A Strong Inference Test of the Effects of Strategic Interdependence on the JV Control-Performance Relationship

Rebecca M. Guidice
University of Nevada Las Vegas

John B. Cullen
Washington State University

Managing joint ventures (JV) both efficiently and effectively is a major challenge for many organizations. Drawing from agency and learning theories we conduct a strong inference test to examine two opposing factors, strategic interdependence and experience, believed to influence the JV control-performance relationship. Results suggest that not only do formal control and experience have an interactive effect on performance but also that informal control, experience, and strategic interdependence interactively influence performance (e.g., performance is greater for experienced parents that use more informal controls with interdependent ventures). Findings contribute to existing research by providing a clear yet more comprehensive perspective on JV governance and success.

The unprecedented rate in which joint ventures (JVs) have formed over the past two decades shows that organizations are increasingly embracing JVs as a means to growth, expansion, and competitive advantage. While much has been gained from studies on the formation, cooperation, management, and performance of JVs, the literature has yet to conclusively identify why the likelihood of JV success is at best,

typically 50% (Anand & Khanna, 2000).

Given the complexities of managing inter-firm relationships it is frequently suggested that the design and implementation of an appropriate control structure is critical to JV performance (Geringer & Hebert, 1989; Killing, 1983; Schaan, 1983). Yet the equivocal nature of extant research suggests that the control-performance relationship is not necessarily direct (Franko, 1971) and may in fact be quite complex and non-linear (Hebert, 1994; Yan & Gray, 1994). Namely, where some studies provide compelling evidence supporting the assertion that control and performance are related (e.g., Ding, 1997; Hebert & Beamish, 1997; Killing, 1983; Mjoen & Tallman, 1997) others fail to demonstrate either a direct or a consistently significant relationship (Calantone & Zhao, 2000; Child, Yan & Lu, 1997; Faulkner, 2000; Kogut, 1988). Furthermore, among the studies where support has been found the conclusions drawn are inconsistent; any one of a number of control strategies are reported to lead to higher JV performance including shared control (Beamish, 1993; Hebert & Beamish, 1997), dominant control (Ding, 1997; Killing, 1983; Mjoen & Tallman, 1997), split control (Choi & Beamish, 2004), and laissez-faire control – i.e., the autonomous JV (Blumenthal, 1988; Tomlinson, 1970).

To shed light on these conflicting views, contextual differences inherent in competing studies have been noted. Among the litany of ventures that have been examined, some are domestic while others are international. Relatedly, some are between partners from developed countries, others between partners from developing countries, and yet others from a mixture of the two. The benefit of highlighting such differences is that it demonstrates that any number of factors – environmental, inter-organizational, or intra-organizational – increase the complexity of JV management (e.g., Pearce, 2001; Yan & Zeng, 1999).

Investigating contingencies is likewise an important element to building cumulative theory; particularly when extant research provides inconsistent results. Studies in which control has been considered in conjunction with characteristics such as JV size, goal commonality, commitment, and conflict (e.g., Osland & Cavusgil, 1996; Pangarkar & Klein, 2004; Yan & Gray, 1994) have no doubt, provided beneficial insights. Nevertheless, to advance our knowledge on issues relevant to JV management continued attention is needed to identify other important moderators.

Two variables considered to be of influential value in this study are strategic interdependence and JV experience. These factors were selected for two reasons. First, each can have significant explanatory power on inter-firm relationships and the design of the JV's governance structure – a structure meant to modify agent behavior, coordinate activities, allocate resources, and achieve JV objectives. The second reason for our selection of variables is based on the belief that to truly understand the nature of a contingent control-performance relationship, research must investigate opposing perspectives and rule out competing conclusions that result from select interactions. Through such strong inference tests (Platt, 1964) a more robust understanding of JVs can be achieved and used as a practical guide for future research.

To elaborate on the point above consider the fragmented approach previously taken with the four variables of interest in this study. Scholars have explored the relationship between strategic interdependence and control mechanisms (Kumar & Seth, 1998),

between experience and control (Gray & Yan, 1992; Johnson, Cullen, Sakano & Bronson, 2001; Lyles 1988), and between experience and performance (e.g., Anand & Khanna, 2000; Makino & Delios, 1996). While each of these studies addressed critical JV issues, a study examining all four variables in a comprehensive fashion has yet to be conducted. This is a significant limitation when strategic interdependence and prior experience can have opposing effects on the design of the JV governance structure. On the one hand, incentives exist to institute more controls when a wide array of important resources are shared with other parties (Kumar & Seth, 1998). On the other hand, there is less need for numerous controls when parents have prior governance experience and can apply acquired know-how to current ventures (Gray & Yan, 1992; Johnson et al., 2001; Lyles, 1988).

The aforementioned research has also led to the implied conclusion that both the positive relationship between interdependence and control as well as the negative relationship between experience and control are beneficial to performance. This belief, however, has yet to be empirically established; reaffirming once again that tests of multiple variables in one comprehensive model is an existing gap in the literature (Yan & Gray, 2001) - one that this paper attempts to fill. Our research therefore adds to a body of literature that has frequently taken a descriptive approach to JV management without examining the performance consequences of governance decisions or the impact of divergent moderators on the control-performance relationship. Our study also provides the opportunity to consider whether JV experience should be viewed as a substitute or complement to control efforts.

To develop this more inclusive framework on the relationship among JV control, strategic interdependence, experience, and performance we rely on a number of well-accepted theories regularly used to explain unique aspects of JV activities. More specifically, agency theory (Jensen & Meckling, 1976), transaction cost economics (Williamson, 1979), and organizational learning theory (Argyris & Schon, 1978; Fiol & Lyles, 1985; Levitt & March, 1988) are adopted to substantiate relationships among variables. All three perspectives are essential in that while transaction cost economics understandably justifies control initiatives (assuming opportunism between partners) and efficiency concerns, it slights interpersonal issues occurring within the JV - the focus of our analysis. When JV managers are of interest, an agency perspective is often a more functional theory for explaining efficient and effective governance.

Agency theory, however, is not immune from criticism. By taking a rather static view of the principal-agent relationship it is assumed that principals should always be suspicious of agents' motivation and thus, consistently and aggressively monitor agents and offer them incentives to keep interests aligned. No allowances are made for the fact that principals can, with intentional effort, learn how to effectively govern agents and their activities. We therefore draw from the organizational learning perspective to explain and account for experiential learning.

Theory Development and Hypotheses

Control

Organizations view control differently based on their values and beliefs. In this

paper, control is defined as a purposeful and goal-oriented process (Green & Welsh, 1988) by which one party influences the behavior and output of another (Ouchi, 1977). According to agency theory, control is a necessity. Assuming that risk-neutral principals and risk-averse agents are boundedly rational utility maximizers (Eisenhardt, 1989; Jensen & Meckling, 1976), difficulty arises when there is information asymmetry and goal conflict between parties (Eisenhardt, 1989). Principals therefore must incur significant monitoring and bonding costs to prevent agents from putting forth suboptimal effort or making self-interested decisions.

Applying these ideas to a JV, it is apparent that when managers are expected to run operations in a distinctly created third entity with its own mission, objectives, strategies, and at times, culture (Johnson et al., 2001), the challenge is one of keeping JV managers' interests aligned with parental interests. To address this challenge, parents rely on various control mechanisms that facilitate exercising managerial control of JV activities (Geringer & Hebert, 1989). That is, it is through the use of control mechanisms that parents are able to influence JV decision processes as well as achieve predictability and confidence in behavior such that the risk of opportunism is minimized and returns are maximized (Fryxell, Dooley, & Vryza, 2002).

Control mechanisms have been characterized in numerous ways, including positive and negative (Schaan, 1983), formal and informal (Fryxell et al., 2002), objective and normative (Leifer & Mills, 1996), and outcome, behavioral, and social (Ouchi, 1979). While diverse in terminology, there is a great deal of conceptual overlap among these characterizations. For instance, reliance on the JV board of directors to monitor JV performance is a negative, formal, objective, or output control mechanism and offering executive development programs is a positive, informal, normative, or social control mechanism.

Of interest in this study are six commonly identified mechanisms - board role, board structure, management staffing, incentive plans, integrative mechanisms, and socialization. The first four of these mechanisms are characteristically referred to as formal and the last two as informal. While previous research has examined these and other mechanisms individually to better understand which type is effective under certain conditions (e.g., Johnson et al., 2001; Kumar & Seth, 1998; Schaan, 1983) our perspective is more collective in nature in that we consider the breadth of control that JV managers encounter. However, we avoid over-aggregation of control to understand better and in more detail how control is related to performance by considering two distinct governance structures – one containing formal mechanisms and the other the informal mechanisms.

JV Performance

Performance is of critical importance to strategic management. Scholars and practitioners alike are interested in the potential outcome of strategies they endorse for results can impact the ultimate survival of a firm. While performance can take on a variety of dimensions, we define it in terms of JV goal achievement. Goal achievement in this sense refers to objectives set forth in the JV agreement and collectively communicated to JV managers as their responsibility to achieve and upon which their performance is evaluated.

While most agree that JV control is an important issue, the effect of control on JV performance is ambiguous and inconsistent (Geringer & Hebert, 1989). As suggested earlier and detailed in the following sections, we propose that strategic interdependence and alliance experience are two variables that can help reconcile such inconsistent findings.

Strategic Interdependence

Strategic interdependence is defined as the extent and importance of resources shared between organizations (Kumar & Seth, 1998). Similar to the concept of interfirm embeddedness, where mutual dependence and connectedness exists among exchange parties (Provan, 1993), the more resources (tangible or intangible) that are shared and the more critical each resource is to competitive success, the stronger the interdependency.

The key to successful JV operations, however, is not just contributing or combining resources. Success requires effective management of those resources. With added interdependence, day-to-day interaction increases (Contractor & Lorange, 1988) as more issues and decisions are coordinated between parents and JV managers (Kumar & Seth, 1998). Proponents of agency theory suggest that the more extensive and critical the resources shared within the JV, the more parents have to lose should resources be misappropriated by JV management. Similarly, research suggests that firm-specific investments in legally separate organizations make parents more permeable and therefore more vulnerable to asset misappropriation (Fryxell et al., 2002; Johnson, Cullen, Sakano, & Takenouchi, 1996). As stated by Johnson and colleagues, a JV "creates a situation fraught with the potential for opportunism, uncertainty, and risk for the parent firm. The nature of the parent firm's assets dedicated to the JV and the uncertainty surrounding the JV suggests a need to safeguard the investment" (2001, p. 37).

To align interests agency theory advocates monitoring and regulating the activities of JV managers with a variety of control mechanisms. In support, Gulati and Singh (1998) found that the greater the interdependence between parents (pooled, sequential, and reciprocal) the more formal controls were used to organize the alliance. Kumar and Seth (1998) also demonstrated that more control mechanisms (formal and informal) are used when parents and the JV are highly interdependent. Finally, Johnson et al (2001) found support for the hypothesis that control increases when a JV is strategically important to a parent.

What the aforementioned studies lack, however, is an analysis of how the ensuing control structure affects performance. It is implicitly assumed that the association is positive. When viewed from an agency perspective it is expected that the greater the interdependence the more likely that an intense control structure (i.e., one containing numerous control mechanisms) should protect parental interests, safeguard against opportunistic tendencies, and subsequently promote JV goal attainment (i.e., high performance). When less extensive and critical resources are contributed to the venture the same control design would do more harm than good. Excessive control mechanisms not only waste resources (Coles, McWilliams, & Sen, 2001) but they can also create tension (Zeng & Chen, 2003) and beget negative feelings between the

controllers and the controllees, which then influences performance related behaviors (e.g., commitment toward goal achievement). Sundaramurthy and Lewis (2003) similarly advise that exclusive control, as suggested by agency theory, often leads to a short-term emphasis, distrust, and reduced commitment. As strategic interdependence decreases, such control consequences should be especially harmful to JV performance. We therefore propose the following:

H1: Strategic interdependence moderates the relationship between a.) the formal control structure and JV performance and b.) the informal control structure and JV performance such that the control-performance relationship is stronger with higher levels of strategic interdependence and weaker with lower levels of strategic interdependence.

Experience

Experience is a prime source of learning (Penrose, 1959). The key to moving along the learning curve and improving performance comes from a firm's ability to internalize lessons from experience (Inkpen & Crossan, 1995), translate that knowledge into behavior that is replicable (Argyris & Schon, 1978), and transfer it to new situations (Cohen & Bacdayan, 1994; Levitt & March, 1988).

Though definitely useful in explaining why parents do not permit or desire complete JV autonomy, agency theory's pessimistic view results in an excessive and relentless application of controls that support monitoring and incentive alignment. Acknowledgement that parents, through experience, may develop control-based competencies is nonexistent. We contend, however, that determining how much control to exert is best achieved through experience and learning how to design effective control structures. Since knowledge gained from experience can be applied to future alliances (e.g., Anand & Khanna, 2000; Child & Yan, 2003) it is reasonable to conclude that experienced parents should be more selective in their choice of controls, often times using fewer mechanisms to protect and preserve the principal-agent relationship.

Consistent with transaction cost economics and stewardship theory, experience may also reveal that excessive controls work against the return maximization objective of control, negates the value-creating benefits of the JV (Lorange, 1997), and limits JV managers from effectively fulfilling their duties and responsibilities (Donaldson & Davis, 1991). Indeed, research has demonstrated that experiential knowledge increases the likelihood of venture success. Lyles (1988) found that firms with prior collaborative experience altered their approach to current collaborations by incorporating prior know-how into the focal relationship. Johnson et al. (2001) discovered that not only does experience facilitate creating the right JV initially but it also reduces the need for direct control in existing inter-firm relationships. Similarly, Reuer, Zollo, and Singh (2002) and Zollo, Reuer, and Singh (2002) examined various trajectories of experience with results highlighting how experiential knowledge altered subsequent alliance governance choices as well as post-formation governance modifications. Thus, we hypothesize:

H2: JV experience moderates the relationship between a.) the formal control structure and JV performance and b.) the informal control structure and JV performance such that the control-performance relationship is weaker with higher levels of experience and stronger with lower levels of experience.

Control-Performance Multiple Contingency Relationship

A major JV decision is determining not only what behaviors to control but also how to control those behaviors such that goal attainment is possible. The discussion thus far suggests that the control-performance relationship is either strengthened with strategic interdependence or weakened with experience. These opposing forces suggest the need to move beyond a simplified model that considers only one contingency factor at a time to one that investigates multiple situational variables interacting simultaneously. The benefit of this configurational approach, beyond its acknowledgement of system interactions (Colbert, 2004), is that it recognizes that "fit" is situationally specific (Delery & Doty, 1996). Based on this perspective we offer the following initial hypotheses:

H3: Strategic interdependence and JV experience moderate the relationship between a.) the JV's formal control structure and performance and b.) the JV's informal control structure and performance.

The remaining four hypotheses originate from the preceding hypothesis but are more explicit in that each considers a specific contextual configuration of strategic interdependence and experience. This rather detailed approach provides a useful means to more thoroughly investigate our model of issues relevant to JV control.

The first configuration concerns a context where interdependence is high and parents have prior JV experience. This relationship is of particular interest because of the opposing impact each contextual factor has on the design of JV control structures. As noted earlier, agency assumptions and related research imply that the greater the strategic interdependence the more likely JV goals will be achieved with extensive (multi-mechanism) control structures. In contrast, fewer controls should be necessary to achieve a desired level of influence over goal-enabling decisions and behaviors when parents have prior governance experience. Platt (1964) argued that when conflicting conclusions exist, strong inference tests that examine multiple hypotheses simultaneously rather than sequentially are useful to advance knowledge on a phenomenon.

When considered together, it is unlikely that strategic interdependence and experience have an equal impact on the design of JV control structures. Studies on decision-making suggest that when confronted with a new or uncertain situation that individuals consider how the current situation relates to previous experiences. When similarities exist, these decision makers respond by using practices that are easily accessible and/or that have been successfully used in the past (Cyert & March, 1963; Huber, 1991). Given the value of experiential learning and the corresponding ability to apply lessons learned to new situations (e.g., Anand & Khanna, 2000; Child & Yan,

2003; Johnson et al., 2001; Lyles, 1988) we therefore expect experience to have a greater impact on the overall design of the control structure than interdependence; and correspondingly, that fit should be better when parents use fewer rather than more control mechanisms to manage behaviors and activities within the strategically interdependent JV. Stated differently and following the aforementioned behavioral rule, experienced parents should search for information on JV governance in their repertoire of prior experiences and existing knowledge, and emulate a control structure that worked well in the past.

Those experienced parents that learned from prior JVs also have an intangible knowledge-based asset that is valuable, rare, and not necessarily something competitors possess or can easily imitate. Indeed, studies have repeatedly shown the advantages resulting from experience-derived governance capabilities. For example, Makino and Delios (1996) found that experience in operating international JVs enhanced a parent's JV capabilities and overcame foreigner disadvantages, which resulted in higher performance. Simonin (1997) noted that the application of learned skills, including managing inter-firm relationships, led to both tangible and intangible benefits. Gupta and Misra (2000) found that markets reward both country-based experience and JV experience in general. Take these various benefits of experience and combine it with high strategic interdependence and the JV will subsequently become quite complex. Ultimately, this could produce a sustainable competitive, advantage if competitors have difficulty disentangling and imitating the venture's unique and ambiguous linkages (Barney, 1991).

Finally, given that use of informal controls reduces the need for costly formal controls (Fryxell et al., 2002) it is also feasible that experienced parents recognize that the most effective means to protecting strategically interdependent resources from misuse and achieving performance expectations occurs when greater reliance is placed on informal mechanisms of control. Activities such as socialization and integrative mechanisms that not only induce shared values, beliefs, and preferences but also facilitate communication, cooperation, and mutual commitment should lead JV managers to process information, react to the environment, and make decisions in a manner consistent with how parents would respond (Trice & Beyer, 1993), thereby lessening the need for more formal or negative sources of control.

Another reason to expect higher performance for JVs subjected to fewer formal mechanisms has to do with, as just alluded to, the costs associated with formal control. Research suggests that monitoring and incentive systems are costly (i.e., time, focus, effort, and money) and those costs can rapidly exceed their benefits (Geringer & Hebert, 1989; Kumar & Seth, 1998). Thus, while control is undeniably necessary to effectively coordinate and integrate critical resources as well as curb agent shirking and self-interested behavior, instituting only a few formal mechanisms can be just as effective if not more so than implementing many. Of particular importance is the devastating impact that pervasive control efforts can have on interpersonal relationships. Referred to as the Pygmalion effect, efforts directed toward managing agents can, in reality, incite the unwanted behavior they were meant to prevent by signaling that parents neither perceive JV managers as trustworthy nor expect principal-beneficial decision making to occur within the JV (Ghoshal & Moran, 1996).

This would consequently hinder adaptability and trust-building as well as slow if not prevent JV goal attainment (Fryxell et al., 2002).

Consistent with learning theory and extant research, we therefore suggest that a majority of experienced parents not only recognize the aforementioned cost/benefit relationship but also consider the economic efficiency and relationship effects of various control structure designs and as a result, are apt to be more selective in their choice of controls. Those experienced parents that fail to incorporate lessons from the past or design control structures consistent solely with strategic interdependent, agency driven recommendations will be at a performance disadvantage.

H4a: With high strategic interdependence, experienced parents who use fewer formal controls, relying on more informal controls, have higher performance than those that use more formal controls and fewer informal controls.

When interdependence is high and parents lack experience fit should be evident for those using more control mechanisms. Prior research suggests that parents lacking governance experience are justified in believing that more mechanisms are better given the scale of interdependence (Kumar & Seth, 1998). Further, because significant interdependence makes a JV more complex, inexperienced parents may be uncertain which mechanisms are most effective and therefore, use an all-encompassing governance structure to improve the likelihood that one or more controls are in place to protect against the misallocation and unintended use of the many important resources contributed to the JV. Finally, while using more rather than fewer mechanisms to manage interdependence is not necessarily efficient, it does minimize risk of opportunism while principals gain experience in JV governance and develop a solid relationship among JV participants. In this context, control benefits should exceed control costs.

H4b: With high strategic interdependence, inexperienced parents who use more controls (formal and/or informal) have higher performance than those that use fewer controls.

When interdependence is low the JV strategy is less intricate and ambiguous. While decreased complexity should make control easier and transaction costs lower it also makes the strategy susceptible to greater imitability and competitive advantage much less sustainable (Barney, 1991; Tallman, 2000). Nonetheless, theory suggests that fewer controls are needed when a JV is characterized as less interdependent because transactions, for instance, are more arms-length and risk is lower. Consistent with our assertion that experience has a greater influence on the design of JV control structures, we propose that many experienced parents base their control decisions on similar reasoning and limit their selection of controls so that JV goals are achieved both efficiently and effectively.

In contrast, experienced parents who elect to use numerous mechanisms should find the control structure counterproductive to JV success (i.e., misfit) because of the

inefficient use of resources and the animosity that can occur when power is perceived as significantly asymmetrical (Johnson et al., 2001). In fact, lacking considerable interdependence parents will not have as much power as likely assumed when implementing their numerous controls. Absent significant power, JV management is in a better position to disregard controls, which may not only fuel animosity among parties but also be counterproductive toward goal achievement efforts.

H4c: With low strategic interdependence, experienced parents who use fewer controls (formal and/or informal), have higher performance than those that use more controls.

The final configuration concerns a context where interdependence is low and parents lack prior JV experience. This relationship is interesting because different hypotheses could be offered depending upon whether attention is centered on control structure design or on performance.

Given that experience is absent in this contextual configuration, parents control structure decisions should be driven by the fact that important (albeit less extensive) resources are being contributed to the JV - and these resources deserve protection. Although low interdependence calls for fewer controls (Kumar & Seth, 1998), inexperienced parents may not recognize or understand that fewer controls achieve the same objectives (i.e., aligns interests and facilitates goal achievement). In support, Johnson et al. (2001) found that parents with limited experience tend to use more control. Even if inexperienced parents reason that fewer mechanisms are needed under conditions of limited strategic interdependence, inexperience should lead to uncertainty about which mechanisms offer the best protection against misallocation of the resources that are contributed. Consistent with this assertion Schaan (1988) found that lacking experience, firms had difficulty deciding not only what to control but also how to control a JV.

Although research provides evidence that inexperienced parents use more control, studies have also shown that one outcome of excessive and overt decision-making control is conflict between parents and the JV (Johnson et al., 2001). Conflict consequently diverts resources, energy, and attention away from strategic objectives and can lead to decreased trust, commitment, motivation to learn, and willingness to perform necessary goal enabling tasks (Johnson et al., 1996).

Finally, while inexperienced parents should be apt to use more control mechanisms in less interdependent JVs, it is quite likely that performance will be lower than it would be for similar ventures subjected to fewer controls. JVs in the later situation should have a performance advantage over the former because situational fit is achieved and thus, more attention can be devoted to the major objectives of the JV. Likewise, lacking a great deal of interdependence, parents may find JV management disregarding or circumventing various control efforts. Since our overarching goal is to better understand the performance implications of control design decisions, we offer the following hypothesis:

H4d: With low strategic interdependence, inexperienced parents who use fewer controls (formal and/or informal) have higher performance than those that use more controls.

Methodology

Data and Research Sample

Taking the JV entity as the unit of analysis, data for this study was collected through a nationwide questionnaire mail survey designed and administered based on the methods offered by Dillman (2000). To ensure content validity, three strategic management scholars conversant with JV literature reviewed the initial questionnaire and provided input for revision. The questionnaire was then pretested on a small group of managers prior to final mailing.

Three secondary sources were used to develop the mailing list of eligible two-parent JVs: *Directory of Corporate Affiliations* (1999), *Ward's Business Directory* (1999), and Lexus Nexis. Our goal was to obtain ventures encompassing a wide range of industries. Hence, any for-profit equity JV was eligible. Including only equity JVs was considered appropriate because the structure of equity JVs tends to be well-defined and standardized. This more homogenous sample helped avert confounding interpretation and comparability of findings (Contractor & Lorange, 1988; Park & Russo, 1996). Second, we only included ventures where the JV entity itself (not necessarily its parents) was located within the United States, thereby controlling for country-specific differences in business and political conditions (Kogut, 1988). Ultimately we generated a list of 680 JVs in both manufacturing and service industries.

Once the JVs were identified, a six-page questionnaire along with a personalized cover letter explaining the nature of the study was sent to joint venture CEOs. Executives were asked to consider the JV they were currently managing and to answer all questions from the perspective of the JV; not their own personal perspective (i.e., organizational not individual point of view). In exchange for participation and to provide motivation and accurate responses each JV CEO was assured of anonymity and given the opportunity to receive a summary report of our findings. Eighty-four of the initially sent surveys were returned because of nonexistent addresses or a JV's inability/unwillingness to participate. These ventures were subsequently excluded from the postcard follow-up mailing. In the end, a total of 71 responses were received for a response rate of 12%. After eliminating responses that had a significant amount of missing information or contained influential outliers, the analysis proceeded with a final n of 62.

While low responses are not unusual for studies at the organizational level of analysis (e.g., Cycyota & Harrison, 2002; Hoskisson & Hitt, 1988), secondary data on various JV attributes allowed us to compare and test for systematic response bias and to establish the representativeness of our sample. Following the procedures suggested by Armstrong and Overton (1977), t-tests were performed comparing respondents and nonrespondents on annual sales and number of full time employees. No significant differences between the two groups were found for either dimension.

Variables

All measures used in the study came from previously published research. The survey instrument is available from the first author.

Dependent variable. Our study used Mjoen and Tallman's (1997) perceptual measure of performance that defines performance in terms of goal achievement. Hatfield, Pearce, Sleeth, and Pitts (1998) contend that goal achievement is appropriate because it is not only a major contributor explaining JV performance but it also avoids contamination by nonperformance factors while maintaining breadth of coverage. That is, defining JV performance subjectively in terms of goal attainment goes beyond mere financial gain or survival (Child & Yan, 2003) to contain a range of additional items including knowledge acquisition and learning; asset, human resource, and market access; technological development; as well as improved understanding of governmental behavior, national policies, foreign cultures, and market characteristics.

The three indicators of goal achievement measured on a 5-point Likert scale were: 1.) we are satisfied with the performance of the JV; 2.) the JV has met the objectives for which it was established; and 3.) the JV has been a profitable investment. A composite score was calculated as the average response to the three performance questions. Cronbach's alpha was .88.

Measuring performance from the perspective of the JV can be a contentious issue for some. However, asking for performance information from one key stakeholder in a three-sided relationship is consistent with previous research (e.g., Ding, 1997) and is supported by empirical demonstration of a significant positive correlation among parents and JV management's assessment of and satisfaction with the JV's performance (Geringer & Hebert, 1991; Glaister, Husan, & Buckley, 2004). Also, there is reason to believe that common method bias, if it indeed is a problem, is not so great as to invalidate results. Given the highly specialized expertise associated with informants it was not unreasonable to expect that the JV CEO had the most detailed knowledge, including both the control mechanisms utilized within the JV and whether JV management had the opportunity and ability to meet its strategic goals (Killing, 1983; Schaan, 1983).

Independent variables. The study's independent variables were breadth of formal and informal control, degree of strategic interdependence, and existence of prior JV experience. To appropriately depict the JV's control structure in terms of few to many mechanisms we combined the standardized scores of six control mechanisms into two formative measures, breadth of formal control (board role, board structure, management staffing, and incentive plans) and breadth of informal control (integrative mechanisms and socialization).

To measure the first formal structure component, *role of the JV board*, CEOs rated the degree that JV parents participate in strategic planning, budget approval and short-term planning, monitoring operating performance, and coordinating JV and parent actions (Kumar & Seth, 1998). Answers ranged from 1 = none to 5 = very great.

The second formal mechanism, *JV board structure*, was assessd by asking the size of the JV board and of the total, how many represent each parent respectively. Responses from the second question were divided by the first to determine the proportion of members from parental headquarters (Kumar & Seth, 1998).

Following Kumar and Seth (1998) the third formal mechanism, *incentive compensation,* was assessed by asking CEOs what percentage of the JV top management bonus plan is based upon the performance of the JV alone rather than contingent upon a combination of JV plus parent performance (reverse coded).

The final formal control mechanism, *staffing JV management positions*, was operationalized by asking JV CEOs the following: 1.) what proportion of JV top management positions are occupied by members from each parent? and 2.) does the JV CEO originate from one of the parents? (Kumar & Seth, 1998).

To measure the first informal structure component, *integrative mechanisms*, JV CEOs were asked to rate the frequency that four different communication mechanisms (direct contact, liaison personnel, temporary task forces, and permanent committees) are used to coordinate JV management decisions with those of its parents (1 = rarely to 5 = very frequently). Consistent with Kumar and Seth (1998) frequency of use was then weighted based on the relative complexity of each type of mechanism with direct contact viewed as least complex (1), permanent committees as the most complex (4), and liaison personnel and temporary task forces lying in between (2 and 3 respectively) (Gupta & Govindarajan, 1991).

The other informal mechanism, *socialization*, was measured by asking CEOs to answer either yes (1) or no (0) to each of the following: 1.) is there planned rotation of the JV CEO back to the parent? 2.) does either parent have planned rotation of JV top managers to and from duty with this JV? and 3.) do JV top managers attend executive development programs and seminars conducted by either parent? (Kumar & Seth, 1998).

Using Kumar and Seth's (1998) instrument, we measured *degree of strategic interdependence,* by asking CEOs to rate separately on a five-point scale, 1.) the importance of thirteen resources to the operation and success of the JV and 2.) the extent to which each of those resources is shared between parties. Resources included items such as capital, raw materials, facilities, strategic planning, brand names, and functional area experience (Harrigan, 1985). A composite score was calculated by weighting each shared resource by its perceived importance.

Experience was measured using a portion of an instrument developed by Johnson et al. (2001) that asked CEOs whether parents had prior JV experience besides the JV of which they were currently managing. Responses were coded (1) if one or both parents had previous JV experience and (0) if neither parent had prior experience.

Three variables that have the potential to confound results include the age of the JV, the nationality of the *JV parents,* and *JV industry.* Age was operationalized in terms of months. Nationality was based on the country of each parent's headquarters. JVs with both parents originating from the US were coded (1). Those with at least one parent from another country were coded (0). JV industry was measured using the JVs two digit SIC code, which was then divided into two industry groups, service (42%) and manufacturing (58%). We felt it necessary to combine firms into two distinct groups because of the ten possible SIC divisions eight were represented in our sample (absent were Divisions A and J). Of those, numerous two-digit SIC codes were represented with no more than five but on average only two companies representing any one two-digit segment thereby making it difficult to determine if a specific industry had an influential effect.

We did not control for percentage of ownership in concurrence with Kumar and Seth (1998) who state that if the majority of the sample has a 50/50 or 49/51 ownership structure, as is the case with our sample, it is not necessary to include it as a control variable as it is implicitly controlled. We also did not include equity ownership as a control mechanism because equity ownership provides only a limited amount of control (Mjoen & Tallman, 1997) and as defined, is not equivalent to managerial control (Geringer & Hebert, 1989; Yan & Gray, 1994). Further, using equity as a control mechanism is more conducive to controlling partner behavior than JV management behavior.

All independent variables measured with multi-item scales were *formative* rather than *reflective* in nature and therefore, could not be subjected to reliability or factor analytic approaches typically used for reflective measures (Bollen & Lennox, 1991). Rather than being affected by or a manifestation of the underlying construct, as is the case with the reflective measures of performance, each item in a formative scale consists of single attributes of the variable that together define or cause the composite construct. Formative indicators are multidimensional "checklists" wherein each item contributes to the total and because of this, are not expected to be internally consistent or unidimensional - they may be positively, negatively, or uncorrelated with each other (Bollen & Lennox, 1991). For instance, the literature suggests that strategic interdependence is best measured by tapping into the resources and skills shared between firms' value chains (Harrigan, 1985). Given that each resource covers different facets of interdependence, it is not expected that manufacturing expertise would be highly correlated with marketing expertise or that a change in the former necessarily leads to a change in the later. Rather, it is by summing the weighted resources and skills that we determine the degree of interdependence. The same logic holds for the breadth of control. Each control mechanism contributes to and defines the JV's control structure.

With formative variables, validation relies largely on the precision and thoroughness in which the measures' domain is established and tapped (Johnson et al., 2001). Thus, content validity was achieved by grounding the items in the literature and having three strategic management scholars visually inspect the items to ensure that they adequately embodied the domain of interest.

Prior to running regression analyses, variance inflation factors (VIF) were examined to determine if the independent variables were orthogonal. Since VIF values were under 10, multicollinearity was determined not to be a problem (Neter, Kutner, Nachtsheim, & Wasserman, 1996).

Results

Table 1 reports the descriptive statistics and the matrix of correlations among all variables. Tables 2 and 3 provide regression results testing the impact of JV characteristics on the relationship between the formal and informal control structure and performance respectively. Following the procedures recommended by Cohen and Cohen (1983) we tested our hypotheses by considering the significance of the standardized regression coefficient for the interaction terms as provided in models three and four of each table.

Table 1: *Descriptive Statistics and Correlations*[a]

Variable	Mean	s.d.	1.	2.	3.	4.	5.	6.	7.	8.
1. Performance	4.20	0.76	1.00							
2. Age	120.89	157.74	0.14	1.00						
3. Industry[b]	0.60	0.50	-0.09	0.16	1.00					
4. Nationality[b]	0.63	0.49	-0.08	0.14	-0.29*	1.00				
5. Formal Controls	0.00	2.30	0.12	0.11	0.26*	-0.20	1.00			
6. Informal Controls	0.00	1.64	0.06	-0.01	0.16	-0.28*	0.56**	1.00		
7. Strategic Interdependence	1.92	0.96	0.02	-0.09	-0.00	-0.01	0.35**	0.50**	1.00	
8. Experience[b]	0.87	0.34	0.21	0.10	0.08	0.20	-0.01	0.01	-0.26*	1.00

[a] N = 62
[b] Dummy Variable
* $p < 0.05$
** $p < 0.01$

Table 2: *Hierarchical Regression Analyses with the Formal Control Structure*

Variables	Model 1	Model 2	Model 3	Model 4
Age	0.19	1.73	0.19	0.20
Industry	-0.16	-0.22	-0.11	-0.07
Nationality	-0.15	-0.20	-0.27*	-0.30*
Formal Control Structure		0.09	1.78**	-1.12
Interdependence		0.07	0.22	0.01
Experience		0.27†	0.47	0.48
Formal Control x Interdependence			-0.24	2.07
Formal Control x Experience			-1.55**	1.33
Interdependence x Experience			-0.27	-0.03
Formal Control x Interdependence x Experience				-2.27
R^2	0.05	0.13	0.31	0.34
F	1.07	1.33	2.59*	2.64**
ΔR^2		0.07	0.18**	0.03

Standardized beta coefficients are reported
N = 62
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$

Hypotheses 1a and 1b predict that strategic interdependence moderates the relationship between the formal control structure and performance as well as the informal control structure and performance. Model 3 in Tables 2 and 3 failed to support these hypotheses. Neither the interaction between the formal control structure and interdependence nor the interaction between the informal control structure and interdependence were significant.

Table 3: *Hierarchical Regression Analyses with the Informal Control Structure*

Variables	Model 1	Model 2	Model 3	Model 4
Age	0.19	0.19	0.16	0.18
Industry	-0.16	-0.20	-0.15	-0.10
Nationality	-0.15	-0.23	-0.21	-0.22
Informal Control Structure		-0.04	-1.41	-2.96*
Interdependence		0.13	1.08**	0.87*
Experience		0.28*	1.27**	1.24**
Informal Control x Interdependence			0.26	2.02†
Informal Control x Experience			1.15	2.83*
Interdependence x Experience			-1.21*	-0.99*
Informal Control x Interdependence x Experience				-1.88†
R^2	0.05	0.12	0.24	0.28
F	1.07	1.27	1.80†	2.00*
ΔR^2		0.07	0.12†	0.05†

Standardized beta coefficients are reported
N = 62
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$

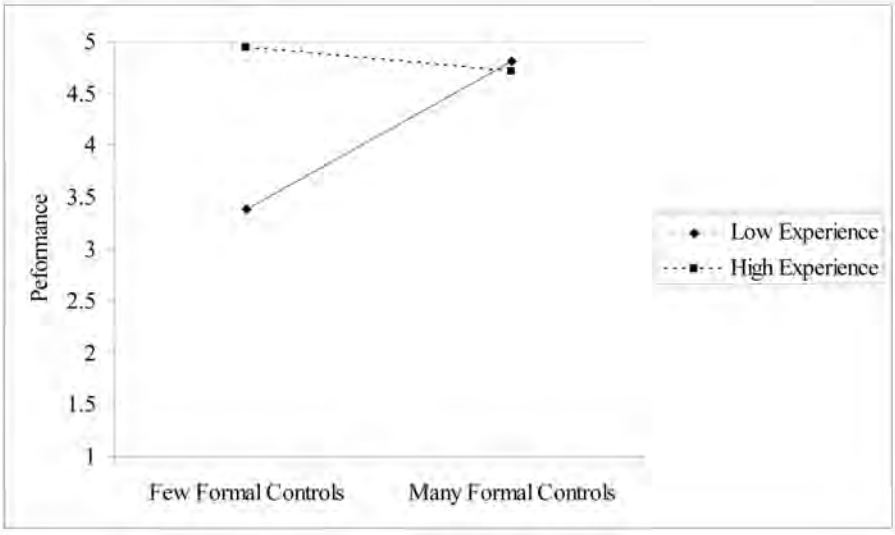
Hypotheses 2a and 2b predict that experience moderates the relationship between the formal control structure and performance as well as the informal control structure and performance. Results in Table 2 support hypothesis 2a, which demonstrates that formal control and experience interact to influence performance (β = -1.55, p < .01). The nature of this interaction is depicted in Figure 1. As seen in Table 3, the interaction between informal control and experience was not significant. Hypothesis 2b therefore, was not supported.

Model 4 in Tables 2 and 3 include the hypothesized three-way interactions. Results depicted in Table 2 failed to support hypothesis 3a. The relationship among formal controls, strategic interdependence, and experience was not significant. In contrast, support was found for hypothesis 3b. Interdependence and experience interact with informal controls to have bearing on performance (β = -1.88, p = .07). We recognize that a p-value greater than .05 is often considered marginal; however, Cohen and Cohen (1983) recommend using a less stringent p-value for higher level interactions. Had the 3-way interactions not been considered there was also a 93% chance that we would violate the assumption of additivity.

Cohen and Cohen (1983) further contend that the coefficients for the multiplicative terms and their component variables' main effects contain information needed to interpret significant N-way interactions. Given that support was found for hypothesis 3b but not 3a, we limited our analysis of hypotheses 4a-d to the relationship between contextual configurations and informal controls on performance

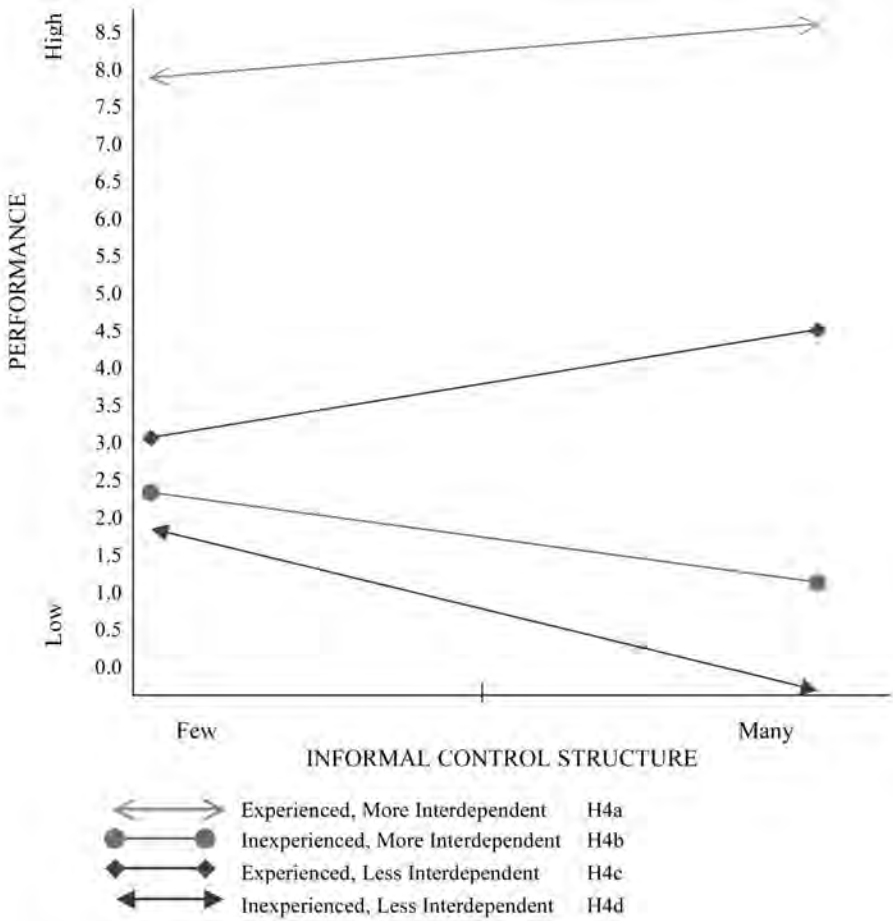
(i.e., how various configurations influence the formal control-performance relationship were not considered). Following the procedures outlined by Cohen and Cohen (1983), the hypotheses were analyzed by means of graphing the relationship between performance and the informal control structure at high and low levels of experience and interdependence (see Figure 2). To determine the slopes of the lines select values (one standard deviation above and below the mean) of the moderator variables were substituted into the unstandardized regression equation. Through this procedure, product terms were eliminated with results showing the performance effects of more or less informal control structures.

Figure 1: *Interaction between a Formal Control Structure and Experience*



Hypothesis 4a predicted that performance will be higher for experienced parents that rely on informal controls when strategic interdependence is high. Results depicted in Figure 2 support this portion of the hypothesis. Opposite to what was predicted in hypothesis 4b, when interdependence was high, inexperienced parents who implemented fewer informal control mechanisms had higher performance than those that implemented more informal controls. Performance was also the reverse for the control-contextual configuration proposed in hypothesis 4c. When strategic interdependence was low, experienced parents who relied on more informal controls had higher performance than those that place less emphasis on informal mechanisms. Finally, with low interdependence, inexperienced parents who used fewer informal controls had higher performance than those that used more informal control mechanisms. This finding therefore supports the informal control facet of hypothesis 4d.

Figure 2: *Effect of Informal Controls on Performance for Four Configurations*



Discussion and Conclusions

A recurring premise in the literature is that control is a critical factor in JV success. Extant research, however, has not investigated the performance implications of the JV control structure in sufficient detail, especially in light of the opposing effect different contextual variables can have on the control-performance relationship. Drawing from both agency and learning theories we describe why research must take a more comprehensive look at issues surrounding JV control and performance. Mechanisms meant to safeguard against agent shirking and resource misappropriation may not always have a beneficial effect on JV goal attainment.

Our synthesis of the literature and findings suggests that interdependence and experience are two important issues affecting control structure decisions and performance outcomes. Results reveal an antagonistic interaction (Neter et al., 1996) between formal control and experience such that an increase in performance due to

increased use of formal control mechanisms becomes smaller as parents gain JV experience. That is, when parents have experience managing JVs, increasing the breadth of the formal control hurts performance. When parents lack experience, the time, effort, and resources devoted to protecting parental interests are a justifiable means of directing JV behavior toward goal attainment.

A significant three-way interaction between informal control, interdependence, and experience brings to light the complex nature of control-performance relationships where interdependence and experience work in combination to influence the design of the JV's informal governance structure. Certain configurations of these variables enhance a JV's ability to achieve its stated goals efficiently and effectively; others do not.

As predicted, performance was greater for experienced parents who used more informal control mechanisms to align interests in a highly interdependent JV. Kumar and Seth (1998) established the individual importance of integrative mechanisms and socialization when interdependence increases between parents and the JV. Our study, which combined these two mechanisms to form the JV's informal control structure, supports their findings and extends their research by considering the simultaneous importance of JV experience.

Interestingly, while performance was higher for inexperienced parents who used fewer informal controls when interdependence was low, we did not find performance to be higher for inexperienced parents who used more informal controls as interdependence increased. We offer two plausible explanations for the latter configuration; however, each indicates the need for additional research into the process of implementing JV control structures.

First, while informal mechanisms can be quite beneficial to JV governance, they are uncertain and ambiguous (Inkpen & Currall, 2004), thereby making execution more challenging than with more explicit formal control structures. Likewise, parents do not necessarily achieve effective control just because control mechanisms are implemented (Das & Teng, 1998). Informal mechanisms in particular will not effectively regulate behavior if concerns of agent opportunism are not overcome (Fryxell et al., 2002). Considering that experience also interacted with the formal control structure it is possible that JV managers struggled to interpret inexperienced parents' control motives (e.g., were many diverse controls selected because parents lacked an understanding of how to manage a JV or do executives from parental headquarters have different perceptions of the trustworthiness of JV managers?). In either case inferior performance would follow because of the economic and social costs incurred in designing and implementing a suboptimal governance system (i.e., one that emphasizes both formal and informal controls) and/or because of the penalties incurred when misunderstandings and resentment arising from inconsistent signals interfere with day-to-day functioning and integration (Guidice & Mero, 2007). Left unattended and unresolved such conflict can lead to reduced commitment and cooperation (Cullen, Johnson, & Sakano, 1995; Pearce, 2001), inefficient operations (Madhok, 1995), and inadequate performance (Ding, 1997; Killing, 1983).

Second, it is important to recognize that while informal controls are more economical in the long run (Fryxell et al., 2002), creating shared values and

commitment takes time and resources, and is difficult to achieve (especially when parental behavior suggests that structural decisions may be driven by opportunistic assumptions). Related research suggests that trust is a determinate of control mechanism choices and that chosen controls influence trust (Inkpen & Currall, 2004). It is also argued that trust and informal control overlap significantly (Fryxell et al., 2002), that extensive use of formal controls slows the development of trust (Inkpen & Currall, 2004), and that successful implementation of informal controls is less likely to occur if trust between parties is negligible (Fryxell et al., 2002). Thus, where a shift from formal to informal controls should occur as the JV ages, this did not seem to happen as easily with the inexperienced parents in our study. Parents may have been preoccupied with formal controls because trust was negligible or perhaps because the JV had yet to reach the point where informal control costs were less than the costs associated with formal mechanisms and performance reflected these costs.

Consistent with learning theory our findings provide evidence that experienced parents can become knowledgeable in JV management and when applicable, use that information in a beneficial manner in subsequent relationships. This conclusion was drawn after comparing multiple pairs of configurations. For example, performance was consistently higher for experienced parents when comparing conditions where interdependence was the same (both either high or low). Performance remained higher for experienced versus inexperienced parents when the configurations being compared contained one high and one low interdependent condition. As seen in Figure 2, the best performers were experienced parents that used more informal controls under conditions of both high and low interdependence.

Given the importance of experience, it can be similarly inferred that experience influences other JV decisions. For instance, the level of interdependence chosen to unite parties may also be partially based on prior experience and learning what skills and resources can safely be shared without creating viable competitors or losing the foundation upon which a competitive position rests. Although an explicit hypothesis was not offered, results in Table 3 show a significant interaction between experience and interdependence (β = -1.21, $p < 0.05$).

While results undeniably support the value of experience we would caution that experience alone does not guarantee a successful control-performance outcome. Not all parents will learn from prior experience to the extent that behavior changes (Fiol & Lyles, 1985). Some experienced parents may also incorrectly assume that their current JV is similar to a prior JV and inappropriately replicate the earlier governance structure (Finkelstein & Haleblian, 2002).

Finally, prior research has suggested that JV experience could be viewed as a complement to control or as a substitute for control. Our findings support both positions depending upon the control structure considered. It appears that experience complements informal control initiatives (more informal control mechanisms were an effective and efficient means to achieving JV goals for experienced parents) while it substitutes for formal control efforts (i.e., experienced parents use fewer formal controls). With the negative relationship between experience and formal control it is important to note that mechanisms like the board of directors can be used for purposes other than monitoring per se; boards also have advisory and resource acquisition roles.

It therefore may not be correct to conclude that absolute substitution is inevitable (i.e., as parents gain more and more experience they will necessarily use fewer and fewer formal controls such that at some level of experience, no formal controls will be used). What experienced parents learn is how much, what types, and for what purpose control mechanisms are best suited.

Implications

Firms are finding it increasingly necessary to build long-term partnerships to accomplish value-creating goals. Despite widespread interest in JVs there is limited understanding of how this organizational form produces a competitive advantage and superior performance. Our study points to the need for scholars to examine the performance implications of their research inquiries. Prior to this study it was implicitly assumed that more controls aided in JV goal attainment. We provide empirical evidence that this assumption may not always be accurate. Findings suggest that when formal controls are considered, less is better for experienced parents. Results also suggest that when the informal control structure is of interest, performance suffers if informal controls, interdependence, and experience are not properly aligned.

Managers in turn, can benefit from understanding that there is no one sure element, even if applied properly that is the key to JV success. We advance knowledge on this issue by providing an explanation for how goals are best achieved under specific contexts using a configuration of various formal and informal control mechanisms. To be sure, this study only tapped into one set of configurations. Other elements are likely to modify the control-performance relationship.

Limitations and Future Research

The ability to generalize our findings or draw comprehensive conclusions is limited in a number of ways that merit discussion. First, given the mean age of the JVs in our sample and fairly high performance ratings, the study may be biased toward, and thus most applicable to, older successful ventures. We would however emphasize that our focus was on trying to understand factors that lead to beneficial JV relationships and it is precisely those older and thriving ventures that offer many insights. Likewise, it takes time for an organization to achieve many of its goals (Hatfield et al., 1998) and older ventures capture this better than newly formed JVs still making progress toward goal attainment.

Second, we develop our arguments based on the supposition that the JV parents make similar assumptions about agent motivation, and thus, agree on the design of the JV governance structure. This may not occur in every relationship and future research should delve deeper into this issue to determine if and how JV governance and performance are affected by parents' philosophical beliefs.

Third, our paper, like other control-performance inquiries, assumes a linear relationship between variables. However, it is possible that a curvilinear relationship exists such that there is a threshold point where the control-performance relationship

shifts from positive to negative or visa versa. This possibility suggests that conclusions drawn in our study may only hold within a specific range.

Fourth, our measure of experience is fairly limited. Experience was considered to exist and guide control design decisions if either one or both parents had engaged in prior JVs. Our dichotomous measure also prevented us from determining whether the knowledge gained from managing one prior JV is comparable to the knowledge gained managing multiple JVs. Future studies would benefit from taking a more in-depth look at experience to determine how quickly a parent moves along the learning curve and whether a parent's knowledge indeed plays a dominant role in the design of the JV control structure when its partner lacks similar experience.

Our final caveat concerns sample size. It is generally acknowledged that obtaining data is often one of the biggest obstacles in JV research (Kogut, 1988). On the positive side, even with low statistical power, we found significant effects for a number of our proposed interactions suggesting strong effect sizes. Had the sample been larger it is possible that we would have detected additional interactions and strengthened other marginally significant effects (Jaccard, Turrisi, & Wan, 1990). Importantly, the availability of secondary data allowed us to compare our limited sample to the population on several dimensions where we found no significant differences.

Other studies have increased their sample size by having executives complete two questionnaires (one for each parent). This, however, is inappropriate. First, JV management is subject to a control mechanism whether implemented by one or both parents. Second, if both parents institute the same mechanism then there is double representation when describing the JV's governance structure. Unless these mechanisms were implemented for reasons other than control there is unwanted repetition in analyses, calling into question the validity of any significant findings.

Beyond the suggestions offered above, future research should extend the ideas offered in the present study to other samples, particularly at an international level. With companies increasing their global presence, additional investigation is required to determine if country-level factors, such as cultural distance influence the nature of JV management.

In conclusion, it is only through further refinements and extensions to this and other inter-organizational research that we will gain a comprehensive understanding of the complex issues inherent in JV relationships.

References

Anand, B. & Khanna, T. (2000). Do firms learn to create value: The case of alliances. *Strategic Management Journal*, 21: 295-316.

Argyris, C. & Schon, D. (1978). *On organizational learning.* Cambridge: Blackwell.

Armstrong, S. & Overton, T. (1977). Estimating non-response bias in mail surveys. *Journal of Marketing Research,* 14: 396-402.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management,* 17: 99-120.

Beamish, P.W. (1993). The characteristics of joint ventures in the People's Republic of China. *Journal of International Marketing,* 1: 29-48.

Blodgett, L. (1991). Partner contributions as predictors of equity share in international joint ventures. *Journal of International Business Studies,* 22: 63-78.

Blumenthal, J. (1988). *Strategic and Organizational Conditions for Joint Venture Formation and Success*. Unpublished Ph.D. dissertation: University of Southern California, USA.

Bollen, K. & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin,* 110: 305-322.

Calantone, R.J. & Zhao, Y.S. (2000). Joint ventures in China: A comparative study of Japanese, Korean, and U.S. Partners, *Journal of International Marketing,* 24: 53-72.

Child, J. & Yan, Y. (2003). Predicting the performance of international joint ventures: An investigation in China. *Journal of Management Studies,* 40: 283- 320.

Child, J., Yan, Y., & Lu, Y. (1997). Ownership and control in Sino-foreign joint ventures. In P.W. Beamish & J.P. Killings (Eds.), *Cooperative Strategies: Asian Pacific Perspectives,* San Francisco: New Lexington Press. 181-225.

Choi, C.B. & Beamish, P.W. (2004). Split management control and international joint venture performance. *Journal of International Business Studies,* 35: 201-215.

Cohen, M. & Bacdayan, P. (1994). Organizational routines are stored as procedural memory: Evidence from a laboratory study. *Organization Science,* 5: 554-568.

Cohen, J. & Cohen, P. (1983). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences.* Hillsdale: Erlbaum.

Colbert, B. (2004). The complex resource-based view: Implications for theory and practice in strategic human resource management. *Academy of Management Review,* 29: 341-359.

Coles, J., McWilliams, V. & Sen, N. (2001). An examination of the relationship of governance mechanisms to performance. *Journal of Management,* 27: 23-50.

Contractor, F. & Lorange, P. (1988). Why should firms cooperate? The strategy and economic basis for cooperative returns. In F. Contractor & P. Lorange (Eds.) *Cooperative Strategies in International Business*. 3-28. Lexington: DC Health.

Cullen, J., Johnson, J., & Sakano, T. (1995). Japanese and local partner commitment to IJVs: Psychological consequences of outcomes and investments in the IJV relationship. *Journal of International Business Studies* 26: 91-115.

Cycyota, C. & Harrison, D. (2002). Enhancing survey response rates at the executive level: Are employee- or consumer-level techniques effective? *Journal of Management,* 28: 151-176.

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

Daniels, J. & Magill, S. (1993). Protection of competitive advantage in US/Asia-Pacific JVs from high-technology industries. In R. Culpan (Ed.), *Multinational Strategic Alliances*. 167-183. New York: International Business.

Das, T.K. & Teng, B. 1998. Between trust and control: Developing confidence in partner cooperation in alliance. *Academy of Management Review* 23: 491-515.

Delery, J. & Doty, H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic contingency theory. *Academy of Management Journal,* 39: 802-836.

Dillman, D. (2000). *Mail and Telephone Surveys: The Total Design Method.* New York:

Wiley.
Ding, D. (1997). Control, conflict and performance. *Journal of International Marketing,* 5: 31-45
Directory of Corporate Affiliations. (1999). Wilmette: National Register Publishing.
Donaldson, L. & Davis, J. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management,* 16: 49-64.
Eisenhardt, K. (1989). Agency theory: An assessment and review. *Academy of Management Review,* 14: 57-74.
Faulkner, D.O. (2000).Trust and control: Opposing or complementary functions? In D.O. Faulkner & M. De Rond, *Cooperative Strategy: Economic, Business, and Organizational Issues.* New York: Oxford University Press. 341-361.
Finkelstein, S. & Haleblian, J. (2002). Understanding acquisition performance: The role of transfer effects. *Organization Science,* 13: 36-47.
Fiol, M. & Lyles, M. (1985). Organizational learning. *Academy of Management Review,* 10: 803-815.
Franko, L. (1971). *Joint Venture Survival in Multinational Corporations*. New York: Praeger.
Fryxell, G., Dooley, R., & Vryza, M. (2002). After the ink dries: The interaction of trust and control in US based international joint ventures. *Journal of Management Studies,* 39: 865-886.
Geringer, M. & Hebert, L. (1989). Control and performance of international joint ventures. *Journal of International Business Studies,* 20: 235-254.
Geringer, M. & Hebert, L. (1991). Measuring performance of international joint ventures. *Journal of International Business Studies,* 22: 249-263.
Ghoshal, S. & Moran, P. (1996). Bad for practice: A critique of the transaction cost theory. *Academy of Management Review,* 21: 13-47.
Glaister, K.W., Husan, R., & Buckley, P.J. (2004). *Strategic Business Alliances: An Examination of the Core Dimensions.* Northampton, MA: Edward Elgar Publishing. 138-156.
Gray, B. & Yan, A. (1992). A negotiations model of joint venture formation, structure and performance: Implications for global management. In S.B. Prasad (Ed.), *Advances in International Comparative Management.* 7: 41-75.
Green, S. & Welsh, A. (1988). Cybernetics and dependence: Refining the control concept. *Academy of Management Review,* 13: 287-301.
Guidice, R. & Mero, N. (2007). Governing joint ventures: Tension among principals' dominant logic on human motivation and behavior. *Journal of Management and Governance,* 11: 261-283.
Gulati, R. & Singh, H. (1998). The architecture of cooperation: Managing coordination costs and appropriation concerns in alliances. *Administrative Science Quarterly,* 43: 781-814.
Gupta, A. & Govindarajan, V. (1991). Knowledge flows and the structure of control within multinational corporations. *Academy of Management Review,* 16: 768-792.
Gupta, A. & Misra, L. (2000). The value of experiential learning by organizations: Evidence from international joint ventures. *The Journal of Financial Research,* 23: 77-102.

Harrigan, K. (1985). *Strategies for Joint Ventures*. Lexington: Lexington Books.

Hatfield, L., Pearce, J., Sleeth, R., & Pitts, M. (1998). Toward validation of partner goal achievement as a measure of JV performance. *Journal of Managerial Issues,* 10: 355-372.

Hebert, L. (1994). *Division of Control, Relationship Dynamics and Joint Venture Performance.* Unpublished Ph.D. dissertation, University of Western Ontario, London, Ontario, Canada.

Hebert, L. & Beamish, P. (1997). Characteristics of Canada-based international joint ventures. In P.W. Beamish & J.P. Killing (Eds.) *Cooperative Strategies: North American Perspectives.* 403-427. San Francisco: New Lexington.

Hoskisson, R. & Hitt, M. (1988). Strategic control systems and relative R&D investments. *Strategic Management Journal,* 9: 605-622.

Huber, G. (1991). Organizational learning: The contributing processes and the literatures. *Organization Science,* 2: 88-115.

Inkpen, A. & Crossan, M. (1995). Believing is seeing: Joint ventures and organization learning. *Journal of Management Studies,* 32: 595-619.

Inkpen, A.C. & Currall, S.C. (2004). The coevolution of trust, control, and learning in joint ventures. *Organization Science,* 15: 586-599.

Jaccard, J., Turrisi, R. & Wan, C. (1990). *Interaction Effects in Multiple Regression.* Newbury Park: Sage.

Jensen, M. & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics,* 3: 305-360.

Johnson, J., Cullen, J. Sakano, T., & Bronson, J. (2001). Drivers and outcomes of parent company intervention in IJV management: A cross-cultural comparison. *Journal of Business Research,* 52: 35-50.

Johnson, J., Cullen, J., Sakano, T., & Takenouchi, H. (1996). Setting the stage for trust and strategic integration in Japanese-US cooperative alliances. *Journal of International Business Studies,* 27: 981-1004.

Killing, P. (1983). *Strategies for Joint Venture Success.* New York: Praeger.

Kogut, B. (1988). Joint ventures: Theoretical and empirical perspectives. *Strategic Management Journal,* 9: 319-332.

Kumar, S. & Seth, A. (1998). The design of coordination and control mechanisms for managing joint venture-parent relationships. *Strategic Management Journal,* 19: 579-599.

Leifer, R. & Mills, P. (1996). An information processing approach for deciding upon control strategies and reducing control loss in emerging organizations. *Journal of Management,* 22: 113-128.

Levitt, B. & March, J. (1988). Organizational learning. *Annual Review of Sociology,* 14: 319–340

Lorange, P. (1997). Black-box protection of your core competencies in strategic alliances. In P.W. Beamish & J.P. Killing (Eds.), *Cooperative Strategies: A European Perspective.* 59-73. San Francisco: New Lexington.

Lui, S. & Ngo, H. (2004). The role of trust and contractual safeguards on cooperation in non-equity alliances. *Journal of Management,* 30: 471-486.

Lyles, M. (1988). Learning among joint venture-sophisticated firms. *Management*

International Review, 28: 85-98.
Madhok, A. (1995). Revisiting multinational firms' tolerance for JVs: A trust-based approach. *Journal of International Business Studies* 26: 117-137.
Makino, S. & Delios, A. (1996). Local knowledge transfer and performance: Implications for alliance formation in Asia. *Journal of International Business Studies,* 27: 905-928.
Mills, P. & Ungson, G. (2003). Reassessing the limits of structural empowerment: Organiza-tional constitution and trust as controls. *Academy of Management Review,* 28: 143-153.
Mjoen, H. & Tallman, S. (1997). Control and performance in international joint ventures. *Organizational Science,* 8: 257-274.
Neter, J., Kutner, M. Nachtsheim, C. & Wasserman, W. (1996). *Applied Linear Statistical Models.* Chicago: Irwin.
Nooteboom, B., Berger, H. & Noorderhaven, N. (1997). Effects of trust and governance on relational risk. *Academy of Management Journal,* 40: 308-338.
Osland, G.E. & Cavusgil, T.S. (1996). Performance issues in US-China joint ventures, *California Management Review,* 38: 106-130.
Ouchi, W. (1977). The relationship between organizational structure and organizational control. *Administrative Science Quarterly,* 22: 92-112.
Ouchi, W. (1979). A conceptual framework for the design of organizational control mechanisms. *Management Science,* 25: 833-848.
Pangarkar, N. & Klein, S. (2004). The impact of control in international joint venture performance: A contingency approach. *Journal of International Marketing,* 12: 86-107.
Park, S. & Russo, M. (1996). When competition eclipses cooperation: An event history analysis of joint venture failure. *Management Science,* 42: 875-891.
Pearce, R.J. (2001). Looking inside the joint venture to help understand the link between inter-parent cooperation and performance. *Journal of Management Studies* 38: 557-582.
Penrose, E. (1959). *The Theory of the Growth of the Firm.* New York: Wiley.
Platt, J.R. (1964). Strong inference. *Science,* 146: 347-353.
Provan, K. (1993). Embeddedness, interdependence, and opportunism in organizational supplier-buyer networks. *Journal of Management,* 19: 841-856.
Reuer, J., Zollo, M. & Singh, H. (2002). Post-formation dynamics in strategic alliances. *Strategic Management Journal,* 23: 135-151.
Schaan, J.L. (1983). *Parent Control and Joint Venture Success: The Case of Mexico.* Unpublished doctoral dissertation, University of Western Ontario, Canada.
Schaan, J.L. (1988). How to control a joint venture even as a minority partner. *Journal of General Management,* 14: 5-16.
Simonin, B. (1997). The importance of collaborative know-how: An empirical test of the learning organization. *Academy of Management Journal,* 40: 1150-1174.
Sundaramurthy, C. & Lewis, M. (2003). Control and collaboration: Paradoxes of governance. *Academy of Management Review,* 28: 397-415.
Tallman, S. (2000). Forming and managing shared organization ventures. *Cooperative Strategy.* 1: 96-119.
Tomlinson, J.W.C. (1970). *The Joint Venture Process in International Business: India and*

Pakistan. Cambridge: MIT Press.

Trice, H. & Beyer, J. (1993). *The Cultures of Work Organizations*. Englewood Cliffs, NJ: Prentice-Hall.

Ward's Business Directory of US Private and Public Companies. (1999). Detroit: Gale Research.

Williamson, O. (1979). Transaction-cost economics: The governance of contractual relations. *The Journal of Law and Economics,* 22: 233-161.

Yan, A. & Gray, B. (1994). Bargaining power, management control, and performance in United States-China joint ventures: A comparative case study. *Academy of Management Journal,* 37: 1478-1517.

Yan, A. & Gray, B. (2001). Antecedents and effects of parent control in international joint ventures. *Journal of Management Studies,* 38: 393-416.

Yan, A. & Zeng, M. (1999). International joint venture instability: A critique of previous research, a reconceptualization, and directions for future research. *Journal of International Business Studies,* 30: 297-414.

Zeng, M. & Chen, X. (2003). Achieving cooperation in multiparty alliances: A social dilemma approach to partnership management. *Academy of Management Review,* 28: 587-605.

Zollo, M., Reuer, J., & Singh, H. (2002). Interorganizational routines and performance in strategic alliances. *Organization Science,* 13: 701-713.