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This paper advances contingency theories of performance-outcome learning in hybrid-project systems, in which both project participants and superordinate organizations influence the formation of project ventures. We propose that performance-outcome learning depends on the perceived relevance of performance feedback and organizational control over project participants. We find support for our theory in a sample of 239 U.S. movie projects from 1931-1940. Higher levels of project performance led to future collaborations with the same partners contingent on prior collaborations, project similarity, and organizational control. Our findings imply distinct patterns of network evolution and that any adaptation by hybrid-project systems may unfold through slow-moving and local adjustments.

Key Words: Organizational Learning, Project Ventures, Hybrid-Project Systems

Short-term flexible networks and project-based ventures have spurred interest as industries migrate toward more fluid, network-based production (Piore & Sabel, 1984; Schilling & Steensma, 2001; Zenger & Hesterly, 1997). We define a project venture as a temporary entity that combines several participants to accomplish a single predetermined short-term task. When the short-term task has been completed, the project team disbands (Sydow, Lindkvist, & DeFillippi, 2004). Among the advantages cited for such project-based production are opportunities to address changes in task demands and contributor capabilities (Jones, Hesterly, & Borgatti, 1997; Lampel, Lant, & Shamsie, 2000; Storper, 1989). In spite of the widespread assumption about their adaptive capabilities, however, project ventures also face considerable learning and adaptation obstacles (Bechky, 2006; Grabher, 2004; Jones, Hesterly, Fladmoe-Linquist, & Borgatti, 1998; Taylor & Greve, 2006).

In this study, we propose a conditional model for when and how performance outcomes of prior projects will influence whether a project's participants will collaborate again in a future project. We thus investigate *performance-outcome learning*. We define this as occurring when a higher level of performance outcome for a given activity increases the chances that this activity will occur again (Cyert & March, 1963, 1992). Conceptually, performance-outcome learning includes both trial-and-error learning from one’s own experience (Van de Ven & Polley, 1992) and vicarious learning from observed performance outcomes of actions by others (Haunschild & Miner, 1997). It represents a special case of organizational learning, which has been defined as a systematic change in behavior or knowledge resulting from experience (Argote, 1999).

Standard models of performance-outcome learning assume that the same entity observes outcomes, interprets them, and repeats activities that generated good outcomes and avoids activities with negative outcomes (Cyert & March, 1963; Greve, 2003; March & Olsen, 1976). In project systems, by definition, the project participants disband after task completion and the project team ceases to exist as a formal entity. It cannot – as a formal entity – serve as organizational memory or the engine of future action. This creates challenges for performance-outcome learning as the learning cycle has to be completed in other ways -- if it is to occur at all.

Another important potential obstacle for the completion of a learning cycle is control over the formation of future project ventures. At one extreme in stand-alone project systems, participants choose freely whether or not to join. These systems form the template for many studies of project collaboration and are presumed to apply to such domains as IPO syndicates (Li & Rowley, 2002), collaborations among independent service contractors (Jones et al., 1998), and contemporary independent movie productions (Baker & Faulkner, 1991; Jones, 1996). At the other extreme, projects can be fully embedded in a higher-level permanent organization that controls what projects are initiated and who joins them. Examples include proprietary internal R&D projects (Hansen, 1999; Katz, 1982; Van de Ven & Polley, 1992) and internal short-term taskforces in traditional manufacturing and service settings (Edmondson, Bohmer, & Pisano, 2001; Grabher, 2004).

In this study, we explore performance-outcome learning in the important middle ground where neither full independence nor total organizational control dominates the project-formation processes. We define this as a *hybrid-project system*. Formation of at least some projects is more centrally controlled by superordinate organizations which can curb, but do not completely eliminate the influence of project participants on project formation. Both organizations and individuals, then, can influence future project participation. Some hybrid systems tilt toward the stand-alone end of the continuum, such as construction collaborations, open-source software projects, grass-roots political movements, or faculty research teams across universities (Fleming & Sorenson, 2004; Jones et al., 1998). Examples for more centrally controlled settings include repertoire theaters that combine their regular actors with outside talent for special productions or political campaign teams that embody strong party-level influence. Although they can vary in their position on this spectrum, hybrid-project systems represent an important conceptual frontier since most prior work has focused on systems either dominated by stand-alone projects or fully-embedded projects.

We introduce a conditional framework of performance-outcome learning in hybrid-project systems. First, we propose that prior collaboration and project-task similarity will enhance the perceived relevance of the performance feedback of a focal project and therefore increase the tendency of the same participants to collaborate again in future project ventures. Second, we argue that organizational power, in the form of institutional control over project participants, will also moderate the impact of performance outcomes for a focal project. Such control facilitates recreating or barring repeated collaborations. This can determine whether a cycle of performance-outcome learning can be completed.

We test related hypotheses by examining whether the performance of specific movie projects shaped the chances that key project participants worked together again in the U.S. movie industry during the 1930s. Historical descriptions reveal that both studios and individuals influenced the selection of project participants, and that performance outcomes were known industry-wide. Thus, the movie industry at that time represented a hybrid-project system and performance-outcome learning *could* occur in principle. We use quantitative data on 239 movie projects to test our theory-based hypotheses.

To foreshadow our results, performance-outcome learning did not occur unconditionally in this hybrid system. Instead, a prior movie's performance had an impact only when there had been recent prior collaboration, or when the prior project was of the same type as the future one. These results are consistent with our theory that perceived relevance will enhance outcome learning. Second, levels of organizational control over project participants also shaped when outcome learning occurred -- consistent with theories that organizational control and power play a key role for completing performance-outcome learning cycles in some contexts.

Our investigation contributes to three major areas. First, it introduces theory and related evidence that advance our understanding of project systems. It highlights the presence of hybrid-project systems and their distinct features. It proposes and tests theory about specific causal factors that affect how repeated collaboration unfolds in such systems -- a key topic in the emerging project-venture literature (Grabher, 2004; Jones et al., 1998; Sorenson & Waguespack, 2006; Zuckerman, 2004).

Second, this study advances organizational learning theory by introducing a contingency framework for performance-outcome learning in hybrid-project systems. Our support for conditional effects underscores the importance of learning context, since work in some other settings has supported unconditional performance effects (Li & Rowley, 2002). Our results related to perceived relevance highlight the importance of project visibility and project similarity in a dynamic learning context. They also highlight how organizational power is an important driver facilitating the completion of performance-feedback cycles in hybrid-project systems. This contrasts with prior studies that often focus primarily on cognitive processes and information as drivers. It also contrasts with the common emphasis on learning as a source of power (Ahuja, 2000; Grant, 1996) rather than power as an influence on learning itself (Rura-Polley & Miner, 2002).

Finally, our work has value for practice. It promotes attention to adaptive implications of hybrid-project systems and offers insights for contemporary industries that are migrating toward more fluid and project-based production (Piore & Sabel, 1984; Sydow et al., 2004; Zenger & Hesterly, 1997). Our study invites the thoughtful attention of managers and policy makers to the strengths and limitations of hybrid-project systems as engines of adaptation, which we discuss briefly at the close of the paper.

To illustrate the construct of a hybrid-project system and how our research setting embodies this type of system, we first describe the specific industry context of our study. We then present the formal hypotheses about performance-outcome learning in this context.

RESEARCH SETTING

The U.S. 1931-1940 Movie Industry as a Hybrid-Project System

The U.S. movie industry in the 1930s provides a clear instance of a hybrid-project system, in which both permanent organizations and project participants influence future project formation. Prior research has outlined key characteristics of this project system, such as industry structure (Mezias & Mezias, 2000; Storper, 1989) and project participants' employment patterns (Baker & Faulkner, 1991; Bielby & Bielby, 1999; Faulkner & Anderson, 1987; Jones, 1996; Zuckerman, Kim, Ukanwa, & Rittman, 2003). Prior project-learning studies have focused on effects of accumulated experience on the quality of project outcomes (Moul, 2001) and effects of project configurations, such as status differences between participants, on exploration learning and innovation (Perretti & Negro, 2007b, 2007a). Importantly, the movie industry during our study period differs from later time periods (Miller & Shamsie, 1996; Robins, 1993). Thus, it is imperative that we base our work on detailed accounts of practices during the 1930s. Accordingly, we describe roles of superordinate permanent organizations (studios) and project participants below.

Superordinate organizations. During our study period, *integrated movie studios* owned substantial production facilities and theater chains. Integrated studios relied to a substantial degree on long-term employment contracts with such key project participants as producers, directors, actors, art directors, and editors (Weinstein, 1998). Typical contracts granted the studio the right to assign most individuals to any movie project, to suspend them if they refused an assignment, and to lend them to other studios. Integrated studios supplemented their substantial internal labor force with individuals loaned from other studios and free-lancers hired via short-term contracts (Davis, 1993; Variety, 1935, July 3: 23). *Non-integrated studios* and *independent production companies* also had permanent administrative structures to execute movie projects and to sell project outcomes, but did not own production facilities or movie theater chains. United Artists, a non-integrated studio founded by four extremely successful movie artists, engaged participants typically for specific projects (Balio, 1976, 1987), as did Selznick International Pictures, an independent production company founded and run by David Selznick (Flannery, 1990). In general, non-integrated studios had some consistent internal resources, but typically did not enjoy long-term contractual control over project participants and could not bar them from joining future projects at other studios. Table 1 provides additional illustrative examples for studio control over future project assignments of individual project participants.

Insert Table 1 about here

Project participants. In a hybrid-project system not only superordinate organizations, but also individual project participants can influence project formation. According to *Variety* (1935, July 3: 23), at least forty acting stars in 1935 were not under long-term contract and could accept or reject offers to participate in proposed projects. Some directors avoided work at integrated studios to gain more influence over project choice and the selection of other project participants (Balio, 1976; Schatz, 1998). Even within the integrated studios, some participants influenced future collaboration. Paul Murni (actor) in 1933, for example, signed a two-year contract for eight pictures with Warner Brothers that granted him the right of approval for story, role, and script (Warner Brothers' Legal Files, 1933). Even less powerful participants could at times influence future project participation, as when they avoided taking a part by talking a producer into reporting them as not appropriate (Buscombe, 1994). Table 2 provides additional examples of different forms of influence by project participants.

Insert Table 2 about here

HYPOTHESES

Performance-Outcome Learning in Hybrid-Project Systems

Movie projects dissolved after task completion and before performance outcome information became available. Thus, a movie project could not – as an organizational entity – accomplish direct performance-outcome learning from its own experience. The descriptions above suggest, however, that entities at two other levels had the potential to use performance information to shape future collaboration: studios and individual project participants.

We follow an established tradition in the learning literature of studying a key learning input (project performance) and the predicted learning outcome (future collaboration) based on theories of specific learning processes (Argote, 1999). Our approach is deductive, drawing on theory to generate hypotheses. We used qualitative and historical information to probe the nature of the learning context, to challenge the credibility of the theorized processes, and to illustrate specific learning processes -- but not to directly develop theories and not to test theories (Eisenhardt, 1989).

We view the influence of prior project performance on future collaboration as a special case of outcome learning. Performance-outcome learning occurs when performance outcomes from an activity influence whether the same activity is repeated (Cyert & March, 1963, 1992). Pared to its bones, the performance-outcome learning cycle has three core steps. An organization or person takes action A; that action produces result B; the better outcome B is, the greater the chances that action A, or elements of A, will be repeated in the future. In contrast, negative outcomes reduce the chance that Action A will be repeated. If project performance influences the chances of later collaborations among any of the original participants, performance-outcome learning about project-team composition has occurred.

The crucial feature of performance-outcome learning is that it involves selective replication of actions based on performance feedback. This differs profoundly from random pairing or from simple momentum processes, which involve the repetition of prior actions regardless of performance outcomes (Amburgey & Miner, 1992; Kelly & Amburgey, 1991; Miller & Friesen, 1980). Considerable prior research has shown a general tendency toward repeated collaboration by various social actors (Baum, Rowley, Shipilov, & Chuang, 2005; Li & Rowley, 2002; Soda, Usai, & Zaheer, 2004) -- including movie-project participants during the 1930s (Zuckerman, 2004). Accordingly, we do not present formal hypotheses about an underlying propensity towards repeated collaboration based on either momentum or random pairing, but hypothesize instead about how performance outcomes affect future collaboration.

Given that the project itself cannot carry out a complete learning cycle (acting, observing and then repeating its own actions based on outcomes), we develop hypotheses about how performance outcomes may influence actions by both superordinate organizations and project participants to shape future collaboration.

Superordinate organizations. At the organizational level two processes can generate performance-outcome learning: internal trail-and-error learning and vicarious learning from the experience of others (Greve, 1995; Levinthal & March, 1993; Miner & Haunschild, 1995). Internal trial-and-error learning has received substantial empirical support. Firms often replicate successful product features or development processes (Eisenhardt & Tabrizi, 1995; Miner, Bassoff, & Moorman, 2001). The success of prior acquisitions increases the likelihood of future acquisitions (Haleblian, Kim, & Rajagopalan, 2006). Internal trial-and error learning models in hybrid-project systems imply that superordinate organizations will try to combine again participants who produced good results in the organization's own prior projects (Cyert & March, 1963).

Qualitative historical information illustrates studio-level choices to repeat apparently successful participant combinations during our study period. For example, Warner Brothers teamed up Errol Flynn (actor), Olivia de Havilland (actress), and Michael Curtiz (director) four times following the unexpected success of their movie 'Captain Blood' in 1935 (King-Hanson & Gevinson, 1993). RKO teamed Fred Astaire and Ginger Rogers (actors) in multiple musicals because of their successful prior projects and against Astaire's explicit wishes (Davis, 1993: 186).

Beyond internal trial-and-error learning, firms can also learn vicariously by imitating actions that produced positive outcomes at other organizations (Conell & Cohn, 1995; Haunschild & Miner, 1997; Kraatz, 1998). In a transparent hybrid-project system, superordinate organizations can observe outcomes of projects they did *not* create and try to replicate good combinations of participants for their own future projects. For the director Capra's first Warner Brothers' movie ('Meet John Doe'/1941), for example, the studio secured the services of Gary Copper and Barbara Stanwyck, who both had starred in prior successful Capra movies at Columbia (Schatz, 1998).

Project participants. Individual participants can also influence future collaboration based on outcomes. The notion that individuals repeat behaviors that produce more attractive outcomes and avoid behaviors that produce negative outcomes goes back to the very origins of learning research in the field of psychology (e.g., Skinner, 1938; Thorndike, 1911). Such individual outcome-based learning has since received substantial empirical support in studies that also showed how it is constrained by limits of human rationality (Kahneman, Slovic, &

Tversky, 1982; Simon, 1955). In addition, group-level research on transactive memory shows that participants in any project (successful or not) can develop partner-specific coordination routines and knowledge of "who is good at what" (Argote, 1999: 85; Liang, Moreland, & Argote, 1995). Higher levels of project performance, however, can enhance participants' belief in the existence and value of such partner-specific routines and knowledge (Argote, 1999), leading them to try to collaborate again with the same partners.

In the movie context, historical data illustrates that individual producers, directors, and actors could all influence the choice of future collaboration partners under certain conditions. As the examples in Table 2 show, producers and directors at times took steps to reassemble pairings from previously successful projects. Actors too sometimes decided whether to work on a future project, given other anticipated participants. Mae West, for example, eventually simply refused to work together with W. C. Fields because of his abusive behavior (King-Hanson & Gevinson, 1993).

Overall, then, learning theory suggests that both superordinate organizations and individual participants will engage in performance-outcome learning in a hybrid-project system. The exemplars above illustrate ways in which this process could occur in our setting. We are neutral about the relative influence of superordinate organizations and project participants. Instead, we test for the overall effect of project performance on future collaboration with the same partners in this and in the following hypotheses.

H1: Higher levels of project performance will have a positive effect on the number of future project collaborations between project participants.

Perceived Relevance as Moderator of Performance Impact in Hybrid-Project Systems

The successful completion of the performance-outcome learning cycle in any setting is contingent on three conditions: awareness of performance outcomes, attribution of the outcome to some particular aspect of prior behavior, and ability to use this knowledge to select the next round of action (Cyert & March, 1963, 1992; Levitt & March, 1988; March & Olsen, 1976). The same conditions are required for performance-outcome learning in hybrid-project systems, but this setting highlights several potential moderators that may affect the learning cycle.

We chose a research setting in which the key project-performance indicator (boxoffice revenue) was widely accepted and easily available to industry members (Powdermaker, 1950; Stuart, 1982). This allowed us to focus on other conditions moderating performance impact. Even when everyone has access to performance information, bounded rationality and ambiguity about the causes of project performance or the applicability of actions of a prior project to future projects can disrupt the completion of performance-outcome learning cycles. In order for a prior project to provide input information for the proposed learning cycle, this prior project must be noticed and the information must be considered decision relevant (Kim & Miner, 2007). In Hypotheses 2a, 2b and 2c, we propose that prior collaboration (especially if more recent) and projects of a same type (color movies here) will increase perceived relevance and enhance performance impact on future collaboration.

Prior Collaborations. This hypothesis focuses on the potential *interaction effect* between any history of previous collaborations and a focal project's performance outcome. Specifically, does the impact of project A's performance on future collaborations with the same partners depend on whether there were previous collaborations between the same partners even before project A? We propose that prior collaborations will enhance the positive effect of project performance because they enhance the perceived relevance of project performance through two sub-processes.

First, the prior collaborations increase the *salience* or visibility of a project. Simon's (1955) and related research (Cyert & March, 1963; Kahneman et al., 1982) show convincingly that decision-making is constrained by the limited attentional capabilities of individuals and organizations. Prior collaborations among the same participants increase the odds that their latest project's positive or negative outcome is noticed by participants or organizations considering the same participants for a future project (March, Sproull, & Tamuz, 1991; Ocasio, 1997) -- especially in settings where the number of projects is high. Consistent with this argument, large scale studies of vicarious organizational learning have shown the impact of highly visible events (Kim & Miner, 2007).

Second, prior collaborations will likely influence the interpretation of project performance, including the *attribution* of higher levels of performance to combinations of participants. Movie performance can result from many factors such as plot, visual impact, acting performances, and distribution timing. Better project performance tends to confirm beliefs by participants or studios that valuable shared routines and complementarities were developed or discovered during prior collaborations. Prior collaborations before a focal project increase the chances that a project's performance is attributed to the combinations of participants. Historical data illustrates the development of such complementary skills and shared knowledge -- supporting the general feasibility of our hypothesized effect. For example, William Wyler (director) reported that Gregg Toland's (camera) ability to keep actors visible in both foreground and background influenced Wyler's directorial approach in ways he highly valued, which led to repeated collaborations (Davis, 1993: 238).

Combined salience and attribution arguments imply that prior collaborations before a focal project will increase the perceived relevance of its performance for future collaboration choices with the same partners. Prior collaborations should strengthen the impact of project performance -- a supplemental interaction effect. This prediction extends related research by Li and Rowley's (2002) that showed main effects for both prior collaboration history and prior collaboration performance on future collaboration between the same investment banks, but did not test their interaction. It also contrasts with *Haleblian* et al. (2006)'s findings that performance and prior experience reduced each other's impact in the context of repeated acquisition behavior. Both studies explored behavior based on an enduring firm's own internal experience, however, rather than the cross-level and cross-organizational learning processes we examine. Our theoretical reasoning implies the following supplemental interaction for hybrid-project settings:

H2a: The greater the number of prior collaborations between the same project participants, the stronger the positive effect of higher levels of project performance on the number of future project collaborations between the same project participants.

Recency of prior collaborations. We argue that recent prior collaborations are more likely to be perceived as relevant for two reasons. First, recent events are often more easily and vividly recalled making them more salient and more likely to be perceived (March et al., 1991; Ocasio, 1997). Thus, participants and superordinate organizations are more likely to pay attention to project-performance outcomes from recent collaborations than from earlier collaborations when considering choices about future collaborations. Second, in some settings, recent collaborations can provide more relevant information precisely because they are closer in time to a future project. This will occur, especially, in dynamic project systems where customers' preferences, competitors' behavior, and contributor capabilities change frequently, like for example in entertainment, fashion, or advertising industries (Grabher, 2004). In such dynamic settings, recent collaborations may be perceived more relevant, as 'recipes for success' and knowledge gained from prior collaborations are assumed to depreciate quickly. In the movie industry, observers highlighted the feasibility of such short-term orientations (Rosten, 1941) as captured in the industry saying: "A man [woman] is only as good as his [her] latest picture" (Powdermaker, 1950: 36). Consistent with these arguments, considerable empirical evidence has supported a stronger impact of recent events and experiences compared to older experiences --

all else being equal (Argote, 1999; Baum & Ingram, 1998; Darr, Argote, & Epple, 1995).

Taken together, these arguments suggest that more recent projects have a higher perceived relevance, which results in a stronger moderating effect compared to older joint collaborations.

H2b: More recent prior collaborations between the same project participants will have a stronger positive moderating effect on the relationship between higher levels of project performance and the number of future project collaborations between the same participants.

Project-type similarity. This hypothesis predicts that project similarity is another factor that will enhance perceived relevance, and hence increase the impact of performance on future collaboration. During our study period, color movies introduced an important new type of project. The innovative color technology required substantial adjustments of how participants performed their interdependent tasks. The lighting of color scenes, for example, affected costumes and stage design, requiring close coordination and experimentation by the director, cinematographer, and the art director (Holden, 1937: 242). The art directors Malcom Bert and Gene Allen, for example, reported how they developed valuable shared knowledge when they collaborated with a specific color consultant, George Hoyningen-Huene, during the production of a later color movie ('A Star Is Born'/WB 1954). They reported that: "[W]e interchanged and just talked and thought of things. He was terribly creative and helpful, and so we formed a sort of partnership." (Harver, 1988). The belief in such valuable shared knowledge by studios or individuals, then, suggests an increase in the likelihood of repeat collaborations of the same participants in similar type projects independent of performance outcomes (Faulkner, 1983; Schatz, 1994; Zuckerman et al., 2003).

We propose that in addition to this unconditional repeated collaboration tendency, project similarity will increase the impact of project performance, again creating a supplemental interaction for two reasons. First, the performance of a specialized type of movie will be more salient and visible, when participants contemplate partner choices or superordinate organizations assign participants for a future project of similar type (Holland & Miller, 1991; March et al., 1991). This argument is consistent with research findings that organizations producing visible outputs in similar settings receive closer attention (Fiegenbaum & Thomas, 1995; Lant & Phelps, 1999) -- and are more likely the source for vicarious performance-outcome learning (Haunschild & Miner, 1997; Kim & Miner, 2007).

Second, these tendencies will be especially strong when individual participants or superordinate organizations believe that a new project will benefit from collaborative practices specific to the project type. Empirical research on the individual, group, and organization level has supported the notion that the value of experience often depends on particular match between task conditions and individuals (Argote, 1999; Austin, 2003; Hutchins, 1991). Historical movie data describes similar beliefs among project participants and studios that some specific knowledge developed in prior collaborations will be valuable only in future projects of a similar type (Crafton, 1997; Powdermaker, 1950; Zuckerman et al., 2003). Such industry beliefs in project-type specific complementarities and higher salience of prior projects of similar type both imply a higher perceived relevance of project performance for future projects of a similar type.

H2c: A focal project's higher level of performance will have a stronger positive effect on the number of future project collaborations between the same participants when the focal and future projects are of the same type.

Organizational Power as Moderator of Performance Impact in Hybrid-Project Systems

Our last hypothesis proposes that organizational power asymmetry will play a key role in the completion of performance-outcome learning cycles. Early theoretical work on organizational learning deliberately highlighted its distinctness from power and other key causal process models. Levitt and March (1988: 319), for example, stated that “Theories of organizational learning can be distinguished from … theories of conflict and bargaining which emphasize strategic action, power, and exchange." Although it was important initially to clarify the distinct focus of organizational learning, we argue that political processes and power can shape contours of performance-outcome learning and offer an important theoretical frontier. Following the initial work on organizational power, we define it in this context as the ability of an organizational entity to control decisions and outcomes (Salancik & Pfeffer, 1974).

In a hybrid system, by definition, more than one party can potentially shape the composition of future project teams. In our research context, both studios and individuals influenced future collaboration. Relative power over participants differed across types of studios, however. Integrated studios maintained considerable control over the participants based on long-term employment contracts. This created *closed organizations* with an internal labor pool that others could not raid. In contrast, non-integrated studios represented *open organizations* that were not able to block participants from joining future projects at other studios. This difference in institutional control created a power asymmetry that provided an integrated studio more opportunities to influence future collaborations of its project participants compared to non-integrated studios. This power asymmetry contrasts with the frequent assumption in several literatures that potential partners freely choose each other. For example, labor market research often assumes that individual employees and employers can freely choose each other (Granovetter, 1995; Stigler, 1962). Similarly, research on interorganizational alliance formation often assumes that organizations can freely choose potential partners (Das & Teng, 2000; Gulati & Gargiulo, 1999).

In contrast, we predict that organizational power plays a key role in how performance-outcome learning affects repeated collaboration in hybrid-project systems. The causal process is simple. A complete performance-outcome learning cycle requires that any learning entity has the power to recreate combinations of participants that it believes valuable. In the absence of power asymmetries, we expect all organizations to recruit equally across organizational boundaries and participants to choose freely which future projects they join. In a hybrid-project system with power asymmetries, however, participants in projects of open organizations can cross organizational boundaries at will. But at least some participants in projects of closed organizations are blocked from working in future projects of other organizations. In our study, non-integrated studios represent open organizations. Integrated studios, with their preference for long-term employment, represent closed organizations.

We predict that these power asymmetries create parts of the system where vicarious performance-outcome learning occurs and other areas in which prior project performance will have a weaker or no effect. All studios can observe the performance of projects at other studios, but if a successful project occurred at an integrated studio (closed organization), other studios encounter more obstacles to replicate that valuable combinations of participants because the integrated studios will block its contributors (or at least some of them) from participating in outside projects. In contrast, successful combinations of participants will be more likely replicated by a different studio if the successful project occurred at a non-integrated studio (open organization). The organizational control over project participants will moderate the impact of project performance.

H3: <u>For future projects governed by a different organization</u>, a focal project's higher level of performance will have a <u>stronger</u> positive effect on the number of future collaborations between the same participants <u>if the focal project was governed by an 'open' organization</u> compared to a 'closed' organization.

METHODS AND MEASURES

Sample and Setting

The U.S. movie industry in the 1930's provides an excellent context for testing our hypotheses. Project participants dispersed at task completion. Industry publications communicated project performance and the names of key project participants. The setting as a whole exemplifies a hybrid-project system, in which both superordinate organizations (studios) and individual project participants influenced later collaboration. The specific degrees of control over project participants varied across studios.

Feature movies produced during this time fall into two distinct categories. High-budget A-movies were carefully crafted entertainment products targeted at high box-office revenues. In contrast, low-budget B-movies were quickly and efficiently created for predictable, but lower box-office returns. A-movie and B-movie production requirements were so distinctly different that they represented two separate production systems. According to Taves (1993), individuals once identified with either production system tended to get pigeonholed. We focus on the production of A-movies because of their better archival documentation. We identified A-movies based on a production time of more than three weeks, at least two-star credits, and a minimum cast size of ten (Taves, 1993).

We randomly sampled 239 A-movie projects based on production announcements in the *Hollywood Reporter* (1930-present) covering the time period 1931-1940. Movies after 1940 were not sampled to minimize disruptive effects of World War II. Movies before 1931 were not sampled because of incomplete production announcements.

We developed our hypotheses from theories of learning. Learning research often faces considerable challenges observing learning processes directly, which enhances the importance of a careful understanding of the learning context. For this reason, we performed an extensive review of historical qualitative data from contemporary industry publications (Variety, 1931-1940; Hollywood Reporter, 1931-1940; Motion Picture Herald, 1931-1940), a contemporary ethnography of movie production (Powdermaker, 1950), preserved studio records (Glancy, 1992, 1995; Warner Brothers' Legal Files, 1933), oral histories of industry participants (Davis, 1993; Naumburg, 1937; Schickel, 1975), case studies of specific movie projects (Harmetz, 1978; Roddick, 1983), and historical investigations of movie production in general (Balio, 1987, 1993; Schatz, 1988). We used the resulting qualitative data to challenge proposed learning processes and to check the face validity of our measures. We also used anecdotal information to illustrate hypothesized learning activities in the presentation of our theory-based hypotheses.

Dependent Variable: Future Collaboration

Relationship dyads are the fundamental unit of social interaction (Simmel, 1902). Consistent with prior learning research in movie settings (Perretti & Negro, 2007b, 2007a), we focused on relationship dyads of the producer and director with key creative and technical project participants. We selected relationships that are crucial for the coordination of interdependent activities during movie production (Powdermaker, 1950; Roddick, 1983). We excluded screenwriters because their main contribution occurs during pre-production. Our measure captures the following twelve dyadic relationships: producer-director, producer-actor #1, producer-actor #2, director-actor #1, director-actor #2, producer-cinematographer, director-cinematographer, producer-art director, director-art director, producer-editor, director-editor, and actor #1-actor #2. Our measure accounts for the central coordinating role of producer and director during the execution of movie projects (Harmetz, 1978; Naumburg, 1937).

We used the American Film Institute Catalog (King-Hanson & Gevinson, 1993) and the Internet Movie Database (www.imdb.com) to determine project participants. Our *Future Collaboration* measure captures the number of repeated dyadic relationships during the four years after project completion (mean=15.01; S.D.=11.95). For example, the movie ‘Radio City Revels’ (RKO, Production: 11/15 - 12/25/1937; Release: 2/11/1938) led to the following two future movie projects that combined some of the same key contributors. First, 'The Affairs of

Annabel' (RKO/September 1938) reunited the director Ben Stoloff, the lead actor Jack Oakie, and art director Van Nest Polglase. This implies the replication of two dyadic relationships: Director-Actor #1 and Director-Art Director. Second, 'The Marines Fly High' (RKO/March 1940) combined director Ben Stoloff again with Art Director Van Nest Polglase. The measure *Future Collaboration (Periods 1 to 4)* for 'Radio City Revels' has the value of 3.

For the project similarity hypothesis (H2c), we constructed a similar future collaboration measure that only captured repeated collaborations in future color movies (mean=1.19; S.D.=2.92). For the power hypothesis (H3), we captured repeated collaboration in future projects governed by a different studio (mean=1.01; S.D.=2.77).

We picked a four-year time window after the start of movie production. Short time windows of less than two years made little sense considering that it took several months till movie release and another couple of months till boxoffice performance was known. We also considered that participants may have committed or been assigned to their next project before project performance was known. Consequently, we expected the effect of project performance to be several projects in the future. At the same time, the longer the time window, the more likely future employment was affected by the outcomes of subsequent projects. Repeated collaboration patterns for producers, directors, and actors in prior research suggested at least a three-year time window after movie release (Zuckerman, 2004). We picked a slightly longer time window (four years) to compensate for the several months that our movie production date preceded movie release. We confirmed the robustness of our findings for 2, 3, and 5 year windows.

Independent Variables

Project performance. During the 1930s, box-office returns provided the primary source of movie revenue because the period predates revenue opportunities through merchandising, TV release, or video release (Stuart, 1982). Several industry publications communicated project performance. We used U.S. box-office information reported by contemporary trade journals called *Boxoffice* (1932-1977) and *Boxoffice Barometer* (1937-1951). These journals surveyed first-run movie theater operators weekly across the United States. Theater operators evaluated a movie's box-office performance in percent compared to the expected box-office of an average movie. This project performance measure is continuous and always positive with an average box-office return being rated as 100%. On average, the sampled movies received a 104.57% performance evaluation (S.D.=18.66). Missing data required estimation of performance values for 16 movies based on information from the *Motion Picture Herald* (1931-1940). Dummy variables control for any fixed effects related to the different sources for performance information. Although first-run theaters comprised only about 25% of total movie-theater seating capacity, they returned 50-75% of the box-office receipts and influenced movie booking decisions of second-run theaters (Balio, 1987; Huettig, 1985). Available revenue information from studio accounting records (Glancy, 1992, 1995) was strongly correlated with the box-office ratings by theater operators (r=.76; p<.001). This corroborates the value of our *Project Performance* measure.

Prior collaboration. Industry publications and on-screen credits communicated names of project participants. We used the same coding rules described for future collaboration to capture prior collaborations between the same key participants. We examined prior collaborations during the same year, and each of the four years preceding the focal movie project (mean=16.73; S.D.=14.76). We confirmed the robustness of our findings for 3, 4, and 6 year windows.

In the absence of strong prior research evidence to determine an appropriate depreciation factor, we employed a simple and intuitive split-group approach to test the impact of more recent collaboration. For this purpose, we created the variables *Prior Collaborations (Periods -2 to 0)* and *Prior Collaborations (Periods -5 to-3)*. Both capture prior collaborations for three-year periods.

Project-type similarity and studio type. We identified color movies (dummy coded ‘1’; mean=.03; S.D.=.16) and the producing studio based on the American Film Institute Catalog (King-Hanson & Gevinson, 1993). We coded as non-integrated studios: United Artists, minor studios, and independent production companies (dummy coded '1'; mean=.08; S.D.=.27).

Control variables. Our baseline models control for differences in project inputs at the participant level (number of prior movies and academy nominations for each key non-cast participant and the top three cast members) and the project level (number of cast star credits, number of days in production, and cast size). The null hypothesis of our investigations is that project performance has no systematic effect on future collaborations either directly or moderated by the impact of other variables. Consequently, different levels of random matching, for example, because of a smaller or larger pool of potential project participants, will ceteris paribus not affect our tests -- because they are random.

However, if higher levels of project performance increase the activity level of individual contributors (number of projects per year), this could influence the likelihood of a future collaboration between the same participants based on random matching processes. To control for this potential indirect effect, our models (H1-H2b) use the number of future projects of each individual contributor as a proxy for differences in activity level.[1] Our results are robust to the inclusion or exclusion of this variable. In the models testing hypotheses about repeated collaborations for color movies (H2c) and studio type (H3), we control for differences in activity level based on the total number of repeated ties between the participants in any type of future movie project. Controlling for future activity levels, however, introduces potential multicollinearity and endogeneity concerns. We addressed the former by using hierarchical

[1] We thank an anonymous reviewer for prompting us to explore this issue in more depth.

regression analyses. We probed for effects of the latter by dropping the controls for differences in activity levels, which did not affect reported results. We report the more conservative models with controls for differences in activity levels.

Additional dummy variables control for any fixed effects of producing studio, year of production, movie genre (drama, musical, and comedy), incomplete participant information, and release quarter. Table 3 provides a list of all control variables and their respective data sources.

Insert Table 3 about here

Analyses and Model Development

Our main dependent variable, *Future Collaboration,* is a count variable. After confirming the robustness of our results using negative binomial and poisson regression (Cameron & Trivedi, 1998), we report OLS results in this paper for two reasons.[2] First, the specific features of our data do not display some of the major concerns related to using OLS. For example, the mean of our dependent variable *Future Collaboration* is substantially different from zero (mean=15.01; S.D.=11.95), there are few cases with a value of zero, and the distribution shows normal tendencies. Second, the robustness of our findings across different model specifications enables us to take advantage of the fact that OLS permits a more straightforward marginal analysis of moderated effects central to our theoretical focus (Cohen, Cohen, West, & Aiken, 2003; Jaccard et al., 1990). Accordingly, we chose to report the more intuitive and less complex OLS results. In order to control for potential heteroscedasticity, we used Huber/White robust standard errors for our significance tests (White, 1980). Our conditional analyses of interaction hypotheses do not require mean centering (Cohen et al., 2003). Thus, we avoided score transformations of our meaningful and externally determined scales to facilitate the interpretation

[2] Results of additional analyses are available from the first author upon request.

of our results (Townsend & Ashby, 1984).

We use hierarchical regression analysis to test for hypothesized interaction effects. In several models, we have to draw on prior models to construct complete interaction terms that accurately reflected our theoretical predictions. For example, we hypothesized a positive interaction between project performance and prior collaboration. If supported, this has implications for our later tests of moderated project-performance effects across different project types (color vs. black-and-white) and different studio types (non-integrated vs. integrated). In those later models, it thus becomes necessary to interact project type and studio type, not only with project performance, but also with the interaction of project performance and prior collaboration to account for their synergistic effect. If hierarchical regression analysis supports the resulting three-way interactions, this suggests that the corresponding two-way interactions should also be included in the full model (Aiken & West, 1991). We report two-tailed significance for all regression coefficients in our tables. For the conditional analyses of specific directional hypotheses, we report one-tailed significance tests.

RESULTS

Descriptives and model development. Table 4 reports the means, standard deviations, and correlation coefficients for the theoretical variables. We follow three steps to assess interaction effects. First, we compare model fit with and without interaction effects for any given model in order to pick the best model for interpretation. If the evidence supports an interaction effect, we assess coefficients in the full model, and analyze the impact of a given variable at three levels of the moderator with which it interacts (conditional analysis). We use the mean, one standard deviation below the mean and one standard deviation above the mean as reasonable moderator values (Aiken & West, 1991). This is consistent with emerging approaches to assessing interaction effects where separately interpreting variables in models without the interaction terms is not encouraged (Cohen et al., 2003). Finally, to help interpret these analyses, we provide graphic representations of the interaction pattern.

Insert Table 4 about here

Table 5 shows regression results for the effects of project performance and prior collaboration on future collaborations. Model 4 adds to Model 3 the hypothesized interaction between project performance and prior collaboration, which significantly improves model fit (ΔR^2=.011; $p<.05$). Thus, hierarchical regression analysis suggests that Model 3 is underspecified. Conditional analyses based on Model 4 should be used to test Hypotheses 1, 2a, and 2b.

Insert Table 5 about here

Interaction of prior collaborations with project performance (H1, H2a). We proposed that prior collaborations before a focal project enhance the impact of that project's performance on later collaborations (H2a). As noted, adding the interaction term for performance and prior collaboration significantly improves model fit (Table 5, Model 4: ΔR^2=.011; $p<.05$). The coefficient for the interaction term is in the hypothesized direction and significant (b=.0042; $p<.01$). To further probe the nature of the moderated project performance effects, we calculated estimates of change in future collaboration, given a marginal change in project performance. Appendix A contains the corresponding partial derivative equations for all conditional analyses. The following coefficients show the impact of a marginal change in project performance (PERF) on future collaboration ($FC_{t=1\text{ to }4}$) -- [$\partial(FC_{t=1\text{ to }4})/\partial(PERF)$]. We evaluate this at low, mean and high levels of prior collaborations ($PC_{t=-4\text{ to }0}$). Standard errors are shown in parentheses along with one-tailed significance tests for our directional hypotheses.

[$\partial(FC_{t=1\text{ to }4})/\partial(PERF)$ | at $PC_{t=-4\text{ to }0}$=1.97] = .032 (.042) (Prior collaborations *low*)

$[\partial(FC_{t=1 \text{ to } 4}) / \partial(PERF) \mid \text{at } PC_{t=-4 \text{ to } 0}=16.73]$ = .094* (.038) (Prior collaborations at *mean*)
$[\partial(FC_{t=1 \text{ to } 4}) / \partial(PERF) \mid \text{at } PC_{t=-4 \text{ to } 0}=31.49]$ = .155** (.044) (Prior collaborations *high*)

These conditional analyses show that the sensitivity of future movie collaborations to past project performance depends upon prior levels of collaboration. Project performance has a significant positive effect on future collaborations between the same partners when prior collaborations are at the mean or high (b=.094; p<.05 and b=.155; p<.01; one-tailed). The positive impact is contingent on at least average levels of prior collaboration. These findings support a conditional positive moderating effect of prior collaborations. The lack of any effect of project performance at low levels of prior collaboration rejects unconditional performance-outcome learning as hypothesized in H1. The positive impact at higher levels supports H2 which argued that prior collaboration will increase the impact of performance. Figure 1 shows the three-dimensional graph of the contingent effect.

Insert Figure 1 about here

Interaction of recent prior collaborations with project-performance (H2b). We proposed that recent prior collaborations will have a stronger positive effect than older collaborations. Model 6 in Table 5 includes two separated interaction terms *Project Performance* x *Prior Collaborations (Periods -2 to 0)* and *Project Performance* x *Prior Collaborations (Periods -5 to-3).* These terms yield a significant model improvement over Model 5 (ΔR^2=.017; p<.05). However, only the interaction term for recent collaborations *Project Performance* x *Prior Collaborations (Periods -2 to 0)* is statistically significant (Model 6: b=.007; p<.001). Comparing Model 8 and Model 6 reveals that adding old *Prior Collaborations (Periods -5 to -3)* and its respective interaction term does not significantly improve model fit (ΔR^2=.004; p=.435). These results support H2b that more recent prior collaborations have a stronger positive moderating effect. In fact, only the recent collaborations mattered. Thus, we use the *Prior Collaborations (Period -2 to 0)* measure in all subsequent models. However, the reported results are robust for the *Prior Collaborations (Periods -4 to 0)* measure.

Interaction of project-type similarity with project performance (H2c). We hypothesized that the effects of project performance on future color movie collaborations will be stronger if the focal project is a color movie. Our support for H2a shows that effects of project performance on future collaborations are moderated by prior collaborations. Thus, we interacted the color movie variable with project performance, prior collaboration, and their interaction term. Time dummies control for the diffusion of the color technology.

Model 2 in Table 6 replicates our standard model containing *Project Performance*, *Prior Collaborations (Periods -2 to 0)*, and their interaction term. Model 3 adds a main effect for a color movie. Model 4 introduces the respective two-way interactions: *Color Movie x Project Performance,* and *Color Movie x Prior Collaborations*. Model 5 adds the three-way interaction that accounts for any difference across project types with regard to the earlier supported *Project Performance x Prior Collaboration* interaction (H2a). The three-way interaction term significantly improves model fit (ΔR^2=.023; p<.001). The support for this higher-level interaction suggests the inclusion of corresponding lower-level interaction terms (Aiken & West, 1991; Cohen et al., 2003). Thus, hierarchical regression analysis suggests Model 5 to examine the hypothesized conditional effects.

Insert Table 6 about here

H2c implies that a focal movie's performance will have a stronger effect on future color collaborations ($FCC_{t=1 \text{ to } 4}$), if the focal movie is a color movie. To test this hypothesis, we estimate conditional change in *Project Performance* (PERF) for a focal *Color Movie* (CM=1) and compare it to the conditional performance effects for a focal black-and-white movie (CM=0). The corresponding conditional analyses also account for the moderating effects of *Prior Collaborations* ($PC_{t=-2\ to\ 0}$).

$[\partial(FCC_{t=1\ to\ 4}) / \partial(PERF) \mid at\ CM=1, PC_{t=-2\ to\ 0}=1.48]$	= .319***	(.061)	(Color, Prior Coll. low)
$[\partial(FCC_{t=1\ to\ 4}) / \partial(PERF) \mid at\ CM=1, PC_{t=-2\ to\ 0}=13.18]$	= .189***	(.055)	(Color, Prior Coll. at mean)
$[\partial(FCC_{t=1\ to\ 4}) / \partial(PERF) \mid at\ CM=1, PC_{t=-2\ to\ 0}=24.87]$	= .059	(.059)	(Color, Prior Coll. high)
$[\partial(FCC_{t=1\ to\ 4}) / \partial(PERF) \mid at\ CM=0, PC_{t=-2\ to\ 0}=1.48]$	= .015	(.012)	(B&W, Prior Coll. low)
$[\partial(FCC_{t=1\ to\ 4}) / \partial(PERF) \mid at\ CM=0, PC_{t=-2\ to\ 0}=13.18]$	= .030**	(.009)	(B&W, Prior Coll. at mean)
$[\partial(FCC_{t=1\ to\ 4}) / \partial(PERF) \mid at\ CM=0, PC_{t=-2\ to\ 0}=24.87]$	= .045**	(.016)	(B&W, Prior Coll. high)

Higher levels of project performance in either a color or a black-and-white movie tend to increase significantly the chances of joint collaboration in a future color movie for four of six conditions. H2c predicted that project performance has a stronger effect when the focal movie was of the same type (color). Consistent with this hypothesis, the conditional regression coefficient estimates for color movies are all larger compared to the performance effect estimates for black-and-white movies. For a formal test, we evaluated the significance of the regression coefficient differences at each of the three levels of prior collaboration (Judge, Griffiths, Hill, Luetkepohl, & Lee, 1985; StataCorp., 2007: 267-273). Color-movie performance has a significantly stronger positive effect when the levels of prior collaboration is average ($\Delta b=.159$; $p<.01$) or low ($\Delta b=.304$; $p<.001$). At high levels of prior collaboration, the performance effect difference is not significant ($\Delta b=.014$; n.s.). These results support H2c. Figure 2 shows graphically how project performance has a stronger effect when the focal movie was of the same type (color) as the later movie.

Insert Figure 2 about here

Interaction of organizational power and project performance (H3). This hypothesis predicted that higher levels of project performance in a non-integrated studio production will have a stronger positive effect on the number of future project collaborations governed by a different studio compared to higher levels of project performance in an integrated studio production. Non-integrated studios lacked the control over project participants to block their future collaboration with other studios. In contrast, integrated studios possessed such control. Thus, we expect a weaker effect of project performance for projects governed by an integrated studio.

We first checked the validity of our assumption about asymmetric studio control. For integrated studios, the number of future collaborations governed by a different studio was significantly lower than the number expected based on random future project assignments. For non-integrated studios there was no such significant difference (for further details see Appendix B). This pattern is consistent with our assumption of asymmetric control between integrated and non-integrated studios.

The baseline Model 2 in Table 7 reports the effects of our standard control and independent variables on *Future Collaborations Governed by a Different Studio* ($FCDS_{t=1\ to\ 4}$) -- plus our proxy for differences in overall activity level -- the participants' total number of *Future Collaborations* ($FC_{t=1\ to\ 4}$). Model 3 adds the *Non-Integrated Studio (NIS)* dummy (ΔR^2=.046; $p<.001$). Model 4 introduces interactions of the non-integrated studio variable with *Project Performance (PERF)* and with *Prior Collaborations* ($PC_{t=-2\ to\ 0}$) (ΔR^2=.057; $p<.001$). Model 5 adds the three-way interaction that accounts for any difference across studio types with regard to the earlier supported *Project Performance* x *Prior Collaboration* interaction (H2a). Hierarchical regression analyses supports the three-way interaction (ΔR^2=.054; $p<.001$) and suggests conditional analyses based on Model 5.

Insert Table 7 about here

Each focal movie project was produced in one of the two studio types. For each project, we estimate changes in future collaboration outside of that studio, given marginal change in performance for reasonable levels of prior collaboration.

$[\partial(FCDS_{t=1 \text{ to } 4})/\partial(PERF) \mid \text{at } NIS=1, PC_{t=-2 \text{ to } 0}=1.48] = .012$ (.033) (Non-integrated, Prior Coll. low)
$[\partial(FCDS_{t=1 \text{ to } 4})/\partial(PERF) \mid \text{at } NIS=1, PC_{t=-2 \text{ to } 0}=13.18] = .523^{***}$ (.124) (Non-integrated, Prior Coll. mean)
$[\partial(FCDS_{t=1 \text{ to } 4})/\partial(PERF) \mid \text{at } NIS=1, PC_{t=-2 \text{ to } 0}=24.87] = 1.034^{***}$ (.262) (Non-integrated, Prior Coll. high)

$[\partial(FCDS_{t=1 \text{ to } 4})/\partial(PERF) \mid \text{at } NIS=0, PC_{t=-2 \text{ to } 0}=1.48] = -.007$ (.007) (Integrated, Prior Coll. low)
$[\partial(FCDS_{t=1 \text{ to } 4})/\partial(PERF) \mid \text{at } NIS=0, PC_{t=-2 \text{ to } 0}=13.18] = -.010$ (.007) (Integrated, Prior Coll. mean)
$[\partial(FCDS_{t=1 \text{ to } 4})/\partial(PERF) \mid \text{at } NIS=0, PC_{t=-2 \text{ to } 0}=24.87] = -.012$ (.008) (Integrated, Prior Coll. high)

H3 predicted that performance will have a stronger effect for movie projects governed by non-integrated studios compared to movie projects governed by an integrated studio. Our results indicate that statistically significant project performance effects occurred only for focal projects at non-integrated studios. For a formal test of H3, we evaluated for each of the three levels of prior collaboration the statistical significance of difference between the performance effect estimates for projects governed by a non-integrated studio vs. projects governed by integrated studio. These tests show that performance of projects governed by a non-integrated studio have a significantly stronger positive effect at average ($\Delta b=.533$; $p<.001$) and high ($\Delta b=1.046$; $p<.001$) levels of prior collaboration. At low levels of prior collaboration, the performance effect difference is not significant ($\Delta b=.005$; n.s.). Thus, H3 is supported: Higher levels of performance in a focal project at a non-integrated studio significantly increased the chances of future collaboration at a different studio. Higher levels of project performance at an integrated studio had no such effect. Figure 3 shows graphically how studio type shaped the impact of project performance.

Insert Figure 3 about here

DISCUSSION

Taken as a whole, our results support the proposed contingency approach to performance-outcome learning in hybrid-project systems. Consistent with our causal theories, Figures 1, 2, and 3 underscore that recent prior collaboration, similar project type, and organizational power all shape whether and how project performance leads to repeated project collaboration. In the following sections, we will first discuss how these results advance our understanding of project systems, before we explore the contributions of our findings to theories of organizational learning. Following considerations of study limitations, we then close by speculating on the implications of our findings for the adaptive value of hybrid-project systems.

Project Systems

The predominant body of work on collaboration and networks tends to emphasize long-term and open-ended collaborations (Baum, Calabrese, & Silverman, 2000; Uzzi, 1997). In contrast, our study advances research of short-term project systems in two key ways. First, our study deepens the conceptual tools for probing the varieties of such systems by introducing and illustrating key features of hybrid-project systems. Second, our study proposes and tests the impact of specific causal processes and constraints that will drive the patterns of collaboration in such systems. Thus, our study offers new theoretical insights, while underscoring the value of further related work.

Features of hybrid-project systems. We defined a hybrid-project system as a setting in which several organizations govern projects, at least some participants can cross organizational boundaries, and both organizations and participants can influence project formation. We provided descriptive illustrative material of such a system based on the studio era of the U.S. movie industry. Although such systems have long existed, systematic scholarly attention has only been more recent (Sydow et al., 2004).

Theoretically our framework underscores that project systems can vary substantially in levels and degrees of control over repeated collaboration. At one extreme, a system of short-term projects can operate in which each project stands alone with no superordinate organization, as seen in studies of independent movie productions (e.g., Baker & Faulkner, 1991; Jones, 1996) or IPO syndicates (e.g., Li & Rowley, 2002). At the other extreme, projects can be fully embedded in a single higher-level organization that controls what projects are initiated and who joins them -- for example, internal research and development projects (Hansen, 1999; Katz, 1982). Hybrid-project systems cover the important middle ground between these extreme constellations. Our descriptive material goes beyond noting the existence of such systems by illustrating some of its key features. Our quantitative analyses indicate how the impact of ongoing processes can vary depending on the specific balance of organizational and individual control in the system.

Careful assessment of the specific balances within a hybrid-project system is increasingly important as outsourcing and limited-term employment have created more of such systems combining participant, superordinate organizations, and asymmetries of power between organizations (Arthur & Rousseau, 1996; Zenger & Hesterly, 1997). Employees of firms who previously worked only on in-house project teams may now participate in R&D projects that contain members from multiple firms (Sakakibara, 2002). Our work implies that processes involving both higher and lower-level actors in such systems, and variations in organizational control over project formation both represent important dimensions not only for our identification, but also for our understanding of such systems.

Patterns of collaboration in hybrid-project systems. Beyond developing the construct of hybrid-project systems and outlining its key characteristics, our study introduces a conditional framework that outlines how repeated collaboration unfolds in such systems. This framework proposes specific constraints and distinct causal processes based on theories of organizational learning and the impact of organizational power. Specifically, we hypothesized that perceived relevance of performance information and organizational control over project participants determine whether and how project performance shapes future collaboration patterns. The study's systematic quantitative data and analyses support this framework. Thus, our results of collaboration patterns in hybrid-project systems also offer insights for two important emerging domains in the organizational learning literature: moderated performance-outcome learning and the impact of organizational power on learning. The following section discusses the broader implications of our findings for organizational learning research.

Organizational Learning

Moderated performance-outcome learning. We theorized that even if outcomes are clear, considerable ambiguity remains in many settings concerning what actually generated a favored outcome. Consequently, learning from outcomes is more difficult than it might first appear. The early organizational learning literature first raised this issue (Levitt & March, 1988), which is well known in the artificial intelligence and agent-based modeling communities as the credit attribution problem (Holland, Holyoak, Nisbett, & Thagard, 1986). It refers to the learners' dilemma of determining what specific prior actions led to specific outcomes and therefore should be repeated (Gronhaug & Falkenberg, 1998; Repenning & Sterman, 2002). We noted factors in our setting that create substantial attribution challenges -- including a large number of different projects, multiple possible causes of good outcomes, and dynamic changes in learning context. Our results are consistent with our prediction that factors that increase the perceived relevance of a prior project's outcome for the next project -- such as prior collaboration and project similarity -- will enhance the impact of outcomes.

Our basic perceived relevance arguments envision two key elements: factors that call attention to a focal project, and factors that lead the participants or superordinate organizations, once they are aware of a project, to believe it is particularly pertinent to future projects. Our quantitative data did not allow us to determine the relative impact of these two elements. We have emphasized, however, that our historical data illustrates that at least some participants and studios believed valuable knowledge had been developed in prior collaborations -- knowledge that could be used again in future projects of a similar type (Flannery, 1990: 156; Schatz, 1998: 32). Our results are consistent with Kim & Miner's (2007) framework that emphasized the impact of salience and applicability, but our overall findings go beyond that work to underscore that power is needed to act upon any gained knowledge, and to hypothesize about short-term projects rather than standing firms. Future research should explore the relative roles of simple salience effects versus cognitive explanations involving mental models and beliefs about relevance.

Impact of organizational power on learning. We report support for organizational power in the form of institutional control over project participants as a key learning contingency. Prior project performance only had an impact on repeated collaboration in projects outside the original organization, if the focal project occurred in an open organization. This finding advances arguments that power can play an important role for the completion of learning cycles. These arguments contrast with the widespread emphasis in the learning literature on knowledge and information as a source of power (Grant, 1996; Teece, 1986). In our setting the key difference between studios did not come from having more or better information. It came from their direct ability to control the actions of others, independent of who knew what.

These findings about the role of control and power have important implications for contemporary work on vicarious organizational learning. Theorists have argued that organizations learn from actions and outcomes of other organizations (Greve, 2003; Miner & Haunschild, 1995) and reported corroborating evidence in the context of acquisition activities

(Baum, Li, & Usher, 2000; Haunschild & Miner, 1997) and the adoption of innovations (Greve, 1998; Kraatz, 1998). In the hybrid-project setting, learning from projects of powerful organizations was constrained. The control over project participants enabled an integrated studio to block vicarious learning by others about successful combinations of participants from its own projects. Thus, repeated vicarious learning in this context does not occur uniformly (Baum, Shipilov, & Rowley, 2003; Miner & Anderson, 1999), but rather locally in specific subgroups of the project population. Such constrained and local outcome learning represents a topic that merits deeper investigation. Important future work should investigate how blocking the replication of successful participant combinations shapes outcome learning on the project-system level.

Scope conditions of performance-outcome learning. Taken as a whole, our *conditional-only* results contrast with findings of unconditional outcome learning in other settings, including repeated collaboration among permanent organizations (Li & Rowley, 2002) and in acquisition behavior (Haleblian et al., 2006). In internal product development projects, however, researchers also found that outcomes sometimes failed to have any impact (Garud & Van de Ven, 1992; Van de Ven & Polley, 1992). Proposed causes included ambiguity about reliability of performance information (Garud & Van de Ven, 1992) and complete lack of attention to some outcomes (Miner et al., 2001). In our setting, however, reliable performance information was easily available, yet performance-outcomes were only perceived relevant given recent prior collaborations and project-task similarity. Thus, we identify additional potential scope conditions for performance-learning in hybrid-project systems. We expect that the constraining effect of these scope conditions on performance-outcome learning will be even stronger in less transparent industry settings and encourage corresponding empirical investigations, for example, in settings such as open-source software systems or interorganizational research consortia.

Similarly, we introduce organizational power as a second scope condition for vicarious performance-outcome learning. In our study, asymmetric organizational control enabled an integrated studio to block others from systematically learning from its projects, but this power applied specifically to project participants. It seems possible that studios learned other things from projects at integrated studios (e.g., what genres audiences preferred (Hsu, 2006)). Consequently, we speculate that learning asymmetries may occur in some domains, but not in others. This highlights the need for a careful consideration of learning content and learning context when predicting learning outcomes. Our work contributes to the general literature on asymmetric learning by proposing specific learning barriers related to perceived relevance of learning outcomes and organizational power.

Limitations and Alternative Explanations

Consistent with traditional learning research, we examine the antecedents and outcomes of hypothesized learning processes. In addition, we used historical data to probe the feasibility of specific learning processes and influences. Nonetheless, we do not provide quantitative tests of specific intermediate learning processes. This highlights the potential value of future more fine-grained work that directly examines the relative impact of specific intermediate learning processes and structural learning factors in hybrid-project systems.

In addition, we have tested predictions primarily from learning theories, but other theoretical traditions offer potentially useful insights as well. Project outcomes, for example, could also influence contributor identities (Baker & Faulkner, 1991; Faulkner & Anderson, 1987; Zuckerman et al., 2003). Identity considerations could shape participants' inclination to work together again in terms of appropriate behavior (March & Olsen, 1996) rather than project-outcome improvement. Higher levels of project performance might also provide legitimacy (DiMaggio & Powell, 1983) so that colleagues who already wanted to work together, simply because they liked each other, could justify collaborating again. The impact of performance-outcome learning may also diminish as repeated collaborations increase the legitimacy of contributor combinations (Tolbert & Zucker, 1983). Such possibilities do not rule out the processes we hypothesize, but suggest opportunities for future, more fine-grained theorizing.

CONCLUSION

Like other recent work that investigates organizational learning across levels and organizational settings (Henderson & Stern, 2004; Miner & Anderson, 1999; Schwab, 2007), we find evidence for selective retention of apparently valuable combinations of organizational elements within a system over time. Here, this takes the form of replicating more successful combinations of project participants. This occurs even though the learning entity, the project team, disbands after task completion and cannot serve as organizational memory or the engine of future action. The retention of valuable combinations, however, is contingent on several scope conditions, including organizational power, and only operates in this context by moderating a more general tendency to repeat recent prior activities.

Many models of system-level change posit that selective retention of behaviors that produced better outcomes – regardless of how this happens – can serve as an engine for system-level adaptation (Aldrich & Ruef, 2006; Siggelkow & Levinthal, 2003). Are our theories and findings consistent with this intuition? On the one hand, our support for performance-outcome learning is consistent with learning about more valuable actions, and paying attention to outcomes of similar projects may increase the chances that useful knowledge is acted on. On the other hand, performance-outcome learning occurred only in the presence of a nonselective short-term tendency to repeat ties. In addition, organizational power asymmetries led to vicarious outcome learning occurring only in subgroups of the population. These contingencies indicate narrow and local learning in such systems, which implies slower diffusion of valuable knowledge on the system level. However, such slower adjustments can prevent systems from superstitious learning and decisions without sufficient accumulated experience. Simulation models, for example, show how slower system-level learning can sometimes actually *increase* adaptive potential in the presence of noisy information about the value of a given action (Anderson, 1999; Denrell & March, 2001; Lounamaa & March, 1987; March, 1991). Consequently, any long-term adaptive implications will depend on the value of specific patterns of change for a given context.

Taken as a whole, our observations undercut simplistic notions that project systems assure system-level adaptation and avoid the well-known challenges in higher-level adaptation and learning. At the same time, our study helps illuminate how underlying performance-outcome learning can affect both the focus and speed of system-level adjustments. These in turn will influence the overall adaptive impact of the emerging repeated collaboration patterns and the network evolution process as a whole (Aldrich, 1999; Baum & Singh, 1996; March, 1991; Miner, 1990; Miner & Haunschild, 1995). We look forward to future work that directly probes the cumulative impact of performance-outcome learning in these systems, and its potential consequences for system-level prosperity.

APPENDIX A

Partial Derivative of Interaction Models

The investigation of conditional effects in models containing interaction terms is based on the corresponding partial derivative of the full model that includes the interaction term. The following section outlines the derivative equations used to calculate regression coefficient estimates for different values of moderator variables (Cohen et al., 2003).

Prior Collaboration (Table 5). Eq. (1) represents the Model 4 regression equation. Eq. (2) is the partial derivative of Eq. (1) for marginal changes of *Project Performance (PERF)* on *Future Collaborations* ($FC_{t=1\ to\ 4}$).

(1) $FC_{t=1\ to\ 4} = b_0 + b_1\ (PERF) + b_2\ (PC_{t=-4\ to\ 0}) + b_3\ (PERF)\ (PC_{t=-4\ to\ 0}) + CONTROLS + \varepsilon$

(2) $[\partial(FC_{t=1\ to\ 4}) / \partial(PERF)] = b_1 + b_3\ (PC_{t=-4\ to\ 0})$
$= .024 + .0042\ (PC_{t=-4\ to\ 0})$

Color Movie (Table 6). Eq. (3) represents the Model 4 regression equation. Eq. (4) is the partial derivative of Eq. (3) for marginal changes in *Project Performance (PERF)* moderated by *Prior Collaborations (Periods -2 to 0)* ($PC_{t=-2\ to\ 0}$) and *Color (CM)* dummy variable:

(3) $FCC_{t=1\ to\ 4} = b_0 + b_1\ (PERF) + b_2\ (PC_{t=-2\ to\ 0}) + b_3\ (PERF)\ (PC_{t=-2\ to\ 0})$
$+ b_4\ (CM) + b_5\ (PERF)\ (CM) + b_6\ (PC_{t=-2\ to\ 0})\ (CM)$
$+ b_7\ (PERF)\ (PC_{t=-2\ to\ 0})\ (CM) + CONTROLS + \varepsilon$

(4) $[\partial(FCC_{t=1\ to\ 4}) / \partial(PERF)] = b_1 + b_3\ (PC_{t=-2\ to\ 0}) + b_5\ (CM) + b_7\ (PC_{t=-2\ to\ 0})\ (CM)$
$= .014 + .001\ (PC_{t=-2\ to\ 0}) + .322\ (CM) - .012\ (PC_{t=-2\ to\ 0})\ (CM)$

Organizational Context (Table 7). Eq. (5) represents the Model 4 regression equation. Eq. (6) is the partial derivative of Eq. (5) for marginal changes in *Project Performance (PERF)* moderated by *Prior Collaborations (Periods -2 to 0)* ($PC_{t=-2\ to\ 0}$) and *Not-Integrated Studio (NIS)* dummy variable:.

(5) $FCDS_{t=1\ to\ 4} = b_0 + b_1\ (PERF) + b_2\ (PC_{t=-2\ to\ 0}) + b_3\ (PERF)\ (PC_{t=-2\ to\ 0})$
$+ b_4\ (NIS) + b_5\ (PERF)\ (NIS) + b_6\ (PC_{t=-2\ to\ 0})\ (NIS)$
$+ b_7\ (PERF)\ (PC_{t=-2\ to\ 0})\ (NIS) + CONTROLS + \varepsilon$

(6) $[\partial(FCDS_{t=1\ to\ 4}) / \partial(PERF)] = b_1 + b_3\ (PC_{t=-2\ to\ 0}) + b_5\ (NIS) + b_7\ (PC_{t=-2\ to\ 0})\ (NIS)$
$= -.007 -.0002\ (PC_{t=-2\ to\ 0}) - .046\ (NIS) + .044\ (PC_{t=-2\ to\ 0})\ (NIS)$

APPENDIX B

Additional Analyses of Future Collaboration for Different Studio Types

The higher output of integrated studios increased the probability of future collaborations occurring at the same studio instead of other studios. To account for this effect, we looked one-by-one at the odds of future collaborations occurring outside for every given studio. We assumed that the distribution of movies produced by a specific studio in our sample captures the distribution of movies produced by the various studios during the time period. Results show that, for all integrated studios, the number of future collaborations governed by a different studio was significantly lower than the number expected based on random future project assignments. For non-integrated studios, in contrast, the expected number of repeated collaborations in future projects governed by a different studio was not significantly different from the actual number observed. Results are available from first author.

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TABLE 1

Illustrative Examples of Superordinate Organization's Control Over Future Project Assignments from U.S. Movie Industry (1931-1940)

Item #	Source	Statement
A. Integrated Studio		
1	Balio (1976: 106)	Majors were lending talent among each other, but rarely and only at exorbitant fees were they *lending talent* to minor studios or independents.
2	Balio (1976: 98-102)	Code of Fair Competition for the Motion Picture Industry (signed into law 11/27/33) regulated trade practices among producers, distributors, exhibitors. [...] The code contained provisions barring *star raiding* [...] --but these provisions were suspended by executive order before the code went into effect and later were permanently removed.
3	Schatz (1998: 32)	Many of the majors were willing to sign one- and two-picture deals with *independent producer-directors* , and they would provide both a base of production operations and a solid distribution-exhibition setup. In February 1940, Capra signed a one-picture deal with Warner Bros. for 'Meet John Doe' […].
4	Flannery (1990: 156)	However, because of its [Ninotchka, MGM 1939] overwhelming success, MGM [integrated studio] decided to *reteam* Garbo and Melvyn Douglas in another social comedy, the disastrous 'Two-Faced Woman,' and assigned George Cukor to direct it.
B. Non-Integrated Studio		
1	Davis (1993: 56)	Monogram [minor studio] operated mainly on a *freelance* basis with writers and directors, but did make contractual arrangements with producers. […] Producers at Monogram noted what the major studios were turning out and tried to copy their successes. Occasionally they succeeded, producing a tentative A that made it into the first-run theaters.
2	Davis (1993: 330)	Studio moguls stayed current on each other's pictures, and private *screenings* were a favorite form of Hollywood amusement. New movies were circulated around the town's mansions before their release, sometimes with devastating results.

Note: Italics identify the search terms used to find the respective exemplar.

TABLE 2

Illustrative Examples of Project Participant's Control Over Future Project Assignments from U.S. Movie Industry (1931-1940)

Item #	Source	Statement
A. Director		
1	Powdermaker (1950: 116)	Mr. Rough-and-Ready is a successful producer-director of Westerns and serials, who has his own independent unit at a major studio, through which his pictures are released. […] He completely *controls* and dominates his pictures, which are concerned with the heroic escapes from danger and an exciting rescue at the end.
2	Rosten (1941: 286-294)	The data which follow are based on elaborate questionnaire materials filled out by sixty-nine directors. […] The directors who earn huge sums per week or per picture often *refuse* employment on pictures or stories which they do not wish to direct.
3	Schatz (1998: 23)	With Capra's [director] increasing success, Cohn [producer] repaid his star director not only with salary increases, but also with greater creative and *administrative freedom.* After the enormous success of 'It Happened One Night' in 1934, Cohn offered Capra producer-director status and a six-picture deal, at $100,000 per picture plus 24 percent of the net profits.
4	Capra (1971: 105)	As Capra said of the *long-term contracts* signed with Columbia in the 1930s, "I was trading away money for power I couldn't get at any other studio."
5	Powdermaker (1950: 198)	With them [producers], too, he [Mr. Prestige, director] discusses and argues, and usually but not always manages to *get his way* because of his capacity of holding out.
B. Actor		
1	Rosten (1941: 331)	Many stars in Hollywood do have "story approval" clauses in their contracts, and can *refuse* to appear in roles which seem unsympathetic or unflattering.
2	Powdermaker (1950: 212)	Another star managed a bit better because he had a *flexible contract* which allowed him to make pictures for two studios.
3	Davis (1993: 106)	By the 1930s powerful agents had appeared in Hollywood--Myron Selznick, Minna Wallis, Leland Hayward--who negotiated *advantageous clauses* for their top clients, sometimes splitting their contracts between studios, securing directorial and casting approval for them, making sure they had dressing rooms and accommodations commensurate with their salaries.
4	Schatz (1998: 220)	Through her agent, she [Bette Davis] sent the following list of *demands* to the studio: a five-year contract at a salary that escalated from $100,000 to $220,000 per year; the right to make no more than four pictures a year; star or co-star billing; the services of her favorite cameramen; and three months' consecutive vacation each year with the right to do one outside picture.
5	Pickard (1978: 338)	Robert Montgomery, a well-known romantic lead at the studio in the thirties, was another who gave as good as he got. Bored with being forever cast as a smooth, debonair leading man he would periodically go to Mayer *demanding* meatier dramatic parts. After loud and bitter arguments that rebounded off the walls of Mayer's plush office, he usually got them.
6	Powdermaker (1950: 213).	Another time, when the producer was not sympathetic and an actor thought a role, that of a foreigner, was not good for him, he asked the make-up man to report that he could not possibly be made up to look the part. Sometimes an *appeal* is made to the casting director not to be recommended for a contemplated role. Or the actor may resort to telling the producer how "unhappy" he will be playing this role, the theory being that an unhappy actor does not do a good job.

Note: Italics identify the search terms used to find the respective exemplar.

Table 3
Description of Variables

Variable	Description	Data Source
A. Dependent Variables		
1 Future Collaborations (Periods 1 to 4)	Number of repeated dyadic relationships between key project contributors during the four years after project completion.	Imdb
2 Future Color Movie Collaborations (Periods 1 to 4)	Number of repeated dyadic relationships between key project contributors in future color movie projects during the four years after project completion.	AFI
3 Future Collaborations Governed By Different Studio (Periods 1 to 4)	Number of repeated dyadic relationships between key project contributors in future movie projects governed by a different studio during the four years after project completion.	AFI
B. Independent Variables		
4 Project Performance	Movie box-office rating by theater operators.	Boxoffice, Boxoffice Barometer, Motion Picture Herald
5 Prior Collaborations (Periods -4 to 0)	Number of prior dyadic relationships between key project contributors during the same and four preceding years.	Imdb
6 Prior Collaborations (Period -2 to 0)	Number of prior dyadic relationships between key project contributors during the same and two preceding years.	Imdb
7 Prior Collaborations (Periods -5 to -3)	Number of prior dyadic relationships between key project contributors during three to five years	Imdb
8 Color Movie	Movie project employing color technology.	AFI
9 Non-Integrated Studio	Movie project governed by a studio without substantial permanent production sites and theater chain ownership.	AFI
C. Control Variables		
10 Production Time (#Days)	Number of days between the beginning and the end of filming scenes.	AFI, Hollywood Reporter
11 Cast Size	Number of cast members.	AFI
12 Above-the-Line Cast Credits	Number cast members whose name were used to promote the movie in printed advertisements.	AFI
13 Director Prior Nominations	Director's number of prior nominations for a directing award of the AMP.	Imdb
14 Actor1 Prior Nominations	First lead actor's number of prior nominations for an acting award of the AMP.	Imdb
17 Actor2 Prior Nominations	Second lead actor's number of prior nominations for an acting award of the AMP.	Imdb
18 Producer Prior Nominations	Producer's number of prior nominations for a producer award of the AMP.	Imdb
19 Camera Prior Nominations	Camera person's number of prior nominations for a cinematography award of the AMP.	Imdb
20 Art Director Prior Nominations	Art director's number of prior nominations for an art direction award of the AMP.	Imdb
21 Editor Prior Nominations	Editor's number of prior nominations for an editing award of the AMP.	Imdb
22 Director Prior Films	Director's number of prior movie projects as director.	Imdb
23 Actor1 Prior Films	Lead actor's number of prior movie projects as actor.	Imdb
24 Producer Prior Films	Producer's number of prior movie projects as producer.	Imdb
25 Camera Prior Films	Camera person's number of prior movie projects as cinematographer.	Imdb
26 Art Director Prior Films	Art director's number of prior movie projects as art director.	Imdb
27 Editor Prior Films	Editor's number of prior movie projects as editor.	Imdb
28 No Editor (Dummy)	Movie project with unknown editor.	AFI, Imdb
29 No Art Director (Dummy)	Movie project with unknown art director.	AFI, Imdb
30 Release Quarter (Dummy)	Quarter of the year the movie was released in.	AFI
31 Genre (Dummy)	Movie project classified as either a drama, comedy, or musical.	AFI
32 Serial (Dummy)	Movie continues characters and story developed in a prior movie.	AFI
33 Revbox (Dummy)	Boxoffice Barometer (1937-1951) as source of box-office ratings by theater operators.	Boxoffice Barometer
34 Boweekly (Dummy)	Boxoffice (1932-1935) as source of box-office ratings by theater operators.	Boxoffice
35 Director Future Films (Periods 1 to 4)	Director's number of future movie projects as director during the following four years.	Imdb
36 Actor1 Future Films (Periods 1 to 4)	First lead actor's number of future movie projects as actor during the following four years.	Imdb
37 Actor2 Future Films (Periods 1 to 4)	Second lead actor's number of future movie projects as actor during the following four years.	Imdb
38 Art Director Future Films (Periods 1 to 4)	Art director's number of future movie projects as art director during the following four years.	Imdb
39 Producer Future Films (Periods 1 to 4)	Producer's number of future movie projects as producer during the following four years.	Imdb
40 Editor Future Films (Periods 1 to 4)	Editor's number of future movie projects as editor during the following four years.	Imdb
41 Camera Future Films (Periods 1 to 4)	Camera person's number of future movie projects as cinematographer during the following four years.	Imdb

Note: AFI: American Film Institute Catalog; AMP: Academy of Motion Pictures; Imdb: Internet Movie Database (www.imdb.com).

TABLE 4

Means, Standard Deviations, and Correlations for Dependent, Independent, and Control Variables

Variable	Mean	S D	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Future Collaborations (Periods 1 to 4)	15.01	11.95	0	63	1.00																				
2 Future Color Movie Collaborations (Periods 1 to 4)	1.19	2.92	0	17	0.55	1.00																			
3 Future Collaborations Governed By Different Studio	1.01	2.77	0	24	-0.05	0.10	1.00																		
4 Project Performance	104.57	18.66	45	180	0.16	0.37	0.07	1.00																	
5 Prior Collaborations (Periods -4 to 0)	16.73	14.76	0	87	0.40	0.36	0.08	0.03	1.00																
6 Prior Collaborations (Period -2 to 0)	13.18	11.69	0	75	0.41	0.33	0.05	-0.01	0.95	1.00															
7 Prior Collaborations (Periods -5 to -3)	4.51	6.41	0	33	0.22	0.31	0.15	0.11	0.72	0.47	1.00														
8 Color Movie	0.03	0.16	0	1	0.20	0.31	0.15	0.11	0.12	0.09	0.16	1.00													
9 Non-Integrated Studio	0.08	0.27	0	1	-0.19	-0.01	0.65	0.05	-0.01	-0.02	0.04	0.15	1.00												
10 Project Performance x Prior Collaborations (P -4 to 0)	1756.1	1606.8	0	10080	0.46	0.49	0.07	0.26	0.94	0.88	0.73	0.18	-0.02	1.00											
11 Project Performance x Recent Prior Collab. (P -2 to 0)	1376.1	1236.5	0	7420	0.48	0.46	0.04	0.23	0.91	0.94	0.50	0.15	-0.03	0.95	1.00										
12 Project Performance x Prior Collaborations (P -5 to -3)	484.71	713.65	0	3900	0.26	0.41	0.13	0.24	0.69	0.46	0.97	0.21	0.02	0.77	0.55	1.00									
13 Project Performance x Color Movie	2.93	18.63	0	150	0.23	0.35	0.17	0.14	0.15	0.11	0.19	0.98	0.14	0.22	0.18	0.26	1.00								
14 Project Performance x Non-Integrated Studio	8.56	29.80	0	180	-0.18	0.01	0.67	0.11	-0.03	-0.04	0.02	0.15	0.98	-0.03	-0.05	0.00	0.14	1.00							
15 Prior Collaborations (P -2 to 0) x Color Movie	0.49	4.25	0	50	0.31	0.31	0.01	0.14	0.27	0.24	0.27	0.73	-0.01	0.35	0.31	0.34	0.78	-0.01	1.00						
16 Prior Collaborations (P -2 to 0) x Non-Integrated Studio	0.97	4.74	0	48	-0.09	-0.06	0.64	-0.04	0.21	0.19	0.21	0.00	0.70	0.18	0.17	0.17	0.00	0.64	-0.02	1.00					
17 Project Perf. x Prior Collab. (P -2 to 0) x Color Movie	62.69	538.56	0	5750	0.31	0.31	0.01	0.15	0.28	0.23	0.28	0.73	-0.01	0.36	0.31	0.36	0.79	-0.01	0.99	-0.02	1.00				
18 Project Perf. x Prior Collab. (P -2 to 0) x Non-Int. Studio	98.66	472.17	0	4800	-0.09	-0.05	0.66	-0.02	0.21	0.19	0.20	0.01	0.71	0.18	0.17	0.17	0.01	0.66	-0.02	1.00	-0.02	1.00			
19 Production Time (#Days)	45.96	22.57	21	212	0.07	0.19	0.06	0.33	0.13	0.06	0.26	0.07	0.02	0.17	0.12	0.26	0.08	0.05	0.03	-0.06	0.05	-0.06	1.00		
20 Cast Size	35.03	22.33	10	130	0.06	0.22	0.03	0.25	0.07	0.02	0.20	0.05	0.01	0.17	0.11	0.25	0.08	0.00	0.04	0.02	0.06	0.02	0.18	1.00	
21 Above-the-Line Cast Credits	0.98	0.94	0	3	0.11	0.08	-0.07	0.21	0.03	0.03	0.07	-0.05	-0.04	0.08	0.07	0.10	-0.04	-0.05	0.06	-0.02	0.06	-0.01	0.10	0.09	1.00
22 Director Prior Nominations	0.26	0.74	0	5	0.14	0.25	-0.04	0.30	0.14	0.08	0.23	0.05	-0.06	0.23	0.18	0.29	0.08	-0.06	0.09	-0.06	0.10	-0.06	0.14	0.08	0.13
23 Actor1 Prior Nominations	0.11	0.43	0	4	0.05	0.17	0.08	0.14	0.16	0.14	0.16	0.40	0.07	0.23	0.20	0.22	0.46	0.07	0.31	0.02	0.37	0.02	0.16	0.12	0.03
24 Actor2 Prior Nominations	0.30	0.68	0	3	-0.07	0.06	0.18	0.22	-0.05	-0.03	-0.04	0.17	0.03	-0.01	0.01	-0.02	0.18	0.07	0.11	-0.05	0.11	-0.04	0.10	0.07	0.14
25 Actor3 Prior Nominations	0.06	0.25	0	2	0.09	0.21	0.04	0.21	0.10	0.09	0.10	0.17	-0.01	0.16	0.16	0.13	0.21	0.01	0.12	-0.03	0.15	-0.03	0.06	0.07	0.15
26 Producer Prior Nominations	0.76	1.25	0	6	0.21	0.33	-0.04	0.09	0.21	0.13	0.32	0.18	-0.13	0.25	0.18	0.34	0.20	-0.11	0.27	-0.11	0.27	-0.11	0.13	0.09	0.04
27 Camera Prior Nominations	0.41	0.88	0	4	0.02	0.10	-0.06	0.13	0.00	0.00	0.02	-0.08	-0.12	0.03	0.02	0.04	-0.07	-0.12	-0.05	-0.09	-0.05	-0.09	0.13	0.06	0.02
28 Art Director Prior Nominations	1.93	2.46	0	8	0.09	0.20	-0.20	0.23	0.06	0.00	0.18	0.04	-0.20	0.13	0.08	0.21	0.06	-0.19	0.11	-0.15	0.12	-0.15	0.18	0.22	0.16
29 Editor Prior Nominations	0.08	0.30	0	2	-0.03	0.02	-0.03	0.06	0.04	-0.03	0.16	-0.04	-0.08	0.07	0.00	0.17	-0.04	-0.08	-0.03	-0.05	-0.03	-0.06	0.11	0.00	0.04
30 Director Prior Films	34.10	26.71	0	140	0.10	0.27	0.04	0.09	0.25	0.18	0.35	0.09	0.06	0.26	0.20	0.35	0.11	0.04	0.14	0.03	0.14	0.03	0.21	0.18	0.03
31 Actor1 Prior Films	25.92	27.86	0	188	-0.01	0.01	0.18	0.10	0.10	0.04	0.23	-0.03	0.15	0.10	0.05	0.19	-0.03	0.13	-0.05	0.14	-0.05	0.14	0.25	0.18	0.09
32 Actor2 Prior Films	30.72	30.47	0	204	-0.12	-0.08	-0.03	-0.04	0.00	-0.05	0.15	-0.03	0.02	-0.01	-0.05	0.11	-0.02	0.01	0.00	0.03	0.00	0.03	0.09	0.11	0.03
33 Producer Prior Films	24.76	34.76	0	373	0.15	0.17	0.43	0.02	0.38	0.33	0.38	0.10	0.15	0.35	0.30	0.36	0.10	0.14	0.09	0.47	0.09	0.48	0.03	0.12	-0.04
34 Camera Prior Films	57.16	28.37	0	125	0.12	0.15	-0.09	0.05	0.26	0.20	0.28	0.02	-0.05	0.29	0.24	0.30	0.03	-0.06	0.15	0.00	0.15	-0.01	-0.10	0.13	0.16
35 Art Director Prior Films	96.31	133.33	0	487	0.12	0.15	-0.18	0.19	0.11	0.03	0.24	0.00	-0.18	0.16	0.09	0.27	0.02	-0.17	0.06	-0.12	0.08	-0.13	0.18	0.14	0.33
36 Editor Prior Films	19.79	13.72	0	82	0.04	-0.06	-0.03	-0.06	0.04	-0.01	0.13	-0.02	0.03	0.04	-0.02	0.12	-0.03	0.01	0.05	0.00	0.04	-0.01	-0.01	0.02	0.09
37 No Editor (Dummy)	0.02	0.13	0	1	0.01	0.00	-0.05	-0.13	-0.05	-0.02	-0.09	-0.02	-0.04	-0.06	-0.03	-0.09	-0.02	-0.04	-0.02	-0.03	-0.02	-0.03	-0.07	-0.04	-0.07
38 No Art Director (Dummy)	0.03	0.16	0	1	-0.07	-0.07	0.19	-0.03	-0.03	-0.04	0.04	-0.03	0.05	-0.03	-0.05	0.03	-0.03	0.04	-0.02	0.24	-0.02	0.24	0.00	0.02	-0.05
39 Release Quarter 1 (Dummy)	0.22	0.42	0	1	0.05	-0.01	0.00	0.00	-0.08	-0.05	-0.14	-0.09	-0.01	-0.09	-0.06	-0.13	-0.08	-0.01	-0.06	-0.04	-0.06	-0.04	0.04	0.02	0.01
40 Release Quarter 2 (Dummy)	0.22	0.42	0	1	-0.16	-0.06	0.07	-0.17	0.00	-0.03	0.09	0.04	0.14	-0.04	-0.06	0.03	0.04	0.15	-0.05	0.10	-0.05	0.10	0.04	-0.04	-0.06
41 Release Quarter 3 (Dummy)	0.22	0.42	0	1	0.04	-0.02	0.03	0.07	0.06	0.06	0.07	-0.09	0.07	0.09	0.08	0.08	-0.08	0.06	-0.06	0.09	-0.06	0.09	0.04	-0.01	0.11
42 Comedy Genre (Dummy)	0.25	0.43	0	1	-0.05	-0.12	0.04	0.01	-0.11	-0.11	-0.07	-0.09	-0.06	-0.11	-0.11	-0.08	-0.09	-0.07	-0.07	0.02	-0.07	0.01	-0.05	0.05	0.16
43 Musical Genre (Dummy)	0.20	0.40	0	1	0.04	0.09	-0.10	0.09	0.08	0.09	0.02	0.05	-0.03	0.08	0.09	0.02	0.06	-0.03	0.03	-0.01	0.04	-0.01	0.22	-0.01	0.02
44 Color (Dummy)	0.03	0.16	0	1	0.20	0.31	0.15	0.11	0.12	0.09	0.16	1.00	0.15	0.18	0.15	0.21	0.98	0.15	0.73	0.00	0.73	0.01	0.07	0.05	-0.05
45 Serial (Dummy)	0.04	0.19	0	1	0.02	-0.07	-0.03	0.03	0.01	0.00	0.02	-0.03	-0.06	0.02	0.01	0.03	-0.03	-0.06	-0.02	-0.04	-0.02	-0.04	-0.12	-0.03	-0.02
46 Revbox (Dummy)	0.07	0.25	0	1	0.00	-0.08	-0.01	-0.20	-0.03	0.00	-0.08	-0.04	-0.08	-0.05	-0.03	-0.09	-0.04	-0.08	-0.03	-0.06	-0.03	-0.06	-0.09	-0.17	-0.17
47 Boweekly (Dummy)	0.39	0.49	0	1	-0.01	-0.19	-0.12	-0.07	-0.12	-0.07	-0.19	-0.13	-0.17	-0.16	-0.11	-0.21	-0.13	-0.15	-0.09	-0.14	-0.09	-0.13	0.00	-0.10	-0.03
48 Director Future Films (Periods 1 to 4)	8.60	4.80	0	22	0.16	0.07	0.05	-0.12	0.15	0.17	0.04	0.05	0.00	0.10	0.11	0.04	0.06	-0.01	0.07	0.07	0.07	0.07	-0.13	-0.14	-0.14
49 Actor1 Future Films (Periods 1 to 4)	9.74	5.73	0	27	0.06	-0.10	-0.10	-0.25	-0.13	-0.12	-0.13	-0.03	-0.11	-0.16	-0.15	-0.14	-0.05	-0.12	-0.03	-0.04	-0.03	-0.04	-0.21	-0.13	-0.37
50 Actor2 Future Films (Periods 1 to 4)	12.10	6.63	0	40	0.13	-0.13	0.09	-0.08	0.03	0.05	-0.03	-0.01	0.01	0.03	0.05	-0.04	-0.03	0.01	-0.04	0.12	-0.05	0.12	-0.18	-0.13	-0.25
51 Art Director Future Films (Periods 1 to 4)	73.94	66.33	0	191	0.18	0.05	-0.28	0.13	0.01	-0.02	0.07	-0.03	-0.30	0.07	0.04	0.10	-0.01	-0.29	0.02	-0.21	0.04	-0.22	0.13	0.09	0.28
52 Producer Future Films (Periods 1 to 4)	20.78	24.36	0	147	0.46	0.13	-0.07	-0.19	0.21	0.26	0.01	0.06	-0.15	0.17	0.22	0.00	0.05	-0.15	0.10	-0.06	0.09	-0.06	-0.12	-0.10	-0.13
53 Editor Future Films (Periods 1 to 4)	10.92	5.44	0	37	0.07	-0.09	-0.08	-0.05	-0.01	0.02	-0.07	-0.10	-0.11	-0.03	0.00	-0.08	-0.10	-0.12	-0.06	0.08	-0.07	0.07	-0.05	0.01	0.04
54 Camera Future Films (Periods 1 to 4)	17.05	7.87	0	58	-0.08	-0.14	0.07	-0.15	0.05	0.06	0.00	-0.08	-0.06	-0.02	-0.01	-0.03	-0.08	-0.06	-0.06	0.17	-0.06	0.17	-0.13	-0.07	-0.03

Note: All correlations with absolute values above .12 are statistically significant at p<.05

TABLE 4 (cont)
Means, Standard Deviations, and Correlations for Dependent, Independent, and Control Variables

Variable	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
22 Director Prior Nominations	1.00																
23 Actor1 Prior Nominations	0.22	1.00															
24 Actor2 Prior Nominations	0.12	0.13	1.00														
25 Actor3 Prior Nominations	-0.04	0.17	0.12	1.00													
26 Producer Prior Nominations	0.13	0.01	0.07	0.02	1.00												
27 Camera Prior Nominations	0.14	-0.04	0.03	0.04	0.11	1.00											
28 Art Director Prior Nominations	0.42	0.09	0.03	0.18	0.05	0.22	1.00										
29 Editor Prior Nominations	0.25	0.00	0.01	-0.06	0.14	0.07	0.13	1.00									
30 Director Prior Films	0.18	0.11	0.00	0.01	0.14	0.11	0.23	0.08	1.00								
31 Actor1 Prior Films	0.01	0.18	0.11	-0.01	-0.03	0.02	-0.01	0.04	0.14	1.00							
32 Actor2 Prior Films	0.14	0.08	0.15	0.01	0.05	-0.05	0.07	0.04	0.10	0.35	1.00						
33 Producer Prior Films	0.03	0.02	-0.05	-0.03	0.30	0.00	0.00	0.03	0.00	0.13	-0.03	1.00					
34 Camera Prior Films	0.15	-0.04	-0.09	-0.01	0.16	0.18	0.03	-0.02	0.15	-0.12	-0.02	0.03	1.00				
35 Art Director Prior Films	0.40	0.16	0.11	0.15	0.00	0.13	0.65	0.12	0.24	0.01	0.12	-0.11	0.09	1.00			
36 Editor Prior Films	0.10	-0.03	-0.08	-0.03	-0.06	0.03	0.10	0.21	0.01	0.02	0.07	-0.06	0.10	0.10	1.00		
37 No Editor (Dummy)	-0.05	0.12	-0.01	-0.03	0.02	-0.06	0.00	-0.03	-0.03	-0.03	-0.06	0.01	0.01	-0.07	-0.18	1.00	
38 No Art Director (Dummy)	-0.06	-0.04	-0.03	-0.04	-0.06	-0.08	-0.13	0.05	-0.10	0.07	0.05	0.37	-0.01	-0.12	-0.02	-0.02	1.00
39 Release Quarter 1 (Dummy)	-0.06	-0.04	-0.06	-0.08	-0.10	0.02	-0.02	0.03	-0.01	0.04	-0.01	-0.05	-0.10	-0.09	0.03	-0.07	-0.09
40 Release Quarter 2 (Dummy)	-0.14	0.03	0.09	0.00	0.01	-0.07	-0.07	0.03	0.02	0.15	0.15	-0.03	-0.07	0.00	-0.02	0.01	0.04
41 Release Quarter 3 (Dummy)	0.12	0.01	0.03	0.08	0.09	0.06	0.05	0.03	0.03	-0.01	-0.05	0.11	0.00	0.12	-0.03	-0.07	-0.02
42 Comedy Genre (Dummy)	0.05	-0.10	0.04	-0.06	-0.09	-0.07	0.06	0.11	-0.14	0.13	0.09	0.08	-0.08	-0.01	0.03	0.08	0.09
43 Musical Genre (Dummy)	0.00	0.07	-0.13	0.05	0.00	0.16	0.13	-0.06	0.09	-0.03	-0.15	-0.02	0.07	0.09	0.00	0.02	-0.01
44 Color (Dummy)	0.05	0.40	0.17	0.17	0.18	-0.08	0.04	-0.04	0.09	-0.03	-0.03	0.10	0.02	0.00	-0.02	-0.02	-0.03
45 Serial (Dummy)	-0.04	-0.05	-0.09	-0.05	-0.10	-0.07	-0.08	0.02	-0.03	0.07	0.09	-0.02	0.03	-0.10	0.08	-0.03	-0.03
46 Revbox (Dummy)	0.00	0.01	-0.02	-0.06	0.01	-0.05	-0.10	-0.07	-0.06	0.00	0.09	-0.01	-0.15	0.00	-0.09	0.10	-0.04
47 Boweekly (Dummy)	-0.17	-0.04	0.00	-0.05	-0.17	-0.10	-0.26	-0.21	-0.12	-0.09	-0.01	-0.14	-0.17	-0.16	-0.13	0.03	0.04
48 Director Future Films (Periods 1 to 4)	-0.14	-0.03	-0.21	0.02	-0.11	0.03	-0.12	-0.04	0.24	-0.10	-0.21	0.03	0.08	-0.11	0.01	0.09	-0.04
49 Actor1 Future Films (Periods 1 to 4)	-0.14	-0.11	-0.25	-0.08	-0.04	0.05	-0.18	-0.15	-0.08	-0.12	0.13	-0.04	-0.08	-0.14	-0.04	-0.01	0.12
50 Actor2 Future Films (Periods 1 to 4)	-0.09	-0.05	-0.10	-0.11	-0.07	-0.05	-0.18	-0.11	-0.17	0.13	-0.06	0.13	-0.11	-0.26	-0.05	0.05	0.13
51 Art Director Future Films (Periods 1 to 4)	0.25	0.12	0.00	0.14	-0.03	0.10	0.67	0.07	0.14	-0.04	-0.01	-0.11	0.07	0.68	0.04	-0.02	-0.18
52 Producer Future Films (Periods 1 to 4)	-0.07	-0.08	-0.12	-0.09	0.24	-0.11	-0.24	-0.06	-0.08	-0.09	-0.01	0.12	0.03	-0.26	-0.04	0.12	-0.05
53 Editor Future Films (Periods 1 to 4)	-0.03	-0.19	0.01	-0.10	-0.14	-0.03	-0.12	0.07	-0.03	-0.07	0.08	-0.09	0.06	0.01	0.01	-0.26	0.06
54 Camera Future Films (Periods 1 to 4)	-0.13	-0.07	-0.08	-0.08	-0.01	-0.08	-0.17	0.03	-0.12	-0.02	-0.01	0.08	0.09	-0.13	-0.02	-0.03	0.20

Variable	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
39 Release Quarter 1 (Dummy)	1.00														
40 Release Quarter 2 (Dummy)	-0.28	1.00													
41 Release Quarter 3 (Dummy)	-0.28	-0.28	1.00												
42 Comedy Genre (Dummy)	0.00	-0.03	-0.07	1.00											
43 Musical Genre (Dummy)	0.03	-0.09	-0.02	-0.29	1.00										
44 Color (Dummy)	-0.09	0.04	-0.09	-0.09	0.05	1.00									
45 Serial (Dummy)	0.05	-0.05	0.00	0.04	-0.10	-0.03	1.00								
46 Revbox (Dummy)	-0.06	0.10	-0.10	0.08	-0.09	-0.04	0.04	1.00							
47 Boweekly (Dummy)	0.17	-0.08	-0.06	-0.08	0.00	-0.13	-0.11	-0.22	1.00						
48 Director Future Films (Periods 1 to 4)	0.00	-0.09	0.00	-0.03	0.05	0.05	0.11	-0.04	0.04	1.00					
49 Actor1 Future Films (Periods 1 to 4)	0.02	0.00	-0.03	-0.08	-0.18	-0.03	0.07	0.14	0.16	0.16	1.00				
50 Actor2 Future Films (Periods 1 to 4)	-0.04	0.04	-0.05	0.03	-0.13	-0.01	0.05	0.13	0.09	0.10	0.20	1.00			
51 Art Director Future Films (Periods 1 to 4)	0.00	-0.07	0.06	0.01	0.17	-0.03	-0.06	-0.05	-0.07	-0.13	-0.19	-0.19	1.00		
52 Producer Future Films (Periods 1 to 4)	-0.01	-0.03	0.01	-0.03	-0.13	0.06	0.04	0.10	-0.02	0.17	0.23	0.18	-0.29	1.00	
53 Editor Future Films (Periods 1 to 4)	0.05	0.07	-0.08	0.09	0.03	-0.10	0.05	0.01	0.06	0.04	0.02	0.05	0.05	0.07	1
54 Camera Future Films (Periods 1 to 4)	-0.03	0.02	-0.08	0.03	0.06	-0.08	-0.06	0.02	0.06	0.10	0.10	0.14	-0.17	0.00	0.2481

Note: All correlations with absolute values above .12 are statistically significant at $p<.05$
n = 239

TABLE 5
OLS Regression of Future Collaborations (Periods 1 to 4)

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		Model 9		Model 10	
Constant	-18.20 **	(5.90)	-16.33 **	(5.72)	-26.91 ***	(6.71)	-19.14 **	(6.77)	-26.90 ***	(6.69)	-19.44 **	(6.73)	-27.12 ***	(6.72)	-18.38 **	(6.62)	-27.15 ***	(6.92)	-25.17 ***	(7.43)
Production Time (#Days)	0.04	(0.03)	0.02	(0.03)	0.00	(0.03)	0.01	(0.03)	0.00	(0.03)	0.00 *	(0.03)	0.01	(0.03)	0.01	(0.03)	0.01	(0.03)	0.02	(0.04)
Cast Size	0.04	(0.03)	0.03	(0.03)	0.02	(0.03)	0.01	(0.03)	0.02	(0.03)	0.02	(0.03)	0.03	(0.03)	0.01	(0.03)	0.02	(0.03)	0.01	(0.04)
Above-the-Line Cast Credits	1.53 †	(0.80)	1.79 *	(0.80)	1.63 *	(0.79)	1.46 †	(0.78)	1.58 *	(0.79)	1.49 †	(0.78)	1.51 †	(0.77)	1.36 †	(0.76)	1.54 †	(0.81)	1.47 †	(0.82)
Director Prior Nominations	1.96 †	(1.11)	1.76 †	(0.99)	1.17	(0.96)	0.95	(0.96)	1.14	(0.97)	1.17	(0.97)	1.21	(0.94)	1.05	(0.92)	1.24	(1.07)	1.11	(1.07)
Actor1 Prior Nominations	-1.24	(1.68)	-2.12	(1.50)	-2.28	(1.42)	-2.82 *	(1.35)	-2.28	(1.45)	-2.53 †	(1.51)	-2.27	(1.47)	-2.81 *	(1.42)	-1.52	(1.56)	-1.78	(1.59)
Actor2 Prior Nominations	0.15	(0.94)	0.19	(0.91)	-0.17	(0.92)	0.05	(0.93)	-0.23	(0.95)	-0.04	(0.95)	-0.33	(0.92)	-0.09	(0.93)	0.01	(0.98)	0.05	(1.00)
Actor3 Prior Nominations	4.08 †	(2.15)	2.47	(2.23)	1.40	(2.31)	1.02	(2.40)	1.38	(2.30)	0.80	(2.42)	1.54	(2.24)	1.01	(2.35)	2.55	(2.31)	2.52	(2.32)
Producer Prior Nominations	0.18	(0.72)	0.00	(0.67)	-0.12	(0.67)	-0.20	(0.66)	-0.04	(0.69)	-0.06	(0.68)	0.08	(0.67)	0.00	(0.65)	-0.18	(0.71)	-0.21	(0.71)
Camera Prior Nominations	0.23	(0.74)	0.22	(0.67)	0.21	(0.68)	0.42	(0.68)	0.14	(0.69)	0.37	(0.69)	0.03	(0.69)	0.28	(0.70)	0.43	(0.72)	0.46	(0.72)
Art Director Prior Nominations	-0.18	(0.74)	-0.50	(0.73)	-0.68	(0.75)	-0.58	(0.74)	-0.67	(0.76)	-0.57	(0.74)	-0.66	(0.76)	-0.54	(0.75)	-0.41	(0.76)	-0.39	(0.76)
Editor Prior Nominations	-0.04	(2.00)	0.10	(2.01)	0.03	(1.99)	-0.41	(2.04)	0.26	(1.93)	0.09	(1.93)	0.43	(1.92)	0.06	(1.93)	-0.40	(2.05)	-0.53	(2.07)
Director Prior Films	0.02	(0.02)	0.00	(0.02)	0.01	(0.02)	0.00	(0.02)	0.01	(0.02)	0.01	(0.02)	0.01	(0.02)	0.01	(0.02)	0.01	(0.02)	0.01	(0.02)
Actor1 Prior Films	0.01	(0.03)	0.01	(0.03)	0.01	(0.03)	0.02	(0.03)	0.01	(0.03)	0.01	(0.03)	0.01	(0.03)	0.02	(0.03)	0.00	(0.03)	0.01	(0.03)
Actor2 Prior Films	-0.04 †	(0.02)	-0.04 †	(0.02)	-0.03	(0.02)	-0.03	(0.02)	-0.03	(0.02)	-0.03	(0.02)	-0.03	(0.02)	-0.03	(0.02)	-0.03 †	(0.02)	-0.03	(0.02)
Producer Prior Films	0.02	(0.02)	-0.01	(0.02)	-0.01	(0.02)	0.00	(0.02)	-0.01	(0.02)	0.00	(0.02)	0.00	(0.02)	0.01	(0.02)	0.01	(0.02)	0.01	(0.02)
Camera Prior Films	0.00	(0.02)	-0.02	(0.02)	-0.02	(0.02)	-0.02	(0.02)	-0.02	(0.02)	-0.02	(0.02)	-0.01	(0.02)	-0.02	(0.02)	-0.01	(0.02)	-0.01	(0.02)
Art Director Prior Films	0.01	(0.01)	0.00	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)
Editor Prior Films	0.09 †	(0.05)	0.06	(0.05)	0.08	(0.05)	0.08	(0.05)	0.08 †	(0.05)	0.09 †	(0.05)	0.09 †	(0.05)	0.09 †	(0.05)	0.09 †	(0.05)	0.09 †	(0.05)
No Editor (Dummy)	-1.24	(3.93)	0.20	(4.08)	1.23	(4.22)	-0.16	(3.81)	1.43	(4.24)	0.18	(3.78)	1.47	(4.23)	-0.04	(3.78)	-0.12	(3.84)	-0.46	(3.77)
No Art Director (Dummy)	1.42	(5.38)	3.76	(5.51)	3.20	(5.18)	1.66	(5.06)	3.09	(5.19)	1.91	(4.96)	3.08	(5.14)	1.48	(4.96)	1.26	(5.16)	0.81	(5.23)
Release Quarter 1 (Dummy)	1.52	(2.01)	1.28	(1.92)	1.59	(1.90)	1.24	(1.85)	1.53	(1.91)	1.27	(1.83)	1.49	(1.90)	1.10	(1.82)	1.84	(2.00)	1.70	(2.00)
Release Quarter 2 (Dummy)	-1.12	(1.66)	-1.78	(1.61)	-0.99	(1.59)	-1.18	(1.58)	-1.04	(1.61)	-1.51	(1.58)	-0.91	(1.61)	-1.25	(1.58)	-0.77	(1.65)	-0.72	(1.65)
Release Quarter 3 (Dummy)	0.03	(1.92)	-0.15	(1.82)	0.19	(1.74)	-0.30	(1.76)	0.13	(1.74)	-0.41	(1.76)	0.18	(1.74)	-0.41	(1.76)	0.20	(1.83)	0.10	(1.83)
Comedy Genre (Dummy)	0.01	(1.69)	0.47	(1.68)	0.36	(1.68)	0.69	(1.69)	0.38	(1.69)	0.56	(1.68)	0.34	(1.68)	0.67	(1.68)	0.06	(1.72)	0.19	(1.72)
Musical Genre (Dummy)	1.35	(2.00)	1.36	(1.90)	1.17	(1.82)	1.46	(1.78)	1.11	(1.82)	1.22	(1.79)	1.01	(1.85)	1.28	(1.80)	1.36	(1.89)	1.47	(1.89)
Color (Dummy)	13.39 †	(7.42)	14.32 *	(5.56)	14.81 **	(5.13)	13.35 **	(5.08)	14.78 **	(5.22)	14.69 **	(5.21)	14.95 **	(5.34)	13.80 **	(5.23)	13.62 *	(6.46)	12.86 †	(6.64)
Serial (Dummy)	1.85	(2.64)	0.33	(2.65)	-0.90	(2.78)	-0.65	(2.98)	-0.75	(2.76)	0.21	(2.75)	-0.57	(2.72)	0.02	(2.86)	0.16	(2.85)	0.04	(2.94)
Revbox (Dummy)	-10.31 †	(6.04)	-6.47	(5.82)	-5.82	(5.83)	-5.83	(5.89)	-5.57	(5.86)	-5.07	(5.90)	-5.38	(5.78)	-5.24	(5.85)	-9.49	(6.12)	-9.59	(6.12)
Boweekly (Dummy)	-10.99 †	(6.30)	-6.92	(6.17)	-7.38	(6.23)	-5.55	(6.29)	-7.03	(6.29)	-4.67	(6.32)	-6.69	(6.20)	-4.47	(6.22)	-11.42 †	(6.44)	-11.06 †	(6.45)
Time Dummies (8)	yes		yes		yes		yes		yes		yes		yes		yes		yes		yes	
20th Century Fox	14.42 **	(4.51)	14.97 ***	(4.33)	15.33 ***	(4.31)	14.92 ***	(4.34)	15.02 ***	(4.31)	15.33 ***	(4.47)	14.52 ***	(4.34)	14.32 ***	(4.38)	15.77 ***	(4.39)	15.32 ***	(4.49)
20th Century	1.87	(5.52)	4.29	(5.09)	5.43	(4.79)	4.37	(4.99)	5.48	(4.73)	4.30	(5.11)	5.22	(4.79)	4.00	(5.07)	3.80	(5.00)	3.58	(5.06)
Columbia	0.82	(4.01)	2.95	(3.84)	4.14	(3.77)	4.12	(3.73)	4.03	(3.72)	4.36	(3.72)	3.71	(3.74)	3.82	(3.70)	2.85	(3.87)	2.69	(3.89)
1st National	3.99	(6.15)	8.41	(5.81)	8.78	(5.70)	6.61	(5.74)	9.08	(5.79)	7.35	(6.13)	9.14	(5.94)	6.88	(6.11)	4.91	(5.70)	4.34	(5.68)
Fox	0.05	(4.54)	3.30	(4.31)	4.69	(4.32)	4.45	(4.29)	4.60	(4.28)	4.54	(4.33)	4.38	(4.34)	4.17	(4.33)	2.21	(4.41)	2.08	(4.42)
Metro-Goldwyn-Mayer	2.34	(4.57)	4.80	(4.37)	5.07	(4.45)	4.77	(4.43)	5.24	(4.45)	4.81	(4.56)	5.30	(4.54)	4.88	(4.54)	2.85	(4.45)	2.85	(4.45)
Paramount	1.03	(4.85)	4.48	(4.81)	6.02	(4.81)	5.70	(4.80)	5.96	(4.77)	6.05	(4.77)	5.51	(4.83)	5.33	(4.81)	3.82	(4.79)	3.57	(4.82)
RKO	4.15	(4.04)	1.54	(4.09)	2.17	(3.98)	2.79	(3.93)	2.24	(3.88)	3.14	(3.91)	2.06	(3.94)	2.83	(3.91)	4.71	(3.88)	4.66	(3.88)
United Artists	6.23	(4.15)	8.61 *	(4.16)	8.68 *	(3.94)	9.20 *	(4.01)	8.73 *	(3.94)	9.84 *	(4.10)	8.28 *	(3.99)	9.12 *	(4.10)	7.54 †	(3.84)	7.42 †	(3.87)
Universal	7.32	(4.75)	7.86 †	(4.45)	8.34 †	(4.41)	9.28 *	(4.38)	8.30 †	(4.35)	10.07 *	(4.39)	7.89 †	(4.38)	9.29 *	(4.38)	8.65 †	(4.62)	8.54 †	(4.59)
Warner Brothers	-2.47	(4.63)	0.57	(4.42)	0.82	(4.42)	0.11	(4.42)	1.00	(4.41)	0.77	(4.48)	1.08	(4.47)	0.44	(4.47)	-1.91	(4.49)	-2.18	(4.52)
Warner Brothers/First National	6.28	(4.94)	7.87	(4.79)	7.57	(4.78)	6.59	(4.86)	7.77	(4.78)	7.36	(4.92)	8.03 †	(4.84)	7.09	(4.89)	5.76	(4.76)	5.39	(4.84)
Director Future Films (Periods 1 to 4)	0.27	(0.17)	0.18	(0.16)	0.19	(0.16)	0.22	(0.16)	0.18	(0.16)	0.24	(0.16)	0.17	(0.16)	0.22	(0.16)	0.27 †	(0.16)	0.27 †	(0.16)
Actor1 Future Films (Periods 1 to 4)	0.22	(0.14)	0.26 *	(0.13)	0.27 *	(0.12)	0.23 †	(0.12)	0.27 *	(0.12)	0.23 †	(0.12)	0.27 *	(0.12)	0.23 †	(0.12)	0.24 †	(0.13)	0.23 †	(0.13)
Actor2 Future Films (Periods 1 to 4)	0.28 **	(0.10)	0.24 *	(0.10)	0.22 *	(0.09)	0.18 *	(0.09)	0.22 *	(0.09)	0.17 †	(0.10)	0.23 *	(0.09)	0.18 †	(0.09)	0.24 **	(0.09)	0.24 *	(0.09)
Producer Future Films (Periods 1 to 4)	0.22 ***	(0.05)	0.19 ***	(0.05)	0.20 ***	(0.05)	0.21 ***	(0.05)	0.20 ***	(0.05)	0.20 ***	(0.05)	0.19 ***	(0.05)	0.20 ***	(0.05)	0.24 ***	(0.05)	0.24 ***	(0.05)
Camera Future Films (Periods 1 to 4)	0.00	(0.10)	-0.02	(0.09)	-0.02	(0.09)	0.02	(0.09)	-0.02	(0.09)	0.03	(0.09)	-0.02	(0.09)	0.02	(0.09)	0.00	(0.09)	0.00	(0.09)
Art Director Future Films (Periods 1 to 4)	0.05 **	(0.02)	0.06 ***	(0.02)	0.07 ***	(0.02)	0.06 ***	(0.02)	0.07 ***	(0.02)	0.06 ***	(0.02)	0.07 ***	(0.02)	0.06 ***	(0.02)	0.05 **	(0.02)	0.05 **	(0.02)
Editor Future Films (Periods 1 to 4)	0.10	(0.14)	0.10	(0.13)	0.10	(0.13)	0.09	(0.13)	0.10	(0.13)	0.08	(0.13)	0.10	(0.13)	0.08	(0.13)	0.12	(0.14)	0.12	(0.14)
Prior Collaboration (Periods -4 to 0)			0.243 ***	(0.070)	0.252 ***	(0.065)	-0.182	(0.139)												
Project Performance					0.102 *	(0.041)	0.024	(0.043)	0.101 *	(0.041)	0.020	(0.045)	0.099 *	(0.041)	0.009	(0.043)	0.097 *	(0.042)	0.079	(0.048)
Project Performance x Prior Collaborations (Periods -4 to 0)							0.0042 **	(0.001)												
Prior Collaborations (Periods -2 to 0)									0.268 ***	(0.080)	-0.463 *	(0.215)	0.292 ***	(0.079)	-0.312 †	(0.163)				
Prior Collaborations (Periods -5 to -3)									0.140	(0.129)	0.783	(0.564)					0.303 *	(0.145)	-0.118	(0.549)
Project Performance x Prior Collaborations (Periods -2 to 0)											0.007 ***	(0.002)			0.0059 ***	(0.002)				
Project Performance x Prior Collaborations (Periods -5 to -3)											-0.0065	(0.005)							0.0039	(0.005)
R^2	0.5630		0.5992		0.6135		0.6249		0.6122		0.6291		0.6101		0.6255		0.5853		0.5866	
ΔR^2			0.036 ***		0.014 *		0.011 *				0.017 *				0.015 **				0.001	
Wald Test (added variables)			12.16 ***		6.23 *		9.73 **				6.63 **				13.27 ***				0.58	
Wald Test (all variables with Prior Collaboration)			12.16 ***		15.18 ***		11.55 ***		7.32 ***		6.52 ***		13.81 ***		12.01 ***		4.40 *		2.38 †	
Wald Test (all variables with Project Performance)					6.23 *		7.46 ***		6.09 *		5.97 ***		5.76 *		8.93 ***		5.26 *		2.94 †	
n	239		239		239		239		239		239		239		239		239		239	

Note: Robust standard errors in parantheses.
Significance tests (two-tailed): † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

TABLE 6
OLS Regression of Future Color Movie Collaborations (Periods 1 to 4)

Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
Constant	0.46	(0.97)	-1.29	(1.65)	-1.97	(1.64)	-1.68	(1.56)	-1.15	(1.59)
Production Time (#Days)	0.01	(0.01)	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)
Cast Size	0.01 †	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)
Above-the-Line Cast Credits	0.04 †	(0.15)	0.01	(0.15)	0.04	(0.14)	0.09	(0.14)	0.10	(0.14)
Director Prior Nominations	0.40 *	(0.37)	0.20	(0.30)	0.23	(0.30)	0.19	(0.28)	0.27	(0.27)
Actor1 Prior Nominations	0.49	(0.44)	0.29	(0.55)	-0.11	(0.48)	-0.61	(0.51)	-0.20	(0.50)
Actor2 Prior Nominations	0.25 *	(0.25)	0.15	(0.27)	0.04	(0.23)	-0.01	(0.20)	-0.22	(0.18)
Actor3 Prior Nominations	1.21	(0.81)	0.74	(0.80)	0.60	(0.74)	0.16	(0.69)	0.16	(0.69)
Producer Prior Nominations	0.28 †	(0.16)	0.25 †	(0.15)	0.20	(0.16)	0.19	(0.16)	0.18	(0.16)
Camera Prior Nominations	-0.02	(0.22)	-0.01	(0.21)	0.01	(0.21)	0.00	(0.21)	0.00	(0.21)
Art Director Prior Nominations	0.00	(0.17)	-0.06	(0.17)	-0.12	(0.17)	-0.11	(0.17)	-0.13	(0.17)
Editor Prior Nominations	-0.13	(0.58)	-0.17	(0.53)	-0.11	(0.53)	-0.20	(0.52)	-0.25	(0.50)
Director Prior Films	0.01 **	(0.01)	0.01 **	(0.00)	0.01 **	(0.00)	0.01 *	(0.00)	0.01 *	(0.00)
Actor1 Prior Films	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)
Actor2 Prior Films	-0.01 †	(0.01)	-0.01	(0.00)	-0.01	(0.00)	-0.01	(0.00)	-0.01	(0.00)
Producer Prior Films	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)
Camera Prior Films	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)
Art Director Prior Films	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Editor Prior Films	-0.02	(0.01)	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)
No Editor (Dummy)	-0.04	(1.13)	0.19	(1.08)	0.62	(1.00)	0.95	(1.00)	0.75	(0.94)
No Art Director (Dummy)	0.27	(0.70)	0.00	(0.66)	0.21	(0.62)	0.28	(0.63)	0.36	(0.61)
Release Quarter 1 (Dummy)	0.20	(0.49)	0.22	(0.43)	0.38	(0.42)	0.34	(0.42)	0.36	(0.42)
Release Quarter 2 (Dummy)	0.03	(0.40)	0.10	(0.38)	0.18	(0.38)	0.06	(0.35)	0.04	(0.35)
Release Quarter 3 (Dummy)	-0.73	(0.56)	-0.75	(0.46)	-0.57	(0.45)	-0.56	(0.44)	-0.56	(0.43)
Comedy Genre (Dummy)	-0.50	(0.39)	-0.44	(0.38)	-0.46	(0.38)	-0.55	(0.38)	-0.48	(0.38)
Musical Genre (Dummy)	0.12	(0.48)	0.12	(0.46)	0.04	(0.45)	-0.08	(0.45)	0.00	(0.45)
Serial (Dummy)	-0.80	(0.72)	-1.18 †	(0.65)	-1.25 †	(0.65)	-1.52 *	(0.65)	-1.42 *	(0.65)
Revbox (Dummy)	-1.41	(1.19)	-0.52	(1.08)	0.24	(0.95)	0.32	(0.89)	0.62	(0.88)
Boweekly (Dummy)	-1.84	(1.31)	-0.89	(1.21)	-0.21	(1.09)	-0.12	(1.05)	0.23	(1.05)
Time Dummies (8)	Yes		Yes		Yes		Yes		Yes	
20th Century Fox	1.99 *	(0.96)	2.33 *	(0.95)	3.05 **	(0.95)	2.83 **	(0.95)	2.62 **	(0.95)
20th Century	-0.78	(0.82)	-0.38	(1.06)	0.36	(1.00)	0.39	(1.04)	0.39	(0.95)
Columbia	0.60	(0.65)	1.19	(0.77)	1.68 *	(0.73)	1.62 *	(0.81)	1.37 †	(0.77)
1st National	1.45	(1.78)	1.76	(1.91)	2.46	(1.93)	2.44	(1.93)	2.04	(1.95)
Fox	0.20	(0.75)	0.79	(0.83)	1.39 †	(0.82)	1.33	(0.88)	1.10	(0.83)
Metro-Goldwyn-Mayer	0.30	(0.83)	0.66	(0.93)	1.22	(0.92)	1.16	(0.94)	1.02	(0.91)
Paramount	-0.01	(0.80)	0.71	(0.87)	1.52 †	(0.91)	1.45	(0.94)	1.16	(0.89)
RKO	-0.16	(0.64)	-0.05	(0.75)	0.52	(0.77)	0.23	(0.73)	0.01	(0.72)
United Artists	1.32	(1.04)	1.67	(1.08)	2.03 †	(1.07)	1.55 †	(0.88)	0.98	(0.81)
Universal	-1.31	(0.90)	-0.81	(0.97)	-0.21	(1.00)	-0.37	(0.98)	0.73	(0.94)
Warner Brothers	0.14	(0.71)	0.40	(0.78)	0.98	(0.79)	0.82	(0.83)	0.62	(0.79)
Warner Brothers/First National	0.64	(1.00)	0.79	(1.05)	1.07	(1.07)	1.01	(1.05)	0.65	(1.01)
Future Collaborations (Periods 1 to 4)	0.110 ***	(0.022)	0.091 ***	(0.024)	0.083 ***	(0.024)	0.080 ***	(0.024)	0.077 **	(0.024)
Project Performance			0.015	(0.014)	0.018	(0.014)	0.017	(0.013)	0.014	(0.013)
Prior Collaborations (Periods -2 to 0)			-0.069	(0.082)	-0.059	(0.079)	-0.063	(0.077)	-0.082	(0.083)
Project Performance x Prior Collaborations (Periods -2 to 0)			0.001	(0.001)	0.001	(0.001)	0.001	(0.001)	0.001	(0.001)
Color					2.740 †	(1.465)	10.256	(8.440)	-29.030 ***	(6.574)
Project Performance x Color							0.142	(0.090)	0.322 ***	(0.065)
Prior Collaborations (Periods -2 to 0) x Color							-0.146	(0.119)	1.295 ***	(0.271)
Project Performance x Prior Collaborations (Periods -2 to 0) x Color									-0.012 ***	(0.002)
R2	0.5837		0.6167		0.6290		0.6430		0.6657	
Δ R2			0.033 **		0.012 *		0.014 *		0.023 ***	
Wald Test (added variables)			3.02 *		3.50 †		1.24		29.69 ***	
Wald Test (all variables with Color)					3.50 †		1.85		11.46 ***	
Wald Test (all variables with Project Performance)			4.48 *		5.35 **		4.35 **		11.98 ***	
Wald Test (all variables with Prior Collaboration (Periods -2 to 0))			0.82		1.04		1.16		9.50 ***	
n			239		239		239		239	

Note: Robust standard errors in parantheses.
Significance tests (two-tailed): † p < .10; * p < .05; ** p < .01; *** p < .001

TABLE 7

OLS Regression of Future Collaborations Governed by a Different Studio (Periods 1 to 4)

Variables	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**	
Constant	-0.327	(0.982)	-0.478	(1.443)	-2.024	(1.486)	0.318	(1.068)	0.598	(1.013)
Production Time (#Days)	0.001	(0.006)	0.001	(0.006)	0.003	(0.006)	0.003	(0.006)	0.008	(0.005)
Cast Size	0.004	(0.009)	0.003	(0.010)	0.003	(0.009)	0.007	(0.007)	0.009	(0.007)
Above-the-Line Cast Credits	-0.015	(0.170)	-0.027	(0.175)	-0.110	(0.160)	-0.067	(0.161)	-0.167	(0.138)
Director Prior Nominations	0.101	(0.198)	0.093	(0.187)	0.069	(0.181)	0.187	(0.168)	0.092	(0.143)
Actor1 Prior Nominations	-0.038	(0.316)	-0.012	(0.363)	0.104	(0.358)	-0.073	(0.336)	0.105	(0.310)
Actor2 Prior Nominations	0.633 *	(0.262)	0.633 *	(0.264)	0.722 **	(0.270)	0.576 *	(0.239)	0.557 **	(0.206)
Actor3 Prior Nominations	0.549	(0.578)	0.572	(0.612)	0.701	(0.629)	0.744	(0.547)	0.573	(0.457)
Producer Prior Nominations	-0.382 *	(0.182)	-0.384 *	(0.186)	-0.198	(0.143)	-0.160	(0.124)	-0.112	(0.119)
Camera Prior Nominations	0.041	(0.164)	0.042	(0.164)	0.088	(0.158)	0.141	(0.146)	0.140	(0.131)
ArtDirector Prior Nominations	-0.046	(0.123)	-0.044	(0.125)	0.105	(0.130)	-0.056	(0.115)	-0.108	(0.112)
Editor Prior Nominations	0.551	(0.417)	0.536	(0.426)	0.523	(0.379)	0.396	(0.320)	0.358	(0.288)
Director Prior Films	0.002	(0.004)	0.003	(0.005)	0.002	(0.004)	0.003	(0.004)	0.001	(0.004)
Actor1 Prior Films	0.006	(0.006)	0.006	(0.006)	0.003	(0.006)	0.009 †	(0.005)	0.009 †	(0.005)
Actor2 Prior Films	-0.003	(0.004)	-0.003	(0.004)	-0.004	(0.004)	-0.005	(0.004)	-0.006	(0.004)
Producer Prior Films	0.037 **	(0.013)	0.038 **	(0.014)	0.034 ***	(0.010)	0.021 ***	(0.006)	0.014 *	(0.006)
Camera Prior Films	-0.005	(0.006)	-0.004	(0.006)	-0.004	(0.006)	-0.004	(0.005)	0.001	(0.005)
ArtDirector Prior Films	0.000	(0.003)	0.000	(0.003)	-0.002	(0.003)	-0.001	(0.003)	-0.002	(0.003)
Editor Prior Films	0.007	(0.010)	0.008	(0.010)	0.004	(0.010)	0.008	(0.009)	0.006	(0.008)
No Editor (Dummy)	-1.013	(0.660)	-1.023	(0.688)	-0.998	(0.657)	-0.947 †	(0.535)	-1.020 *	(0.467)
No Art Director (Dummy)	0.553	(1.322)	0.453	(1.328)	0.135	(1.123)	0.002	(0.898)	0.152	(0.905)
Release Quarter 1 (Dummy)	0.149	(0.305)	0.157	(0.311)	-0.063	(0.298)	0.024	(0.290)	-0.042	(0.262)
Release Quarter 2 (Dummy)	-0.108	(0.416)	-0.080	(0.432)	-0.371	(0.408)	-0.463	(0.375)	-0.210	(0.313)
Release Quarter 3 (Dummy)	-0.305	(0.358)	-0.289	(0.355)	-0.405	(0.329)	-0.437	(0.310)	-0.390	(0.268)
Comedy Genre (Dummy)	0.220	(0.315)	0.214	(0.323)	0.209	(0.301)	0.193	(0.281)	0.260	(0.256)
Musical Genre (Dummy)	0.092	(0.377)	0.098	(0.374)	-0.101	(0.347)	-0.101	(0.303)	-0.166	(0.285)
Color (Dummy)	1.223	(1.542)	1.160	(1.534)	-0.156	(1.717)	1.506	(1.518)	1.449	(1.339)
Serial (Dummy)	0.075	(0.567)	0.079	(0.590)	0.575	(0.474)	0.391	(0.421)	0.351	(0.409)
Revbox (Dummy)	0.915	(0.915)	0.838	(0.980)	0.103	(0.932)	0.242	(0.786)	0.520	(0.732)
Boweekly (Dummy)	0.320	(1.274)	0.212	(1.379)	-0.483	(1.255)	-0.528	(1.110)	-0.036	(1.038)
	0.298	(1.320)	0.449	(1.357)	1.598	(1.353)	0.589	(1.015)	-0.486	(0.974)
Time Dummies (8)	Yes		Yes		Yes		Yes		Yes	
20th Century	-2.131 *	(0.838)	-2.181 **	(0.829)	-0.837	(0.909)	-1.049	(0.768)	-0.959	(0.771)
Columbia	-1.704 *	(0.750)	-1.756 *	(0.738)	-0.016	(0.853)	-0.577	(0.766)	-0.694	(0.724)
1st National	-1.063	(0.820)	-1.215	(0.834)	0.121	(0.976)	-0.264	(0.841)	-0.374	(0.812)
Fox	-0.166	(0.831)	-0.273	(0.845)	0.946	(0.959)	0.549	(0.827)	0.492	(0.794)
Metro-Goldwyn-Mayer	-0.838	(1.047)	-0.945	(1.056)	0.752	(1.095)	0.451	(1.016)	0.631	(1.018)
Paramount	-1.318 †	(0.772)	-1.420 †	(0.758)	-0.414	(0.726)	-0.237	(0.630)	0.065	(0.606)
RKO	-1.074	(0.705)	-1.013	(0.737)	0.579	(0.742)	0.443	(0.667)	0.433	(0.637)
United Artists	5.853 ***	(1.513)	5.763 ***	(1.524)	2.427	(2.011)	4.167 *	(1.942)	5.170 **	(1.754)
Universal	-0.989	(0.792)	-1.041	(0.789)	0.333	(0.899)	-0.138	(0.777)	-0.281	(0.714)
Warner Brothers	-1.157 †	(0.686)	-1.224 †	(0.684)	0.177	(0.833)	-0.258	(0.744)	-0.235	(0.695)
Warner Brothers/First National	-0.335	(0.832)	-0.381	(0.828)	1.047	(0.981)	0.259	(0.856)	-0.097	(0.807)
Future Collaborations (Periods 1 to 4)	-0.013	(0.011)	-0.011	(0.015)	0.009	(0.013)	0.005	(0.011)	0.009	(0.010)
Project Performance			0.002	(0.010)	-0.001	(0.011)	-0.012	(0.009)	-0.007	(0.008)
Prior Collaboration (Periods -2 to 0)			-0.011	(0.046)	-0.007	(0.041)	-0.026	(0.032)	-0.003	(0.031)
Project Performance x Prior Collaborations (Periods -2 to 0)			0.000	(0.001)	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)
Nonintegrated Studio					5.067 **	(1.608)	-11.007	(6.680)	2.907	(5.370)
Nonintegrated Studio x Project Performance							0.105 †	(0.059)	-0.046	(0.046)
Nonintegrated Studio x Prior Collaboration (Periods -2 to 0)							0.264 ***	(0.077)	-4.057 ***	(1.192)
Nonintegrated Studio x Project Performance x Prior Collaboration (Periods -2 to 0)									0.044 ***	(0.012)
R2	0.6221		0.6230		0.6694		0.7261		0.7796	
Δ R2			0.001		0.046 ***		0.057 ***		0.054 ***	
Wald Test (added variables)			0.18		9.93 **		6.4 **		13.48 ***	
Wald Test (all variables with Nonintegrated Studio)					9.93 **		9.41 ***		10.93 ***	
Wald Test (all variables with Project Performance)			0.03		0.03		1.67		5.96 ***	
Wald Test (all variables with Prior Collaboration (Periods -2 to 0))			0.23		0.52		2.61 †		6.23 ***	
n			239		239		239		239	

Note: Robust standard errors in parantheses.

Significance tests (two-tailed): † p < .10; * p < .05; ** p < .01; *** p < .001

FIGURE 1

Interaction of Project Performance and Prior Collaboration on Future Collaborations (Periods 1 to 4)

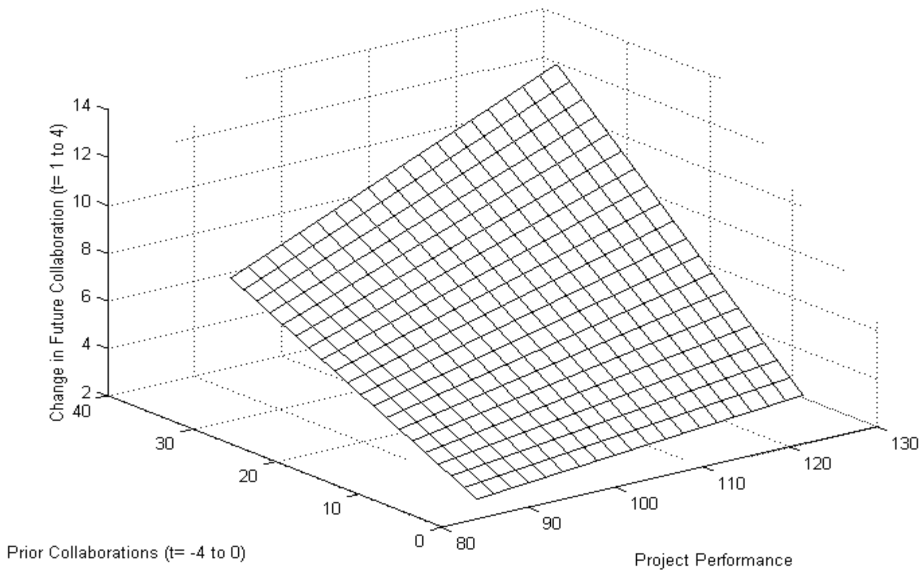


FIGURE 2

Interaction of Project Performance and Prior Collaboration on Future Color Collaborations (Periods 1 to 4) for Color and Non-Color Projects

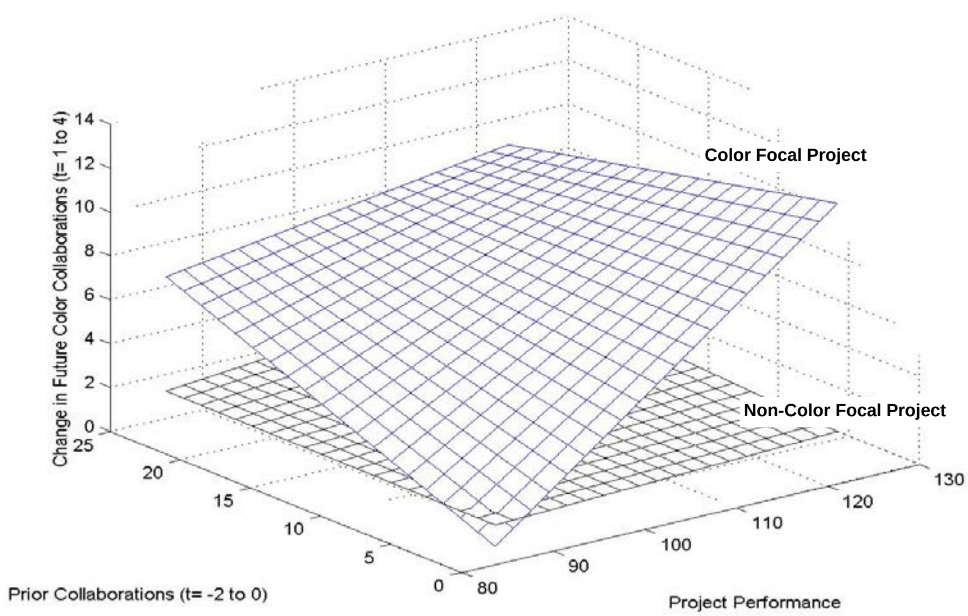
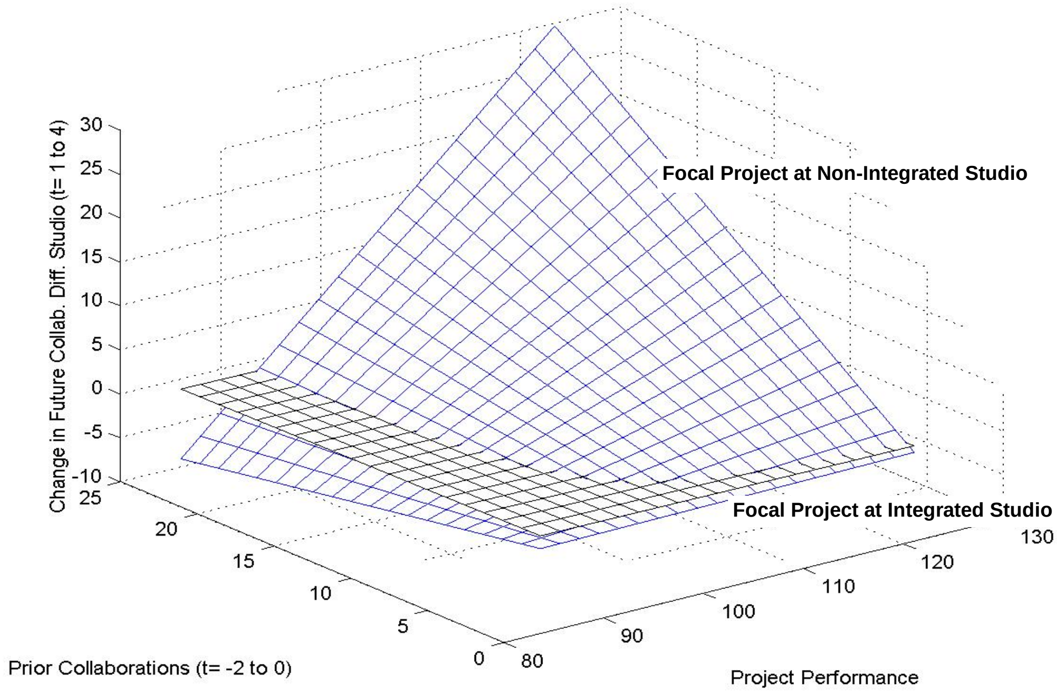


FIGURE 3

Interaction of Project Performance and Prior Collaboration on Future Collaborations at Different Studio (Periods 1 to 4) for Projects at Integrated and Non-Integrated Studios



Note: This graph shows that for focal projects at non-integrated studios the combination of project success and prior collaborations has a strong positive effect on future collaborations governed by a different studio. The corresponding plane shows a strong incline. In contrast, the same factors have no such effect for focal projects at integrated studios and the corresponding plane remains flat.

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