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Los Angeles

Causes and consequences of  
institutional practices in organizations:  
routines, trust, and identity

A dissertation submitted in partial satisfaction of the  
requirements for the degree Doctor of Philosophy  
in Sociology

by

Oliver Siegfried Schilke

2014



## **ABSTRACT OF THE DISSERTATION**

Causes and consequences of  
institutional practices in organizations:  
routines, trust, and identity

by

Oliver Siegfried Schilke

Doctor of Philosophy in Sociology

University of California, Los Angeles, 2014

Professor Lynne Goodman Zucker, Chair

The central thrust of this dissertation is oriented around institutional practices in organizations—i.e., those processes that organizational decision makers take for granted and execute quasi-automatically. My goal is to better understand how such practices emerge and become habitualized over time, how they affect perceptions of the organizational environment, and how they influence organizational success. Specifically, the dissertation analyzes institutional practices as they pertain to (1) routines, (2) trust, and (3) identity.

The first chapter investigates the performance consequences of institutional practices in the form of organizational routines in the domains of alliance management and new product development. I develop the argument that the effectiveness of those routines is highest in “normal” environments but comparatively weaker in both volatile and stable contexts, suggesting

an inverse U-shaped moderation effect of environmental dynamism on the link between those organizational routines and competitive advantage. Longitudinal key informant survey data from 279 firms provide strong support for my position.

Chapter two is concerned with how institutional practices affect perceptions of other organizations in the field. Specifically, I integrate a calculative and a relational perspective on institutions to better understand the sources of organizational trustworthiness perceptions. Using the setting of interfirm alliances and based on dyadic survey data from 171 such alliances, I find that the calculative perspective (represented by contractual safeguards) has higher predictive power when the partner lacks a favorable reputation, whereas the relational perspective (represented by organizational culture) predicts trustworthiness more strongly when familiarity with the partner organization is high.

Finally, the third chapter develops a better understanding of how social cognition affects organizational resistance to institutional pressures. A series of experiments shows that perceiving oneself as part of a larger organizational identity reduces participants' tendency to adopt solutions from competitors. I also find that status (low, high) moderates the organizational identity-resistance link. These findings advance our understanding of micro-level sources of organizational action, bring together the highly complementary but thus far largely separate streams of neoinstitutional and identity research, and inform the emerging research stream of behavioral strategy by shedding new light on the role of cognition for strategic action.

The dissertation of Oliver Siegfried Schilke is approved.

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2014

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**CHAPTER 1**

**ON THE CONTINGENT VALUE OF DYNAMIC CAPABILITIES FOR COMPETITIVE  
ADVANTAGE: THE NONLINEAR MODERATING EFFECT OF ENVIRONMENTAL  
DYNAMISM**

**ABSTRACT**

This paper suggests that dynamic capabilities can give the firm competitive advantage, but this effect is contingent on the level of dynamism of the firm's external environment. A nonlinear, inverse U-shaped moderation is proposed, implying that the relationship between dynamic capabilities and competitive advantage is strongest under intermediate levels of dynamism but comparatively weaker when dynamism is low or high. This proposition is tested using data on alliance management capability and new product development capability, two specific dynamic capabilities widely recognized in prior research. Results based on longitudinal key informant data from 279 firms support the account that these dynamic capabilities are more strongly associated with competitive advantage in moderately dynamic than in stable or highly dynamic environments.

## INTRODUCTION

The dynamic capabilities perspective has emerged as one of the most influential theoretical lenses in the study of strategic management over the past decade. Despite its popularity in the literature, the dynamic capabilities perspective has been criticized for its ill-defined boundary conditions and its confounding discussion of the effect of dynamic capabilities (e.g., Arend and Bromiley, 2009). One important source of concern is that the presence of dynamic capabilities has frequently been equated with environmental conditions characterized by high dynamism (Zahra, Sapienza, and Davidsson, 2006). A turbulent environment, however, is not necessarily a component of, or precondition for, dynamic capabilities, which can exist even in stable environments (Helfat and Winter, 2011). Further, researchers have tended to identify dynamic capabilities post hoc, often equating their existence with successful organizational outcomes. This practice makes it difficult to separate the existence of dynamic capabilities from their effects (Helfat and Peteraf, 2009). Given the above limitations, it has remained difficult to ascertain the value of dynamic capabilities for a firm's competitive advantage, especially under different degrees of dynamism.

This chapter empirically investigates the link between dynamic capabilities and competitive advantage and examines the efficacy of dynamic capabilities under conditions of varying environmental dynamism. To accomplish this goal, I conceptualize dynamic capabilities in terms of organizational routines, thus making them measurable and distinct from a firm's competitive advantage (Eisenhardt and Martin, 2000). I also separate dynamic capabilities from the firm's external environment, which I identify and measure as a contingency factor (Helfat *et al.*, 2007). Making this distinction allows for considering and ultimately reconciling the competing claims regarding the effect of environmental dynamism on the relationship between



dynamic capabilities and competitive advantage. Some propose that the dynamism of a firm's environment may enhance the efficacy of dynamic capabilities and their potential for competitive advantage (Drnevich and Kriauciunas, 2011; Winter, 2003; Zollo and Winter, 2002). Other scholars, however, suggest that, on the contrary, dynamic capabilities may prove less effective in highly dynamic environments (Eisenhardt and Martin, 2000; Schreyögg and Kliesch-Eberl, 2007).

The key contributions of this research are twofold. First, this chapter makes a theoretical contribution by offering a new, integrative position on the relationship between dynamic capabilities, environmental dynamism, and competitive advantage. Integrating existing views, I propose a novel inverse U-shaped moderating effect, implying that the association between dynamic capabilities and competitive advantage is strongest under intermediate levels of dynamism but comparatively weaker when dynamism is low or high. Second, this study makes an empirical contribution by testing this nonlinear interaction effect. In doing so, this chapter contributes to reducing the scarcity of empirical research on the consequences of dynamic capabilities for organizational outcomes (e.g., Helfat and Peteraf, 2009).

## **THEORETICAL BACKGROUND**

### **Dynamic capabilities and competitive advantage**

The dynamic capabilities view may be regarded as an extension of the resource-based view (RBV); while the RBV primarily addresses a firm's existing resources, the dynamic capabilities view emphasizes the reconfiguration of these resources (Helfat and Peteraf, 2003). Prior research suggests that dynamic capabilities are organizational routines that affect change in the firm's existing resource base (Eisenhardt and Martin, 2000; Helfat, 1997; Teece, Pisano, and Shuen, 1997). This definition emphasizes that dynamic capabilities are based on organizational routines,

commonly understood as learned, highly patterned, repetitious behavioral patterns for interdependent corporate actions (Pierce, Boerner, and Teece, 2002; Winter, 2003; Zollo and Winter, 2002). Although the routines underlying dynamic capabilities are not entirely fixed as people perform them across time and space, interpret them subjectively, and ultimately introduce variations (Feldman and Pentland, 2003), Winter (2003) emphasizes that there are clear limits to the degree to which they reflect flexible action with modest continuity across occasions (also see Weick and Sutcliffe, 2006). Therefore, it is important to note that not all organizational change needs to originate from dynamic capabilities; in particular, contingent, creative improvisation is typically not associated with dynamic capabilities as defined here (Winter, 2003).

Interest in dynamic capabilities stems from their potential influence on competitive advantage, the key outcome variable in dynamic capabilities theory (Teece *et al.*, 1997). A firm is said to have a competitive advantage when it enjoys greater success than current or potential competitors in its industry (Peteraf and Barney, 2003). Consistent with this conceptualization, superior firm performance relative to rivals commonly serves as an empirical indicator of competitive advantage.

Traditionally, the literature has assumed a universally positive effect of dynamic capabilities on competitive advantage. By replacing existing resources, dynamic capabilities have been suggested to create better matches between the configuration of a firm's resources and external environmental conditions (e.g., Teece and Pisano, 1994).

### **The contingent role of environmental dynamism**

However, researchers have started to disagree in their assessments of the value of dynamic capabilities. Advocates of a more contingent view posit that the benefits of dynamic capabilities depend not only on the existence of the underlying organizational routines, but also on the

context in which these capabilities are deployed (Levinthal, 2000; Sirmon and Hitt, 2009).

Recognizing that organizational adaptation is at least partly determined by environmental forces (Hrebiniak and Joyce, 1985), recent theoretical accounts on dynamic capabilities have emphasized particularly the role of environmental dynamism as a potentially important contextual variable (Helfat *et al.*, 2007; Helfat and Winter, 2011; Zahra *et al.*, 2006).

This chapter builds on Miller and Friesen's (1983) influential conception that views both volatility (rate and amount of change) and unpredictability (uncertainty) as fundamental characteristics of environmental dynamism. For example, changes in industry structure, the instability of market demand, and the probability of environmental shocks are important elements of environmental dynamism (e.g., Jansen, Van Den Bosch, and Volberda, 2006; Levinthal and Myatt, 1994; Sirmon, Hitt, and Ireland, 2007). Consequently, environments with little dynamism are characterized by infrequent changes, and market participants usually anticipate those changes that do occur. In contrast, highly dynamic environments are those where rapid and discontinuous changes are common. In the middle lie moderately dynamic environments with regular changes that occur along roughly predictable and linear paths.

Currently, there are two competing views on the effect of environmental dynamism on the link between dynamic capabilities and competitive advantage, with little integration of both perspectives. The first view posits that there has to be a critical need to change in order to gain significant value from these capabilities (Drnevich and Kriauciunas, 2011; Helfat *et al.*, 2007; Winter, 2003; Zahra *et al.*, 2006; Zollo and Winter, 2002). This is because building and using dynamic capabilities are costly. These costs typically arise from various activities involved in devising new resources, reconfiguring existing ones, and combinations thereof. Additional costs might accrue if continual reconfigurations of resources unnecessarily disrupt ongoing learning

activities by preventing the firm from recognizing potential differences in the outcome of its resources under different conditions. Other significant costs may result from wrongly estimating the need for resource alterations, which happens when firms use their dynamic capabilities when there is no compelling need for change (Winter, 2003). This can create significant costs because the frequent disruption of the underlying resource base may degrade structural reproducibility and hence decrease an organization's ability to act as a reliable and accountable collective entity.

Clearly, acknowledging that developing dynamic capabilities involves serious costs has implications for their potential value. If a firm rarely has a need to change, its performance relative to competitors may suffer when it devotes significant resources to developing these capabilities. This observation emphasizes the importance of balancing the costs of a given dynamic capability and its actual use. As such, dynamic capabilities can be viewed as “strategic options” (Kogut and Zander, 1996) that allow firms to (re)shape their existing resource base when the opportunity or need arises. The lower the need for change, the less likely the opportunity to “strike” the option, making dynamic capabilities comparatively less valuable. This implies that a firm needs to use its dynamic capabilities repeatedly in order for them to produce significant value (Helfat and Winter, 2011).

Following this logic, in environments characterized by low dynamism, dynamic capabilities can be expected to be of relatively less importance for a firm's competitive advantage. These environments typically reward consistent exploitation of existing resources (Leonard-Barton, 1992; Teece, 2007), whereas constantly reconfiguring resources may disrupt the efficiency and value potential of the firm's resources. Consequently, the positive effect of dynamic capabilities on a firm's competitive advantage will be comparatively low when environmental dynamism is low.

Another group of researchers has stressed that routine-based dynamic capabilities are not always an adequate means of change, even if there is a significant need for resource configurations (Eisenhardt and Martin, 2000; Schreyögg and Kliesch-Eberl, 2007). An important feature of the routines underlying dynamic capabilities is that they are path dependent and therefore based on interpretations and outcomes of past actions (Schreyögg and Kliesch-Eberl, 2007). Routine-based, history-dependent organizational change is typically very effective for adapting locally and incrementally based on past experiences, but research on experiential learning argues that this type of organizational change may prove problematic when previously unknown forces continuously alter the basis of competitive success (Levinthal and Rerup, 2006; March and Levinthal, 1993), as is the case in highly dynamic environments. More specifically, contexts where change is frequent and unpredictable and the environment shifts uncertainly among states that place novel demands on the organization produce two kinds of problems for dynamic capabilities, the first of which I call a “matching problem” and the second an “inertia problem.”

The matching problem is intrinsic to the way in which dynamic capabilities work. Following a patterned stimulus-response logic, they match particular environmental states with certain avenues for organizational change (Levinthal, 2000; Pierce *et al.*, 2002). For this purpose, the environment is monitored, and appropriate organizational changes that proved successful under similar conditions in the past are invoked (Levinthal and Rerup, 2006; March and Levinthal, 1993). For this experience-based matching process to work, however, the organization must have encountered the particular (or at least a comparable) environmental state before. In Weick and Sutcliffe’s (2006) terminology, the environment needs to be in an “in-family” state—a situation that was previously experienced, analyzed, and understood. “Out-of-family” states,

which are common when environmental dynamism is high, pose problems to the effectiveness of dynamic capabilities in that they do not trigger a programmed reactivation of matching organizational change. Given the absence of relevant stimulus knowledge, an out-of-family state may either be ignored or it may become normalized—that is, treated as if it were a familiar event already encountered and understood in the past, and potentially inappropriate organizational responses may in turn be matched to these normalized situations (Levinthal and Rerup, 2006; Weick and Sutcliffe, 2006).

Second, even when environmental states appear familiar and previously successful organizational responses can be identified, this does not necessarily ensure that the same response will again and again be the most effective one (Jansen *et al.*, 2006; Pierce *et al.*, 2002). The automated stimulus-response logic underlying dynamic capabilities, however, tends not to incentivize scrutinization. Given that a proven response to an identified problem exists in organizational memory, experimentation with alternatives becomes less attractive, crowding out explorative activities that would go beyond the beaten track (Levinthal, 1991; Levinthal and Myatt, 1994; Sørensen and Stuart, 2000). This issue is what I call an inertia problem. Importantly, it can not only pertain to an organization's zero-order capabilities but to its dynamic capabilities as well, since routine-based organizational change tends to favor local adaptations (Collis, 1994; Levinthal, 1997; Schreyögg and Kliesch-Eberl, 2007). Especially when environmental dynamism is high and contextual change is fundamental and discontinuous, long-jump reorientations that require entirely novel solutions often prove more beneficial for a firm's competitive advantage than local adaptations from within the current set of available actions (Levinthal, 1997, 2000; Sørensen and Stuart, 2000).

In sum, I propose that highly dynamic environments with their unfamiliar states and demand for novel actions pose distinct challenges to the effectiveness of dynamic capabilities. Matching unfamiliar situations with organizational changes proves difficult and may lead to either unresponsiveness or normalization and, in turn, implementation of inappropriate responses. Additionally, experience-based adaptation is often associated with inertial forces that impede employing less local, more path-breaking changes that are often required for organizations in highly dynamic environments to create a competitive advantage.

Overall, I recognize that environmental dynamism affects both the extent of opportunities to change and the organizational capacity to exploit these opportunities via routine-based change, thus acknowledging the validity of the arguments from both research camps. When environmental dynamism is *low*, the potential of dynamic capabilities is limited because there are few occasions to exercise them effectively. In these situations, organizational routines for adapting the resource base may be of reduced value, in particular when considering the costs associated with them. Therefore, when environmental dynamism is low, I suggest that dynamic capabilities exert a relatively weak influence on the competitive advantage of firms.

I expect that when environmental dynamism is *high*, dynamic capabilities may also have a relatively weak impact on the competitive advantage of firms. Although highly dynamic environments provide ample opportunities for resource reconfigurations, the high frequency of novel situations and the necessity to bring about discontinuous organizational change in these settings make the routine-based mechanisms dynamic capabilities rest on comparatively less appropriate, given the matching and inertia problems associated with them.

In contrast, I expect that dynamic capabilities have the relatively strongest positive effect on the competitive advantage of firms when environmental dynamism is *intermediate*. These

environments are dynamic enough to create opportunities for change but stable enough for organizations to recognize reoccurring problem structures and successfully leverage solutions existing in organizational memory. When environmental dynamism is at the intermediate level, there is both a potential for organizational change, and firms also have the capacity to make good use of the routinized practices that underlie dynamic capabilities. In summary, I expect the positive effect of dynamic capabilities first to increase but then to diminish as environmental dynamism continues to rise, eventually declining at high levels of dynamism. I test this position empirically below.

## **HYPOTHESES**

Dynamic capabilities manifest themselves in various identifiable and specific business processes (Eisenhardt and Martin, 2000; Helfat *et al.*, 2007; Helfat and Winter, 2011). Thus, rather than measuring a necessarily vague, generic dynamic capability, empirical researchers have been advised to carefully select a set of relevant business processes in which these capabilities exist to test their hypotheses (Gruber *et al.*, 2010; Helfat and Peteraf, 2009; Helfat and Winter, 2011). Although selecting a limited number of specific processes as proxies for dynamic capabilities may affect the universality of results, doing so is necessary for empirical research on dynamic capabilities to be practicable. It is through theoretical induction that such empirical research on specific types of dynamic capabilities “sheds light not only on these specific processes, but also on the generalized nature of dynamic capabilities” (Eisenhardt and Martin, 2000, p. 1108).

In this study, I develop and test hypotheses on the contingent dynamic capabilities-competitive advantage link using data on *alliance management capability* and *new product development capability*. I selected these two dynamic capabilities for various related reasons. First, strategic alliances and new product development are essential means for reconfiguring the



organizational resource base. While strategic alliances give firms access to resources that lie outside of their boundaries (Das and Teng, 2000), new product development aims at updating the firm's product portfolio (Helfat and Raubitschek, 2000). Second, existing definitions of both alliance management capability and new product development capability are a good match with the conceptualization of dynamic capabilities adopted here. Helfat *et al.* (2007, p. 66) define alliance management capability as a "type of dynamic capability with the capacity to purposefully create, extend, or modify the firm's resource base, augmented to include the resources of its alliance partners" (see also Schilke and Goerzen, 2010). New product development capability is commonly defined as organizational routines that purposefully reconfigure the organizational product portfolio (Danneels, 2008; Lawson and Samson, 2001; Subramaniam and Venkatraman, 2001). Third, alliance management capability and new product development capability are among the most frequently mentioned types of dynamic capabilities in the extant literature (e.g., Eisenhardt and Martin, 2000; Helfat *et al.*, 2007; Helfat and Winter, 2011; Teece and Pisano, 1994). Fourth, in the explorative fieldwork, alliance management and new product development were the most frequently named types of routine activities for adapting organizations to changes in the environment (see the Method section). Taken together, these two capabilities are particularly representative for the dynamic capabilities concept, which makes them ideal candidates for this study.

In what follows, I develop two hypotheses for the contingent effects of alliance management capability and new product development capability with strong reference to the theoretical argument developed in the preceding section. In line with my more general reasoning, I expect the relationship between these two capabilities and competitive advantage to be the

strongest when environmental dynamism is at intermediate levels and comparatively weaker when dynamism is low or high, as elaborated in greater detail below.

### **Alliance management capability and competitive advantage**

The extant empirical literature finds that alliance management capability tends to be positively related to performance (see Sluyts *et al.*, 2011 for a recent review). Organizations with a strong alliance management capability possess routines that support various alliance-related tasks, such as partner identification and interorganizational learning, that facilitate an effective execution of interfirm relationships (Schilke and Goerzen, 2010; Schreiner, Kale, and Corsten, 2009).

However, building and maintaining an alliance management capability usually requires substantial investments in, for example, a dedicated alliance function that oversees and supports alliance operations (Heimeriks and Duysters, 2007; Helfat *et al.*, 2007; Kale, Dyer, and Singh, 2002). Such a separate, specialized organizational unit captures and codifies alliance-related knowledge from ongoing alliance relationships and disseminates it throughout the firm. Other relevant investments may include setting up alliance-specific intranet databases or holding regular alliance management workshops (Heimeriks, 2010).

While supporting the institutionalization of alliance management capability, such investments are typically associated with nontrivial costs. Consistent with my general theoretical argument regarding the amortization of dynamic capabilities, I suggest that such costs may not be fully justified when the firm has no need to employ alliance management routines on a frequent basis—that is, when it only rarely engages in strategic alliances. One contextual factor that significantly affects the extent of alliance opportunities is environmental dynamism. Analyzing alliance use of manufacturing firms, Dickson and Weaver (1997) find the dynamism of the environment to be a key driver. Similarly, Rosenkopf and Schilling (2007) report that

industries low in dynamism (such as clothing and construction supplies) also scored in the lowest tertile for both alliance participation rates and number of alliances per firm. Thus, the extent to which firms engage in alliances depends (*ceteris paribus*) on the degree of environmental dynamism, with low dynamism providing relatively little need to make sufficient use of alliance management routines so that the costs from alliance management capability would be far outweighed by its gains. Beyond considerations related to direct costs, another source of concern when investing in alliance management capability in relatively stable contexts with few needs for alliances is managers' tendency to feel a necessity to legitimize those investments by promoting, and at times imposing, the use of alliances and related management practices beyond a functional level (Heimeriks, 2010). Based on this reasoning, I suggest that the positive effect of alliance management capability in creating competitive advantage is comparatively small when environmental dynamism is low.

Further, consistent with my earlier general argument regarding the effectiveness of dynamic capabilities in highly dynamic environments, I also submit that very high levels of dynamism may reduce the value creation potential of alliance management capability. This is because alliance management capability rests on routinized practices that leverage lessons learned from prior alliances (Anand and Khanna, 2000; Heimeriks, 2010). In highly dynamic environments, however, the nature of alliances may drastically differ from one relationship to the next. Terjesen, Patel, and Covin (2011), for example, report significant positive associations between environmental dynamism and alliance partner diversity as well as alliance geographic diversity. Given the high degree of novelty firms operating in highly dynamic environments are likely to face in their alliances, matching appropriate routines to these novel settings will prove challenging (matching problem). Additionally, highly dynamic environments may cause an

inertia problem in that alliance management capability may limit a firm's tendency to experiment with alternative behavior. Continued reliance on established information transfer processes, for example, can prevent acquiring new types of knowledge that may prove critical under drastically altered environmental conditions (Hoang and Rothaermel, 2005; Sampson, 2005). Also, firms with strong alliance management capability tend to follow established partner selection protocols (Heimeriks, 2010) and tend to engage in social bonding with their partners (Schreiner *et al.*, 2009), both of which favor repeated ties with the same portfolio of alliance partners. Restricted partner selection, however, may prove particularly detrimental when operating in highly dynamic environments where frequently switching alliance partners is often required in order to gain access to the currently most relevant resources (Kandemir, Yaprak, and Cavusgil, 2006).

At intermediate levels of dynamism, finally, I expect a balance to exist between firms' ability to leverage their alliance management investments and to effectively exploit their experience-based alliance management routines. In these settings, alliances are frequent enough to justify the costs of developing alliance management capability, and environmental states are similar enough to pursue alliance management in a routinized fashion that strongly builds on past experiences and to make effective use of similar types of alliances. Thus:

*Hypothesis 1: The relationship between alliance management capability and competitive advantage is strongest under intermediate levels of environmental dynamism but comparatively weaker when dynamism is low or high.*

### **New product development capability and competitive advantage**

A new product development capability is reflected in organizational routines that structure innovation processes aimed at reconfiguring the firm's product portfolio (Danneels, 2008; Lawson and Samson, 2001; Subramaniam and Venkatraman, 2001). It is commonly assumed

that such routines lead to new product innovations that in turn result in competitive advantage (Lawson and Samson, 2001). However, there is reason to believe that the strength of this positive effect varies across levels of environmental dynamism.

Similar to my discussion of alliance management capability, it is important to note that a new product development capability usually entails durable commitment of funds—e.g., to support skilled personnel, specialized facilities, and state-of-the-art equipment (Helfat *et al.*, 2007). For example, Clark and Fujimoto (1990) find that investing in specialized coordination committees promotes routinized product development. Given the costs of such investments in developing new product development capability, firms need to repeatedly deploy this capability in order to generate revenues from new or improved products for these expenses to pay off (Helfat and Winter, 2011). Whereas new product launches and product overhauls are critical to firms' competitive advantage when contextual conditions change relatively frequently (Song *et al.*, 2005), stable environments often allow firms to sell existing products profitably without much alteration (Hambrick, 1983), making a new product development capability relatively less central to competitive advantage.

In highly dynamic environments, on the other hand, product lifecycles tend to be comparatively short and technological paradigm shifts relatively frequent. Although they provide ample product development opportunities, I propose that environments characterized by high dynamism pose considerable matching and inertia problems that may decrease the relative effectiveness of an experience-based new product development capability. As Brown and Eisenhardt's (1997) study illustrates, highly structured new product development processes are able to rapidly and flawlessly capture opportunities that build on prior product features, but these routines are often unable to accommodate opportunities that are different in kind, suggesting a

possible matching problem between unfamiliar environmental opportunities and appropriate new product development activities. Additionally, relying on experience-based new product development can result in inertia, which can prove particularly problematic when environmental change is frequent and discontinuous. Firms with a strong established new product development capability tend to develop a preference for pursuing incremental product improvements along existing trajectories rather than exploring radically different innovations (Levinthal and Myatt, 1994; Sørensen and Stuart, 2000). The empirical study by Leonard-Barton (1992) corroborates this view, showing that it was precisely new product development routines that brought about dysfunctional restrictions in exploring the scope of alternatives. Further illustrative evidence comes from Helfat *et al.*'s (2007, pp. 49ff.) Rubbermaid case study. Long known as a best-in-class “new product machine” with highly professionalized innovation routines that allowed for continuously and quickly bringing a large number of products to the market, the firm began to struggle when the environment was beginning to change drastically in the early 1990s. During that time, customers became significantly more price conscious and large retailers such as Wal-Mart gained substantial power. These were fundamental changes that Rubbermaid too long seemed to ignore while continuing to reinforce previous recipes for new product innovation success that no longer were appropriate, which ultimately resulted in a deterioration of the firm's competitive advantage.

Overall, I expect new product development capability to be most valuable in moderately dynamic contexts, where product innovation opportunities occur in a relatively frequent but rather incremental fashion. Extant qualitative comparative studies support the notion that environments with moderate dynamism provide an ideal context for new product development capability to unleash its greatest potential. In the moderately dynamic mainframe sector, for

example, Eisenhardt and Tabrizi (1995) find the capability's underlying routines to substantially enhance predictability and effectiveness by coordinating the entire new product development process from initial specification through manufacturing ramp-up whereas such routines were less beneficial in the more dynamic personal computing industry. In summary, when environmental dynamism is at an intermediate level, there is a potential for repeated new product launches that make investments in capability development worthwhile and firms also have the capacity to effectively utilize experience-based new product development routines to create new, successful products that build on existing solutions. Therefore:

*Hypothesis 2: The relationship between new product development capability and competitive advantage is strongest under intermediate levels of environmental dynamism but comparatively weaker when dynamism is low or high.*

## **DATA**

The empirical research comprised three sequential stages. I first conducted qualitative field interviews to learn about types of capabilities relevant to organizational resource reconfiguration, their potential implications for competitive advantage, as well as the intelligibility of a preliminary survey questionnaire. I next developed and conducted a large-scale survey. Three years later, I collected measures for the dependent variable from the same firms that participated in the previous survey.

### **Qualitative field interviews**

The fieldwork included 13 interviews with top-level managers from various industries. Each interview lasted between 45 and 90 minutes and consisted of three parts. In the first part, managers were asked to elaborate on relevant types of routine activities for adapting their organization to changes in the environment. New product development and alliancing turned out

to be among the most frequent responses.<sup>1</sup> In the second part, I scrutinized the study's hypotheses by asking managers how critical these activities are for competitive advantage—both in general and, more specifically, when comparing environments characterized by little, moderate, and substantial changes. There was considerable agreement that organizational change routines can support firms' competitive advantage. Managers disagreed, however, with regard to the relative performance implications under varying degrees of environmental dynamism. Mirroring the different perspectives in the academic literature (see the literature review), some managers maintained that those routines would be valuable in virtually any context. Others suggested that the strongest effect on competitive advantage should be observed in highly dynamic environments, whereas a few managers indicated that routine activities might prove comparatively less useful in highly turbulent environments. In the third and final part of the interviews, managers were asked to fill out a preliminary version of the questionnaire to be used in the subsequent survey study while providing feedback on the clarity of items as well as difficulties in responding to them. As a result of this process, several questionnaire items were reworded or eliminated. Another important insight came from a comment by two managers that, for diversified firms, all questionnaire items should pertain to the business unit rather than the corporate level, as practices may differ substantially between business units, and managers can also provide more reliable information about the particular business unit they are most strongly involved in.

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<sup>1</sup> Other routine activities that were mentioned pertained to information technology, marketing, and mergers.



### **Sample and data for the survey study**

The two focal predictor variables in the hypotheses-testing survey study were alliance management capability and new product development capability. In conceptualizing alliance management capability, I followed prior alliance research (e.g., Eisenhardt and Schoonhoven, 1996) and focused on alliances in research and development (R&D), given the diversity of different forms of alliances and their idiosyncratic goals, policies, and structures. R&D alliances (as opposed to production or marketing alliances, for example) have been argued to be more clearly directed towards reconfiguring organizational resources (Eisenhardt and Schoonhoven, 1996), making them ideal for the purpose of studying an instance of dynamic capability.

The study population comprised firms in the chemicals, machinery, and motor vehicle industries (1) because alliances are frequent in these sectors (Hagedoorn, 1993), (2) because new product development activities play a key role in these industries (Centre for European Economic Research, 2004), and (3) in order to capture a wide variance in the moderating variable environmental dynamism. I obtained contact data for 2,226 firms through Hoppenstedt Firmendatenbank, a large commercial database containing a comprehensive listing of firms located in Germany. Consistent with the relationship criterion approach commonly adopted in alliance research (Koka and Prescott, 2002), I only included firms in this study that were involved in at least one R&D alliance. For this purpose, I employed a professional call center that contacted each of the 2,226 initial firms by telephone and determined whether they currently

participated in R&D alliances.<sup>2</sup> This led me to exclude 840 firms that were not engaged in R&D alliances, resulting in a target population of 1,386 firms who were asked for their participation in this study.

I received 302 usable responses, reflecting a response rate of 21.8 percent, which is consistent with comparable studies using key informant methodology (e.g., Capron and Mitchell, 2009). These 302 informants provided information on all constructs except for the dependent variable (competitive advantage), which I measured with a three-year time lag through a separate survey. My objectives were to establish temporal order of the independent variables (preceding in time) to the dependent variables to enhance causal inference (Biddle, Slavings, and Anderson, 1985) as well as to allow time for the performance effects of dynamic capabilities to materialize (Zahra *et al.*, 2006, p. 947) and also to reduce the threat of a potential common method bias that could have been present had I collected both independent and dependent variables simultaneously (Podsakoff and Organ, 1986). I chose a time lag of three years based on (1) Rindfleisch *et al.*'s (2008) assessment that three years is an appropriate compromise between enhancing causal inference by implementing temporal order in the empirical design while not passing the outcome's end date; (2) Kor and Mahoney's (2005, p. 495) finding in the medical instruments industry that "R&D investments convert into revenue-generating products typically within a period of three years"; and (3) prior usage of a three year lag in longitudinal survey studies on strategic alliances (Rindfleisch and Moorman, 2001, 2003). Of the 302 firms that

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<sup>2</sup> The call center employees were trained extensively and provided with a detailed interview guide. They were instructed to contact top-level managers, preferably heads of R&D or members of the executive board. Names of adequate contact persons were partly extracted from Hoppenstedt or other public sources and partly asked at the telephone switchboard.

responded to the first survey in 2006, nine had ceased to exist because they were acquired or dissolved. In the remaining 293 firms, I contacted the same key informant who participated three years earlier. After several reminders, I received 204 responses from these informants. In order to further increase the number of responses, I tried to contact an alternative top manager if the original informant was no longer available or remained unresponsive, which allowed me to gather information on competitive advantage from an additional 75 firms. Thus, the study's final sample consists of 279 matched questionnaires across times 1 and 2. While this sample size may not be considered very large, it is much in line with sample sizes in other strategy studies (Phelan, Ferreira, and Salvador, 2002) and exceeds common recommendations for advanced statistical analyses (e.g., MacCallum *et al.*, 1999).

Characteristics of the firms and informants in the sample are provided in Table 1-1. To verify the appropriateness of the key informants, questionnaire items asked about their tenure and expertise (Kumar, Stern, and Anderson, 1993). Overall, 73.5 percent of the participants in the final dataset had been with their current firm for 6 years or longer (see Table 1-1). In addition, I assessed respondents' self-reported knowledge of the firm's R&D alliances and innovation-related activities on five-point answer scales ranging from 1 ("poor") to 5 ("excellent"). The means of 4.07 (SD=0.84) and 4.12 (SD=0.72), respectively, suggested that the informants were very well informed.

[Insert Table 1-1 here]

I checked for nonresponse bias in three ways. First, I assessed a nonresponse bias by comparing early and late respondents (Armstrong and Overton, 1977). The results of the t-tests indicated no significant differences ( $p>0.05$ ) across means for each of the theoretical constructs between early and late respondents. Second, I examined whether the nonresponding firms

differed from the responding firms in terms of size and industry segment using information from Hoppenstedt Firmendatenbank. I found no significant differences in either variable ( $p>0.05$ ). Third, I contacted a random sample of nonrespondents and asked them to answer one item for each theoretical construct (Mentzer, Flint, and Hult, 2001). Based on information from 30 nonrespondents, the t-tests of group means revealed no significant differences between respondents and nonrespondents on any of the questions ( $p>0.05$ ). These findings provide consistent evidence that nonresponse bias is not a problem. Kruskal Wallis H tests also showed no significant differences in responses of the four informant groups (i.e., heads of R&D, project leaders in R&D, members of the executive board, miscellaneous).

## **Measures**

I used multi-item scales to measure the independent, dependent, and moderating variables. Consistent with the qualitative interviews, if the respondent worked for a diversified firm, he/she was asked to answer all questions with reference to the business unit for which he/she worked.<sup>3</sup> Table 1-2 lists the measurement items used to operationalize the constructs. When adequate measures were available, I adapted them from prior studies. Following the recommendations of DeVellis (2003), the questionnaire items were further refined through in-depth interviews with 13 managers (described above), an item sorting pretest based on Anderson and Gerbing (1991) administered to 15 scholars, and a pretest of the questionnaire conducted with 21 managers. When possible, survey information obtained from the key informant in the main study was

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<sup>3</sup> While the fact that the sample consists of both firms and business units may be viewed as a limitation, I control for this issue in the empirical analysis as described further below. Reported results are also robust to dropping business units.

triangulated with complementary data sources to establish its accuracy (Homburg *et al.*, 2012), as described below.

### *Competitive advantage*

A firm is said to have a competitive advantage when it enjoys greater success than current or potential competitors in its industry, suggesting that superior firm performance serves as a key indicator of competitive advantage (Barnett, Greve, and Park, 1994; Ghemawat and Rivkin, 1999). Specifically, I operationalized competitive advantage as a two dimensional construct, with the first-order dimensions of (a) strategic performance (qualitative dimension) and (b) financial performance (quantitative dimension), both of which were measured in comparison to competition. Items for the two performance dimensions were adapted from Jap (1999) and Weerawardena (2003).

To corroborate the performance information obtained from key informants, I collected accounting performance data for a subset of 48 companies for which such information was available. Using a public financial database and company reports available on the firms' websites, I obtained information on return on investment (ROI) and return on sales (ROS) for each of the three years preceding the second survey. I then computed the average ROI and ROS for those years and standardized the measures by industry. Subsequently, I correlated this archival data with perceptual responses averaged across the six competitive advantage items. Both measures were significantly correlated (ROI:  $r=0.44$ ,  $p \leq 0.001$ ; ROS:  $r=0.48$ ,  $p \leq 0.001$ ). Although these correlations were relatively lower compared to what Robson, Katsikeas, and Bello (2008) obtained using a similar approach, they compare favorably to several other studies reporting correlations between subjective and archival performance data (e.g., Boyer, 1999; Douglas and Judge, 2001; Krishnan, Martin, and Noorderhaven, 2006).

To provide further evidence for sufficient accuracy, I gathered performance information from a second key informant in a total of 36 firms and calculated ICC(1) to determine the level of interrater reliability. I obtained an ICC(1) of 0.24, which clearly exceeded Bliese's (1998) 0.1 cutoff. Finally, I relied on information on organizational growth, which population ecologists often use as a proxy for competitive advantage (Baum, 1996), to triangulate the dependent variable. For the firms for which such information was available, I computed three-year percentage changes in sales revenues ( $n=48$ ), number of employees ( $n=279$ ), and accounting value of assets ( $n=48$ ) (Helfat *et al.*, 2007) and then correlated these three measures with the average of the items of the competitive advantage construct. I found significant associations for growth in sales revenues ( $r=0.32$ ,  $p\leq 0.01$ ), number of employees ( $r=0.28$ ,  $p\leq 0.001$ ), and accounting value of assets ( $r=0.39$ ,  $p\leq 0.001$ ), which lends further credibility to the perceptual competitive advantage measure.

#### *Alliance management capability*

I used the measure developed by Schilke and Goerzen (2010), which suggests a five-dimensional, second-order structure of the construct, with the underlying dimensions of (a) inter-organizational coordination, (b) alliance portfolio coordination, (c) inter-organizational learning, (d) alliance proactiveness, and (e) alliance transformation. Inter-organizational coordination pertains to the governance of individual alliances, whereas alliance portfolio management involves the integration of the firm's various strategic alliances. Inter-organizational learning reflects routines designed to facilitate knowledge transfers across organizational boundaries. Alliance proactiveness can be defined as routine efforts to identify potentially valuable partnering opportunities. Finally, alliance transformation concerns routines to modify alliances over the course of the alliance process.

I corroborated the subjective alliance management capability measure by correlating it with the firm's prior alliance experience, a widely used proxy for alliance management capability (Anand and Khanna, 2000; Hoang and Rothaermel, 2005). To measure alliance experience, I asked respondents to indicate the number of prior agreements with R&D alliance partners within the last five years and used a logarithmic transformation to correct skewness. This variable was then correlated with the composite score of the alliance management capability construct, computed as the simple average of its dimensions' items. Both measures were significantly correlated ( $r=0.27$ ;  $p\leq 0.001$ ), which supported the validity of the perceptual measure.

#### *New product development capability*

To capture the firm's new product development capability, I relied on the measurement items introduced by He and Wong (2004). These items gauge the extent to which a firm routinely carries out innovation projects aimed at entering new product domains. I triangulated this measure with archival information on R&D intensity (R&D expenditures divided by revenues), which has often been used as a proxy for innovation-related dynamic capabilities in archival research (Helfat, 1994a, 1994b, 1997). For the 48 firms for which relevant secondary data was available, I found a strong positive association with the average of the survey items ( $r=0.30$ ;  $p\leq 0.001$ ).

#### *Environmental dynamism*

Environmental dynamism refers to the volatility and unpredictability of the firm's external environment (Miller and Friesen, 1983). To capture dynamism, I used items developed by Miller and Friesen (1982) and Jap (1999). For the purpose of validating managers' perceptions of environmental dynamism, I applied two archival indexes measuring instability in sales and net assets (Sutcliffe, 1994). To compute these indexes, I regressed sales and net assets for a period of

three years prior to the survey on a variable representing the time period and divided the standard errors of the regression by the mean level of the dependent variable (Dess and Beard, 1984).

Correlations of these indexes with the subjective measure of dynamism were 0.36 (n=48) and 0.38 (n=48), respectively; both were significant at  $p \leq 0.001$ . These positive and highly significant correlations exceeded those obtained by Sharfman and Dean (1991) in a similar analysis and supported the validity of the perceptual measure of environmental dynamism. Furthermore, complementary perceptual information from 36 secondary key informants was used to determine interrater reliability. I obtained an ICC(1) of 0.20, which clearly exceeds the common 0.1 threshold.

#### *Control variables*

Consistent with Li, Poppo, and Zhou (2008), I considered industry effects, firm size, and firm age as controls. In addition, I controlled for the firm's alliance portfolio size, product scope, market scope, and process innovation, responses pertaining to either a firm or a business unit, and the use of either the same or a different respondent during the second data collection wave, as elaborated below.

*(a) Industry effects.* The importance of the industry in which a firm competes as a predictor of firm-level variables is widely recognized in the literature (Dess, Ireland, and Hitt, 1990). To control for industry effects, I used dummy variables, specifying the chemicals industry as the base to which the effects of the other dummies (machinery and motor vehicles) were compared.

*(b) Firm age.* Firm age has been suggested to influence a firm's competitive advantage (Zahra, Ireland, and Hitt, 2000) as well as the extent of patterned forms of behavior that underpin dynamic capabilities (Helfat and Peteraf, 2003). I measured firm age in terms of the number of years since the establishment of the firm, classifying the number of years into 6 categories



(ranging from 1 for firms that are younger than five years to 6 for firms that are 50 years or older) (Capron and Mitchell, 2009).

(c) *Firm size*. Firm size can enhance competitive advantage by, for example, facilitating access to a lower cost of capital while simultaneously lowering risk (Chang and Thomas, 1989). Firm size may also influence the firm's dynamic capabilities, with larger firms being able to dedicate more resources to developing their change routines. Size was assessed based on a firm's total number of full-time employees (ranging from 1 for firms that have fewer than 100 employees to 6 for firms that have 5,000 or more employees).

(d) *Alliance portfolio size*. Previous research has associated a firm's number of alliances with performance outcomes (Powell, Koput, and Smith-Doerr, 1996) and with innovation intensity (Hagedoorn and Schakenraad, 1994). Additionally, firms with a large alliance portfolio can be expected to have strongly institutionalized alliance management routines. I measured alliance portfolio size by the firm's total number of current alliances (Jiang, Tao, and Santoro, 2010) and logarithmized this measure to reduce skewness.

(e) *Product and market scope*. In line with Zott and Amit (2008), I controlled for the breadth of the firm's product offering and targeted market, as these are key dimensions of a firm's strategy that may affect its competitive advantage and capability development. I adopted the questionnaire items for these two variables from Zott and Amit (2008).

(f) *Process innovation*. Process innovation refers to the introduction of new elements into an organization's operations. I measured process innovation with the item "We have frequently improved manufacturing or operational processes," which has previously been used by Su, Tsang, and Peng (2009).

(g) *Firm unit of analysis*. Because the sample comprises one set of observations for firms and another set of observations for business units within firms (as mentioned above), I followed the approach by Mithas, Ramasubbu, and Sambamurthy (2011) and used a dummy (1=firms and 0=business units) to account for this difference.

(h) *Same respondent*. I used a dummy variable to control for the fact that in a subset of firms, the informant used in t=2 differed from the informant used in t=1. The dummy was coded as 1 when the identical respondent was used in both waves of data collection.

[Insert Table 1-2 here]

### **Measurement properties of constructs**

Table 1-2 reports coefficient alphas ( $\alpha$ ), composite reliabilities (CR), and average variances extracted (AVE) for the study's first-order, multi-item constructs. The values obtained indicate reliable and valid measures of the individual constructs. After assessing the constructs individually, I performed a confirmatory factor analysis among all first-order factors, using the structural equation modeling software AMOS 16.0 (Arbuckle, 2007) and the maximum likelihood (ML) procedure (Hair *et al.*, 2006). The measures of goodness of fit had satisfactory values ( $\chi^2=1,013.80$ ;  $df=741$ ;  $\chi^2/df=1.37$ ; CFI=0.95; GFI=0.87; TLI=0.94; RMSEA=0.04). Following Fornell and Larcker (1981), I assessed the discriminant validity of the factors in the model and found that the square root of the average variance extracted by the measure of each factor is larger than the absolute value of the correlation of that factor's measure with all measures of other factors in the model, as reported in Table 1-3.

[Insert Table 1-3 here]

### **Common method bias**

Although using key informants is common in research on organizational capabilities in order to obtain required data on intrafirm processes (e.g., Capron and Mitchell, 2009; Danneels, 2008; Gruber *et al.*, 2010; Kemper, Schilke, and Brettel, forthcoming), common method bias might pose a problem in such studies (Podsakoff and Organ, 1986). To safeguard against this possibility, I undertook several steps. First, and most importantly, measures of the dependent variable were collected in a separate survey (Podsakoff and Organ, 1986). Second, I performed Harman's one factor test by loading all indicators of the study constructs into an exploratory factor analysis. Results revealed that no single factor explained more than 30 percent of the total variance in the variables, suggesting that common method bias was unlikely to be a serious problem in this study. Additionally, I also applied Harman's one factor test using confirmatory factor analyses (McFarlin and Sweeney, 1992), which compared a single-factor model with the proposed 19-factor model. Results showed that the single factor model had a significantly worse fit ( $\chi^2_{\text{diff}}=1232.33$ ;  $df_{\text{diff}}=170$ ;  $p \leq 0.01$ ). These findings, along with those reported earlier regarding the significant associations between subjective and archival measures, indicated that common method bias was not a serious concern in this study.

### **METHOD AND RESULTS**

To test the hypotheses, I analyzed nonlinear interactions using OLS regression based on the procedure outlined by Jaccard (2003). This involved averaging the items for each construct (in case of a multi-dimensional construct, averaging the items for all of the construct's dimensions), mean centering interacting variables, calculating the square of the moderating variable (environmental dynamism), constructing linear as well as squared product terms, and finally estimating the following regression equation:

$$\begin{aligned}
\text{Competitive advantage} = & a + b_1 \text{ machinery} + b_2 \text{ motor vehicles} + b_3 \text{ firm age} + b_4 \text{ firm size} + \\
& b_5 \text{ alliance portfolio size} + b_6 \text{ product scope} + b_7 \text{ market scope} + \\
& b_8 \text{ process innovation} + b_9 \text{ firm unit of analysis} + b_{10} \text{ same} \\
& \text{respondent} + b_{11} \text{ alliance management capability} + b_{12} \text{ new product} \\
& \text{development capability} + b_{13} \text{ environmental dynamism} + \\
& b_{14} \text{ environmental dynamism squared} + b_{15} \text{ alliance management} \\
& \text{capability} \times \text{environmental dynamism} + b_{16} \text{ new product} \\
& \text{development capability} \times \text{environmental dynamism} + b_{17} \text{ alliance} \\
& \text{management capability} \times \text{environmental dynamism squared} + \\
& b_{18} \text{ new product development capability} \times \text{environmental} \\
& \text{dynamism squared} + e
\end{aligned}$$

A significant coefficient of the squared moderator product term (here:  $b_{17}$  and  $b_{18}$ ) would indicate the presence of quadratic moderation, suggesting that the relationship between the independent variable and the outcome varies as a nonlinear function of the moderator. More specifically, a positive coefficient suggests a U-shaped pattern whereas a negative coefficient indicates an inverse U-shaped pattern, the latter of which would be in line with the hypotheses.

Table 1-4 summarizes the regression results. Model 1 includes controls only, and model 2 adds the direct effects of alliance management capability, new product development capability, and environmental dynamism. Model 3 additionally includes linear interaction terms. Model 4 is my main model and introduces squared interaction terms. Inspection of variance inflation factors (VIF) among the explanatory variables in all four models revealed the highest VIF to be 2.49. This suggests that no problematic multicollinearity is present (Kleinbaum, Kupper, and Muller, 1988). Inspecting the results of model 4, the regression coefficient of 0.37 indicates a positive

and highly significant ( $p \leq 0.01$ ) relationship between alliance management capability and competitive advantage. The coefficient of new product development capability shows that firms with a stronger new product development capability have a significantly higher competitive advantage ( $b=0.39$ ;  $p \leq 0.01$ ). As such, both dynamic capabilities have a positive relationship with competitive advantage. Among the control variables, firm size is significantly related to competitive advantage ( $b=0.12$ ;  $p \leq 0.01$ ).

[Insert Table 1-4 here]

With regard to the hypotheses, the negative and highly significant coefficients of the two squared product terms suggest that the relationships between the two dynamic capabilities and competitive advantage vary across different levels of environmental dynamism in a quadratic manner. The nature of the interactions is illustrated in Figure 1-1. The graphs in this figure represent associations between alliance management capability and competitive advantage (panel A) and new product development capability and competitive advantage (panel B) across different levels of environmental dynamism. To create these graphs, the regression equation was examined at different levels of environmental dynamism, using the margins command implemented in STATA 11. The vertical axes of the graphs represent values of regression coefficients for alliance management capability and new product development capability, respectively, and the horizontal axes represent values of environmental dynamism between 2 standard deviations below and above the mean (i.e., between 1.21. and 5.21).

[Insert Figure 1-1 here]

The proposed inverse U-shaped relationship between dynamic capability and competitive advantage across increasing levels of environmental dynamism is apparent in both graphs. As shown in panel A of Figure 1-1, for firms that experience a low or a high level of environmental

dynamism, the coefficient for the regression of competitive advantage on alliance management capability is comparatively low and, at very low levels of environmental dynamism, nonsignificant. However, at intermediate levels of environmental dynamism, the association was strongly positive and significant. Panel B shows an analogous inverse U-shaped graph for the regression of competitive advantage on new product development capability. These illustrations, together with the significant quadratic interaction terms, provide empirical support for hypotheses 1 and 2.

In comparing the two graphs, it becomes apparent that the range for which the respective regression coefficient is significant is located at slightly higher levels of environmental dynamism in the case of alliance management capability (between 2.3 and 4.9) as compared to new product development capability (between 2.1 and 4.4). This observation suggests that alliance management capability has a positive impact on competitive advantage at relatively higher levels of environmental dynamism when compared to new product development capability.

## **POST-HOC ANALYSES**

Four supplemental analyses demonstrated the robustness of the results. First, I conducted the Hausman (1978) endogeneity test (e.g., Wooldridge, 2008), using two instruments that have previously been identified as correlates of dynamic capabilities: willingness to cannibalize and organizational slack (Danneels, 2008). The first instrument was measured with the item "We support projects even if they could potentially take away sales from existing products" and the second instrument was captured by "My firm has a reasonable amount of resources in reserve" (Danneels, 2008). Hausman's (1978) endogeneity test was not significant for both alliance management capability and new product development capability ( $p > 0.1$ ), which attenuated

concerns of endogeneity in the empirical analysis. Second, I reestimated the regression model using strategic and financial performance (instead of the competitive advantage construct) as dependent variables. Results did not change qualitatively from the original model specification. The effects of alliance management capability and new product development capability remained positive and statistically significant at  $p \leq 0.01$ , and the effects of the squared interaction terms remained negative and statistically significant at  $p \leq 0.01$  in both alternative models. Third, as an alternative approach for examining nonlinear moderation, I estimated a spline (instead of a polynomial) specification, in which I broke environmental dynamism into linear splines knotted at the median and interacted these splines with alliance management capability and new product development capability. The interactions were positive up to the median and then became negative, in line with hypotheses 1 and 2 (full results for this specification are available upon request). Fourth, I also used multi-group structural equation modeling to test for moderation (Byrne, 2001; Hair *et al.*, 2006). Please see Appendix 1 for details. The results of the multi-group analyses lent further support to hypotheses 1 and 2.

## **DISCUSSION**

This paper presented two hypotheses suggesting that the effects of both alliance management capability and new product development capability on a firm's competitive advantage vary as a nonlinear function of environmental dynamism. More specifically, building on dynamic capabilities theory as well as alliance and new product development literature, I proposed that these two capabilities would have the strongest positive impact on competitive advantage under intermediate levels of environmental dynamism, whereas their impact would be comparatively weaker in stable and highly dynamic contexts. I tested these hypotheses empirically and found strong support for my position. The analyses indicated that the effects of the two capabilities on

competitive advantage are highest when environmental dynamism is moderate and comparatively lower when environmental dynamism is low or high.

Two somewhat contradictory positions exist on the value of dynamic capabilities under different levels of environmental dynamism. One suggests that their effect on competitive advantage is comparatively smaller at low levels of dynamism (Drnevich and Kriauciunas, 2011; Helfat *et al.*, 2007; Winter, 2003; Zahra *et al.*, 2006; Zollo and Winter, 2002), while the other raises doubts about their effectiveness in highly dynamic environments (Eisenhardt and Martin, 2000; Schreyögg and Kliesch-Eberl, 2007). Integrating these views, I found evidence for an inverse U-shaped contingent relationship where the effect of dynamic capabilities on competitive advantage is highest in moderately dynamic environments but lower under low and high levels of environmental dynamism.

Interestingly, the multi-group analyses (see Appendix 1) showed that the positive effects of the two capabilities on competitive advantage were still statistically significant in the high dynamism subgroup. This finding appears to contradict Eisenhardt and Martin's (2000) and Schreyögg and Kliesch-Eberl's (2007) argument that dynamic capabilities do not confer a competitive advantage in these settings. It suggests a less extreme position in that these capabilities can be strategically valuable even in high velocity environments, possibly because an inventory of established change repertoires can indirectly facilitate novel action by providing the fodder for new recombinations (Levinthal and Rerup, 2006; Wirtz, Mathieu, and Schilke, 2007). Nonetheless, it is important to note that the efficacy of dynamic capabilities decreased significantly when moving from medium to high environmental dynamism, consistent with this paper's argument that they exert their relatively strongest positive impact when dynamism is at intermediate levels.



This study contributes to research on dynamic capabilities in several ways. First, it provides empirical support for the notion that dynamic capabilities, like most ways of organizing, should not be regarded as a universal, one-fits-all solution. The study's findings help delineate boundary conditions for dynamic capabilities theory—an important precondition for any theory to move forward. Second, the study establishes that environmental dynamism plays a key role in the link between dynamic capabilities and competitive advantage. The chapter therefore contributes to answering “‘under what conditions does the presence of DC in firms generate competitive advantage?’: arguably one of the most interesting questions in the field of strategic management today” (Verona and Zollo, 2011, p. 537). Rather than focusing on dynamic contexts only, the study's multi-industry design allowed for contrasting the efficacy of dynamic capabilities in settings with varying dynamism. This research, thus, heeds calls for empirical studies that “explicitly compare the effects of similar dynamic capabilities in two or more clearly distinct environmental conditions” (Barreto, 2010, p. 276). Results indicate significant differences among these settings, underlining the importance of considering the degree of environmental dynamism when making claims about performance implications of dynamic capabilities. Overall, this study thus helps reduce ambiguities regarding the role of environmental dynamism in the dynamic capabilities framework (Zahra *et al.*, 2006). Third, this work makes a theoretical contribution by integrating existing theorizing on the contribution of dynamic capabilities under varying levels of dynamism. I acknowledge both the cost argument (Winter, 2003; Zahra *et al.*, 2006; Zollo and Winter, 2002), which suggests that stable environments may not provide sufficient opportunities to cover the costs of developing dynamic capabilities, as well as the familiarity/discontinuity argument (Eisenhardt and Martin, 2000; Schreyögg and Kliesch-Eberl, 2007), which implies that rule-based, experiential routines may be inappropriate to deal

with unfamiliar situations and abrupt change typical for highly dynamic environments. The U-shaped moderation proposed and tested here implies that both arguments are valid and that the interaction among dynamic capabilities, environmental dynamism, and competitive advantage may be more complex than a simple linear relationship considered by earlier work (e.g., Drnevich and Kriauciunas, 2011).

In terms of managerial implications, the results suggest that investments in building dynamic capabilities (such as alliance management capability and new product development capability) are strategically justified in many firm environments. As noted, dynamic capabilities reconfigure a firm's resource base, and managers need to pay attention to building and exploiting these capabilities in ways that generate a competitive advantage. Even though some of the routines develop accidentally, others require managers' patient investments and foresight in deciding where and how to build these capabilities as well as how to deploy them to achieve a competitive advantage. Dynamism could alter the fabric of the industry and cause the decay of the firm's resources or render them strategically irrelevant. Therefore, managers need to ensure the effectiveness of their firm's dynamic capabilities.

The study's empirical findings help clarify a key contingency that influences the efficacy of dynamic capabilities. They point to striking differences in the dynamic capabilities-competitive advantage relationship between settings characterized by different degrees of environmental dynamism. Nonetheless, several limitations need to be acknowledged, some of which suggest important avenues for future research. For example, although this data set included a broad range of manufacturing firms representing a variety of industries, care should be exercised in generalizing the results. Future studies may scrutinize the study's findings in other settings, possibly incorporating a greater number of different industries, countries, and/or

time periods in order to ensure even higher levels of variance of environmental dynamism in the data set. Future researchers also need to determine whether the moderating role of the environment on the relationship between dynamic capabilities and competitive advantage also extends to other environmental characteristics, such as the type of industry (e.g., goods versus services) and its stage of evolution (e.g., emerging versus mature). Going beyond context-specific differences, future research should also engage with firm-specific differences in the link between dynamic capabilities and competitive advantage, exploring organizational characteristics (such as organizational culture or organizational structure) that may influence the effectiveness of dynamic capabilities.

Furthermore, firms develop multiple types of dynamic capabilities (e.g., in the fields of alliances and new product development, but also in information technology, marketing, and mergers); thus, the effects of other capabilities, along with their potential complementarities (Levinthal, 2000), should also be investigated. Moreover, we need deeper insight into the variety of mechanisms that underlie the performance effects of capabilities; the current study's limited focus on the direct effect of dynamic capabilities clearly needs to be augmented by research aimed at studying intervening theoretical effects. For example, future research should study the intervening role of inertia by controlling for how long a firm has retained a given capability. Other research may also shed light on the amount of time it takes for different types of capabilities in different industries to materialize in measurable outcomes. Moreover, this study has adopted a rather narrow definition of dynamic capabilities that focuses on experience-based, rather static routines and excludes more flexible forms of organizational change (consistent with, for example, Pierce *et al.*, 2002; Winter, 2003; Zollo and Winter, 2002). Future (possibly qualitative) research should take up the challenge of investigating the interplay between highly

routinized and ad hoc resource reconfiguration in greater detail. Finally, I also expect interactions between dynamic capabilities and higher-order dynamic capabilities (routines for adapting established change routines) to play a significant role (Collis, 1994; Levinthal and Rerup, 2006), an important topic, which warrants further theorizing and empirical investigation.

In conclusion, the findings presented here suggest that dynamic capabilities have more complicated performance effects than previously assumed, ranging from nonsignificant in very stable and very dynamic settings to strongly positive in moderately dynamic environments. I hope that the more nuanced approach developed here spurs further empirical research that helps us better understand the intricacies of the consequences of dynamic capabilities.

## TABLES AND FIGURES

**Table 1-1: Sample composition**

	<b>Sample in t=1 (n=302)</b>	<b>Sample in t=2 (n=279)</b>
<b>Industry</b>		
Machinery	55.2%	54.1%
Chemicals	21.0%	22.6%
Motor vehicles	23.8%	23.3%
<b>Firm size</b>		
<100 employees	4.3%	3.2%
100-249 employees	34.8%	35.5%
250-499 employees	23.8%	24.4%
500-999 employees	16.2%	15.4%
1,000-4,999 employees	12.3%	12.5%
≥5,000 employees	8.6%	9.0%
<b>Firm age</b>		
<5 years	2.6%	2.9%
5-9 years	4.0%	3.9%
10-19 years	12.9%	11.1%
20-29 years	8.9%	9.7%
30-49 years	16.9%	18.3%
≥50 years	54.6%	54.1%
<b>Position of respondent</b>		
Head of R&D	62.8%	63.8%
R&D project leader	17.0%	15.4%
Member of executive board	8.7%	8.2%
Other (e.g., head of construction, CTO)	11.6%	12.5%
<b>Tenure of respondent in firm</b>		
≤1year	4.6%	3.3%
2-5 years	21.8%	16.3%
6-10 years	24.9%	29.3%
11-15 years	15.3%	16.3%
≥16 years	33.3%	35.0%

**Table 1-2: Measurement scales**

				Mean/SD
<b>Competitive advantage</b>				4.80/0.95
<i>("strongly disagree" [1] to "strongly agree" [7])</i>				
<b>Strategic performance</b>	$\alpha=0.73$	CR=0.75	AVE=0.50	
1a We have gained strategic advantages over our competitors.				5.29/1.10
1b We have a large market share.				5.13/1.39
1c Overall, we are more successful than our major competitors.				4.98/1.20
<b>Financial performance</b>	$\alpha=0.93$	CR=0.93	AVE=0.81	
2a Our EBIT (earnings before interest and taxes) is continuously above industry average.				4.49/1.37
2b Our ROI (return on investment) is continuously above industry average.				4.42/1.27
2c Our ROS (return on sales) is continuously above industry average.				4.47/1.31
<b>Alliance management capability</b>				4.61/1.06
<i>("strongly disagree" [1] to "strongly agree" [7])</i>				
<b>Inter-organizational coordination</b>	$\alpha=0.85$	CR=0.85	AVE=0.59	
3a Our activities with R&D alliance partners are well coordinated.				5.18/1.67
3b We ensure that our work tasks fit with those of our R&D alliance partners very well.				4.84/1.70
3c We ensure that our work is synchronized with the work of our R&D alliance partners.				4.59/1.67
3d There is a great deal of interaction with our R&D alliance partners on most decisions.				4.96/1.53
<b>Alliance portfolio coordination</b>	$\alpha=0.91$	CR=0.91	AVE=0.73	
4a We ensure an appropriate coordination among the activities of our different R&D alliances.				4.25/1.72
4b We determine areas of synergy in our R&D alliance portfolio.				4.32/1.74
4c We ensure that interdependencies between our R&D alliances are identified.				4.02/1.67
4d We determine if there are overlaps between our different R&D alliances.				4.59/1.73
<b>Inter-organizational learning</b>	$\alpha=0.88$	CR=0.88	AVE=0.64	
5a We have the capability to learn from our R&D alliance partners.				5.20/1.37
5b We have the managerial competence to absorb new knowledge from our R&D alliance partners.				4.71/1.47
5c We have adequate routines to analyze the information obtained from our R&D alliance partners.				4.93/1.49
5d We can successfully integrate our existing knowledge with new information acquired from our R&D alliance partners.				4.86/1.48
<b>Alliance proactiveness</b>	$\alpha=0.88$	CR=0.88	AVE=0.65	
6a We strive to preempt our competition by entering into R&D alliance opportunities.				4.46/1.74
6b We often take the initiative in approaching firms with R&D alliance proposals.				4.20/1.71
6c Compared to our competitors, we are far more proactive and responsive in finding and 'going after' R&D partnerships.				3.89/1.61
6d We actively monitor our environment to identify R&D partnership opportunities.				4.57/1.50
<b>Alliance transformation</b>	$\alpha=0.83$	CR=0.83	AVE=0.62	
7a We are willing to put aside contractual terms to improve the outcome of our R&D alliances.				4.18/1.60
7b When an unexpected situation arises, we would rather modify an R&D alliance agreement than insist on the original terms.				4.90/1.46
7c Flexibility, in response to a request for change, is characteristic of our R&D alliance management process.				4.89/1.43

<b>New product development capability</b>	$\alpha=0.81$	CR=0.83	AVE=0.55
Objectives for undertaking innovation projects in the last 3 years: (“not important” [1] to “very important” [7])			
8a Introduce new generation of products			5.77/1.34
8b Extend product range			5.42/1.42
8c Open up new markets.			6.02/1.04
8d Enter new technology fields			4.68/1.58
<b>Environmental dynamism</b>	$\alpha=0.81$	CR=0.81	AVE=0.47
(“strongly disagree” [1] to “strongly agree” [7])			
9a The modes of production/service change often and in a major way.			2.73/1.18
9b The environmental demands on us are constantly changing.			3.80/1.47
9c Marketing practices in our industry are constantly changing.			3.18/1.27
9d Environmental changes in our industry are unpredictable.			3.51/1.40
9e In our environment, new business models evolve frequently.			2.85/1.29
<b>Alliance portfolio size</b>			
10a How many alliances is your firm/business unit involved in at present?			7.08/18.68
<b>Product scope</b>			
Strategic objectives: (“not important” [1] to “very important” [7])			
11a Breadth of product offering (pursuing a narrow, focused product scope)			4.67/1.45
<b>Market scope</b>			
Strategic objectives: (“not important” [1] to “very important” [7])			
12a Breadth of targeted market segments (pursuing a narrow, focused market scope)			3.85/1.52
<b>Process innovation</b>			
(“strongly disagree” [1] to “strongly agree” [7])			
13a We have frequently improved manufacturing or operational processes.			5.04/1.45
<b>Firm unit of analysis</b>			
(“no” [0], “yes” [1])			
14a Please indicate whether your responses pertain to a non-diversified firm (as opposed to a business unit in a diversified firm with several business units).			0.89/0.32

**Table 1-3: Descriptive statistics and discriminant validity**

Factor	Scale	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 Strategic performance	1-7	5.13	0.99	0.71																		
2 Financial performance	1-7	4.46	1.23	0.56	0.90																	
3 Inter-organizational coordination	1-7	4.89	1.37	0.33	0.16	0.77																
4 Alliance portfolio coordination	1-7	4.30	1.52	0.28	0.25	0.63	0.85															
5 Inter-organizational learning	1-7	4.93	1.24	0.33	0.29	0.68	0.60	0.80														
6 Alliance proactiveness	1-7	4.28	1.41	0.44	0.33	0.61	0.54	0.67	0.81													
7 Alliance transformation	1-7	4.66	1.29	0.16	0.12	0.50	0.34	0.51	0.49	0.79												
8 New product development capability	1-7	5.47	1.09	0.56	0.30	0.39	0.29	0.43	0.49	0.25	0.74											
9 Environmental dynamism	1-7	3.21	1.00	-0.03	0.07	-0.02	0.03	-0.04	0.04	0.01	0.11	0.69										
10 Machinery	0/1	0.54	0.50	0.09	-0.06	-0.09	-0.06	-0.12	-0.10	-0.05	0.00	0.03	n/a									
11 Motor vehicles	0/1	0.23	0.42	-0.04	-0.05	0.12	0.03	0.08	0.03	0.03	-0.02	-0.07	-0.60	n/a								
12 Firm age	1-6	4.99	1.38	0.17	0.03	0.04	0.00	0.06	0.03	0.16	0.09	-0.08	0.01	-0.02	n/a							
13 Firm size	1-6	3.25	1.37	0.24	0.16	0.20	0.15	0.19	0.17	0.03	0.19	-0.08	-0.22	0.26	0.28	n/a						
14 Alliance portfolio size	n/a	1.32	0.92	0.15	0.08	0.11	0.13	0.18	0.28	0.01	0.24	0.08	-0.06	-0.11	0.02	0.22	n/a					
15 Product scope	1-7	4.67	1.45	-0.01	-0.04	-0.01	-0.01	-0.04	0.00	0.15	-0.04	0.22	0.15	-0.05	-0.04	-0.16	-0.07	n/a				
16 Market scope	1-7	3.85	1.52	-0.05	-0.12	-0.03	-0.04	0.02	-0.05	-0.03	-0.01	0.10	0.04	0.03	-0.03	-0.21	-0.10	0.42	n/a			
17 Process innovation	1-7	5.04	1.45	0.17	0.09	0.26	0.13	0.18	0.27	0.17	0.47	0.16	0.12	-0.05	-0.09	0.00	0.12	-0.03	-0.02	n/a		
18 Firm unit of analysis	0/1	0.89	0.32	-0.03	-0.02	-0.09	-0.14	-0.09	0.00	-0.02	-0.05	0.02	0.05	-0.07	-0.04	-0.22	-0.09	0.00	-0.01	0.10	n/a	
19 Same respondent	0/1	0.73	0.44	-0.10	-0.13	0.00	-0.01	-0.03	0.00	-0.05	-0.08	-0.04	0.07	-0.05	-0.03	-0.11	0.07	0.03	0.03	0.01	0.01	n/a

Notes: n=279; numbers on the diagonal show square roots of AVE, numbers below the diagonal show correlations; AVE not available for single-item constructs; correlations with absolute value >0.17 are significant at the 1% level and >0.12 at the 5% level.

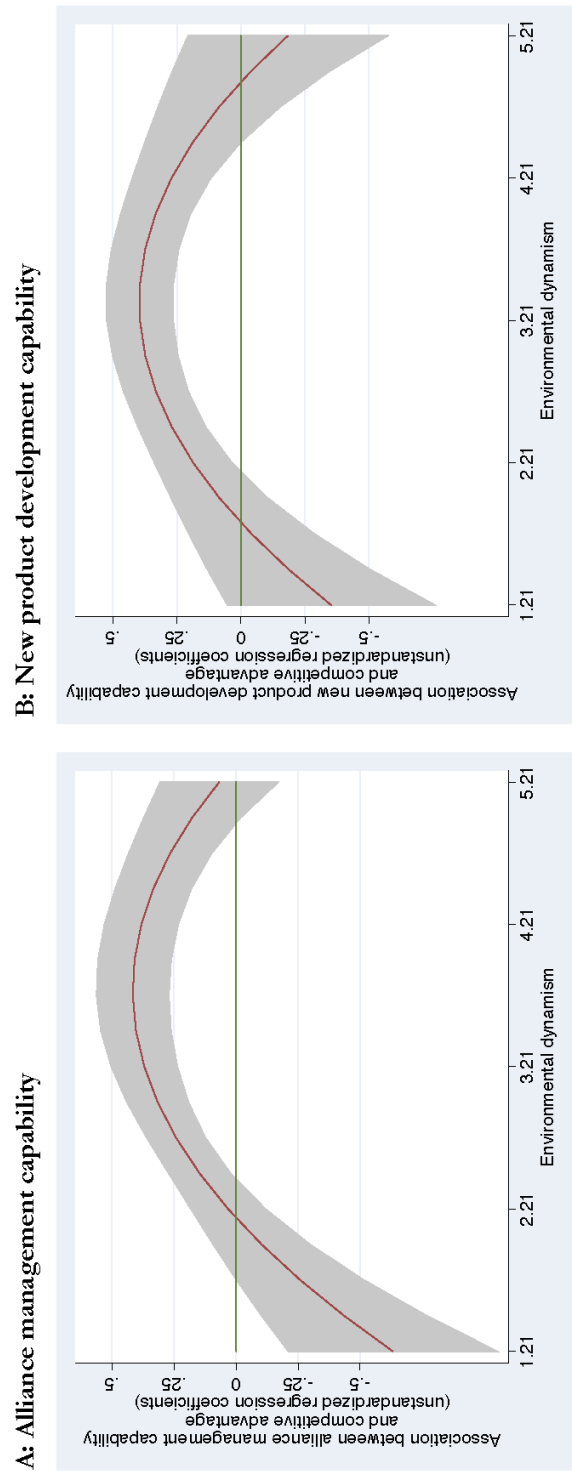


**Table 1-4: Regression results**

<b>Variables</b>	<b>Coefficient</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
Intercept	a	3.94** (0.44)	2.33** (0.46)	4.84** (0.42)	4.91** (0.39)
<u>Controls</u>					
Machinery	b <sub>1</sub>	-0.05 (0.14)	0.01 (0.13)	0.00 (0.13)	0.05 (0.12)
Motor vehicles	b <sub>2</sub>	-0.24 (0.17)	-0.22 (0.16)	-0.23 (0.16)	-0.09 (0.15)
Firm age	b <sub>3</sub>	0.03 (0.04)	0.00 (0.04)	0.00 (0.04)	0.00 (0.04)
Firm size	b <sub>4</sub>	0.14** (0.05)	0.10** (0.04)	0.11** (0.04)	0.12** (0.04)
Alliance portfolio size	b <sub>5</sub>	0.05 (0.06)	-0.03 (0.06)	-0.06 (0.06)	-0.09 (0.06)
Product scope	b <sub>6</sub>	0.02 (0.04)	0.01 (0.04)	0.01 (0.04)	0.02 (0.04)
Market scope	b <sub>7</sub>	-0.03 (0.04)	-0.04 (0.04)	-0.04 (0.04)	-0.05 (0.04)
Process innovation	b <sub>8</sub>	0.09** (0.04)	-0.05 (0.04)	-0.04 (0.04)	-0.04 (0.04)
Firm unit of analysis	b <sub>9</sub>	0.02 (0.18)	0.12 (0.16)	0.16 (0.16)	0.10 (0.15)
Same respondent	b <sub>10</sub>	-0.24* (0.13)	-0.20 <sup>†</sup> (0.11)	-0.21 <sup>†</sup> (0.11)	-0.16 (0.11)
<u>Predictors</u>					
Alliance management capability	b <sub>11</sub>		0.22** (0.05)	0.22** (0.05)	0.37** (0.07)
New product development capability	b <sub>12</sub>		0.27** (0.06)	0.28** (0.06)	0.39** (0.07)
Environmental dynamism	b <sub>13</sub>		0.03 (0.05)	0.01 (0.05)	0.05 (0.05)
Environmental dynamism squared	b <sub>14</sub>				0.00 (0.04)
Alliance management capability × Environmental dynamism	b <sub>15</sub>			0.08 (0.05)	0.18** (0.06)
New product development capability × Environmental dynamism	b <sub>16</sub>			0.11 <sup>†</sup> (0.06)	0.04 (0.05)
Alliance management capability × Environmental dynamism squared	b <sub>17</sub>				-0.16** (0.04)
New product development capability × Environmental dynamism squared	b <sub>18</sub>				-0.17** (0.05)
R-squared		0.10	0.26	0.28	0.37
Adjusted R-squared		0.06	0.22	0.24	0.33

Notes: n=279; unstandardized coefficients and standard errors (in parentheses) are reported;  
<sup>†</sup>p≤0.10; \*p≤0.05; \*\*p≤0.01.

**Figure 1-1: The relationship between dynamic capabilities and competitive advantage as a function of environmental dynamism (with 95% confidence interval)**



## APPENDIX 1: MULTI-GROUP ANALYSES

For the purpose of conducting multi-group structural equation modeling, the sample was split along the values of the moderator variable of environmental dynamism to create three equally-sized subsamples reflecting low, medium, and high dynamism (each with  $n=93$ ; mean levels of environmental dynamism: 2.15 [low], 3.14 [medium], and 4.75 [high], respectively). I then analyzed a structural model simultaneously in the three subsamples using AMOS. This structural model related alliance management capability (modeled as a five-dimensional reflective second-order construct) and new product development capability to competitive advantage (modeled as a two-dimensional reflective second-order construct) and also included the significant control variables firm size, alliance portfolio size, and process innovation along with their structural paths to the two capabilities and competitive advantage (I previously confirmed in a full-sample structural model that dropping nonsignificant controls did not substantially affect the other structural paths while substantially improving model fit: BIC [full structural model]=1,766.90; BIC [trimmed structural model]=857.29). Results revealed that neither alliance management capability ( $\beta=-0.05$ ) nor new product development capability ( $\beta=0.18$ ) were associated with competitive advantage in the low dynamism subsample ( $p>0.1$ ). These capabilities had the strongest association with competitive advantage in the medium dynamism group (alliance management capability:  $\beta=0.53$ ;  $p\leq 0.01$ ; new product development capability:  $\beta=0.66$ ;  $p\leq 0.01$ ). In the high dynamism subsample, they were still significantly associated with competitive advantage (alliance management capability:  $\beta=0.26$ ;  $p\leq 0.1$ ; new product development capability:  $\beta=0.48$ ;  $p\leq 0.05$ ), although the strength of these effects was markedly lower compared to the medium dynamism subgroup.  $\chi^2$ -tests indicated highly significant differences in the coefficient for the path from alliance management capability to competitive advantage when comparing the

low and medium dynamism group ( $\chi^2_{\text{diff}}=13.21$ ;  $\text{df}_{\text{diff}}=1$ ;  $p\leq 0.01$ ) as well as the medium and high dynamism group ( $\chi^2_{\text{diff}}=5.72$ ;  $\text{df}_{\text{diff}}=1$ ;  $p\leq 0.05$ ). Similarly, the path coefficients from new product development capability to competitive advantage differed significantly between the low and the medium dynamism group ( $\chi^2_{\text{diff}}=5.12$ ;  $\text{df}_{\text{diff}}=1$ ;  $p\leq 0.05$ ) and between the medium and high dynamism group ( $\chi^2_{\text{diff}}=4.24$ ;  $\text{df}_{\text{diff}}=1$ ;  $p\leq 0.05$ ). Given potential concerns related to sample size in structural equation modeling (cf. Iacobucci, 2010), I replicated the multi-group analyses using OLS regression, which yielded highly comparable results (which are available on request).

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## **CHAPTER 2**

### **SOURCES OF ALLIANCE PARTNER TRUSTWORTHINESS: INTEGRATING CALCULATIVE AND RELATIONAL PERSPECTIVES**

#### **ABSTRACT**

Research on the sources of organizational trustworthiness remains bifurcated. Some scholars have adopted a calculative perspective, stressing the primacy of actors' rational calculations, while others have approached trustworthiness from a relational perspective, focusing on its social underpinnings. We help to reconcile these seemingly disparate views by adopting an integrative approach that allows us to clarify the boundaries of both perspectives. Based on dyadic survey data from 171 strategic alliances, we find that the calculative perspective (represented by contractual safeguards) has higher predictive power when the partner lacks a favorable reputation. In contrast, the relational perspective (represented by organizational culture) predicts trustworthiness more strongly when familiarity with the partner organization is high.

## INTRODUCTION

While scholarly interest in the role of trustworthiness in an organizational context has proliferated substantially in recent years (Fulmer and Gelfand, 2012; Zaheer and Harris, 2006), the literature has remained fragmented (McEvily, Perrone, and Zaheer, 2003). In particular, two distinct perspectives on the sources of trustworthiness have been distinguished, a calculative and a relational account (Kramer, 1999). Whereas proponents of the calculative view tend to adopt an economic frame and consider trustworthiness to be based on rational calculations, the relational perspective is anchored in sociological and psychological thinking and gives primacy to the social underpinnings of trustworthiness.

While the calculative and the relational research programs derive from different assumptions, integration of ideas from both perspectives is important (cf. Kramer, 1999; McEvily and Zaheer, 2006) because, as we will argue, each perspective alone provides only a partial account of the underlying basis of trustworthiness. Moreover, existing empirical studies do not allow for a direct comparison of the predictive power of these respective perspectives or for determination of the specific conditions under which the factors identified as most relevant in each perspective apply.

This study helps to integrate the calculative and relational perspectives on trustworthiness and investigates relevant contextual circumstances that determine their scope. First, we identify specific antecedents to trustworthiness representative of each perspective. Then, we develop hypotheses regarding the conditions that determine which of the two perspectives has stronger predictive power. A key contribution of our study is to establish the relative importance of the calculative and the relational perspectives to trustworthiness under different conditions. Identifying such boundary conditions is an essential theoretical tool for reconciling conflicting

approaches (Gray and Cooper, 2010) and for increasing conceptual precision (Leavitt, Mitchell, and Peterson, 2010; Peteraf, Di Stefano, and Verona, forthcoming). Our ultimate goal, therefore, is the development of a more generalizable theory of context that would help explain the conditions under which different antecedents of trustworthiness are more or less relevant (McEvily, 2011; McEvily and Tortoriello, 2011; Zaheer and Harris, 2006).

We chose strategic alliances as the research setting to empirically test our integrative theoretical model. Strategic alliances can be defined as interorganizational relationships that allow otherwise independent firms to share a variety of resources (Anand and Khanna, 2000). Because trustworthiness is a particularly important issue in relationships characterized by high uncertainty, interdependence, and threats of opportunism (Deakin and Wilkinson, 1998; Rousseau *et al.*, 1998), strategic alliances—in which these characteristics are typically very salient (Leiblein, 2003)—provide an ideal context for this study. Specifically, we analyze current rather than prospective alliances and thus focus on trustworthiness perceptions in ongoing relationships rather than on preexisting trustworthiness prior to alliance formation.

## **CONCEPTUAL BACKGROUND AND HYPOTHESES**

Trust and trustworthiness have become key concepts in research on exchange relationships (Cook and Schilke, 2010; Hardin, 2002). While scholars have used the term trust broadly to denote a wide variety of issues, including dispositional traits, mutual orientation, and actual behavior, the concept of trustworthiness (that we focus on in this paper) is more specific and thus less ambiguous in that it refers to perceived characteristics of a trustee (Cook, Hardin, and Levi, 2005; McEvily and Tortoriello, 2011). An exchange partner who is trustworthy is one that will not exploit the other's exchange vulnerabilities (Mayer, Davis, and Schoorman, 1995). Three factors have been proposed to constitute relevant first-order dimensions of trustworthiness:

the trustee's perceived ability, benevolence, and integrity (Mayer *et al.*, 1995). This three-dimensional model is sometimes referred to as the ABI-framework (Pirson and Malhotra, 2011), and it has become the dominant model for conceptualizing trustworthiness in organizational research (McEvily and Tortoriello, 2011). Ability refers to the trustor's perception that the trustee can accomplish the specific task at hand effectively. Benevolence refers to the trustor's perception that the trustee cares for him or her and has his or her best interests at heart. Integrity refers to the trustor's perception that the trustee is committed to an acceptable set of principles. In this conceptualization, trustworthiness may refer not only to persons, but also to collective actors or firms (Schilke and Cook, forthcoming; Schoorman, Mayer, and Davis, 2007). Thus, the conceptualization is applicable in the context of strategic alliances where trustworthiness pertains to a specific partner firm.

What makes the concept particularly appealing for strategy research is that trustworthiness has the potential to be a source of competitive advantage (Barney and Hansen, 1994; Dyer and Singh, 1998). Trustworthiness varies between firms because it typically results from unique historical conditions and is socially complex (Tyler, 2001). In addition, trustworthiness may lead to lower transaction costs (Dyer and Chu, 2003) and enhanced learning (Becerra, Lunnan, and Huemer, 2008; Li, Poppo, and Zhou, 2010; Szulanski, Cappetta, and Jensen, 2004), suggesting a positive relationship between trustworthiness and performance outcomes (Dyer and Singh, 1998). Thus, Barney and Hansen (1994) consider trustworthiness to be an important source of competitive advantage.

### **Antecedents to trustworthiness**

Given the significance of the trustworthiness concept in strategic management, it becomes important to understand the intricacies of the sources of trustworthiness. While the

beneficial consequences of trustworthiness are well accepted in the literature, there is less agreement on how trustworthiness develops (cf. Becerra and Gupta, 2003; Poppo, Zhou, and Ryu, 2008). Kramer (1999) observes two disparate positions in the literature regarding relevant sources of trustworthiness, the calculative and the relational perspectives. This calculative-relational dichotomy is now widely acknowledged in the literature (e.g., Das and Teng, 2001; Gulati and Nickerson, 2008; McEvily and Zaheer, 2006; Saporito, Chen, and Sapienza, 2004; Zaheer and Harris, 2006; Zahra, Yavuz, and Ucbasaran, 2006) and can be considered an instance of the more general distinction between economic and behavioral perspectives in strategy research (Zajac, 1992).

Scholars following the *calculative* approach tend to focus on the instrumental motives that drive trustworthy behavior (e.g., Axelrod, 1985; Gambetta, 1988; Schelling, 1960). Actors are presumed to be motivated to make rational, efficient choices about trustworthy behavior in an effort to maximize expected gains and/or to minimize expected losses from their transactions. A conscious calculation of the advantages and disadvantages of behaving in a trustworthy manner drives these choices. Therefore, an actor will be perceived as trustworthy only if there are adequate grounds for believing that it would be in that party's economic interest to be trustworthy (Hardin, 1992), especially when negative sanctions in the case of defection outweigh the potential benefits of opportunistic behavior (Lane, 1998). Other major reasons for perceiving someone as trustworthy are typically rejected or considered to be exceptions by researchers who adopt the calculative approach (Bromiley and Harris, 2006), making expected punishment the primary "motivator" for calculus-based trustworthiness (Lewicki and Bunker, 1996).

Scholars adopting a *relational* perspective, on the other hand, tend to focus more on social and attitudinal underpinnings of trustworthiness (e.g., Mayer *et al.*, 1995; McAllister,

1995; Tyler and Kramer, 1996). In this view, trustworthiness is based on a social orientation, and identity and values are seen as important drivers of trustworthiness (Kramer, Brewer, and Hanna, 1996; Tyler and Degoe, 1996). The exchange partner's normative or cognitive commitment to institutionalized rules and ways of behaving are considered key to explaining trustworthy behavior (Beckert, 2009). A common feature of research in this tradition is an emphasis on social rather than instrumental motives that drive trustworthiness, including consideration of how actors' self-presentational concerns and identity-related needs and motives influence trustworthy behavior. It is important to note that Kramer's (1999) conceptualization of the term "relational" deviates from the more narrow usage of the term in studies such as Dyer and Singh (1998) or Poppo et al. (2008), which tend to equate the term "relational" with a dyad-level unit of analysis. We adopt Kramer's use of the term in this study. His conceptualization includes, but is not restricted to the dyad level. Most notably, the trustee's values constitute an important organizational- as opposed to dyad-level antecedent to trustworthiness in Kramer's (1999) framework.

We agree with Lane (1998) and Kramer (1999) who argue for the importance of reconciling these views concerning the antecedents to trustworthiness. Rather than seeing calculative and relational factors as incompatible, Kramer (1999) calls for research that would develop a contextual account and simultaneously incorporate both economic considerations and social inputs in trustworthiness decisions. "In other words, what is needed is a conception of organizational trust that incorporates calculative processes as part of the fundamental arithmetic of trust, but that also articulates how social and situational factors influence the salience and relative weight afforded to various instrumental and non-instrumental concerns" (Kramer, 1999: 574). Similarly, McEvily and Tortoriello (2011: 41) advocate the development of "a

generalizable theory of context that explains when and under which conditions different components of trust are more or less relevant.”

Our study addresses the call for more inclusive as well as situation dependent considerations of different sources of trustworthiness in the context of strategic alliances. Before turning our attention to contingency factors, we identify specific calculative and relational factors that are relevant sources of the trustworthiness of alliance partners. We selected *contractual safeguards* and *organizational culture* for two reasons. First, these factors have a particularly strong conceptual fit with the calculative and the relational approach, respectively. Contractual safeguards affect perceptions of trustworthiness based on calculative grounds, whereas relational values explain the mechanism through which organizational culture drives trustworthiness (as we discuss in greater detail below). Second, focusing on contractual safeguards and organizational culture is consistent with the influential theoretical framework of Barney and Hansen (1994), which differentiates between governance mechanisms and values as key drivers of trustworthiness. It is also consistent with the work of Bacharach and Gambetta (2001), which emphasizes the importance of governance norms and moral principles in judgments of trustworthiness. Taken together, we consider contractual safeguards and organizational culture to be specific representations of calculative and relational sources of trustworthiness in the context of strategic alliances.

*Contractual safeguards.* Barney and Hansen (1994) describe contracts that govern the interorganizational relationship as an important source of trustworthiness. Contractual safeguards define what constitutes opportunistic behavior and specify the consequences for offending parties (Malhotra and Lumineau, 2011; Parkhe, 1993; Reuer and Ariño, 2007); the trustee undertakes to cede something of value in the event of committing a breach of contract

(Lumineau and Quélin, 2012). Comprehensive contractual safeguards make it economically beneficial for the trustee to behave in a trustworthy manner and thus provide an incentive structure that gives credibility to the trustee's commitments (Baker, Gibbons, and Murphy, 1994; Deakin and Wilkinson, 1998). In this way, contractual safeguards provide ex ante systems to ensure reciprocity and an obligatory framework to restrain private incentive seeking by the trustee (Lumineau and Malhotra, 2011; Poppo and Zenger, 2002). In his comprehensive treatment, Sitkin (1995) describes four general mechanisms through which legalistic structures, such as contractual safeguards, can foster trustworthiness perceptions: by reducing the risk involved in ascribing high trustworthiness, by channeling action toward trustworthy behavior, by encouraging learning during the process of putting the structures in place, and by promoting faith in trustworthy action beyond what can be explicitly monitored. As a result, contractual safeguards can elevate the trustor's perceptions of the alliance partner's trustworthiness.

*Organizational culture.* Moreover, Barney and Hansen (1994) argue that exchange parties may be trustworthy because opportunistic behavior would violate their values, principles, and internalized behavioral standards. At the firm-level, the trustee's organizational culture—understood as the complex set of values, beliefs, assumptions, and symbols that define the way a firm conducts its business (Barney, 1986)—represents such “principled” trustworthiness. The organizational culture serves as an expression to the firm's employees of how things are done and prioritized (Barney and Hansen, 1994). Importantly, cultural ideals tend to apply not only internally, but also to the relationships outside the organization (Adler, Goldoftas, and Levine, 1999; Dyer and Ouchi, 1993), underscoring the relevance of organizational culture to the ways in which employees deal with alliance partners (Beugelsdijk, Koen, and Noorderhaven, 2006). In



line with the relational approach, it is thus argued that a partner firm can be viewed as trustworthy because of its internal organizing rules and values.

More specific predictions about the role of organizational culture as a source of trustworthiness require the identification of a particular type of organizational culture that is associated with trustworthy firms. Based on the qualitative findings of Larson (1992) and Dodgson (1993), high trustworthiness of alliance partners tends to be related to those organizational cultures that are receptive to external inputs, which is characteristic of a clan culture, one of the four types of organizational cultures proposed by Cameron and Freeman (1991). Focusing on clan culture is also consistent with McEvily *et al.* (2003: 92) who “view trust as most closely related to the clan organizing principle.” Clan culture refers to the degree to which an organization’s underlying values and assumptions emphasize collective goals, participation, and teamwork (Cameron and Quinn, 1999). It promotes goal congruence and reduces the inclination of organizational members to behave opportunistically (Perrone, Zaheer, and McEvily, 2003). This implies that a clan culture encourages boundary spanners to harmonize the interests of both alliance partners and, thus, constitutes an important driver of a partner firm’s trustworthiness (Perrone *et al.*, 2003).

We suggest that both contractual safeguards and clan culture have an important bearing on alliance interactions and affect perceptions of the trustworthiness of alliance partners. This leads us to the following two baseline hypotheses:

*Hypothesis 1: The greater the extent of contractual safeguards, the greater the perceived trustworthiness of the alliance partner.*

*Hypothesis 2: The greater the prevalence of a clan culture within the partner firm, the greater the perceived trustworthiness of the alliance partner.*

## Contextualization

We have reason to believe, however, that these hypothesized relationships are not always equally strong. In particular, we propose that information asymmetries regarding the trustee's true qualities differ between settings and that such differences affect the relative importance of the proposed calculative and relational sources of trustworthiness. In certain settings, the trustor has relatively little relevant information about the true characteristics of the exchange partner (Barney and Hansen, 1994; Cook et al., 2005; Sydow, 1998). In these situations, contractual protections are a particularly important means of assuring trustworthiness, whereas the lack of detailed knowledge of a partner firm's characteristics diminishes the effect of the cultural antecedent to trustworthiness. However, with decreasing information asymmetries, relational factors begin to outweigh costly calculative sources of trustworthiness as the trustor's confidence in the assessment of the trustee increases. In what follows, we apply this general line of thinking to examine two concrete mechanisms through which information asymmetries between alliance partners are alleviated: familiarity and reputation. We select these two contingencies because reputation is frequently mentioned as a relevant reducer of information asymmetries by researchers who emphasize calculative factors (e.g., Bolton and Ockenfels, 2009; Chen, 2000; Hill, 1990), while familiarity is viewed as central to the relational perspective (e.g., Child, 2001; Dekker and van den Abbeele, 2010; Luhmann, 1979).

*Familiarity.* Familiarity can be defined as the degree to which one party in an exchange relationship is knowledgeable of the characteristics of the other party. Familiarity is often based on previous communication, experience, and learning (Gefen, Karahanna, and Straub, 2003; Luhmann, 1979). It is well accepted that familiarity enables a firm to gain a deeper understanding of the alliance partner's procedures and ways of doing business (Dekker and van

den Abbeele, 2010; Sherwood and Covin, 2008; Zollo, Reuer, and Singh, 2002) and that it increases the degree to which the trustor is able to “read” the trustee (Carson *et al.*, 2003). The “social knowledge” that enables the trustor to understand general patterns of highly familiar trustees also allows the trustor to predict future trustee behavior (Larson, 1992; Poppo *et al.*, 2008; Tolbert, 1988).

In particular, familiarity should foster confidence in the trustor’s assessment of the alliance partner’s culture and its implications for trustworthiness. That is, familiarity makes culture-based inferences about future behavior more salient and reliable and, thus, strengthens the link between clan culture and perceived trustworthiness. Conversely, when partner familiarity is low, trustworthiness cannot be adequately anchored to specific observed beliefs and procedures. The complex nature of an organization’s culture makes it difficult to observe (Child, 2001), especially when relevant first-hand experience with the organization is lacking. Consequently, with low familiarity, firms may not be reasonably assured that cultural values of the alliance partner can credibly predict trustworthy behavior.

Based on the discussion above, we suggest that the degree of familiarity affects the absolute strength of the effect of clan culture on trustworthiness in that this effect is stronger when familiarity is high. In addition, we expect the degree of familiarity to also affect the relative influence of clan culture and contractual safeguards in such a way that the former outweighs the latter when familiarity is high. As suggested by Gulati (1995) and McKnight, Cummings, and Chervany (1998), trustworthiness beliefs based on cautious contracting among unfamiliar partners give way to trustworthiness perceptions that are based on cultural characteristics as partner firms become acquainted. Hence:

*Hypothesis 3a: The relationship between clan culture and perceived trustworthiness is stronger when familiarity is high rather than low.*

*Hypothesis 3b: The relationship between clan culture and perceived trustworthiness is stronger than the relationship between contractual safeguards and trustworthiness when familiarity is high.*

*Reputation.* A partner firm's reputation is an important signal reducing information asymmetries about its characteristics (Weigelt and Camerer, 1988). Reputation is defined as the firm's favorable standing in the community that is based on its recognized achievements (e.g., Deephouse and Carter, 2005; Radbourne, 2003). We posit that imposing contractual constraints will have a relatively less strong effect on perceived trustworthiness as the reputation of the partner increases. Since developing a favorable reputation involves a significant investment and represents a valuable asset (Afuah, 2013; Dasgupta, 1988; Hill, 1990; Scott and Walsham, 2005), it is rational for alliance partners with a good reputation to behave in a trustworthy manner even in the absence of detailed and extensive contractual safeguards. A trust breach is more costly for these firms, and that is why reputation reduces the demand for copious contracts to ensure exchange partner trustworthiness (Coleman, 1990; Cook *et al.*, 2005; Lewicki and Bunker, 1996). On the contrary, in constellations where the alliance partner lacks reputational assets, the need to rely on comprehensive contracts to ensure trustworthiness is higher (Hill, 1990). In these settings, detailed contractual safeguards will be a crucial instrument in specifying the trustworthiness of the alliance partner, and we expect contractual provisions to outweigh cultural perceptions as drivers of perceived trustworthiness. Therefore, we hypothesize:

*Hypothesis 4a: The relationship between contractual safeguards and perceived trustworthiness is stronger when reputation is low rather than high.*

*Hypothesis 4b: The relationship between contractual safeguards and perceived trustworthiness is stronger than the relationship between clan culture and perceived trustworthiness when reputation is low.*

## **METHOD**

### **Sample and data collection**

The nature of our hypotheses required gathering key informant data from two parties involved in an alliance—the trustee and the trustor. Such a matched sample design also reduces the threat of common method bias, which would have been problematic had we collected both independent and dependent variables from the same source (Podsakoff *et al.*, 2003).

We chose strategic alliances in the area of research and development (R&D) as the empirical setting because the number of such R&D alliances has grown immensely (Hagedoorn, 2002) and because we wanted to ensure a sufficient homogeneity of the research domain (Eisenhardt and Schoonhoven, 1996). In addition, we followed Robson, Katsikeas, and Bello (2008) and focused on ongoing bilateral alliances between for-profit firms because of their wide prevalence and the idiosyncratic goals, policies, and structures of other forms of alliances. We are aware that these restrictions may affect the generalizability of our results, but we believe they were required to enhance the study's internal validity (Mohr and Spekman, 1994).

Data were gathered in Germany during six phases. In the first phase, we obtained an initial list of 3,326 firms from *Hoppenstedt Firmendatenbank*, a commercial database containing contact information for approximately 250,000 German enterprises. The 3,326 firms in our target

population were affiliated with one of the following industries: machinery, chemicals, motor vehicles, electronics, and information technology. We selected these industries since they have been found to be among the most prolific in alliance activity (e.g., Grant and Baden-Fuller, 2004). In the second phase, we contacted each firm by phone to inquire whether it currently participated in an R&D alliance (cf. Lunnan and Haugland, 2008). The reason for aiming at ongoing (as opposed to past) alliances was that key informant reports are more reliable and valid when they pertain to issues that are relatively recent (Homburg *et al.*, 2012). Based on the responses from the phone calls, we sent questionnaires to 1,893 eligible firms in the third phase. These questionnaires contained items pertaining to clan culture as well as firm-level control variables. We targeted heads of R&D as primary key informants in our study. Because these managers are responsible for overseeing the firm's R&D activities, they are knowledgeable about R&D agreements with other firms, making them appropriate respondents. After a three-wave mailing approach via e-mail (Dillman, 2000), a total of 512 responses were returned. This corresponds to a response rate of 27.0 percent, which is in line with comparable studies using top managers as key informants (e.g., Lunnan and Haugland, 2008; Tsang, 2002).

In the fourth phase, we contacted the 512 managers again and requested a list of up to three R&D partner firms as well as the name of an appropriate key informant in each partner firm. In total, 210 managers provided contact information for at least one alliance partner along with information on contractual safeguards and relationship-specific control variables, resulting in a response rate of 41.0 percent. Given the high confidentiality of alliance partner information (Carson, 2007), this can be considered a satisfactory response. Reasons for declining to list the alliance partners included legal issues, general firm policies, and lack of support from the executive board. In the fifth phase, we contacted the managers in the partner firms by phone and

asked them for their participation in our study. We sent the questionnaires that contained items pertaining to their views of the trusting party as well as alliance-related issues to those managers who agreed to participate. In the introductory comments of our survey, we asked these executives to relate their responses only to this specific alliance of their firm (Tsang, 2002). After various telephone and e-mail reminders, the sixth phase concluded our data collection with a total of 180 responses. Nine informants failed a post-hoc respondent competency test (Kumar, Stern, and Anderson, 1993), yielding usable data on 171 dyads. While this sample size may not be considered very large, it is very much in line with other strategy studies using primary data (cf. Phelan, Ferreira, and Salvador, 2002, p. 1166). The characteristics of the firms and respondents in our sample are summarized in Table 2-1.

[Insert Table 2-1 here]

To verify the appropriateness of the key informants, questionnaire items asked about the tenure and alliance-related knowledge of the respondent (Kumar *et al.*, 1993). More than two-thirds of the participants in our final dataset had been with their current firm for 6 years or longer (Table 2-1). In addition, the mean of the item that assessed the respondent's self-reported knowledge of the R&D alliance on a five-point scale, ranging from 1 ("poor") to 5 ("excellent"), was 4.31 (SD = 0.67) among focal firms and 4.41 (SD = 0.73) among partner firms, suggesting that the respondents were very well informed. Overall, the results pertaining to key informant competency were comparable with those reported in similar studies (e.g., Poppo *et al.*, 2008; Robson *et al.*, 2008).

For all rounds of survey data collection, we checked for non-response bias in three different ways. First, we assessed a non-response bias by comparing early and late respondents (Armstrong and Overton, 1977). Specifically, we tested the first and last quartiles of the returned

questionnaires for significant differences across means for each of the theoretical constructs. The results of the t-tests indicated no significant differences between early and late respondents ( $p > 0.05$ ). Second, we examined whether the non-responding firms differed from the responding firms in terms of size and industry segment using information from *Hoppenstedt Firmendatenbank* and found no significant differences ( $p > 0.05$ ). Third, we conducted a telephone survey of randomly selected non-participants, in which we contacted 30 focal (i.e., trusted) firms and 18 partner (i.e., trusting) firms asking them to answer four questions selected from our questionnaires (cf. Zaheer, McEvily, and Perrone, 1998). The t-test of group means revealed no significant differences between respondents and non-respondents on any of the questions ( $p > 0.05$ ). The results of these three tests provide consistent evidence that non-response bias is not a problem in our data.

## **Measures**

Table 2-2 reports the measurement items used to operationalize our theoretical constructs. Because the survey was conducted in Germany, we had the items translated and backtranslated to ensure accuracy. When adequate measures were available, we adapted them from prior studies. Some items were modified to reflect the specific context of our study (Dillman, 2000). Following the recommendations of DeVellis (2003), the questionnaire items were further refined through in-depth interviews with 13 managers, an item sorting pretest based on Anderson and Gerbing (1991) among 15 scholars familiar with alliance research, and a pretest of the questionnaire conducted with 21 managers. When possible, survey information obtained from the key informant was triangulated with complementary data to establish its accuracy (Homburg *et al.*, 2012).

[Insert Table 2-2 here]



*Dependent variable.* *Trustworthiness* captures the degree to which an exchange partner is perceived not to exploit one's exchange vulnerabilities (Mayer *et al.*, 1995). In line with Mayer *et al.* (1995), trustworthiness is conceptualized as a second-order construct reflected by three dimensions: ability, benevolence, and integrity. Ability refers to the trustee's skills and competencies that enable the trustee to perform exchange-related tasks effectively. Benevolence denotes the extent to which the trustor believes a trustee wants to do good to him/her. Integrity is the trustor's perception that the trustee adheres to a set of principles that the trustor finds acceptable (Mayer *et al.*, 1995). Together, these three trustworthiness dimensions represent the most widely used facets in organizational research (McEvily and Tortoriello, 2011). Ability was measured using two items adapted from Johnson *et al.* (1996), while the three items measuring benevolence were based on Ganesan (1994) and Scheer, Kumar, and Steenkamp (2003). Finally, two items measuring integrity were based on the considerations by Dyer and Chu (2003). All three dimensions were measured on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree).

*Independent variables.* *Contractual safeguards* can be defined as stipulations in a partnership agreement that inflict penalties for the omission of cooperative behaviors or commission of violating behaviors (Parkhe, 1993). We measured the extent of contractual safeguards adopting the index developed by Parkhe (1993) and validated by Reuer and Ariño (2007). Eight items described various deterrents to opportunism, and informants were asked to indicate which of these deterrents were explicitly included as a term in their alliance agreement. Consistent with Parkhe (1993), we arranged the eight items in order of increasing stringency and assigned a weight of 1 to the first item, a weight of 2 to the second item, and so on. These weighted items were then summed and subsequently divided by 36 to compute a composite score

of contractual safeguards in the alliance. To cross-validate this measure, we first compared the information gathered from the trusted firm with information on the same measure from the trusting firm. The two composite scores were highly correlated ( $r = 0.66$ ;  $p \leq 0.001$ ), which indicated satisfactory accuracy of our measure. In addition, we were able to obtain access to the actual alliance contracts for a subset of 24 collaborations (either the manager from the trusted or trusting firms shared these with us upon request). Similar to Ryall and Sampson (2009), we performed a content analysis of these contracts, scanning the contract terms and coding the presence of the eight deterrents to opportunism included in our measure of contractual safeguards. Subsequently, we calculated composite scores based on this information and correlated them with the corresponding scores obtained from our survey of trusted firms. Again, we found a high level of correspondence between complementary data sources ( $r = 0.57$ ;  $p \leq 0.01$ ), supporting the accuracy of the survey measure.

*Clan culture* refers to the degree to which an organization's underlying values and assumptions emphasize collective goals, participation, and teamwork (Cameron and Quinn, 1999). To measure the extent to which the trusted firm is characterized by a clan culture, we used four items introduced by Cameron and Freeman (1991). These items contained brief scenarios describing the organization's general cultural characteristics, leadership style, institutional bonding, and strategic emphases. They were formulated as Likert-type statements anchored by a seven-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). To assess the accuracy of the measure for clan culture, we gathered information from a second key informant in a total of 36 trusted firms and calculated ICC(1) to determine the level of agreement. We obtained an ICC(1) of 0.25, which clearly exceeded Bliese's (1998) 0.1 cutoff and suggested sufficient convergent validity.

*Contingency variables.* *Familiarity* denotes the degree to which one party in an exchange relationship is knowledgeable about the characteristics of the other party. To capture this construct, we modified and recoded five items that Leonidou, Palihawadana, and Theodosiou (2006) used to measure the converse construct of distance. The items were anchored on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree) and asked the informant in the trusting firm to assess his/her familiarity with various facets of the partner firm. We corroborated this measure by correlating it with partner-specific alliance experience. While both constructs are distinct, there is reason to assume that they are interrelated (Gefen *et al.*, 2003). Partner-specific alliance experience was measured as the natural logarithm of the number of prior agreements with the same partner within the last five years (Zollo *et al.*, 2002). This measure was correlated with the composite score of the familiarity construct, computed as the simple average of its items. Both measures were significantly correlated ( $r = 0.31$ ;  $p \leq 0.001$ ), which supported the accuracy of our perceptual familiarity measure.

*Reputation* refers to the firm's favorable standing in the community that is based on its recognized achievements (Radbourne, 2003), such as producing high-quality products, retaining valuable employees, maintaining long-lasting customer relationships, and sustaining above-average innovativeness (e.g., Deephouse and Carter, 2005; Rindova, Pollock, and Hayward, 2006). The construct was captured using five items that were based on the measures used by Saxton (1997). These items were measured on a seven-point Likert scale (1 = much worse; 7 = much better).

*Control variables.* Consistent with previous studies (e.g., Poppo and Zenger, 2002), we included the trustees' firm size, firm age, and industry as controls. In addition, we controlled for alliance type and, importantly, alliance duration. Firm size was measured by an item representing

the number of employees (e.g., Capron and Mitchell, 2009). It was included in the analysis to account for potential differences in the trustworthiness of small and large firms (Dyer and Chu, 2003). We measured firm age in terms of the number of years since the incorporation of the firm (e.g., Schilke, forthcoming). Given the “liability of newness” suggested by Stinchcombe (1965), there is reason to assume that young firms may be perceived as less trustworthy compared to established firms. Respondents in trusted firms also classified their firms’ industry. Based on the five industries represented in our study, four dummy variables (chemicals, motor vehicles, electronics, and information technology) were included in the structural model (e.g., Poppo et al., 2008). In addition, respondents specified the alliance type as one of the following three (e.g., Reid, Bussiere, and Greenaway, 2001): joint venture (alliance is a separate entity both partners have a share in), equity alliance (no separate entity; partners have mutual equity stakes), or non-equity alliance (no separate entity; no mutual equity stakes). Finally, we measured alliance duration with an item capturing the number of years the alliance had been in existence at the time of measurement (Krishnan, Martin, and Noorderhaven, 2006) and used a logarithmic transformation to correct skewness, since many of the alliances were relatively young. Including alliance duration as a control accounts for the fact that trustworthiness perceptions tend not to be constant but may evolve as the alliance progresses (Schilke and Cook, forthcoming).

### **Robustness checks**

*Common method bias.* Though using key informants as data sources is common in organizational research, it exposes data to a potential common method bias. To overcome problems associated with common method bias in our study, we closely followed the recommendations of Podsakoff *et al.* (2003) and controlled for common method bias through two procedural remedies. First, we obtained measures of the predictor and criterion variables

from different sources (i.e., through dyadic data from both the trusted and trusting firm). Second, in an effort to reduce evaluation apprehension, we promised to protect respondent's anonymity and assured them that there were no right or wrong answers. Besides these procedural remedies, we also used two statistical procedures to determine the presence of common method bias in our data. First, we performed Harman's one factor test by loading all indicators of the study constructs into an exploratory factor analysis. Results revealed that no single factor explained more than 22.9 percent of the total variance in the variables, suggesting that common method bias was unlikely to be a serious problem in this study. Second, we applied the partial correlation adjustment procedure suggested by Lindell and Whitney (2001). Following Krishnan *et al.* (2006), we used tenure of the respondent in the trusting firm as the marker variable. All significant zero-order correlations remained significant after the partial correlation adjustment. In sum, we conclude that common method bias does not constitute a significant problem in this study.

*Endogeneity.* Because contract design choice may be influenced by expected partner trustworthiness (Connelly, Miller, and Devers, 2012; Puranam and Vanneste, 2009; Weber, Mayer, and Wu, 2009), contractual safeguards might not be entirely exogenous to the model predicting alliance partner trustworthiness, which may cause estimates to be inconsistent (Hamilton and Nickerson, 2003; Shaver, 1998). Thus, we conducted the Hausman (1978) endogeneity test (e.g., Wooldridge, 2008) using organizational centralization of alliance management as the instrumental variable. Contractual safeguards can be expected to be more comprehensive when organizations possess centralized units supporting the set-up and coordination of alliances (Kale, Dyer, and Singh, 2002). We measured this instrumental variable on a 7-point scale (1 = strongly disagree; 7 = strongly agree) using the following item: "In our

firm, there is a great deal of support for the management of R&D alliances through a central unit” (Schilke and Goerzen, 2010). Using Stata 12 software, Hausman’s (1978) endogeneity test was not significant ( $\chi^2 = 1.12$ ;  $p > 0.1$ ), which attenuated concerns of endogeneity in our analysis.

In addition, we conducted a supplementary propensity score matching (PSM) analysis. Invoking the ignorability assumption, PSM allows biases in the estimate of the treatment effect to be removed by adjusting for differences in a set of pretreatment covariates (Morgan and Winship, 2007). We used the STATA command `doseresponse` to perform the PSM analysis (Bia and Mattei, 2008). To estimate the conditional distribution of the treatment (contractual safeguards), we used all of our control variables except for alliance duration, because it is not temporally prior to contractual safeguards. After accounting for the obtained propensity score, the effect of contractual safeguards remained significant for all observed levels of the treatment ( $p \leq 0.05$ ). This finding corroborates the structural equation modeling results reported in the results section of the paper, further alleviating any concerns that endogeneity might have biased our estimates.

### **Reliability and validity**

Before testing our hypotheses, we used confirmatory factor analysis (CFA) to evaluate the validity of the measures (Anderson and Gerbing, 1988). The CFA measurement model fit the data satisfactorily ( $\chi^2(324) = 455.26$ ;  $\chi^2/df = 1.41$ ; CFI = 0.94; GFI = 0.86; TLI = 0.91; SRMR = 0.05). The results showed that all standardized item loadings were significantly greater than zero ( $p \leq 0.001$ ), positive, and high in magnitude ( $\geq 0.65$ ), providing evidence of convergent validity.

Then, we computed coefficient alphas ( $\alpha$ ), composite reliabilities (CR), and average variances extracted (AVE). As shown in Table 2-2, with the single exception of the ability measure, all values exceeded the recommended thresholds of 0.7, 0.7, and 0.5, respectively

(Bagozzi and Yi, 1988). Thus, the individual measures demonstrated adequate convergent validity and reliability.

Further, we assessed discriminant validity in two ways. First, following the procedure that Fornell and Larcker (1981) proposed, we found that the square root of the average variance extracted by the measure of each multi-item factor exceeded the correlation of that factor with all other factors in the model (see Table 2-3). Second, we tested discriminant validity by running pairwise  $\chi^2$ -difference tests for the multi-item factors (Anderson and Gerbing, 1988). These tests compared a model in which the factor correlation is fixed at 1 with an unrestricted model. Every restricted model exhibited a significantly worse fit when compared to the unrestricted model. Overall, our results demonstrate appropriate discriminant validity.

[Insert Table 2-3 here]

In a separate analysis, we tested the postulated structure of the multidimensional trustworthiness construct by means of second-order confirmatory factor analysis (Bagozzi, 1994). In the model, trustworthiness is the second-order factor reflected by three first-order dimensions: ability, benevolence, and integrity. The global fit criteria indicate a good fit of this model ( $\chi^2(11) = 34.29$ ;  $\chi^2/\text{df} = 3.12$ ; CFI = 0.96; GFI = 0.94; TLI = 0.93; SRMR = 0.05). The standardized loadings of the second-order construct on its three respective dimensions are 0.99, 0.73, and 0.90 ( $p \leq 0.001$ ). We then compared a three-factor model with a one-factor structure using a  $\chi^2$ -difference test. The fit of the single-factor model was significantly worse compared with the three-factor model ( $\Delta\text{df} = 3$ ;  $\chi^2_{\text{diff}} = 98.56$ ;  $p \leq 0.001$ ). These results underline the reliability and validity of the three-dimensional trustworthiness measure.

## RESULTS

To test our hypotheses, we used the covariance-based structural equation modeling software AMOS 16.0 (Arbuckle, 2007) and applied the maximum likelihood (ML) procedure. Skewness and kurtosis in the data were well below the common cut-offs of 2 and 7, and thus, ML estimation can be expected to provide reliable estimates (Curran, West, and Finch, 1996). Structural equation modeling has the advantage of estimating relationships between latent variables and observed indicators simultaneously with structural relationships between latent variables; it thus explicitly accounts for measurement error and allows for more accurate conclusions about relationships between constructs compared to simpler modeling processes (Bollen, 1989).

First, we estimated a baseline model with contractual safeguards and clan culture as the independent variables and trustworthiness as the outcome variable. The model also included the control variables. The fit measures for this model showed satisfactory values ( $\chi^2 (130) = 185.19$ ;  $\chi^2/df = 1.43$ ; CFI = 0.95; GFI = 0.91; TLI = 0.92; SRMR = 0.05). Figure 2-1 presents the estimates for the structural paths in the model. The path coefficient of 0.17 points to a positive, significant ( $p \leq 0.05$ ) relationship between contractual safeguards and trustworthiness, providing support for hypothesis 1. The coefficient of the path from clan culture to trustworthiness shows that clan culture is related positively and significantly to trustworthiness ( $\beta = 0.18$ ;  $p \leq 0.05$ ), in support of hypothesis 2.

[Insert Figure 2-1 here]

Subsequently, we explored whether clan culture relates to perceived trustworthiness more strongly compared to contractual safeguards, as could be concluded from the slightly larger path coefficient. To provide a sound statistical assessment, we performed a  $\chi^2$ -difference test to



examine whether the difference between both effects is significant. We constrained the two path coefficients to be equal, creating a new, restricted model that is nested in the original, unrestricted model. Comparing the fit of these two models, we find that the restriction did not significantly decrease the model fit ( $\Delta df = 1$ ;  $\chi^2_{diff} = 1.89$ ;  $p > 0.1$ ), suggesting that, *ceteris paribus*, the effects of the two antecedents on trustworthiness do not differ significantly.

Hypotheses 3 and 4 examined the differential effects of contractual safeguards and clan culture under diverse conditions. To test these hypotheses, we again relied on  $\chi^2$ -difference tests; more specifically, we applied multi-group structural equation modeling based on a mean split of the sample along the values of the relevant contingency variable to create two subsamples (Hair *et al.*, 2006).

Hypothesis 3a predicted that the relationship between clan culture and perceived trustworthiness is stronger when familiarity is high rather than low. In line with this hypothesis, we found that familiarity has a highly significant effect on the clan culture-trustworthiness relationship ( $\Delta df = 1$ ;  $\chi^2_{diff} = 4.02$ ;  $p \leq 0.05$ ); clan culture is more strongly linked to trustworthiness when familiarity is high ( $\beta_2 = 0.49$ ;  $p \leq 0.01$ ) rather than low ( $\beta_1 = -0.08$ ;  $p > 0.1$ ), supporting hypothesis 3a. Hypothesis 4a stated that the relation between contractual safeguards and trustworthiness is stronger when the reputation of the trusted party is low rather than high. Given a significant  $\chi^2$ -difference ( $\Delta df = 1$ ;  $\chi^2_{diff} = 8.07$ ;  $p \leq 0.01$ ) and a higher path coefficient in the low reputation subsample ( $\beta_1 = 0.32$ ;  $p \leq 0.05$ ) than in the high reputation subsample ( $\beta_2 = -0.14$ ;  $p > 0.1$ ), our results fully support this hypothesis.

Next, we examined our hypotheses regarding the relative effectiveness of the two trustworthiness antecedents in constrained settings. To test hypotheses 3b and 4b, we analyzed high familiarity and low reputation subgroups, respectively, and constrained the two path

coefficients of contractual safeguards and clan culture to be equal. Hypotheses 3b stated that the relationship between clan culture and trustworthiness is stronger than the relationship between contractual safeguards and trustworthiness when familiarity is high. Our data fully support this hypothesis. Setting the two paths to be equal in the high familiarity subgroup significantly decreased model fit ( $\Delta df = 1$ ;  $\chi^2_{diff} = 5.47$ ;  $p \leq 0.05$ ), and we found the estimate for the clan culture-trustworthiness path to be higher ( $\beta = 0.49$ ;  $p \leq 0.01$ ) than the one for the contractual safeguards-trustworthiness path ( $\beta = -0.09$ ;  $p > 0.1$ ). This constellation reverses for the low reputation subgroup. In line with hypothesis 4b, contractual safeguards have a stronger relationship with trustworthiness ( $\beta = 0.32$ ;  $p \leq 0.05$ ) than does clan culture ( $\beta = -0.03$ ;  $p > 0.1$ ), with the difference between effects being statistically significant ( $\Delta df = 1$ ;  $\chi^2_{diff} = 6.24$ ;  $p \leq 0.05$ ). The path coefficients from multi-group structural equation modeling analyses are presented in graphical form in the Appendix 2. As a robustness check of our multi-group structural equation modeling results, we also conducted partial least squares (PLS) analyses with linear interaction terms (Chin, Marcolin, and Newsted, 2003). The results are consistent and lend further support to our hypotheses.

## **POST-HOC ANALYSES**

To further explore the nuances of the conditional effects of clan culture and contractual safeguards, we performed additional post-hoc analyses in which we dimensionalized our trustworthiness variable. That is, we calculated a series of multi-group structural equation models in which we substituted trustworthiness with ability, benevolence, or integrity, respectively. We only report the overall pattern of results here; detailed results can be obtained upon request. In the benevolence model, we replicated our earlier findings that clan culture has a stronger effect when familiarity is high rather than low ( $\Delta df = 1$ ;  $\chi^2_{diff} = 5.61$ ;  $p \leq 0.05$ ) and that this effect is

also stronger than that of contractual safeguards ( $\Delta df = 1$ ;  $\chi^2_{diff} = 6.15$ ;  $p \leq 0.05$ ). We also identified analogous differences in the competence model ( $\Delta df = 1$ ;  $\chi^2_{diff} = 9.74$ ;  $p \leq 0.01$  and  $\Delta df = 1$ ;  $\chi^2_{diff} = 3.79$ ;  $p \leq 0.05$ , respectively). However, no such differences were identified in the integrity model (both  $p$ 's  $> 0.1$ ). Further, only in the integrity model we found that contractual safeguards have a stronger effect when reputation is low rather than high ( $\Delta df = 1$ ;  $\chi^2_{diff} = 4.60$ ;  $p \leq 0.05$ ) and that this effect is stronger than that of organizational culture ( $\Delta df = 1$ ;  $\chi^2_{diff} = 6.34$ ;  $p \leq 0.05$ ), whereas these differences were not significant in the ability and benevolence models (all  $p$ 's  $> 0.1$ ).

Finally, based on theoretical considerations, our moderating hypotheses H3a and H4a only pertain to one of the two main effects. In post-hoc analyses, we also looked into the contingency factors' influence on the other main effect—that is, we explored whether familiarity also affects the effect of contractual safeguards and whether reputation affects the effect of clan culture. The Appendix 2 shows the subgroup-specific coefficients.  $\chi^2$ -difference tests revealed that both moderating effects are non-significant ( $\Delta df = 1$ ;  $\chi^2_{diff} = 3.42$ ;  $p > 0.05$  and  $\Delta df = 1$ ;  $\chi^2_{diff} = 2.56$ ;  $p > 0.1$ , respectively).

## **DISCUSSION AND CONCLUSION**

In the past several years, scholarly interest in the topic of trustworthiness has exploded. As summarized in several literature reviews (Fulmer and Gelfand, 2012; Kramer, 1999; McEvily *et al.*, 2003; McEvily and Zaheer, 2006), researchers agree that trustworthiness is a key ingredient in successful economic exchange. But what is also common to these literature reviews is the recognition that conceptions of the basis of trustworthiness remain fragmented and that this fragmentation impairs scientific progress. In particular, while some researchers emphasize

calculative accounts, others tend to focus on the relational basis of trustworthiness (cf. Kramer, 1999; McEvily and Zaheer, 2006).

The main objective of this study was to help to integrate the calculative and relational approaches to trustworthiness by clarifying the contextual conditions under which each perspective is more relevant and investigating these conditions empirically in a study of strategic alliances. First, we examined the direct effects of antecedents derived from these perspectives in a single model, which allowed us to test whether the relational component affects trustworthiness after controlling for the calculative component and vice versa. Second, we scrutinized the assumption that one approach is more important than the other by investigating the nature of the relationship context and its effect on whether calculative or relational aspects relate more strongly to trustworthiness. Our study clearly advances the extant literature by showing that the effects of calculative and relational antecedents to trustworthiness are not equally strong when taking into consideration the organization's familiarity with the exchange partner as well as the reputation of the partner. It thus takes a significant step forward in developing a more generalizable theory of context that elaborates under which conditions different sources of trustworthiness are particularly relevant—an important requirement for the field of trust research to move forward and to generate specific insights for clearly defined settings (McEvily and Tortoriello, 2011).

Analyzing trustworthiness in the context of strategic alliances, our research started out with the notion that perceptions of trustworthiness associated with alliance partners can emerge in different ways. Acknowledging the validity of the arguments from both the calculative tradition (e.g., Axelrod, 1985; Gambetta, 1988; Schelling, 1960) and the relational tradition (e.g., Mayer *et al.*, 1995; McAllister, 1995; Tyler and Kramer, 1996), we identified contractual

safeguards and clan culture as critical antecedents to alliance partner trustworthiness. While contractual safeguards increase trustworthiness perceptions by restricting partner behavior through explicit constraints that make it rational to act in a trustworthy manner (consistent with the calculative perspective), an organizational culture that rewards employees who refrain from opportunistic behavior accounts for “principled” trustworthiness that is based on the intrinsic values of the organization (consistent with the relational perspective).

Subsequently, we argued that the relative importance of these two sources of trustworthiness differs depending on the particular context of the interorganizational relationship. Our results show that contextual characteristics strongly influence the importance of contractual safeguards and clan organizational culture as drivers of trustworthiness. More specifically, we find that in situations in which familiarity with the alliance partner is high, clan culture becomes much more important as an origin of trustworthiness—significantly more important than contractual safeguards. In addition, our results reveal that contractual safeguards relate more strongly to trustworthiness when the alliance partner lacks a favorable reputation.

Overall, our empirical findings suggest that both contractual safeguards and clan culture are significantly linked to trustworthiness and that their effects are comparable in size—but only when we consider our entire sample. The relevance of contractual safeguards increases drastically once we focus on those relationships in which the partner firm lacks a strong reputation in the marketplace. Here, the effect of safeguards on trustworthiness is highly significant while the effect of clan culture is not. Conversely, the influence of clan culture is heightened when partners have established above-average familiarity. Here, a firm’s clan culture becomes a very strong antecedent to trustworthiness—significantly stronger than contractual safeguards. Our post-hoc analyses suggest that these differences may be driven primarily by the

differential effect of clan culture on the trustworthiness dimensions of ability and benevolence as well as the differential effect of contractual safeguards on the integrity dimension of trustworthiness.

This research contributes to the literature in several significant ways. First, the findings from this study improve our understanding of the origins of organizational trustworthiness. We theorize and confirm empirically that both calculative and relational factors in the form of contractual safeguards and clan culture can contribute to alliance partners being perceived as trustworthy. Therefore, this work helps to integrate previously often separated streams of research on the antecedents to trustworthiness. Notably, our finding of a positive impact of contracts on trustworthiness contradicts some recent theorizing suggesting that contracts may *hamper* trustworthiness (Puranam and Vanneste, 2009, p. 15). Instead, our results provide empirical support for theoretical models describing how contractual structures *increase* trustworthiness perceptions (e.g., Sitkin, 1995).

Second, and perhaps more importantly, our results indicate that neither the relational nor the calculative approach to trustworthiness is superior per se, but that the strength of their explanatory role depends on the circumstances characterizing the exchange relationship at stake. Thus, we believe our study helps to reconcile contrasting views of the underpinnings of trustworthiness by identifying two key variables that affect their respective scope (i.e., familiarity and reputation). Third, we also make a methodological contribution to the literature by addressing the conceptualization and measurement of alliance partner trustworthiness. Recent research has called for more fine grained, yet comprehensive measures of trustworthiness in the context of interfirm relationships (Weber *et al.*, 2009). In an effort to derive such a measurement instrument, we accounted for its multifaceted nature (Mayer *et al.*, 1995) and modeled the

trustworthiness of an alliance partner as a second-order factor reflected by the three dimensions of ability, benevolence, and integrity. Building on existing measures derived from various contexts and extensive field interviews with alliance managers, we operationalized these dimensions and assessed the validity of our measurement instrument. Using several advanced statistical analyses, we found evidence that our multidimensional measure possesses high reliability, as well as construct and discriminant validity. Since a rigorously developed and validated metric is crucial for establishing common ground to allow comparison of results across studies, future alliance researchers may find it valuable to use the trustworthiness measurement instrument developed in this research.

This research has four limitations worth mentioning. These limitations also provide important avenues for further research. First, our study focused on the origins of trustworthiness, not on its consequences. While previous research has indicated that trustworthiness may lead to decreased transaction costs, improved learning, and superior alliance performance (Dyer and Chu, 2003; Szulanski *et al.*, 2004), we agree with Robson *et al.* (2008) that much work remains to be done to clarify the various and potentially contingent consequences of trustworthiness. For example, relating trustworthiness to organizational-level (rather than relationship-level) outcomes may contribute to the growing stream of research on the factors that explain why some organizations have greater alliance success than others (Kale *et al.*, 2002; Schilke and Goerzen, 2010). Potential dependent variables may include the firm's alliance portfolio performance, overall attractiveness as an alliance partner, or total number of alliances. Second, our conceptual arguments and empirical analyses only pertain to ongoing alliances between firms. However, it is likely that trustworthiness cues already play an important role in the very early stages in the formation of interorganizational relationships (McKnight *et al.*, 1998). Future studies should

investigate drivers of trustworthiness perceptions in the partner search and selection phases. Because in many cases, familiarity between partners will be low in these early stages, our results indicate the importance of contractual provisions. Third, this study is clearly restricted to the empirical context of strategic alliances. We chose this context since strategic alliances are characterized by a high degree of uncertainty and transaction-specific investments (Leiblein, 2003), making opportunism, and conversely trustworthiness, highly relevant concepts. Rousseau (2004) notes that middle range theories are necessary to fully understand the nature of trustworthiness. Each of these theories is confined to a single setting and the settings are likely to differ significantly. Future research should thus shed light on the calculative and relational factors that serve as antecedents to trustworthiness in contexts other than strategic alliances, such as in arm's length relationships or mergers. Finally, our data do not allow us to identify which party was the leading force in putting in the contractual safeguards—although it would be clearly interesting to investigate how this would affect perceptions of trustworthiness. In the future, experiments might be best suited to clearly allocate the locus of control in the design of contracts and to investigate its effects on subsequent trustworthiness perceptions.

In sum, our research provides important new insights into the sources of the trustworthiness of alliance partners. Specifically, the study underscores the need to move beyond drawing exclusively from either the calculative or the relational perspectives in seeking to more fully understand the range of factors affecting perceptions of trustworthiness. In addition, while the results of our integrative research effort show that neither perspective is superior per se, we identify two relevant conditions that determine their respective significance: familiarity with and reputation of the exchange partner. We hope our study stimulates further research that continues



to explore the complex and contingent sources of trustworthiness from additional angles to further advance knowledge of this significant phenomenon.

## TABLES AND FIGURES

**Table 2-1: Sample composition**

	<b>Sample of trusted firms</b>	<b>Sample of trusting firms</b>
<b>Industry</b>		
Machinery	47.4%	36.5%
Chemicals	14.6%	11.3%
Motor vehicles	15.8%	5.7%
Electronics	5.8%	17.6%
Information technology	16.4%	15.7%
Other	0.0%	13.2%
<b>Firm size</b>		
<100 employees	6.4%	56.5%
100-249 employees	39.2%	17.6%
250-499 employees	24.6%	5.3%
500-999 employees	12.9%	4.7%
1,000-4,999 employees	9.9%	8.8%
≥5,000 employees	7.0%	7.1%
<b>Firm age</b>		
<5 years	4.1%	3.6%
5-9 years	9.4%	17.8%
10-19 years	4.7%	22.5%
20-29 years	15.2%	9.5%
30-49 years	22.8%	16.6%
≥50 years	43.9%	30.2%
<b>Position of respondent</b>		
Head of R&D	66.2%	24.4%
R&D project leader	2.4%	15.5%
Member of executive board	16.3%	45.2%
Head of alliance department	5.4%	10.7%
Other (e.g., head of construction, CTO)	9.6%	4.2%
<b>Tenure of respondent in firm</b>		
≤1 year	9.3%	4.1%
2-5 years	15.8%	22.8%
6-10 years	26.9%	30.4%
11-15 years	17.0%	17.5%
≥16 years	31.0%	25.1%

**Table 2-2: Measurement items and validity assessment**

Construct Name	Reference	Items	SFL <sup>a</sup>	Mean	SD	$\alpha$	CR	AVE
Trustworthiness	Mayer <i>et al.</i> (1995)							
Ability	Johnson <i>et al.</i> (1996)	- This alliance partner can be regarded as a capable and competent alliance partner.	0.76	6.02	1.03	0.69	0.69	0.52
		- This alliance partner is knowledgeable about everything relevant to alliances	0.69	5.37	1.10			
Benevolence	Ganesan (1994); Scheer <i>et al.</i> (2003)	- This alliance partner would go out of its way to make sure that we are not damaged or harmed.	0.94	3.64	1.62	0.87	0.88	0.70
		- This alliance partner would make sacrifices for us.	0.84	3.40	1.64			
		- Though circumstances change, this alliance partner would be ready and willing to offer assistance and support.	0.75	4.14	1.73			
Integrity	Dyer and Chu (2003)	- This alliance partner does not take excessive advantage of us even when the opportunity is available.	0.71	5.43	1.33	0.80	0.80	0.67
		- This alliance partner only makes adjustments (e.g., as market conditions change) in ways perceived as "fair" by us.	0.94	5.42	1.19			
Contractual safeguards	Parkhe (1993)	Which of the following is explicitly included as a term in your alliance agreement?	n/a <sup>b</sup>			n/a <sup>b</sup>	n/a <sup>b</sup>	n/a <sup>b</sup>
		- Periodic written reports of all relevant transactions		0.30	0.46			
		- Prompt written notice of any departures from the agreement		0.34	0.48			
		- The right to examine all relevant records - through a firm of CPAs		0.06	0.25			
		- Designation of certain information as proprietary and subject to confidentiality - provisions of the contract		0.60	0.49			
		- Non-use of proprietary information even after termination of agreement		0.55	0.50			
		- Termination agreement		0.23	0.43			
		- Arbitration clauses		0.20	0.40			
		- Lawsuit provisions		0.35	0.48			
Clan culture	Cameron and Freeman (1991)	- The glue that holds my organization together is loyalty and tradition. Commitment to this firm runs high.	0.73	5.60	1.16	0.83	0.83	0.56
		- The head of my organization is generally considered to be a mentor, sage, or a father/mother figure.	0.67	4.32	1.62			
		- My organization emphasizes human resources. High cohesion and morale in the firm are important.	0.82	5.48	1.40			
		- My organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	0.77	4.89	1.49			

Familiarity (“strongly disagree” [1] to “strongly agree” [7])	Leonidou <i>et al.</i> (2006)	- This alliance partner is a well-known firm to us.	0.65	5.96	1.28	0.91	0.92	0.70
		- We are familiar with the alliance partner’s business environment.	0.67	5.21	1.52			
		- We are familiar with the alliance partner’s organizational culture, values, and attitudes.	0.91	4.88	1.63			
		- We are aware of many things about the organizational structure of this alliance partner.	0.92	4.84	1.68			
		- We are familiar with the working methods and processes followed by this alliance partner.	0.89	4.83	1.60			
Reputation (“much worse” [1] to “much better” [7])	Saxton (1997)	How would you rate this alliance partner relative to other firms in the industry in terms of the following criteria:				0.86	0.86	0.55
		- Quality of products	0.70	5.51	0.97			
		- Innovativeness	0.64	5.46	1.12			
		- Ability to retain valuable employees	0.71	5.01	1.31			
		- Customer relationships	0.83	5.39	1.00			
Firm size (“<100 employees” [1] to “≥5,000 employees” [6])	Capron and Mitchell (2009)	- Overall reputation	0.85	5.53	1.10			
		How many employees does your company have?	n/a <sup>b</sup>	3.02	1.35	n/a <sup>b</sup>	n/a <sup>b</sup>	n/a <sup>b</sup>
Firm age (“<5 years” [1] to “≥50 years” [6])	Capron and Mitchell (2009)	For how long has your company existed?	n/a <sup>b</sup>	4.75	1.49	n/a <sup>b</sup>	n/a <sup>b</sup>	n/a <sup>b</sup>
Industry (“no” [0]; “yes” [1])	Poppo <i>et al.</i> (2008)	Which of the following is your company’s primary industry sector?	n/a <sup>b</sup>			n/a <sup>b</sup>	n/a <sup>b</sup>	n/a <sup>b</sup>
		- Chemicals		0.15	0.35			
		- Motor vehicles		0.16	0.37			
		- Electronics		0.06	0.24			
		- Information technology (base dummy: machinery)		0.16	0.37			
Alliance type (“no” [0]; “yes” [1])	Reid <i>et al.</i> (2001)	Please classify your alliance in one of the following categories:	n/a <sup>b</sup>			n/a <sup>b</sup>	n/a <sup>b</sup>	n/a <sup>b</sup>
		- Joint venture (JV)		0.08	0.27			
		- Equity alliance		0.05	0.22			
		(base dummy: non-equity alliance)						
Alliance duration (“# years”)	Krishnan <i>et al.</i> (2006)	For how long has your alliance been in existence?	n/a <sup>b</sup>	6.85	7.98	n/a <sup>b</sup>	n/a <sup>b</sup>	n/a <sup>b</sup>

<sup>a</sup> SFL = standardized factor loading.

<sup>b</sup> SFL,  $\alpha$ , CR, and AVE not available for formative indices, single item measures, or dummy sets.

**Table 2-3: Correlations and square root of AVE**

Construct	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Ability	<b>.72</b>															
2 Benevolence	.60 <sup>**</sup>	<b>.84</b>														
3 Integrity	.66 <sup>**</sup>	.58 <sup>**</sup>	<b>.82</b>													
4 Contractual safeguards	.01	-.12 <sup>*</sup>	.04	<b>n/a</b>												
5 Clan culture	.21 <sup>**</sup>	.17 <sup>*</sup>	.13 <sup>†</sup>	-.11	<b>.75</b>											
6 Familiarity	.30 <sup>**</sup>	.33 <sup>**</sup>	.33 <sup>**</sup>	.04	.12	<b>.84</b>										
7 Reputation	.43 <sup>**</sup>	.39 <sup>**</sup>	.47 <sup>**</sup>	-.08	.26 <sup>**</sup>	.27 <sup>**</sup>	<b>.74</b>									
8 Firm size	-.01	-.12	-.05	.15 <sup>*</sup>	-.18 <sup>*</sup>	.02	.04	<b>n/a</b>								
9 Firm age	.16 <sup>*</sup>	.10	.12	-.18 <sup>*</sup>	.07	-.01	.16 <sup>*</sup>	.12	<b>n/a</b>							
10 Chemicals	.20 <sup>**</sup>	.14 <sup>†</sup>	.15 <sup>†</sup>	-.02	.21 <sup>**</sup>	.02	.06	.11	.13	<b>n/a</b>						
11 Motor vehicles	-.14 <sup>†</sup>	-.24 <sup>**</sup>	-.12	.28 <sup>**</sup>	-.07	.04	-.09	.02	.01	-.18 <sup>*</sup>	<b>n/a</b>					
12 Electronics	.05	.01	.06	-.02	-.08	-.05	-.07	.03	.06	-.10	-.11	<b>n/a</b>				
13 Information technology	-.13 <sup>†</sup>	-.01	-.04	.03	-.04	.14 <sup>†</sup>	-.10	-.04	-.35 <sup>**</sup>	-.18 <sup>*</sup>	-.19 <sup>*</sup>	-.11	<b>n/a</b>			
14 Joint venture	-.14 <sup>†</sup>	-.15 <sup>†</sup>	-.02	-.09	.05	-.09	.06	-.05	.17 <sup>*</sup>	-.06	-.01	.02	-.13 <sup>†</sup>	<b>n/a</b>		
15 Equity alliance	.19 <sup>*</sup>	.20 <sup>**</sup>	.16 <sup>*</sup>	-.14 <sup>†</sup>	.13 <sup>†</sup>	.15 <sup>*</sup>	.20 <sup>*</sup>	.07	.09	-.02	.04	-.06	-.10	-.07	<b>n/a</b>	
16 Alliance duration	.03	.12	.02	-.12	.06	.29 <sup>**</sup>	.16 <sup>*</sup>	.12	.17	-.05	.04	-.04	-.06	-.08	.01	<b>n/a</b>

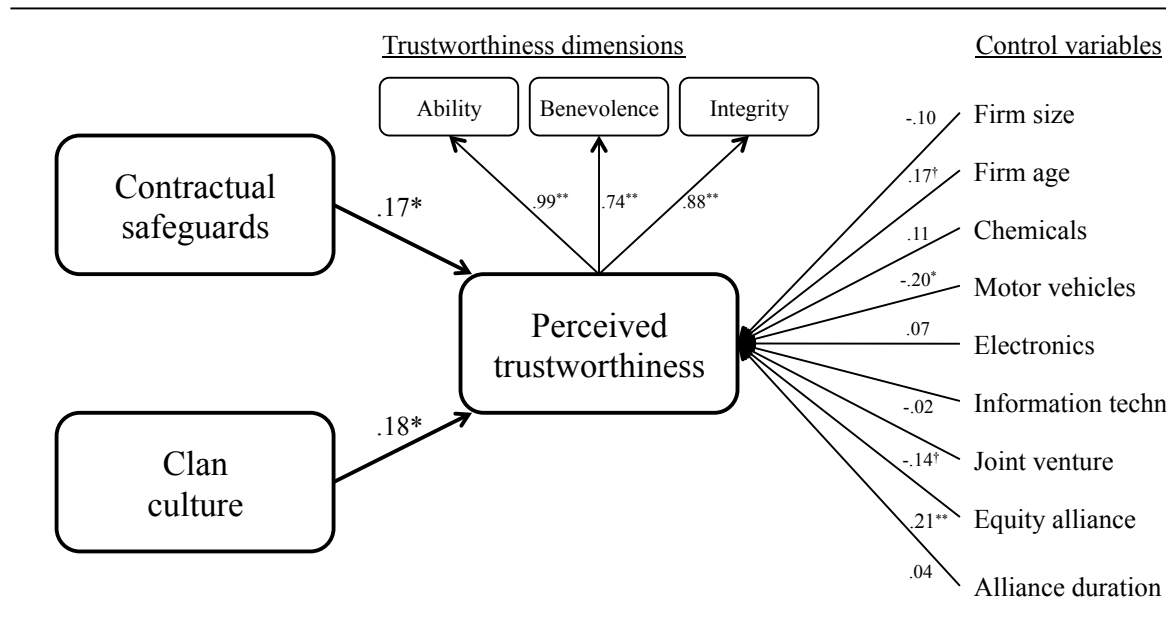
Notes: <sup>\*\*</sup> p ≤ .01; <sup>\*</sup> p ≤ .05; <sup>†</sup> p ≤ .1

n = 171

Bold numbers on the diagonal show the square root of AVE, numbers below the diagonal the correlations.

AVE not available for formative and single-item constructs.

**Figure 2-1: Results for the full-sample structural model**



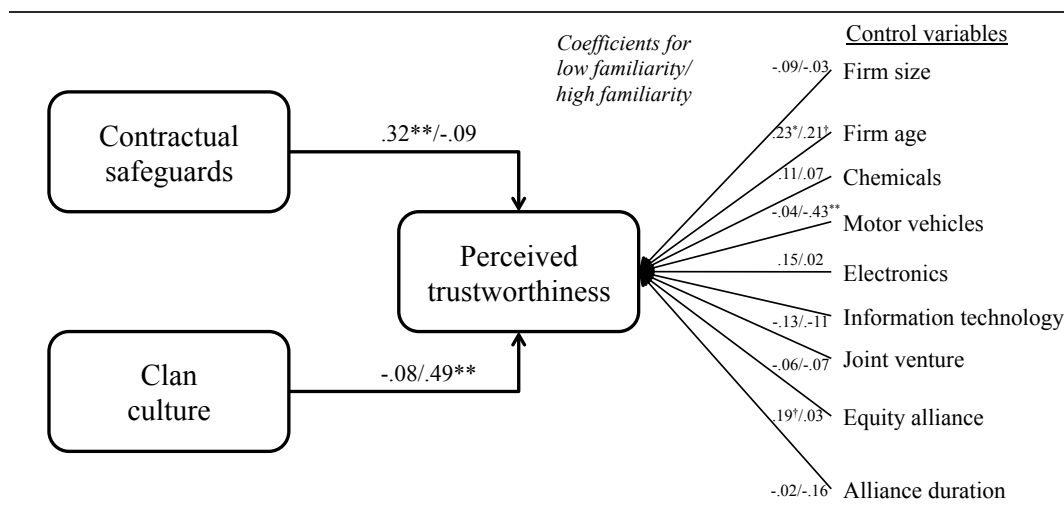
n = 171. \*\* p ≤ .01; \* p ≤ .05; † p ≤ .1. Standardized coefficients are shown.

## APPENDIX 2: PATH COEFFICIENTS FROM MULTI-GROUP STRUCTURAL EQUATION MODELING ANALYSES

This appendix provides a complete overview of the path coefficient estimates obtained through multi-group structural equation modeling. Figure A1 contains estimates for the comparison of low and high familiarity; Figure A2 shows estimates for the comparison of low and high reputation.

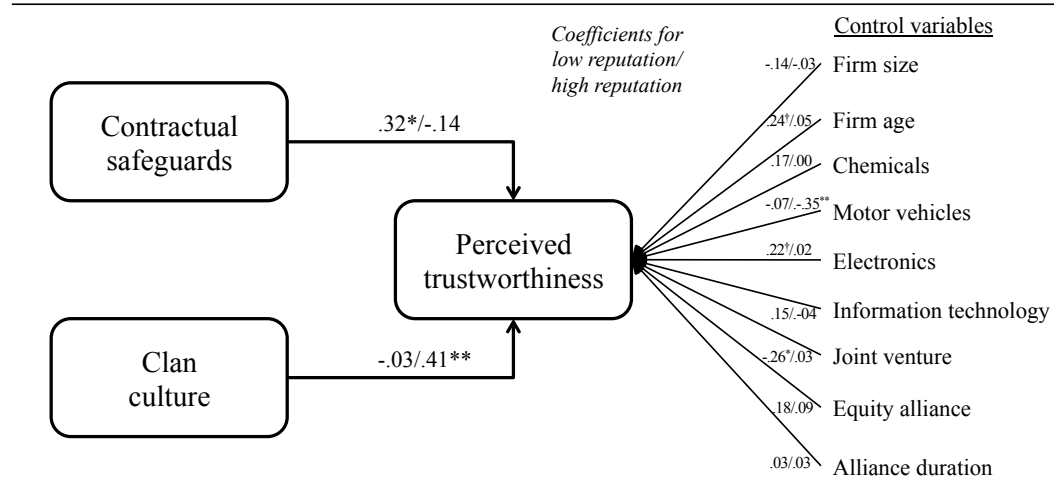
[Insert Figure A2-1 and Figure A2-2 here]

**Figure A2-1: Multi-group results for low and high familiarity**



$n_1 = 85 / n_2 = 86$ .  $^{**} p \leq .01$ ;  $^{*} p \leq .05$ ;  $^{\dagger} p \leq .1$ . Standardized coefficients are shown.

**Figure A2-1: Multi-group results for low and high reputation**



$n_1 = 85$  /  $n_2 = 86$ . \*\*  $p \leq .01$ ; \*  $p \leq .05$ ; †  $p \leq .1$ . Standardized coefficients are shown.



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# **CHAPTER 3**

## **ORGANIZATIONAL IDENTITY AND RESISTANCE TO ENVIRONMENTAL PRESSURES**

### **ABSTRACT**

A key problem faced by organizational decision makers is uncertainty regarding the relative value of alternative courses of organizational action. Two largely isolated streams of research in sociology have emphasized different mechanisms of dealing with such uncertainty. Research in neoinstitutional theory indicates that uncertainty leads organizations to imitate others in their field. The literature on identity theory suggests that actors' group membership (i.e., organizational identity) strongly informs how they behave in the presence of uncertainty. This chapter aims to synthesize these two theories by showing how organizational identity affects the degree to which organizational decision makers imitate others in their field. Two experiments are described that not only test the relationship between organizational identity and resistance to environmental pressures but also examine status as a potential contingency. The positive link between organizational identity and resistance is expected to become stronger when status is high (rather than low). Empirical results from the two studies support the proposed theory.

## INTRODUCTION

Uncertainty is at the core of organizational sociology as it significantly complicates organizational decision making (Beckert, 2003; Cyert and March, 1963). For example, managers are often confronted with the decision of whether to invest in various administrative programs, such as reengineering, matrix management, or total quality management, whose material benefits for the organization are highly ambiguous. So, which is the “right” decision? Neoinstitutional theory suggests that in the presence of uncertainty, organizations are particularly prone to social influence from the organizational environment (Zucker, 1987). That is, when uncertainty is high, organizations tend to model themselves on other organizations (DiMaggio and Powell, 1983). This process, which has been termed “mimetic isomorphism,” eventually leads to high levels of homogeneity in the organizational field (Tolbert and Zucker, 1983).

More recent neoinstitutional accounts continue to emphasize field homogenization but stress that individual organizations vary substantially in the extent to which they imitate other organizations’ practices (Goodrick and Salancik, 1996; Kraatz and Zajac, 1996). It was not until very recently, however, that researchers turned their attention to dynamics internal to organizations that may lead to differential responses to environmental pressures. Rising dissatisfaction with neoinstitutional theory’s exclusive focus on the macro (i.e., sectoral, field, or global) level has led to a growing number of calls for investigations into factors at the micro level (Barley, 2008; Bitektine, 2011; Powell and Colyvas, 2008), that is, the level of individual actors. Thus far, relatively little neoinstitutional research has investigated how micro-level issues contribute to conformity or resistance to macro-level institutions. This dearth of research is unfortunate since one can fully grasp the nature and effect of these institutions only by understanding how individuals enact them (Dacin, Munir, and Tracey, 2010; George *et al.*, 2006;



Powell and Colyvas, 2008). Indeed, one of the most serious criticisms leveled against neoinstitutional theory is that it has neglected how coping with institutions manifests itself in organization members' sensemaking (Barley, 2008).

This chapter contributes to the emerging micro-level approach to neoinstitutionalism by empirically investigating a critical source of resistance to environmental pressures: the extent to which the decision maker is part of a superordinate organizational identity. More specifically, this research brings the phenomenon of institutional pressures into the laboratory and compares the adoption of practices from the environment between two conditions: weak and strong identification of the decision maker with a superordinate entity. Further, the chapter examines the moderating role of status (as operationalized through performance feedback), analyzing whether the link between organizational identity and resistance is strengthened in the case of high (as opposed to low) status.

Overall, this research addresses the following key research questions: (1) Does organizational identity affect decision makers' resistance to imitating other organizations? (2) Does status intensify the effect of organizational identity on this resistance? By investigating these questions, the chapter aims to advance the field in at least three ways:

- by introducing organizational identity as a novel micro-level factor explaining organizational differences in responses to environmental conformity pressures;
- by contributing to the integration of the highly complementary but so far largely separate streams of neoinstitutional and identity research (Pedersen and Dobbin, 2006);
- by reviving the experimental approach to institutional theory (Zucker, 1977) that leverages the unique advantages of experiments for clarifying causal relations and micro-level process (Brewer, 1985).

## CONCEPTUAL BACKGROUND

This chapter builds on neoinstitutional theory to develop the study's explanandum—organizations' resistance to environmental pressures—while drawing from organizational identity theory to determine relevant antecedents and contingencies. I briefly elaborate on both neoinstitutional and organizational identity theory before deriving my hypotheses in the subsequent section.

### Neoinstitutional theory

Following the seminal works of Meyer and Rowan (1977), Zucker (1977), and DiMaggio and Powell (1983), neoinstitutionalism has developed into a leading—perhaps the dominant—perspective in organizational analysis (Greenwood *et al.*, 2008). It has substantially added to our understanding of the environmental pressures responsible for causing organizations in the same field to become isomorphic (i.e., to converge on similar processes and structures (DiMaggio and Powell, 1991)). Organizations with dominant designs are publicly perceived as reflecting prevailing values, obeying pertinent regulations, and following logics of how things are naturally (Berger and Luckmann, 1966; Zucker, 1983), which may in turn increase their legitimacy and acceptance among stakeholders (Scott, 2008; Zucker, 1989). Thus, neoinstitutional logic suggests that, as organizations strive for legitimacy, solutions that are widely viewed as appropriate and necessary will become ubiquitous (Fligstein, 1985; Tolbert and Zucker, 1983).

Despite its significant contributions, neoinstitutionalism has become the subject of increasing criticism for its overly strong focus on macro-level sources of organizational behavior (Barley, 2008; Bitektine, 2011; Powell and Colyvas, 2008). The theory has heavily focused on environmental drivers of organizational behavior while neglecting the processes by which organizations cope with the environment and which may thus explain organizational-level

heterogeneity (King, Felin, and Whetten, 2010). That is, by viewing the source of organizational action as exogenous, neoinstitutionalists have largely “black boxed” the organization (Gavetti, Levinthal, and Ocasio, 2007).

This line of criticism is fueled by the observation that, even in the long run, many organizations will *not* conform to environmental pressures (Brunninge, 2005; Kraatz and Zajac, 1996; Powell, 1991). A recent meta-analysis by Heugens and Lander (2009) among 144 studies analyzing the effect of environmental pressures on isomorphism finds that, although this effect is significant, reported effect sizes are relatively small, implying environmental norms do not represent an institutional iron cage from which no escape is possible.

In response to such criticism, neoinstitutionalists have increasingly come to accept the notion that organizations do not simply react to environmental demands, paving the way for investigations into mechanisms that can explain when resistance rather than conformity characterizes an organization’s response (Haveman and David, 2008). In particular, neoinstitutionalists have recently become interested in investigating factors relevant to the micro level. A nascent but growing stream of research aims to analyze how coping with environmental institutions manifests in organization members’ sensemaking (Barley, 2008; Bitektine, 2011; Powell and Colyvas, 2008). Researchers have pointed to the cognitive processes that mediate the perception of the environment as a particularly fruitful avenue of research (DiMaggio, 1997; Zucker and Darby, 2005). Sociologists have started to illuminate this issue from a social cognition perspective, emphasizing how the immediate context in which the individual is embedded shapes the mental structures used to perceive, process, and retrieve information (DiMaggio, 1997; Zerubavel, 1997). Consistent with the foundational work by Berger and Luckmann (1966), such a social cognition approach emphasizes the effect of social construction

on cognitive conceptions that may shape organizations' responses to their institutional environments (Zucker and Darby, 2005). A key concept related to social construction in people's immediate context and how it affects cognition and decision making is social identity (DiMaggio, 1997), particularly organizational identity, to which I turn next.

### **Organizational identity**

While the concept of social identity has well-established roots in both sociological and psychological literature (Cerulo, 1997; Stryker and Burke, 2000), the systematic inquiry into *organizational* identity began in the late 1980s with the influential works of Albert and Whetten (1985) and Ashforth and Mael (1989). Two key aspects of the concept of organizational identity are *strength* and *content* (Cole and Bruch, 2006; Gioia and Thomas, 1996). While identity strength captures the extent to which members perceive themselves as subordinate parts of the organization,<sup>4</sup> identity content defines the particular characteristics that are (either objectively or subjectively) shared among those members (Corley *et al.*, 2006; Whetten, 2006).

Research on organizational identity heavily draws from social identity theory (Tajfel, 1978; Tajfel and Turner, 1985) and self-categorization theory (Turner, 1985; Turner *et al.*, 1987). According to these theories, people have a tendency to classify themselves as well as others into social categories, including organizational membership (as well as religious affiliation, gender, age group, etc.). Such classifications fulfill two purposes: first, they cognitively segment and order the social environment; second, they enable the individual to situate him- or herself within this environment. Social identity is an individual's perception that he or she belongs to a larger aggregate of humans delineated by such classification, helping him or her to answer the question

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<sup>4</sup> Some researchers also refer to organizational identity strength as organizational identification (cf. Cole and Bruch, 2006).

“Who am I?” (DiMaggio and Markus, 2010; Ridgeway, 2006; Stryker and Serpe, 1982; Turner, 1982).

Building on these conceptualizations of social identity, Ashforth and Mael (1989, p. 21) define organizational identity as “the perception of oneness with or belongingness” to the organization. Organizational identity thus pertains to categorizing oneself as an organizational member. Because the work organization is a primary group (Homans, 1950), organizational researchers have singled out organizational identity as a particularly prevalent instance of social identity (Lee, 1971; Rotondi, 1975) and a fundamental feature of organizational life (Simon, 1957).

What makes the concept of organizational identity unique (and particularly relevant for this chapter) is that it roots the individual in the organization, delimiting the set of cognitions, affect, and behaviors and thus providing insight into the relation between the individual and organizational levels (Ashforth, Rogers, and Corley, 2011). The self-defining implication of identity leads employees to see themselves as similar to other employees of the organization, to ascribe organization-defining characteristics to themselves, and to take the organization’s interests to heart (Sedikides and Brewer, 2001; van Knippenberg and Hogg, 2003).

All this suggests that social collectives are not just external features of the world, but that they are also internalized so that they contribute to an individual’s sense of self (DiMaggio and Markus, 2010; Haslam and Ellemers, 2005). This effect may occur because strong organizational identity prompts deindividuation, which in turn stimulates the internalization of organizational norms and characteristics (Blader and Tyler, 2009). Such internalization establishes collective meaning and constructs a link between individual and collective behavior (Ashforth, Harrison, and Corley, 2008).

Given its relevance for linking individual and collective behavior, researchers have started to associate organizational identity not only with individual level outcomes but with organizational decision making as well. Barney and Stewart (2000) argue that organizational identity acts as a framing mechanism for strategic decision making in organizations. As such, the strength of an organization's identity affects what kind of issues consume top decision makers' attention (Dutton and Penner, 1993) and also guides subsequent interpretations of these issues and appropriate strategic responses (Barney and Stewart, 2000; Dukerich, Kramer, and McLean Parks, 1998; Dutton and Dukerich, 1991). In sum, prior research points to a strong general connection between organizational identity and strategic decision making in organizations.

## **HYPOTHESES**

This chapter is particularly interested in how organizational identity shapes strategic decision making in terms of responses to the organization's external environment. As suggested by Meyer (1982), Milliken (1990), and Gioia and Thomas (1996), strong organizational identity can act as a perceptual screen that can influence individuals' interpretation of environmental stimuli.

Consistent with this perspective, I propose that organizational identity diminishes the extent of social influence from the environment for two reasons: organizational identity (1) reduces the decision maker's uncertainty and (2) enhances the perceived legitimacy of distinctiveness.

### **Uncertainty**

Uncertainty-identity theory (Hogg, 2000, 2007) suggests that identity processes associated with group membership reduce people's uncertainty about who they are, what they should think, how they should behave, and how others will perceive and treat them. Through the identification process and the establishment of ingroups and outgroups, individuals create a sense of order in their world. Group identity also reduces uncertainty by furnishing a sense of

belonging, connection, and social cohesion (Baumeister and Leary, 1995; Hogg, Adelman, and Blagg, 2010). Prior research provides evidence that identifying with a larger social entity can significantly reduce uncertainty (e.g., Hogg and Grieve, 1999; Mullin and Hogg, 1998).

I suggest that the uncertainty reduction gained through organizational identity counteracts decision makers' propensity to imitate solutions from their external environment.

Neoinstitutional theory emphasizes that uncertainty is a major driver of environmental isomorphism (DiMaggio and Powell, 1983; Zucker, 1987). Since organizational identity significantly reduces such uncertainty, it follows that individuals with a strong sense of organizational identity should feel less pressure to yield to environmental influences.

### **Social distinction**

According to social identity theory, in addition to reducing uncertainty, defining oneself in terms of a social group also leads individuals to seek to differentiate their ingroup from outgroups (Tajfel and Turner, 1979). People whose sense of self is defined in terms of "we" rather than "I" tend to want to see "us" as different from "them" (Haslam and Ellemers, 2005); thus they engage in a process of social distinction of the ingroup from outgroups (Turner, 1975, 1981; Turner and Pratkanis, 1998).

In line with this view, it has been argued that organizational identity can lead to a "distinctive behavioral signature"—a pattern of choices that is relatively time- and situation-independent (Baumeister, 1998; Mischel and Morf, 2003). Clark (1972) describes how the historical sagas, unique programs, and socialization practices of various colleges significantly strengthened their identity and enabled them to make "claims of distinctiveness" that remained consistent over time. In a similar vein, Dutton, Dukerich, and Harquail (1994) report that

employees with a strong organizational identity are proud of their organization's differences from other organizations.

Building on these insights, I expect environmental information to have less influence on decision makers when organizational identity is made salient. By legitimizing distinctiveness, organizational identity reduces the extent to which individuals are willing to accept or even pay attention to outgroup information. Organizational identity is argued to be the source of enduring commitment to earlier decisions, as it legitimates the local reality accepted by the ingroup, even if that reality is at odds with environmental norms, and thus buffers the organization from the environment. Hence:

*H1: The level of resistance to environmental pressures will be higher in the strong organizational identity condition than in the weak organizational identity condition.*

*H2: The decision maker's confidence mediates the link between organizational identity and resistance to environmental pressures.*

*H3: Social distinction mediates the link between organizational identity and resistance to environmental pressures.*

## **Status**

But under what conditions will impact of organizational identity on resistance to environmental pressures be particularly strong versus relatively weak? In her review of institutional theory, Zucker (1987, p. 452) briefly discusses the possibility that organizational decision makers' motivation to resist external influence may wane when the organization becomes unprofitable. Similarly, Oliver (1992) brings up the notion of performance crises contributing to the delegitimation of organizational practices and decision makers adopting more externally motivated courses of action.



These considerations are in line with research on the interplay of identity and status (Dukerich, Golden, and Shortell, 2002; Dutton *et al.*, 1994; Kramer, 1991; Mael and Ashforth, 1992), which argues that belonging to a high-status group intensifies uncertainty reduction and social distinction. Conversely, members of low status groups have been shown to decrease their outgroup bias and pay greater attention to outgroup behavior (Boen and Vanbeselaere, 2002; Haslam, 2004).

Among relevant organizational features, organizational performance has a particularly important status effect (Carmeli, Gilat, and Waldman, 2007; Dutton *et al.*, 1994; Schneider *et al.*, 2003). When organizations experience successful outcomes and are assessed favorably, individuals will more readily allow their membership in those organizations to inform their decision making. Conversely, when the organization encounters negative events and failure, identification can be painful and even debilitating (Turner, 1981). As a result, individuals may try to distance or dissociate themselves from the organization (Sutton and Callahan, 1987; Tedeschi and Riess, 1984), repressing the self-continuity conferred by organizational identity and making them more prone to informational cues and pressures from the environment. Thus:

*H4: The impact of organizational identity on resistance to environmental pressures will be higher when status is high (rather than low).*

## **METHODS**

### **Study overview**

The chapter uses two experimental studies to test the four hypotheses. The first study adopts a highly established social influence task (an ambiguous visual perception task introduced by Berger *et al.*, 1977) and a category-based identity manipulation (e.g., Haslam *et al.*, 2006). In each of several trials, participants have the opportunity to adjust their initial choice after learning

about responses from competing participants. Focusing on those trials in which self and alter disagree, self staying with his/her previous choice is used as a measure of resistance to external influence (Berger *et al.*, 1977), the dependent variable in this research. The second study mirrors the structure of the first, but uses a slightly modified task and employs a 2 x 2 factorial design, in which both superordinate organizational identity (weak, strong) and status (low, high) are manipulated.

### **Methodological considerations**

As noted above, this chapter uses a set of laboratory experiments. Experiments have the important advantage of controlling for extraneous factors that would be difficult to isolate in a field setting. Using random assignment and systematically varying theoretically relevant information, one can be confident that observed differences in the dependent variable are due to the manipulated features rather than other factors, allowing for strong causal inference (Brewer, 1985). A possible source of concern with experimental methods may be the question whether a laboratory setting can resemble real life organizations. In considering this issue, it is important to bear in mind that experiments generalize to naturally occurring situations not directly but only through theory (Martin and Sell, 1979; Zelditch, 1980). Therefore, an adequate experimental setting needs to ensure that the theoretical principles can be tested so that the results inform the underlying theory, which bridges the experimental study and the real world. Although neoinstitutional theory is often thought of as a macro-level approach focusing on fields of organizations, researchers have argued that its predictions also hold at the level of smaller groups (Troyer and Silver, 1999; Zucker, 1991). In fact, previous work has successfully implemented experimental designs to test key aspects of neoinstitutional theory, including the institutionalization of abstract group standards (Zucker, 1977), organizational strategy (Kurke,

1988), and female organizational leadership (Lucas, 2003). I build on this line of research and adapt the experimental setting to the specific needs of the current research.

## **Study 1**

### *Main task*

The research problem required a situation in which participants made ambiguous organizational decisions on behalf of a group; it also required that they be confronted with information on others' behavior, in response to which they could adjust their initial choice (which allows for capturing variations in resistance to environmental pressures). Finally, participants should be task-oriented and expect their performance to be evaluated, so that they were motivated to perform the task well.

To establish such a setting, I used a variant of the standardized experimental situation first introduced by Berger *et al.* (1977). This approach is well established and has been shown to provide a valid measure of social influence in the study of various theoretical problems (Berger, 2007). In addition, the standardized experimental situation is similar to the designs used in earlier experimental research on institutional theory (Lucas, 2003; Zucker, 1977) but has the advantage of being amenable to computerization (Walker and Willer, 2007), with computerization offering several well-known benefits, including reduction of experimenter effects and greater control over timing (Molm, 2007). Meeker (1990) summarizes the general setup and protocol of the standardized experimental situation in greater detail.

More specifically, the task employed here required participants to undergo a series of ambiguous judgment trials, in which they made binary choices on various organizational problems. Participants were told that their group was running a large flower shop (more on group assignment below) and that they would need to make a series of complex strategic decisions for

the shop on behalf of their group. For example, one of the questions reads, “Your group's flower shop needs to decide on the location for a new branch. Which of the following solutions do you choose?,” with the two answer options being “open branch in a shopping mall” and “open branch downtown.” I extensively pretested and refined these scenarios and eventually arrived at a final list of twenty-five questions.<sup>5</sup> These questions represent common strategic problems faced by real-life organizations, thus ensuring high levels of ecological validity.<sup>6</sup>

Instructions indicated that, in each decision round, participants were first asked for their group’s initial response. Subsequently, they would be shown the competing group’s response that they had provided for their shop (in reality, the competing group’s responses were computer-generated in a way to achieve disagreement with the participant’s initial choice in twenty of the twenty-five trials, consistent with Foschi (1996)). After learning about the competing group’s choice, participants had the opportunity to adjust their own group’s initial response to provide a final choice for the respective trial. That is, the participant could either resist the influence attempt (1 = stay with the initial choice) or conform to the influence attempt (0 = change the initial choice). Focusing on those twenty trials in which self and alter initially disagreed, self’s

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<sup>5</sup> Initially, I created a long list of thirty decision scenarios (each consisting of a question and two answer choices) based on several strategy and marketing textbooks and case studies. I then ran a pretest via amazon mturk (n = 41), in which I asked pretest participants to select a response and then indicate how certain they were about their choice (on a scale from 1 to 7) for each of the thirty questions. Focusing on those questions with relatively little behavioral response variance and high levels of perceived certainty, I dropped five questions and slightly reworded others. Please see Appendix 3-A for a full list of organizational problems used in the task.

<sup>6</sup> See Lant and Montgomery (1992) for relevant characteristics and benefits of business simulation games as a research method for studying organizational decision making.

behavioral response of staying with his/her previous choice was used as a measure of resistance to influence (Berger *et al.*, 1977)—the study’s dependent variable.

Before beginning the task, instructions further stressed that it was important to envision oneself as a representative of the entire group throughout this task and that the responses would represent all group members (Kane, Argote, and Levine, 2005). After reading those instructions, participants went through a practice trial that familiarized them with the structure of the task.

### *Participants and procedures*

One hundred and eighty-seven participants were recruited to a study on “decision making” through the subject pool of the behavioral lab of a large public university on the American West Coast. Participants were scheduled in groups ( $M_{\text{session size}} = 10.2$  participants). To qualify for participation in the study, students had to have sufficiently high levels of English proficiency (as self-reported in the post-task questionnaire) and needed to demonstrate that they paid sufficient attention to the study instructions (as assessed based on the response to a screener question hidden in the post-task questionnaire). On the basis of these criteria, eighteen people were excluded from the study, yielding a usable sample size of one hundred and sixty-nine participants (72% female,  $M_{\text{age}} = 21$  years).<sup>7</sup> Participants were randomly assigned to one of the experimental conditions: weak organizational identity ( $n = 84$ ) or strong organizational identity ( $n = 85$ ).

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<sup>7</sup> Specifically, two of the participants indicated their level of English language proficiency to be novice or less, while sixteen participants responded incorrectly to the screener item “To show that you have read this question, please choose 0 (the very left button) as your response” (which I adapted from Berinsky, Margolis, and Sances, forthcoming and which was hidden within a battery of other questionnaire items). I also ran the analyses including those eighteen participants (i.e., with  $n = 187$ ) and the results were substantively similar.

Upon arriving at the lab, participants were ushered into separate cubicles equipped with computers. A research assistant (who was blind to the study's hypotheses) obtained informed consent and told the participants they had to wait until all session participants were there before the experiment could start. Once the signal to begin was given, all further instructions were displayed on the computer screen. Participants first underwent the identity manipulation before completing the study's main task and subsequently filling out a post-task questionnaire that included manipulation checks and several other survey items. Finally, participants were debriefed and received US\$ 6.50 as remuneration. The procedure took about 35 minutes to complete.

### *Manipulation*

According to Ashmore, Deaux, and McLaughlin-Volpe (2004), identity is first and foremost a statement about categorical membership. To vary the salience of organizational identity, I employed a variant of the highly established minimal group paradigm (Tajfel *et al.*, 1971), which uses categorization into a superordinate organization as the primary means for manipulating identity. The minimal group paradigm has the advantages of being compatible with ad hoc groups (as opposed to real-world organizations) and not requiring potentially confounding face-to-face interaction between the group members. Even under these relatively stripped-down conditions, prior research has shown this manipulation to be very effective in inducing identity (Grieve and Hogg, 1999; Tajfel, 1970). In particular, I adopted the organizational identity manipulation procedure devised by Doosje, Spears, and Koomen (1995) and Ellemers, Spears, and Doosje (1997) and recommended by Haslam (2004) specifically for lab studies with ad hoc organizations.

The first phase of the procedure involved participants engaging in a word and number association test, which ostensibly served the purpose of dividing people into one of two groups that would later compete against each other. The test presented participants with a series of key words (e.g., water) and key numbers (e.g., 1111), after which they were asked to choose one of four alternative responses they associated most with the key word (e.g., rain, fire, drink, or well) or the key number (e.g., 1110, 1112, 111, or 4).<sup>8</sup> Based on their responses, participants were led to believe that the computer would be able to assess their dominant thinking style and assign them to either the group of “inductive thinkers” or the group of “deductive thinkers” (in reality, all participants were assigned to the group of “inductive thinkers”). They were also told that each group consisted of four members that would compete against the other group on several tasks.

I then varied identity strength between conditions as follows. First, in the strong organizational identity condition, participants were told that the research team would like them to stay in the group they had been assigned to for the rest of the study, and they were asked whether or not they would agree with this (which all but one participant did). This question was included because prior research has shown that voluntary group commitment enhances identification with a group (Turner *et al.*, 1984). In the weak identity condition, participants were only informed that they would stay in the group for the rest of the study, without asking them to voluntarily commit to it.

Afterwards, participants in the strong organizational identity condition performed an intergroup reward allocation task, in which they allocated points using “Tajfel matrices” (Tajfel *et al.*, 1971). These matrices provided fourteen different payoff tuples for two individuals, with

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<sup>8</sup> See Appendix 3-B for the full list of items used in the association test.

payoffs on one side of the spectrum benefitting the first of the two while hurting the second person and payoffs on the other side of the spectrum benefitting the second of the two while hurting the first person. In four of the six matrices, participants were asked to divide points between members of their own group (the inductive thinkers) and members of the other group (the deductive thinkers), whereas in one matrix the division of points was between two ingroup members and in another matrix between two outgroup members.<sup>9</sup> Leyens, Yzerbyt, and Schadron (1994, p. 68) suggest that performing this intergroup reward allocation task increases category salience and thus group identity. Participants in the weak organizational identity condition performed the same task but only *after* (rather than *before*) the study's main task.

Then, participants were asked to indicate on a 9-point scale to what extent they agreed with five general questions that directly or indirectly related to group membership or social contact (e.g., "relationships with other people are very important to me").<sup>10</sup> After providing their responses, instructions explained to participants that these five questions were "group involvement questions," which, together with the participant's choices on the association test, ostensibly allowed for computing a personalized group involvement score—a measure tapping the extent to which participants feel involved with their respective group. It was deliberately left open how exactly that involvement score was computed. Participants in the strong identity condition were then informed that their group involvement score was 53 points, which purportedly was significantly above the average score of 40, whereas participants in the strong identity condition were told that their group involvement score was 27 points and thus

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<sup>9</sup> See Appendix 3-C for a list of Tajfel matrices used in the intergroup reward allocation task.

<sup>10</sup> See Appendix 3-D for all five "group involvement questions."



significantly below the average score of 40. On the next screen, participants were asked to report the group involvement score they were just provided using a slider, which showed a range from 20 to 60 and a mid point of 40.

#### *Comprehension, suspicion, and manipulation checks*

Post-task questionnaire items were used to assess self-reported comprehension and suspicion regarding the task. The mean of an item “I understood the instructions well”—with answer categories ranging from 1 (strongly disagree) to 5 (strongly agree)—was 4.21, suggesting that study comprehension was not a significant problem. Further, I gauged the extent to which participants were suspicious about the group setting by asking them to indicate their agreement with the statement “There were other participants involved in the task.” The item mean of 4.33 indicated that the participants bought into the group setting. In addition, an open-ended question asked participants to list any aspects of the experiment that they found “weird” or “hard to believe” (if any). While some of the participants expressed doubt that the association test was a valid instrument for discriminating between inductive and deductive thinkers or that the specific group involvement score they were provided exactly matched their group involvement, the actual existence of other study participants and the reality of their responses was very rarely questioned.

To check the effectiveness of the manipulation, I measured self-reported identity strength using four items pertaining to the inductive thinkers ingroup (“I identify with this group,” “I do not fit in well with the other members of this group” (reverse coded), “I would like to get to know the other group members,” “I feel like I belong to this group”), anchored on a nine-point answer scale ranging from 1 (strongly disagree) to 9 (strongly agree). Coefficient alpha ( $\alpha = 0.79$ ), composite reliability (CR = 0.80), and average variance extracted (AVE = 0.52) demonstrated good convergent validity and reliability of this identity measure. Results of a one-

way ANOVA showed that the mean of this measure among participants in the strong identity condition ( $M_{\text{strong identity}} = 6.29$ ) was significantly greater than the mean among participants in the weak identity condition ( $M_{\text{weak identity}} = 5.60$ ),  $F(1, 167) = 11.69$ ,  $p \leq 0.001$ . As a supplementary analysis, I also compared the number of points allocated to ingroup members in the reward allocation task<sup>11</sup> and found significantly more points to be allocated to ingroup members in the strong identity condition ( $M_{\text{strong identity}} = 38.55$ ) than in the weak identity condition ( $M_{\text{weak identity}} = 29.80$ ),  $F(1, 167) = 7.61$ ,  $p \leq 0.01$ . This result provided further support for a successful manipulation of identity strength in this study. In short, comprehension was high, suspicion was low, and the identity manipulation was successful.

### *Main effect*

Data on the individual trials of the main task were nested within participants, which is why I used random-intercept logistic regressions with participant as clustering variable (Rabe-Hesketh and Skrondal, 2012). With regard to the proposed main effect of organizational identity on resistance to environmental pressures, the regression results provided strong empirical support for a positive effect ( $b = 0.64$ ;  $SE = 0.20$ ;  $z = 3.22$ ;  $p \leq 0.001$ ), showing that resistance to environmental pressures increases significantly as organizational identity strength increases. Therefore, hypothesis 1 was supported.

### *Mediational analyses*

Hypotheses 2 and 3 stated that the effect of organizational identity on resistance to environmental pressures is mediated by the decision maker's confidence (H2) and social

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<sup>11</sup> This analysis focused on those four trials of the reward allocation task in which participants were asked to divide points between members of their own group and members of the other group.

distinction (H3) such that organizational identity increases both confidence and social distinction, which in turn increase resistance. Decision maker confidence was measured in the post-task questionnaire using the following three items (with an answer scale ranging from 1 = strongly disagree to 5 = strongly agree): “I feel confident about being a participant in the experiment,” “I feel confident about my responses,” and “I found it easy to provide appropriate responses.” The measure demonstrated good psychometric properties ( $\alpha = 0.82$ ; CR = 0.82; AVE = 0.61). Social distinction from other groups was approximated using the behavioral measure of reaction time in the individual trials of the main task, with the rationale being that distinctiveness-seeking participants would pay less attention to the competing group’s choices, as indicated by shorter reaction times (Prinzmetal, McCool, and Park, 2005). Since reaction times (measured in seconds) were highly skewed, I redefined the variable using a logarithmic transformation that has been shown to remedy such a problem (Tabachnick and Fidell, 2000). Finally, I reverse-coded the variable such that larger values indicated higher levels of social distinction.<sup>12</sup>

Consistent with the standard analytical procedure suggested by Baron and Kenny (1986), three conditions are necessary for the presence of a mediation effect: (a) the independent variable (organizational identity) must significantly affect the dependent variable (resistance to environmental pressures) while *not* controlling for the mediator (decision maker confidence; social distinction), (b) the independent variable (organizational identity) must significantly affect the mediator (decision maker confidence; social distinction), and (c) the mediator (decision

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<sup>12</sup> To reverse-code the continuous reaction time variable, I used the following equation: reversed values = maximum value + minimum value – old values.

maker confidence; social distinction) must significantly affect the dependent variable (resistance to environmental pressures) after the influence of the independent variable (organizational identity) is controlled for. As reported above, condition (a) was met, given that organizational identity significantly increased resistance to environmental pressures. To assess condition (b), I regressed decision maker confidence and social distinction, respectively, on organizational identity. Results revealed a significant positive effect of organizational identity on both decision maker confidence ( $b = 0.56$ ;  $SE = 0.11$ ;  $t = 4.93$ ;  $p \leq 0.001$ ) and social distinction ( $b = 0.12$ ;  $SE = 0.03$ ;  $t = 4.55$ ;  $p \leq 0.001$ ), satisfying condition (b).<sup>13</sup> Finally, I evaluated condition (c) by running a random-intercept logistic regression with organizational resistance to environmental pressures as dependent variable and organizational identity and decision maker confidence as independent variables. This final analysis showed that both decision maker confidence ( $b = 0.29$ ;  $SE = 0.12$ ;  $z = 2.38$ ;  $p \leq 0.05$ ) and social distinction ( $b = 1.32$ ;  $SE = 0.08$ ;  $z = 17.49$ ;  $p \leq 0.001$ ) were significant predictors of resistance to environmental pressures while the effect of organizational identity was controlled for. The fact that organizational identity remained a significant predictor in this regression ( $b = 0.39$ ;  $SE = 0.19$ ;  $z = 2.02$ ;  $p \leq 0.05$ ) suggests the presence of partial mediation.<sup>14</sup>

### *Posthoc analyses*

In supplementary posthoc analyses, I first explored potential gender effects (Simpson, 2006) by estimating a model with resistance to environmental pressures (i.e., change the initial

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<sup>13</sup> Note that social distinction is measured at the trial-level ( $n = 3,380$ ) whereas decision maker confidence is measured at the participant-level ( $n = 169$ ), which is why I used a multi-level regression for the former and an ordinary single-level regression for the latter dependent variable.

<sup>14</sup> I also ran this regression for each of the mediators in isolation and results are substantively the same.

choice = 0, stay with the initial choice = 1) as dependent variable and gender as independent variable. Results showed that gender had no significant effect ( $b = -0.34$ ;  $SE = 0.23$ ;  $z = -1.48$ ;  $p > 0.1$ ). Further, I explored temporal tendencies to see whether respondents would learn to resist or accept external influence throughout the trials of the experiment. Running a regression with resistance to environmental pressures as dependent variable and trial number (ranging from 1 to 20) as independent variable yielded a nonsignificant coefficient ( $b = 0.01$ ;  $SE = 0.01$ ;  $z = 1.38$ ;  $p > 0.1$ ). Manual inspection of the responses aggregated across participants at the trial level also didn't reveal any cross-trial trends.<sup>15</sup> Further, I assessed differences between the 20 focal trials in which the competitor's response ostensibly differed and the five trials in which there was agreement between the participant's and the competitor's initial choice. Running a paired samples t-test, I found that participants stayed with their previous choice significantly more frequently in those five trials ( $M_{\text{control trials}} = 0.94$ ) as compared to the twenty focal trials ( $M_{\text{focal trials}} = 0.85$ ),  $t = 5.15$ ,  $df = 168$ ,  $p \leq 0.001$ , indicating that response changes were indeed a consequence of environmental pressures.

### *Discussion*

Results of study 1 provided strong support for hypotheses 1 to 3. As predicted, I found a significant main effect of organizational identity on resistance to environmental pressures, with greater resistance in the strong than in the weak identity condition. Further, study 1 provided important insights into the processes responsible for the observed main effect. In line with hypotheses 2 and 3, both decision maker confidence and social distinction (as approximated by reaction time) mediate the identity-resistance relationship. Organizational identity increases

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<sup>15</sup> See Appendix 3-E for trial specific resistance values.

decision maker confidence, which in turn raises resistance to environmental pressures. Additionally, organizational identity increases social distinction, and social distinction in turn raises resistance to environmental pressures. In sum, the results of study 1 contribute to understanding how organizational identity influences perception and affects the way decision makers respond to social influence from the environment.

While the standardized experimental situation employed in study 1 represents a well-established design for studying drivers of social influence and has repeatedly been shown to produce reliable data, the fact that decision makers are directly confronted with first-hand information on the behavior of competitors who are entirely unknown to them may raise concerns about mundane realism. Therefore, my second study's task focuses on a different mechanism through which mimetic isomorphism can occur: benchmarking—a project-based organizational effort to learn from best practice, often with the help of external management consultants who perform a systematic competitor analysis for the organization. Benchmarking has become one of the most common vehicles for strategic planning and organizational innovation these days. As such, it provides an ideal setting to study mimetic isomorphism in action (Still and Strang, 2009). Benchmarking can be seen as an institutionalized form of imitation where an organization is confronted with multiple innovations in a field, and capturing the extent to which organizational decision makers consider adopting these new solutions provides a direct measure of environmental influence (Strang, 2010). Study 2 adapts the task of the first study to incorporate key features of a benchmarking setting. Furthermore, study 2 was designed to assess hypothesis 4 on the moderating role of status.

## Study 2

### *Main task*

The second study's task builds on and shares several features with the flower shop task from study 1 but also exhibits several notable differences. Participants were again told that their group was running a large flower shop and that they would need to make a series of complex strategic decisions for that shop on behalf of their group. They were then informed that they had hired a management consulting firm for them to benchmark what competing flower shops and retailers in adjacent fields were doing differently than their own shop. That consulting firm had now come back to them with a number of practices that differed from their flower shop's current way of doing business. In each of the twenty-five trials, participants needed to decide whether or not their group should consider implementing the new, benchmarked practice or continue to stick to the current practice. The nature of the twenty-five strategic problems was the same as in study 1. For example, one of the questions reads "The benchmarking results show that other companies expand by opening new branches in downtown areas, whereas your own group's flower shop has traditionally opened new branches in shopping malls. What should your group's flower shop do in the future?," with the two answer options being "open branch in a shopping mall (keep current practice)" and "open branch downtown (adopt others' practice)."<sup>16</sup> That is, participants could either resist the influence attempt (1 = keep current practice) or conform to the influence attempt (0 = adopt others' practice), which allowed for measuring the dependent variable of resistance to environmental pressures. Instructions again stressed that it was important to envision oneself as a

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<sup>16</sup> See Appendix 3-F for a list of all scenarios used in the main task of study 2.

representative of the entire group, and participants went through a practice trial before beginning the main task.

### *Participants and procedures*

One hundred and eighty-six students of a large public university on the American West Coast participated in exchange for monetary compensation of US\$6.50. Based on self-reported levels of English proficiency and an attention screener question (see study 1), eleven people were excluded from the study, yielding a usable sample size of one hundred and seventy-five participants (73% female,  $M_{\text{age}} = 21$  years).

Participants were randomly assigned to one of four conditions in a 2 (organizational identity: weak versus strong) x 2 (status: low versus high) between-subjects experimental design with organizational identity and status as independent variables and resistance to environmental pressures as the dependent variable. The mean session size for study 2 was 4.2 participants. The procedural set up closely mirrored the procedures of study 1.

### *Manipulations*

I adopted the manipulation of organizational identity used in study 1. Status was manipulated by providing participants feedback on how well their group was doing midway through the main task (e.g., Brewer, Manzi, and Shaw, 1993). After completing the first twelve trials, the current scores of both the inductive thinkers (the ingroup) and the deductive thinkers (the outgroup) as well as the average score for the task (61 points in all conditions) were displayed to the participants. In the high status condition, the inductive thinkers' current score was shown to be 67 points, whereas the deductive thinker's current score was 54 points. In contrast, in the low status condition, the inductive thinkers' current score was 54 points while the deductive thinkers scored 67 points. After being informed about their group's score, the next



screen asked participants to report that score using a slider with 61 as mid point, 45 as minimum, and 75 as maximum. All analyses in study 2 focused on the remaining thirteen trials following the performance feedback.

### *Comprehension, suspicion, and manipulation checks*

Comprehension and suspicion issues did not appear to be a problem in the study. Participants strongly agreed with the statements “I understood the instructions well” ( $M = 4.03$ ) and “There were other participants involved in the task” ( $M = 4.24$ ), both anchored on a five-point answer scale. For the purpose of testing the identity manipulation, I used the same four-item measure employed in study 1 ( $\alpha = 0.72$ ;  $CR = 0.75$ ;  $AVE = 0.47$ ). Results of a two-way ANOVA (with identity and status as independent variables) showed that the mean of this measure among participants in the strong identity condition ( $M_{\text{strong identity}} = 5.86$ ) was significantly greater than the mean among participants in the weak identity condition ( $M_{\text{weak identity}} = 5.32$ ),  $F(1, 171) = 10.03$ ,  $p \leq 0.01$ . There was no significant difference on this measure between participants in the low status condition ( $M_{\text{low status}} = 5.47$ ) and those in the high status condition ( $M_{\text{high status}} = 5.74$ ),  $F(1, 171) = 2.07$ ,  $p > 0.1$ , and neither was the identity  $\times$  status-interaction significant,  $F(1, 171) = 2.17$ ,  $p > 0.1$ . Furthermore, a supplementary two-way ANOVA using number of points allocated to ingroup members in the reward allocation task as dependent variable showed that significantly more points were allocated to ingroup members in the strong identity condition ( $M_{\text{strong identity}} = 34.77$ ) than in the weak identity condition ( $M_{\text{weak identity}} = 28.73$ ),  $F(1, 162) = 4.32$ ,  $p \leq 0.05$ .<sup>17</sup> Neither status nor the identity  $\times$  status-interaction

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<sup>17</sup> In study 2, responses to the reward allocation task were not coded as required, resulting in missing values for one or more relevant trials in nine cases.

had significant effects ( $p$ 's  $> 0.1$ ). Finally, I checked the effectiveness of the status manipulation by running a two-way ANOVA with self-assessed performance as dependent variable. To capture self-assessed performance, the post-task questionnaire included the question "Before telling you the end result of the flower shop task, how do you think your group was doing?" that could be answered on a 9-point bipolar scale ranging from "much worse than other groups" to "much better than other groups." Results showed that self-assessed performance differed significantly between the low status condition ( $M_{\text{low status}} = 5.23$ ) and the high status condition ( $M_{\text{high status}} = 6.65$ ),  $F(1, 171) = 45.76$ ,  $p \leq 0.001$ , whereas no significant effects were found for both identity and the identity  $\times$  status-interaction ( $p$ 's  $> 0.1$ ). To sum up, identity and status were successfully manipulated.

#### *Main and moderating effects*

To test the proposed interaction effect of identity and status on resistance to environmental pressures, I again used random-intercept logistic regressions with participant as clustering variable and entered identity, status and their interaction as predictors. Results provided additional support for the proposed main effect (hypothesis 1): identity had a significant positive impact on resistance to environmental pressures ( $b = 0.32$ ;  $SE = 0.12$ ;  $z = 2.71$ ;  $p \leq 0.01$ ). Further, I found status to positively affect the dependent variable ( $b = 0.41$ ;  $SE = 0.12$ ;  $z = 3.44$ ;  $p \leq 0.001$ ). Finally, the positive coefficient of the interaction term was consistent with the proposed moderation effect, although the effect was statistically significant only at a trend level ( $b = 0.41$ ;  $SE = 0.24$ ;  $z = 1.72$ ;  $p \leq 0.1$ ). Appendix 3-G illustrates the interaction effect posited in hypothesis 4 graphically. Consistent with this hypothesis, the figure shows that the positive effect of identity on resistance to environmental pressures becomes stronger when status is high rather than low. Subgroup analyses revealed that the effect of

identity is not significant when focusing on low status groups alone ( $b = 0.12$ ;  $SE = 0.17$ ;  $z = 0.71$ ;  $p > 0.1$ ). However, I did find a highly significant identity effect when restricting the analysis to high status groups ( $b = 0.52$ ;  $SE = 0.15$ ;  $z = 3.36$ ;  $p \leq 0.001$ ).

#### *Posthoc analyses*

To explore potential gender effects, I estimated a fully interacted logistic regression model with identity, status, and gender along with their interactions as predictors, resistance to environmental pressures as dependent variable and participant as clustering variable. Gender had no significant main effect ( $b = -0.06$ ;  $SE = 0.13$ ;  $z = -0.44$ ;  $p > 0.1$ ) and none of the interaction terms involving gender were significant ( $p$ 's  $> 0.1$ ). Further, there were no temporal trends, as evidenced by the nonsignificant coefficient when regressing resistance to environmental pressures on trial number (ranging from 1 to 13).

#### *Discussion*

The results of study 2 replicate and extend the findings from study 1. Using a modified experimental paradigm, I again find a significant positive main effect of organizational identity on resistance to environmental pressures, underlining the robustness of this effect. In addition, study 2 provides novel evidence on the role of status as a relevant moderator of the identity-resistance relationship. In situations of positive performance feedback (i.e., high status), the effect of identity on resistance to environmental pressures is stronger than in situations of negative performance feedback (i.e., low status), with this interaction being significant at a .10 level.

### **GENERAL DISCUSSION AND CONCLUSION**

The message of this research is clear and profound. Organizational identity significantly decreases mimetic tendencies, showing that identity is an important mechanism that can help us

understand variations in responses to environmental pressures. These findings have broader theoretical significance because they provide convincing support for the claim that cognition plays a critical role in how decision makers respond to institutional pressures from the organizational environment. More specifically, the knowledge created by this chapter advances our theoretical understanding in several ways.

First, this research heeds repeated calls for investigations into micro-level sources of organizations' responses to their institutional environments (Aldrich, 2010; Barley, 2008; Powell and Colyvas, 2008). It introduces organizational identity as a novel micro-level factor explaining organizational differences in reactions to environmental conformity pressures. Emphasizing that adaptation to the environment is not automatic but is mediated by decision makers' cognitive schemas (Gavetti *et al.*, 2007; King *et al.*, 2010), it advances the theoretical argument that self-categorization into an organization reduces decision makers' uncertainty and increases the perceived acceptability of social distinction, both of which in turn diminish decision makers' receptivity to environmental pressures. Further, the relationship between organizational identity and resistance to environmental pressures is found to be more pronounced when the organization's prior performance is strong (rather than weak). Taken together, these insights aid in understanding the differential effects of environmental institutions on different organizations.

Second, the chapter makes a methodological contribution by re-incorporating experimental research into neoinstitutional analysis. The current lack of methodological diversity restricts the neoinstitutional line of research to specific kinds of research questions; in particular, it does not allow for the illumination of the phenomenological underpinnings of institutions (Barley, 2008; Suddaby and Greenwood, 2009). Whereas most extant empirical research in neoinstitutionalism is based on archival records and qualitative case studies, my hope is to revive

the experimental approach to institutional theory initiated 35 years ago by Zucker (1977). Such an approach has the potential to make significant contributions to understanding how groups of individuals organize and carry out their goals (Heath and Sitkin, 2001) and to clarifying causal effects of micro-level process (Brewer, 1985), thus allowing for an approach to institutionalism from the bottom up and complementing existing insights. Further, experiments like the ones reported here can also give unique insights into the processes explaining how organizations perceive and react to environmental pressures. These experiments can thus add considerable richness to the neoinstitutional research agenda. The results reported in the current research should encourage future researchers to adopt this route. Specifically, they show that even quite minimal conditions may be sufficient to elicit a sense of belongingness and that my manipulation of identity successfully induced different levels of environmental conformity.

Third, the chapter also contributes to research on identity by introducing environmental resistance as a new dimension on which decisions made by highly identifying individuals differ from those made by individuals with lower identity levels. Although the identity approach has constituted a long-standing interest to sociologists and social psychologists, it has only recently emerged as a significant perspective in explaining strategic decision making in organizations (Cole and Bruch, 2006), and there are still relatively few empirical analyses of the organizational-level consequences of identity (Carmeli *et al.*, 2007). By showing that organizational identity is an important predictor of a key organizational outcome—the extent of organizational distinctiveness—this chapter encourages further research on organizational identity and its role in strategic decision making.

Fourth, the chapter makes an integrative contribution by bringing together the highly complementary but thus far largely separate streams of neoinstitutional and identity research.

Despite their common foundation in social constructionism, these two lines of research have evolved largely independently, with little cross-fertilization (Pedersen and Dobbin, 2006). An integrative approach provides significant theoretical leverage, as it may help to reconcile the seemingly contradictory observations of homogeneity and distinctiveness central to the two approaches.

Finally, this chapter also informs the emerging research stream of behavioral strategy (Powell, Lovaglio, and Fox, 2011) by shedding new light on the role of cognition for strategic action (Nadkarni and Barr, 2008). The current research positions organizational identity as an important intraorganizational factor affecting managerial cognition, and it specifically adds to current knowledge on the relation between cognition and within-field heterogeneity (Johnson and Hoopes, 2003).

In addition to its scientific merit, this research also has important practical implications by improving executives' and policy makers' knowledge of an important factor driving organizational resistance to environmental pressures.<sup>18</sup> Especially in times of high uncertainty (e.g., during the ongoing economic crisis), many organizations tend to give up some of their agentic qualities and almost automatically adopt competitors' solutions in order to "play it safe." However, conformity with the environment is not always entirely beneficial; while it may improve symbolic performance by increasing legitimacy, it can also hurt technical efficacy and competitive advantage based on differentiation (Heugens and Lander, 2009; Meyer and Rowan, 1977). By implication, the level of distinctiveness determines issues of societal relevance, such

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<sup>18</sup> By investigating micro-level sources of organizational heterogeneity, this chapter significantly increases neoinstitutional theory's appeal to managers, which has been reported to decline steadily due to the theory's macro-level focus (David and Bitektine, 2009).

as job security and economic competitiveness. Organizations may thus benefit from proactive management of environmental conformity. This chapter suggests that one way to do so is to steer identity salience. While an organization's identity has traditionally been theorized to be rather enduring (Albert and Whetten, 1985), other studies show that there are various tools available that can shape identity. For example, an organization's identity can be altered by conveying and repeating a limited set of goals and values with which employees may identify (Cheney, 1983). In addition to direct communication, symbols (such as corporate logos or the architectural design of headquarters) can prove to be a powerful tool for disseminating the organization's identity (Harquail, 2006). Further, hiring and socialization policies have been found to substantially influence organizational identity (Battilana and Dorado, 2010).

Although this research provides unique insights into the link between organizational identity and resistance to environmental pressures, like prior studies it is limited by its conceptual focus and the methods employed, opening up important avenues for future research. For example, the chapter focuses mostly on identity *strength* while bracketing the issue of different *types* of organizational identity—that is, the content of the identity in terms of attributes that are central, enduring, and distinctive to the organization. Follow-up studies are needed to further how different types of identity affect resistance to environmental pressures. One possible approach to this question may be to operationalize organizational identity content by building on the two archetypical identity configurations proposed by Gioia and Thomas (1996): utilitarian identity and normative identity. A utilitarian identity is governed by values related to the maximization of profit, whereas the concept of normative identity is typified by Parsons' (1960) pattern maintenance organization with primarily cultural, educational, and expressive functions.

Furthermore, it is worth repeating that empirical findings from experimental research—including those reported here—are generalizable only via theory rather than through one-to-one application (Haslam *et al.*, 2006; Webster and Sell, 2007). Clearly, simplifying assumptions and focus on the features of particular theoretical interest are necessary to bring the research question into the laboratory. Therefore, experimental studies in institutional theory should spark further research that uses different methods to shed more light on the dynamic process by which organizational identity develops and is negotiated in organizations (Levine, 2003).

Despite these limitations, this research provides valuable novel findings on a key source of organizational resistance. It moves beyond the traditional neoinstitutional macro-level approach to delve into cognitive processes that help explain organizational choices, thus opening the door for a new neoinstitutional agenda of research aimed at the black box of organizational decision making.



## APPENDICES

### Appendix 3-A: Organizational problems used in the main task of study 1

- 1) Your group's flower shop needs to reduce **personnel costs**. Which of the following solutions do you choose?
  - Discharge a small number of employees
  - Reduce the working hours of all employees
- 2) Your group's flower shop needs to decide on its **hiring policy**. Which of the following solutions do you choose?
  - Hire certified florists only
  - Hire motivated people no matter their education
- 3) Your group's flower shop needs to decide on its **geographic scope**. Which of the following solutions do you choose?
  - Focus on local area
  - Spread over various regions
- 4) Your group's flower shop needs to decide on its **product breadth**. Which of the following solutions do you choose?
  - Focus on flowers only
  - Offer flowers and other garden products
- 5) Your group's flower shop needs to decide on its **pricing strategy**. Which of the following solutions do you choose?
  - Low prices (meaning low profit margins but higher volumes)
  - High prices (meaning high profit margins but lower volumes)

- 6) Your group's flower shop needs to decide on its **replenishment system**. Which of the following solutions do you choose?
- Reordering inventory at fixed points in time
  - Reordering inventory when running low
- 7) Your group's flower shop needs to decide on **price variations**. Which of the following solutions do you choose?
- Keep prices constant throughout the year (to reduce consumer confusion)
  - Run frequent price promotions
- 8) Your group's flower shop needs to decide on its **flower portfolio**. Which of the following solutions do you choose?
- Wide variety of flowers from all over the world
  - Specific types of flowers the shop is known for
- 9) Your group's flower shop needs to decide on the location for a **new branch**. Which of the following solutions do you choose?
- Open branch in a shopping mall
  - Open branch downtown
- 10) Your group's flower shop needs to decide on **who places orders**. Which of the following solutions do you choose?
- Orders are placed centrally by corporate management
  - Orders are placed decentrally by every branch manager
- 11) Your group's flower shop needs to decide on its **ownership form**. Which of the following solutions do you choose?
- Privately held company

- Publicly traded company

12) Your group's flower shop needs to decide on the target segment of its **next ad campaign**. Which of the following solutions do you choose?

- Weddings and events
- Individual customers

13) Your group's flower shop needs to decide on its **sourcing strategy**. Which of the following solutions do you choose?

- Order from few exclusive flower wholesalers
- Order from many different flower wholesalers

14) Your group's flower shop needs to decide on how to **reward outstanding employees**. Which of the following solutions do you choose?

- Personnel trainings
- Financial boni

15) Your group's flower shop needs to decide on a way to **improve the stores**. Which of the following solutions do you choose?

- Improve store design
- Improve store size

16) Your group's flower shop needs to increase **customer retention**. Which of the following solutions do you choose?

- Loyalty card/bonus points
- Volume discounts

17) Your group's flower shop needs to determine its **key financial goal**. Which of the following solutions do you choose?

- Increase sales growth
- Increase profit margins

18) Your group's flower shop needs to decide on how to obtain **market intelligence**. Which of the following solutions do you choose?

- Set up an inhouse market research unit
- Hire a market research consultancy

19) Your group's flower shop needs to decide which **advertising channel** to prioritize. Which of the following solutions do you choose?

- Advertising via Internet
- Advertising via local media

20) Your group's flower shop needs to redesign its **logo**. Which of the following solutions do you choose?

- Make the logo blue
- Make the logo red

21) Your group's flower shop needs to decide on whether or not to offer **home delivery**. Which of the following solutions do you choose?

- Offer delivery service—that's where the money is
- Don't offer delivery service—that's not worth the hefty investment

22) Your group's flower shop needs to decide on its **return policy**. Which of the following solutions do you choose?

- "7 days fresh or your money back"
- "If you don't love it, we'll take it back"

23) Your group's flower shop needs to decide on its **expansion strategy**. Which of the following solutions do you choose?

- Organic growth (growth from existing business)
- External growth (growth from acquiring other flower shops)

24) Your group's flower shop needs to decide on its **opening hours**. Which of the following solutions do you choose?

- 9am-9pm for all branches
- Store hours consistent with other stores in the local neighborhood

25) Your group's flower shop needs to increase its reach among **commercial customers**. Which of the following solutions do you choose?

- Offer discounted flower subscriptions
- Hire a sales rep to go out to restaurants, funeral homes, etc.

### Appendix 3-B: List of items used in the association test

- 1) Which of the four words listed below do you associate most with the keyword: **cow**?
  - horse
  - farmer
  - grass
  - milk
- 2) Which of the four words listed below do you associate most with the keyword: **water**?
  - rain
  - fire
  - drink
  - well
- 3) Which of the four words listed below do you associate most with the keyword: **house**?
  - apartment
  - home
  - roof
  - school
- 4) Which of the four words listed below do you associate most with the keyword: **film**?
  - director
  - cinema
  - camera
  - movie
- 5) Which of the four words listed below do you associate most with the keyword: **lamp**?
  - shade

- genie

- street

- desk

6) Which of the four words listed below do you associate most with the keyword: **cup**?

- tea

- coffee

- glass

- mug

7) Which of the four words listed below do you associate most with the keyword: **phone**?

- dial

- cell

- ring

- call

8) Which of the four words listed below do you associate most with the keyword: **book**?

- page

- reservation

- story

- library

9) Which of the four words listed below do you associate most with the keyword: **car**?

- engine

- truck

- vehicle

- auto

10) Which of the four words listed below do you associate most with the keyword: **pool**?

- table
- water
- swim
- cue

11) Which of the four numbers below do you associate most with the keynumber: **12**?

- 11
- 6
- 13
- 24

12) Which of the four numbers below do you associate most with the keynumber: **1111**?

- 1110
- 1112
- 111
- 4

13) Which of the four numbers below do you associate most with the keynumber: **66**?

- 99
- 12
- 6
- 3

14) Which of the four numbers below do you associate most with the keynumber: **101**?

- 111
- 131



- 11
- 202

15) Which of the four numbers below do you associate most with the keynumber: **1**?

- 0
- 2
- 11
- 10

### Appendix 3-C: Tajfel matrices used in the intergroup reward allocation task

1)

Please choose one of the following reward allocation structures:

Line 1: Rewards/penalties for Member 2 of your group ("inductive thinkers")

Line 2: Rewards/penalties for Member 3 of the other group ("deductive thinkers")

---

-19	-16	-13	-10	-7	-4	-1	0	1	2	3	4	5	6
6	5	4	3	2	1	0	-1	-4	-7	-10	-13	-16	-19
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2)

Please choose one of the following reward allocation structures:

Line 1: Rewards/penalties for Member 3 of your group ("inductive thinkers")

Line 2: Rewards/penalties for Member 1 of the other group ("deductive thinkers")

---

1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	13	12	11	10	9	8	7	6	5	4	3	2	1
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3)

Please choose one of the following reward allocation structures:

Line 1: Rewards/penalties for Member 4 of your group ("inductive thinkers")

Line 2: Rewards/penalties for Member 4 of the other group ("deductive thinkers")

---

-14	-12	-10	-8	-6	-4	-2	-1	3	7	11	15	19	23
23	19	15	11	7	3	-1	-2	-4	-6	-8	-11	-12	-14
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4)

Please choose one of the following reward allocation structures:

Line 1: Rewards/penalties for Member 3 of your group ("inductive thinkers")

Line 2: Rewards/penalties for Member 2 of your group ("inductive thinkers")

---

12	10	8	6	4	2	0	-1	-5	-9	-13	-17	-21	-25
-25	-21	-17	-13	-9	-5	-1	0	2	4	6	8	10	12
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5)

Please choose one of the following reward allocation structures:

Line 1: Rewards/penalties for Member 4 of the other group ("deductive thinkers")

Line 2: Rewards/penalties for Member 3 of the other group ("deductive thinkers")

---

18	17	16	15	14	13	12	11	10	9	8	7	6	5
5	6	7	8	9	10	11	12	13	14	15	16	17	18
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6)

Please choose one of the following reward allocation structures:

Line 1: Rewards/penalties for Member 2 of your group ("inductive thinkers")

Line 2: Rewards/penalties for Member 1 of the other group ("deductive thinkers")

---

17	14	11	8	5	2	-1	-2	-3	-4	-5	-6	-7	-8
-8	-7	-6	-5	-4	-3	-2	-1	2	5	8	11	14	17
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

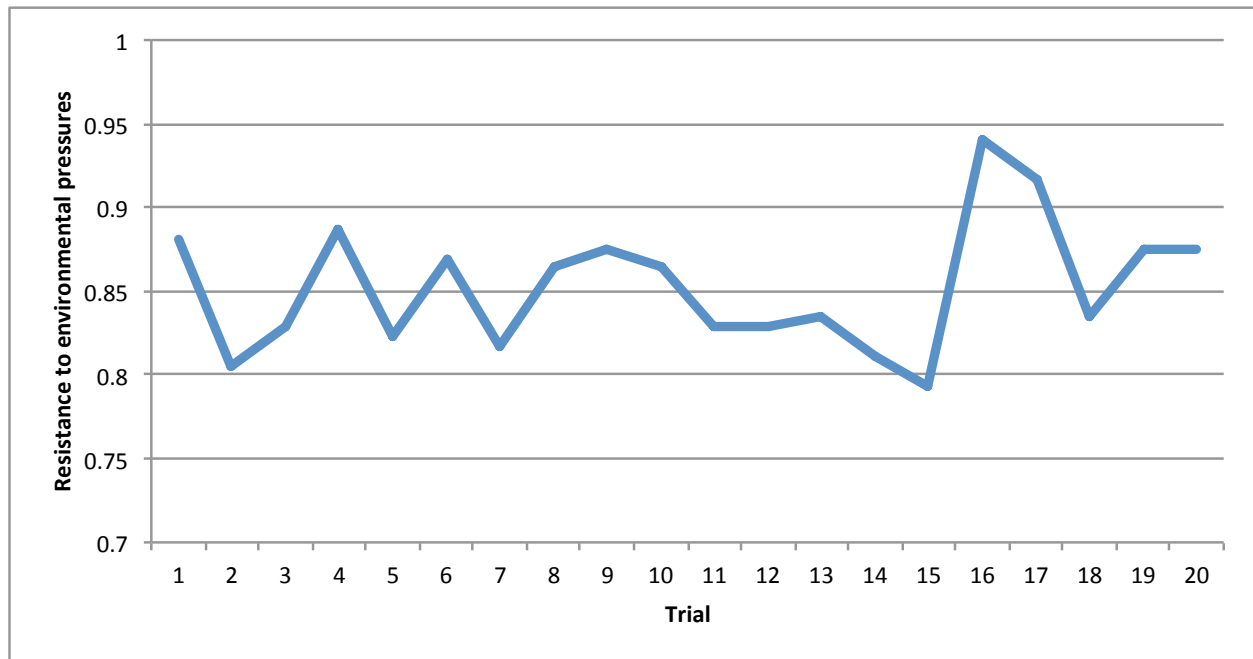
### **Appendix 3-D: Group involvement questions**

Next, please indicate to what extent you agree with the following statements:

- 1) Relationships with other people are very important to me.
- 2) I basically never feel lonely.
- 3) Belonging to larger social entities and groups is a crucial part of life.
- 4) Sometimes, the welfare of groups I belong to can be as important as my own personal welfare.
- 5) I care about groups I belong to and want them to be different/better than other groups.

(anchored on a 9-point answer scale ranging from “not at all” to “very much”)

**Appendix 3-E: Average resistance to environmental pressures (proportion of trials in which participants stayed with their initial response) across individual trials**



### **Appendix 3-F: Organizational problems used in the main task of study 2**

- 1) The benchmarking results show that other companies cut personnel costs by reducing the work hours of all employees, whereas your own group's flower shop has traditionally discharged a small number of employees in case of an urgent need for personnel cost reduction. What should your group's flower shop do in the future?
  - Discharge a small number of employees (keep current practice)
  - Reduce the working hours of all employees (adopt others' practice)
- 2) The benchmarking results show that other companies spread over various geographical regions, whereas your own group's flower shop has traditionally focused on your local area. What should your group's flower shop do in the future?
  - Focus on local area (keep current practice)
  - Spread over various regions (adopt others' practice)
- 3) The benchmarking results show that other companies offer complementary products in addition to the focal product, whereas your own group's flower shop has traditionally focused on its focal product—flowers. What should your group's flower shop do in the future?
  - Focus on flowers only (keep current practice)
  - Offer flowers and other garden products (adopt others' practice)
- 4) The benchmarking results show that other companies adopt a high price strategy, whereas your own group's flower shop has traditionally had comparatively low prices. What should your group's flower shop do in the future?
  - Low prices (keep current practice)
  - High prices (adopt others' practice)

- 5) The benchmarking results show that other companies reorder inventories when running low, whereas your own group's flower shop has traditionally reordered inventory at fixed points in time. What should your group's flower shop do in the future?
- Reordering inventory at fixed points in time (keep current practice)
  - Reordering inventory when running low (adopt others' practice)
- 6) The benchmarking results show that other companies run seasonal price promotions, whereas your own group's flower shop has traditionally kept prices fairly constant throughout the year. What should your group's flower shop do in the future?
- Keep prices constant throughout the year (keep current practice)
  - Run seasonal price promotions (adopt others' practice)
- 7) The benchmarking results show that other companies focus on products varieties they are well-known for, whereas your own group's flower shop has traditionally offered a wide variety of different flowers. What should your group's flower shop do in the future?
- Wide variety of flowers from all over the world (keep current practice)
  - Specific types of flowers the shop is known for (adopt others' practice)
- 8) The benchmarking results show that other companies expand by opening new branches in downtown areas, whereas your own group's flower shop has traditionally opened new branches in shopping malls. What should your group's flower shop do in the future?
- Open branch in a shopping mall (keep current practice)
  - Open branch in a busy street downtown (adopt others' practice)

9) The benchmarking results show that other companies place orders decentrally through local branch managers, whereas your own group's flower shop has traditionally place orders centrally through corporate management. What should your group's flower shop do in the future?

- Orders are placed centrally by corporate management only (keep current practice)
- Orders are placed decentrally by every branch manager (adopt others' practice)

10) The benchmarking results show that other companies are publicly traded, whereas your own group's flower shop has traditionally been privately held. What should your group's flower shop do in the future?

- Privately held company (keep current practice)
- Publicly traded company (adopt others' practice)

11) The benchmarking results show that other companies target their ad campaigns at individual customers, whereas your own group's flower shop has traditionally had ad campaigns targeted weddings and events. What should your group's flower shop do in the future?

- Weddings and events (keep current practice)
- Individual customers (adopt others' practice)

12) The benchmarking results show that other companies use a variety of different wholesalers when placing orders, whereas your own group's flower shop has traditionally used only a few wholesalers. What should your group's flower shop do in the future?

- Order from few exclusive flower wholesalers (keep current practice)
- Order from many different flower wholesalers (adopt others' practice)



13) The benchmarking results show that other companies reward outstanding employees by giving them financial boni, whereas your own group's flower shop has traditionally rewarded outstanding employees by offering them personnel trainings. What should your group's flower shop do in the future?

- Personnel trainings (keep current practice)
- Financial boni (adopt others' practice)

14) The benchmarking results show that other companies focus their store improvement efforts on increasing store size, whereas your own group's flower shop has traditionally focused on improving store design. What should your group's flower shop do in the future?

- Improve store design (keep current practice)
- Improve store size (adopt others' practice)

15) The benchmarking results show that other companies try to increase customer retention by offering volume discounts, whereas your own group's flower shop has traditionally tried to increase customer retention through a bonus point system implemented through a loyalty card. What should your group's flower shop do in the future?

- Loyalty card/bonus points (keep current practice)
- Volume discounts (adopt others' practice)

16) The benchmarking results show that other companies focus on increasing profit margins, whereas your own group's flower shop has traditionally focused on increasing sales growth. What should your group's flower shop do in the future?

- Increase sales growth (keep current practice)
- Increase profit margins (adopt others' practice)

17) The benchmarking results show that other companies obtain market intelligence by hiring market research consultancies, whereas your own group's flower shop has traditionally used an inhouse market research unit. What should your group's flower shop do in the future?

- Set up an inhouse market research unit (keep current practice)
- Hire a market research consultancy (adopt others' practice)

18) The benchmarking results show that other companies do most of their advertising via local media, whereas your own group's flower shop has traditionally used the Internet for most of its advertising. What should your group's flower shop do in the future?

- Advertising via Internet (keep current practice)
- Advertising via local media (adopt others' practice)

19) The benchmarking results show that other companies use the color red in their brand logo, whereas your own group's flower shop's brand logo is mostly blue. What should your group's flower shop do in the future?

- Blue logo (keep current practice)
- Red logo (adopt others' practice)

20) The benchmarking results show that other companies do not offer delivery service, whereas your own group's flower shop has traditionally offered delivery. What should your group's flower shop do in the future?

- Offer delivery service that's where the money is (keep current practice)
- Don't offer delivery service that's not worth the costs (adopt others' practice)

21) The benchmarking results show that other companies offer a "If you don't love it, we'll take it back" return policy, whereas your own group's flower shop has traditionally

offered a "7 days fresh or your money back" return policy. What should your group's flower shop do in the future?

- "7 days fresh or your money back" (keep current practice)
- "If you don't love it, we'll take it back" (adopt others' practice)

22) The benchmarking results show that other companies make hiring decisions based on an applicant's motivation, whereas your own group's flower shop has traditionally hired based on certifications. What should your group's flower shop do in the future?

- Hire certified florists only (keep current practice)
- Hire motivated people no matter their education (adopt others' practice)

23) The benchmarking results show that other companies grow externally by acquiring other companies, whereas your own group's flower shop has traditionally grown organically by expanding its existing business. What should your group's flower shop do in the future?

- Organic growth from existing business (keep current practice)
- External growth from acquiring other flower shops (adopt others' practice)

24) The benchmarking results show that other companies base their store hours on those of neighboring stores, whereas your own group's flower shop has traditionally opened from 9am to 9pm no matter what neighboring stores were doing. What should your group's flower shop do in the future?

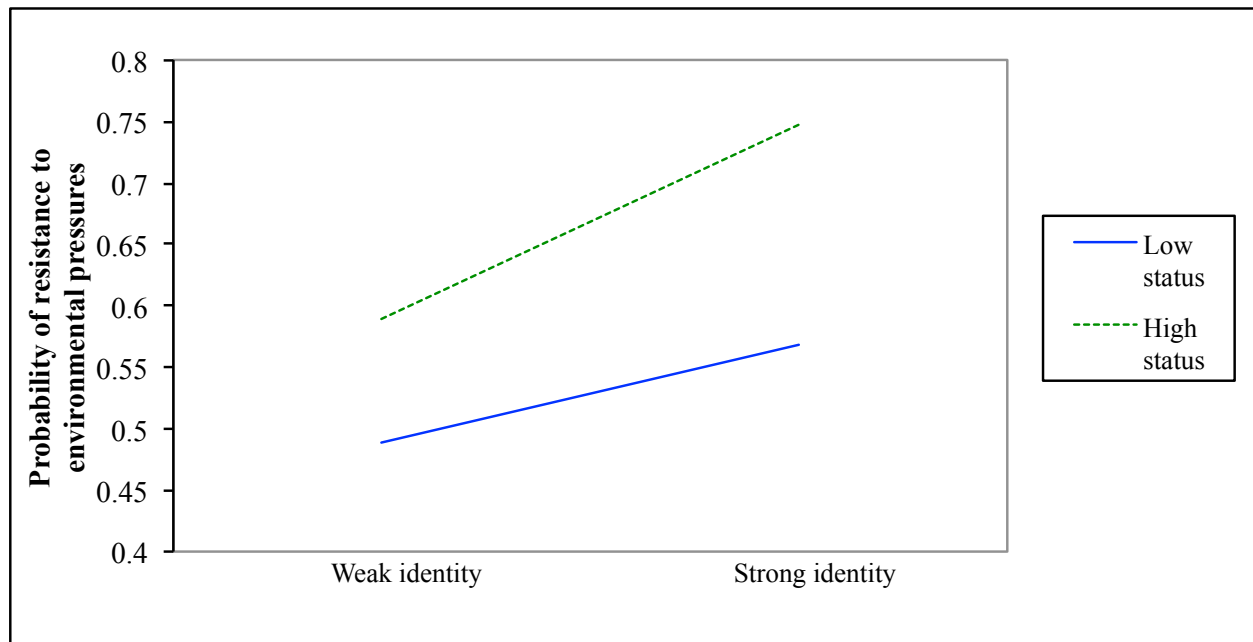
- 9am-9pm for all branches (keep current practice)
- Store hours consistent with other stores in the local neighborhood (adopt others' practice)

25) The benchmarking results show that other companies try to acquire commercial customers by hiring a dedicated commercial sales rep, whereas your own group's flower shop has traditionally offered special subscription discounts for commercial customers.

What should your group's flower shop do in the future?

- Offer discounted flower subscriptions (keep current practice)
- Hire a sales rep to go out to restaurants, funeral homes, etc. (adopt others' practice)

**Appendix 3-G: Status as a moderator of the effect of identity on resistance to environmental pressures**



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