependent variables in regression analysis." In C. C. Clogg (ed.), Sociological Methodology: 93–114. San Francisco: Jossey-Bass.

Anand, J., and H. Singh
1997 "Asset redeployment, acquisitions and corporate strategy in declining industries." Strategic Management Journal, 18: 99–118.

Antle, R., and A. Smith
1985 "Measuring executive compensation: Methods and an application." Journal of Accounting Research, 23: 296–325.

Argyris, C., and D. Schön
1978 Organizational Learning. Reading, MA: Addison-Wesley.

Bandura, A.
1977 Social Learning Theory. Englewood Cliffs, NJ: Prentice-Hall.
1986 Social Foundations of Thought and Action. Englewood Cliffs, NJ: Prentice-Hall.

Barkema, H. G., and L. R. Gomez-Mejia
1998 "Managerial compensation and firm performance: A general research framework." Academy of Management Journal, 41: 135–145.

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

Bartunek, J. M., and M. K. Moch
1987 "First-order, second-order, and third-order change and organization development interventions: A cognitive approach." Journal of Applied Behavioral Science, 23: 483–500.

Bettenhausen, K., and J. K. Murnighan
1985 "The emergence of norms in competitive decision-making groups." Administrative Science Quarterly, 30: 350–372.

Boeker, W.
1997 "Strategic change: The influence of managerial characteristics and organizational growth." Academy of Management Journal, 40: 152–171.

Bollen, K. A.
1989 Structural Equations with Latent Variables. New York: Wiley.

Browne, L. E., and E. S. Rosengren
1988 "The merger boom: An overview." New England Economic Review, 20: 22–32.

Brush, T. H.
1996 "Predicted change in operational synergy and post-acquisition performance of acquired businesses." Strategic Management Journal, 17: 1–24.

Burns, L. R., and D. R. Wholey
1993 "Adoption and abandonment of matrix management programs: Effects of organizational characteristics and interorganizational networks." Academy of Management Journal, 36: 106–138.

Burt, R. S.
1983 Corporate Profits and Cooptation: Networks of Market Constraints and Directorate Ties in the American Economy. New York: Academic Press.
1987 "Social contagion and innovation: Cohesion versus structural equivalence." American Journal of Sociology, 92: 1287–1335.

Carroll, G. R., and M. T. Hannan
2000 The Demography of Corporations and Industries. Princeton, NJ: Princeton University Press.

Chandler, A. D.
1962 Strategy and Structure. Cambridge, MA: MIT Press.

Chaves, M.
1996 "Ordaining women: The diffusion of an organizational innovation." American Journal of Sociology, 101: 840–873.

Chickering, A. W., and Z. F. Gamson
1987 "Seven principles for good practice in undergraduate education." AAHE Bulletin, 39 (7): 3–7.

Cohen, S. G., L. Chang, and G. E. Ledford, Jr.
1997 "A hierarchical construct of self-management leadership and its relationship to quality of work life and perceived work group effectiveness." Personnel Psychology, 50: 275–308.

Crystal, G. S.
1984 Questions and Answers on Executive Compensation. Englewood Cliffs, NJ: Prentice-Hall.
1991 In Search of Excess: The Overcompensation of American Executives. New York: W.W. Norton.

Cyert, R. M., and J. G. March
1963 A Behavioral Theory of the Firm. Englewood Cliffs, NJ: Prentice-Hall.

Daft, R. J., J. Sormunen, and D. Parks
1988 "Chief executive scanning, environmental characteristics, and company performance: An evaluative study." Strategic Management Journal, 9: 123–139.

Davis, G. F.
1991 "Agents without principles? The spread of the poison pill through the intercorporate network." Administrative Science Quarterly, 36: 583–613.
1994 "The interlock network as a self-reproducing social structure." Working paper, School of Business, Columbia University.

Deephouse, D. L.
1999 "To be different, or to be the same? It's a question (and theory) of strategic balance." Strategic Management Journal, 20: 147–166.

Demb, A., and F. F. Neubauer
1992 The Corporate Board: Confronting the Paradoxes. Oxford: Oxford University Press.

Dierickx, I., and K. Cool
1989 "Asset stock accumulation and sustainability of competitive advantage." Management Science, 35: 1504–1513.

DiMaggio, P. J., and W. W. Powell
1983 "The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields." American Sociological Review, 48: 147–160.

Edelman, L. B.
1992 "Legal ambiguity and symbolic structures: Organizational mediation of civil rights law." American Journal of Sociology, 97: 1531–1577.

Edwards, J. R.
1995 "Alternatives to differences scores as dependent variables in the study of congruence in organizational research." Organizational Behavior and Human Decision Processes, 64: 307–324.

Eisenhardt, K. M., and M. J. Zbaracki
1992 "Strategic decision making." Strategic Management Journal, 13: 17–37.

Fama, E. F., and M. Jensen
1983 "The separation of ownership and control." Journal of Law and Economics, 26: 301–325.

Farmer, S. M., J. M. Maslyn, D. B. Fedor, and J. S. Goodman
1997 "Putting upward influence strategies in context." Journal of Organizational Behavior, 18: 17–42.

Feldman, D. C.
1984 "The development and enforcement of group norms." Academy of Management Review, 9: 47–53.

Feldt, T., E. Leskinen, U. Kinnunen, and S. Mauno
2000 "Longitudinal factor analysis models in the assessment of the stability of sense of coherence." Personality and Individual Differences, 28: 239–257.

Finkelstein, S., and B. K. Boyd
1998 "How much does the CEO matter? The role of managerial discretion in the setting of CEO compensation." Academy of Management Journal, 41: 179–199.

Finkelstein, S., and D. C. Hambrick
1990 "Top management team tenure and organizational outcomes: The moderating role of managerial discretion." Administrative Science Quarterly, 35: 484–503.

Fletcher, G. J. O., J. A. Simpson, and G. Thomas
2000 "The measurement of perceived relationship quality components: A confirmatory factor analytic approach." Personality and Social Psychology Bulletin, 26: 340–354.

Fligstein, N.
1991 "The structural transformation of American industry: An institutional account of the causes of diversification in the largest firms, 1919–1979." In W. W. Powell and P. J. DiMaggio (eds.), The New Institutionalism in Organizational Analysis: 311–336. Chicago: University of Chicago Press.
1995 "Networks of power or the finance conception of control? Comment on Palmer, Barber, Zhou, and Soysal." American Sociological Review, 60: 500–503.

Fredrickson, J. W., and T. R. Mitchell
1984 "Strategic decision processes: Comprehensiveness and performance in an industry with an unstable environment." Academy of Management Journal, 27: 399–423.

Galaskiewicz, J.
1985 "Interorganizational relations." Annual Review of Sociology, 11: 281–304.
1997 "An urban grants economy revisited: Corporate charitable contributions in the Twin Cities, 1979–81, 1987–89." Administrative Science Quarterly, 42: 445–471.

Galaskiewicz, J., and S. Wasserman
1989 "Mimetic processes within an interorganizational field: An empirical test." Administrative Science Quarterly, 34: 454–479.

Gartrell, C. D.
1987 "Network approaches to social evaluation." Annual Review of Sociology, 13: 49–66.

Geletkanycz, M. A., and D. C. Hambrick
1997 "The external ties of top executives: Implications for strategic choice and performance." Administrative Science Quarterly, 42: 654–681.

Ghoshal, S., and D. E. Westney
1991 "Organizing competitor analysis systems." Strategic Management Journal, 12: 17–31.

Gibbons, R., and K. J. Murphy
1990 "Relative performance evaluation for chief executive officers." Industrial and Labor Relations Review, 43: 30–51.

Gioia, D. A., and C. C. Manz
1985 "Linking cognition and behavior: A script processing interpretation of vicarious learning." Academy of Management Review, 10: 527–539.

Goffman, E.
1967 Interaction Ritual. New York: Anchor Books.

Gomez-Mejia, L.R.
1992 "Structure and process of diversification, compensation strategy, and firm performance." Strategic Management Journal, 13: 381–397.

Greene, W. H.
1993 Econometric Analysis, 2d ed. New York: Macmillan.

Greve, H. R.
1998 "Performance, aspirations, and risky organizational change." Administrative Science Quarterly, 43: 58–86.

Grinyer, P. H., and J.-C. Spender
1979 "Recipes, crises, and adaptation in mature businesses." International Studies of Management and Organization, 9: 113–133.

Gulati, R.
1998 "Alliances and networks." Strategic Management Journal, 19: 293–317.

Gulati, R., N. Nohria, and A. Zaheer
2000 "Strategic networks." Strategic Management Journal, 21: 203–215.

Hambrick, D. C.
1981 "Environment, strategy, and power within top management teams." Administrative Science Quarterly, 26: 253–275.

Haunschild, P. R.
1993 "Interorganizational imitation: The impact of interlocks on corporate acquisition activity." Administrative Science Quarterly, 38: 564–592.

Haunschild, P. R., and A. S. Miner
1997 "Modes of interorganizational imitation: The effects of outcome salience and uncertainty." Administrative Science Quarterly, 42: 472–500.

Haveman, H. A.
1993 "Organizational size and change: Diversification in the savings and loan industry after deregulation." Administrative Science Quarterly, 38: 20–50.

Hayward, M. L. A., and D. C. Hambrick
1997 "Explaining the premiums paid for large acquisitions: Evidence of CEO hubris." Administrative Science Quarterly, 42: 103–129.

Hill, C. W. L., and G. Hansen
1991 "A longitudinal study of the causes and consequences of changes in diversification in the U.S. pharmaceutical industry 1977–1986." Strategic Management Journal, 12: 187–199.

Hopkins, H. D.
1987 "Acquisition strategy and the market position of acquiring firms." Strategic Management Journal, 8: 535–547.

Ingram, P., and K. Clay
2000 "The choice-within-constraints new institutionalism and implications for sociology." Annual Review of Sociology, 26: 525–546.

Johnston, J., and J. DiNardo
1997 Econometric Methods, 4th ed. New York: McGraw-Hill.

Joreskog, K. G., and D. Sorbum
1993 LISREL 8: User's Reference Guide. Chicago: Scientific Software International.

Judge, W. Q., and C. P. Zeithaml
1992 "Institutional and strategic choice perspectives on board involvement in the strategic decision process." Academy of Management Journal, 25: 766–794.

Kenny, D. A.
1975 "A quasi-experimental approach to assessing treatment effects in the nonequivalent control group design." Psychological Bulletin, 82: 345–362.

Kenny, D. A., and S. H. Cohen
1979 "A reexamination of selection and growth processes in the nonequivalent control group design." In K. Schuessler (ed.), Sociological Methodology, 11: 290–313. San Francisco: Jossey-Bass.

Kochhar, R., and M. A. Hitt
1998 "Linking corporate strategy to capital structure: Diversification strategy, type and source of financing." Strategic Management Journal, 19: 601–610.

Kopp, T. J.
1990 Perspectives on Corporate Takeovers. Lanham, MD: University Press of America.

Kraatz, M. S.
1998 "Learning by association? Interorganizational networks and adaptation to environmental change." Academy of Management Journal, 41: 621–643.

Levitt, B., and J. G. March
1988 "Organizational learning." Annual Review of Sociology, 14: 319–340.

Lorsch, J. W., and E. MacIver
1989 Pawns or Potentates: The Reality of America's Corporate Boards. Boston: Harvard Business School Press.

Mallette, P., and K. L. Fowler
1992 "Effects of board composition and stock ownership on the adoption of 'poison pills'." Academy of Management Journal, 35: 1010–1035.

Manz, C. C., and H. P. Sims
1987 "Leading workers to lead themselves: The external leadership of self-managing work teams." Administrative Science Quarterly, 32: 106–128.

March, J. G., and J. P. Olsen
1976 Ambiguity and Choice in Organizations. Bergen, Norway: Universitetsforlaget.

McKeachie, W. J.
1994 Teaching Tips: Strategies, Research, and Theory for College and University Teachers, 9th ed. Lexington, MA: D.C. Heath.

Meyer, J. W., W. R. Scott, and D. Strang
1987 "Centralization, fragmentation, and school district complexity." Administrative Science Quarterly, 32: 186–201.

Miles, R. E., C. C. Snow, A. D. Meyer, and H. J. Coleman, Jr.
1978 "Organizational strategy, structure, and process." Academy of Management Review, 3: 546–562.

Miner, A. S., and S. J. Mezias
1996 "Ugly duckling no more: Pasts and futures of organizational learning research." Organization Science, 7: 88–99.

Mintzberg, H.
1978 "Patterns in strategy formation." Management Science, 24: 934–948.

Mizruchi, M. S.
1992 The Structure of Corporate Political Action: Interfirm Relations and Their Consequences. Cambridge, MA: Harvard University Press.
1996 "What do interlocks do? An analysis, critique, and assessment of research on interlocking directorates." Annual Review of Sociology, 22: 271–298.

Monge, P., and N. S. Contractor
1997 "Emergence of communication networks." In F. M. Jablin and L. L. Putnam (eds.), Handbook of Organizational Communication, 2d ed.: 1–72. Thousand Oaks, CA: Sage.

Newey, W. K., and K. D. West
1987 "A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix." Econometrica, 55: 703–708.

Nisbett, R., and L. Ross
1980 Human Inference: Strategies and Shortcomings of Social Judgment. Englewood Cliffs, NJ: Prentice-Hall.

Ocasio, W.
1999 "Institutionalized action and corporate governance: The reliance on rules of CEO succession." Administrative Science Quarterly, 44: 384–416.

O'Reilly, C. A., B. G. Main, and G. S. Crystal
1988 "CEO compensation as tournament and social comparison." Administrative Science Quarterly, 33: 257–274.

Palmer, D., and B. M. Barber
2001 "Challengers, elites, and owning families: A social class theory of corporate acquisitions in the 1960s." Administrative Science Quarterly, 46: 87–120.

Palmer, D. A., P. D. Jennings, and X. Zhou
1993 "Late adoption of the multidivisional form by large U.S. corporations: Institutional, political, and economic accounts." Administrative Science Quarterly, 38: 100–131.

Phan, P.H.
2000 Taking Back the Boardroom: Better Directing for the New Millennium. Singapore: McGraw-Hill.

Porac, J. F., H. Thomas, F. Wilson, D. Paton, and A. Kanfer
1995 "Rivalry and the industry model of Scottish knitwear producers." Administrative Science Quarterly, 40: 203–229.

Porac, J. F., J. B. Wade, and T. G. Pollock
1999 "Industry categories and the politics of the comparable firm in CEO compensation." Administrative Science Quarterly, 44: 112–144.

Porter, M. E.
1998 Competitive Strategy, 2d ed. New York: Free Press.

Powell, W. W., K. W. Koput, and L. Smith-Doerr
1996 "Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology." Administrative Science Quarterly, 41: 116–145.

Quinn, J. B.
1980 Strategies for Change: Logical Incrementalism. Homewood, IL: Irwin.

Rogers, W. H.
1993 "Regression standard errors in clustered samples." Stata Technical Bulletin Reprints, 3: 88–94.

Rumelt, R. P., D. Schendel, and D. J. Teece
1991 "Strategic management and economics." Strategic Management Journal, 12: 5–29.

Sanders, W. G., and M. A. Carpenter
1998 "Internationalization and firm governance: The roles of CEO compensation, top team composition, and board structure." Academy of Management Journal, 41: 179–199.

Schank, R. C., and R. P. Abelson
1977 Scripts, Plans, Goals, and Understanding. Hillsdale, NJ: Erlbaum.

Scott, W. R.
1992 Organizations: Rational, Natural, and Open Systems, 3rd ed. Englewood Cliff, NJ: Prentice-Hall.
1995 Institutions and Organizations. Thousand Oaks, CA: Sage.

Segev, E.
1987 "Strategy, strategy making, and performance in a business game." Strategic Management Journal, 8: 565–577.

Seward, J. K., and J. P. Walsh
1996 "The governance and control of voluntary corporate spinoffs." Strategic Management Journal, 17: 25–39.

Stanton, A. Q.
1989 "The interface of communication and instruction: Conceptual considerations and programmatic manifestation." Communication Education, 38: 364–371.

Thomas, A. S., R. J. Litschert, and K. Ramaswamy
1991 "The performance impact of strategy-manager coalignment: An empirical examination." Strategic Management Journal, 12: 509–522.

Tolbert, P. S., and L. G. Zucker
1983 "Institutional sources of change in the formal structure of organizations: The diffusion of civil service reform, 1880–1935." Administrative Science Quarterly, 28: 22–39.

Tushman, M. L., and E. Romanelli
1985 "Organizational evolution: A metamorphosis model of convergence and reorientation." In L. L. Cummings and B. M. Staw (eds.), Research in Organizational Behavior, 7: 171–222. Greenwich, CT: JAI Press.

Useem, M.
1993 Executive Defense: Shareholder Power and Corporate Reorganization. Cambridge, MA: Harvard University Press.

Virany, B., M. L. Tushman, and E. Romanelli
1992 "Executive succession and organization outcomes in turbulent environments: An organizational learning approach." Organization Science, 3: 72–91.

Wade, J. B., C. A. O'Reilly, III, and I. Chandratat
1990 "Golden parachutes: CEOs and the exercise of social influence." Administrative Science Quarterly, 35: 587–603.

Weick, K.
1979 "Commentary on the purpose of leadership research." In J. G. Hunt and L. L. Larson (eds.), Crosscurrents in Leadership: 88–96. Carbondale, IL: Southern Illinois University Press.

Westphal, J. D.
1999 "Collaboration in the boardroom: The consequences of social ties in the CEO/board relationship." Academy of Management Journal, 42: 7–24.

Westphal, J. D., and J. W. Fredrickson
2001 "Who directs strategic change? Director experience, the selection of new CEOs, and change in corporate strategy." Strategic Management Journal, 22: 1113–1138.

Westphal, J. D., R. Gulati, and S. M. Shortell
1997 "Customization or conformity: An institutional and network perspective on the content and consequences of TQM adoption." Administrative Science Quarterly, 42: 366–394.

Westphal, J. D., and E. J. Zajac
1997 "Defections from the inner circle: Social exchange, reciprocity and the diffusion of board independence in U.S. corporations." Administrative Science Quarterly, 42: 161–183.

Wiersema, M. F., and K. A. Bantel
1992 "Top management team demography and corporate strategic change." Academy of Management Journal, 35: 91–121.
1993 "Organizational demography in Japanese firms: Group heterogeneity, individual dissimilarity, and top management team turnover." Academy of Management Journal, 36: 996–1026.

Wood, R., and A. Bandura
1989 "Social cognitive theory of organizational management." Academy of Management Review, 14: 361–384.

Zajac, E. J.
1988 "Interlocking directorates as an interorganizational strategy." Academy of Management Journal, 31: 428–438.
1990 "CEO selection, succession, compensation and firm performance: A theoretical integration and empirical analysis." Strategic Management Journal, 11: 217–230.
1992 "Relating economic and behavioral perspectives in strategy research." In P. Shrivastava, A. Huff, and J. Dutton (eds.), Advances in Strategic Management, 8: 69–96. Greenwich, CT: JAI Press.