

METHODOLOGICAL FIT IN MANAGEMENT FIELD RESEARCH

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Methodological fit, an implicitly valued attribute of high-quality field research in organizations, has received little attention in the management literature. Fit refers to internal consistency among elements of a research project—research question, prior work, research design, and theoretical contribution. We introduce a contingency framework that relates prior work to the design of a research project, paying particular attention to the question of when to mix qualitative and quantitative data in a single research paper. We discuss implications of the framework for educating new field researchers.

To advance management theory, a growing number of scholars are engaging in field research, studying real people, real problems, and real organizations. Although the potential relevance of field research is motivating, the research journey can be messy and inefficient, fraught with logistical hurdles and unexpected events. Researchers manage complex relationships with sites, cope with constraints on sample selection and timing of data collection, and often confront mid-project changes to planned research designs. With these additional challenges, the logic of a research design and how it supports the development of a specific theoretical contribution can be obscured or altered along the way in field research. Compared to experimental studies, analyses of published data sets, or computer simulations, achieving fit between the type of data collected in and the theoretical contribution of a given field research project is a dynamic and challenging process.

This article introduces a framework for assessing and promoting *methodological fit* as an overarching criterion for ensuring quality field research. We define methodological fit as internal consistency among elements of a research project (see Table 1 for four key elements of field research). Although articles based on field research in leading academic journals usually exhibit a high degree of methodological fit, guidelines for ensuring it are not readily available. Beyond the observation that qualitative data are appropriate for studying phenomena that are not well understood (e.g., Barley, 1990; Bouchard, 1976; Eisenhardt, 1989a), the relationship between types of theoretical contributions and types of field research has received little explicit attention. In particular, the conditions under which *hybrid methods* that mix qualitative and quantitative data are most helpful in field research—a central focus of this paper—are not widely recognized.

We define field research in management as systematic studies that rely on the collection of original data—qualitative or quantitative—in real organizations. The ideas in this paper are not intended to generalize to all types of management research but, rather, to help guide the design and development of research projects that centrally involve collecting data in field sites. We offer a framework that relates the stage of prior theory to research questions, type of data collected and analyzed, and theoretical contributions—the elements shown in Table 1.

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TABLE 1
Four Key Elements of a Field Research Project

Element	Description
Research question	<ul style="list-style-type: none"> ● Focuses a study ● Narrows the topic area to a meaningful, manageable size ● Addresses issues of theoretical and practical significance ● Points toward a viable research project—that is, the question can be answered
Prior work	<ul style="list-style-type: none"> ● The state of the literature ● Existing theoretical and empirical research papers that pertain to the topic of the current study ● An aid in identifying unanswered questions, unexplored areas, relevant constructs, and areas of low agreement
Research design	<ul style="list-style-type: none"> ● Type of data to be collected ● Data collection tools and procedures ● Type of analysis planned ● Finding/selection of sites for collecting data
Contribution to literature	<ul style="list-style-type: none"> ● The theory developed as an outcome of the study ● New ideas that contest conventional wisdom, challenge prior assumptions, integrate prior streams of research to produce a new model, or refine understanding of a phenomenon ● Any practical insights drawn from the findings that may be suggested by the researcher

In well-integrated field research the key elements are congruent and mutually reinforcing.

The framework we present is unlikely to call for changes in how accomplished field researchers go about their work. Indeed, experienced researchers regularly implement the alignment we describe. However, new organizational researchers, or even accomplished experimentalists or modelers who are new to *field* research, should benefit from an explicit discussion of the mutually reinforcing relationships that promote methodological fit.

The primary aim of this article, thus, is to provide guidelines for helping new field researchers develop and hone their ability to align theory and methods in field research. Because a key aspect of this is the ability to anticipate and detect problems that emerge when fit is low, our discussion explores and categorizes such problems. A second aim is to suggest that methodological fit in field research is created through an iterative learning process that requires a mindset in which feedback, rethinking, and revising are embraced as valued activities, and to discuss the implications of this for educating new field researchers. To begin, in the next section we situate our efforts in the broader methodolog-

ical literature and describe the sources that inform our ideas.

BACKGROUND

Prior Work on Methodological Fit

The notion of methodological fit has deep roots in organizational research (e.g., Bouchard, 1976; Campbell, Daft, & Hulin, 1982; Lee, Mitchell, & Sablinski, 1999; McGrath, 1964). Years ago, McGrath (1964) noted that the state of prior knowledge is a key determinant of appropriate research methodology. Pointing to a full spectrum of research settings, ranging from field research to experimental simulations, laboratory experiments, and computer simulations, he presented field studies as appropriate for exploratory endeavors to stimulate new theoretical ideas and for cross-validation to assess whether an established theory holds up in the real world. The other, non-field-based research settings were presented as appropriate for advancing theory. Understandably, given the era, McGrath did not dig deeply into the full range of methods that have since been used within field research alone.

Subsequently, Bouchard, focusing on how to implement research techniques such as inter-

views, questionnaires, and observation, noted, "The key to good research lies not in choosing the right method, but rather in asking the right question and picking the most powerful method for answering that particular question" (1976: 402). Others have issued cautions against assuming the unilateral rightness of a method—wielding a hammer and treating everything as nails (e.g., Campbell et al., 1982). Yet all researchers are vulnerable to preferring those hammers that we have learned to use well. Thus, we benefit from reminders that not all tools are appropriate for all situations. At the same time, exactly how to determine the right method for a given research question—particularly in the field—has not been as well specified.

More recently, Lee et al. (1999: 163) tackled the challenges of research in "natural settings" to explicate strategies for effective qualitative organizational and vocational research. Using exemplars, these authors showed that qualitative data are useful for theory generation, elaboration, and even testing, in an effort to "inspire [other researchers] to seek opportunities to expand their thinking and research" and to help them "learn from this larger and collective experience and avoid misdirection" (1999: 161). In advocating the benefits of qualitative work for organizational researchers, these authors provide a helpful foundation for the present paper. We build on this work by distinguishing among purely qualitative, purely quantitative, and hybrid designs, as well as by including a fuller range of field research methods in a single framework. The categories we develop allow a more fine-grained analysis of field research options than offered previously.

A recent body of work debates the appropriateness of combining qualitative and quantitative methods within a single research project. Issues addressed in this debate include whether qualitative and quantitative methods investigate the same phenomena, are philosophically consistent, and are paradigms that can reasonably be integrated within a study (e.g., Greene, Caracelli, & Graham, 1989; Morgan & Smircich, 1980; Sale, Lohfeld, & Brazil, 2002; Yauch & Steudel, 2003). Consistent with Yauch and Steudel (2003), who provide a brief review of the current thinking on this topic, we propose that the two methods can be combined successfully in cases where the

goal is to increase validity of new measures through triangulation¹ and/or to generate greater understanding of the mechanisms underlying quantitative results in at least partially new territory. This paper complements prior work on hybrid methods by addressing how the state of current theory and literature influences not only when hybrid research strategies are appropriate but also when other methodological decisions are appropriate and how different elements of research projects fit together to form coherent wholes.

Sources for Understanding Fit in Field Research

Several sources have informed the ideas presented in this paper. A long-standing interest in teaching field research methods fueled extensive note taking, reflection, and iterative model building over the past decade. In this reflective process we drew first from the many high-quality papers reporting on field research published in prominent journals; we use a few of these articles as exemplars to highlight and explain our framework. Second, we drew from our own experiences conducting field research, complete with missteps, feedback, and extensive refinement. Third, the first author's experience reviewing dozens of manuscripts reporting on field research submitted to academic journals provided additional insight into both the presence and absence of methodological fit.² Unlike reading polished published articles, reviewing offers the advantage of being able to observe part of the research journey. Moreover, a reviewer's reward is the opportunity to see how other anonymous reviewers have evaluated the same manuscript—constituting an informal index of agreement among expert judges. Papers rejected or returned for extensive revision because a poor match among prior work,

¹ Triangulation is a process by which the same phenomenon is assessed with different methods to determine whether convergence across methods exists. See Jick (1979) for a thoughtful discussion.

² These reviewing experiences were important inputs into the framework in this paper; however, the confidentiality of the review process precluded using these cases as examples. To illustrate poor fit and attempts to improve fit later in the article, we resorted to drawing on our second primary source—our own field research projects.

research questions, and methods helped inform our framework; agreement among expert reviewers strengthens our confidence in these ideas.

This agreement is not explained by explicit instruction. A glance at the current *Academy of Management Journal* and *Administrative Science Quarterly* checklists for reviewers reveals an emphasis on the quality of the individual elements of a submission—for example, “technical adequacy”—without a formal criterion for evaluating fit among elements. Yet researchers may employ a particular method exceptionally well, without it being an effective approach to studying the stated research question. This happens, in part, because field research is often spurred by unexpected data collection opportunities. Responding to requests from contacts at companies, researchers may collect data driven by company interests but not well matched to initial research questions. For example, surveys may be distributed that help the site but that have limited connection to the researcher’s theoretical goals. Similarly, interview data from a consulting project may be reanalyzed for research, focusing on an area of theory not well suited to purely qualitative research. The opportunistic aspect of field research is not in itself a weakness but may increase the chances of poor methodological fit when data collected for one reason are used without careful thought for another.

The experience of reviewing also highlights that a lack of methodological fit is easier to discern in others’ field research than in one’s own. This motivated us to develop a formal framework to help researchers uncover areas of poor fit in their own field research earlier in the research journey, without waiting for external review.

Drawing on the above sources, we inductively derived the framework presented in this paper, revising it along the way, driven by each other and by colleagues and reviewers both close and distant. In exploring methodological fit, we are particularly focused on how the state of current theory shapes other elements of a field research project. For clarity of illustration and comparisons across diverse methods, we limit the *substantive* topic of the research projects discussed to one area—organizational work teams.

In the next section we show that producing methodological fit depends on the state of rele-

vant theory at the time the research is designed and executed. We use the state of prior theory as the starting point in achieving methodological fit in field research because it serves as a given, reasonably fixed context in which new research is developed: it is the one element over which the researcher has no control (i.e., the state of extant theoretical development cannot be modified to fit the current research project).

A CONTINGENCY FRAMEWORK FOR MANAGEMENT FIELD RESEARCH

The State of Prior Theory

We suggest that theory in management research falls along a continuum, from mature to nascent. *Mature theory* presents well-developed constructs and models that have been studied over time with increasing precision by a variety of scholars, resulting in a body of work consisting of points of broad agreement that represent cumulative knowledge gained. *Nascent theory*, in contrast, proposes tentative answers to novel questions of how and why, often merely suggesting new connections among phenomena. *Intermediate theory*, positioned between mature and nascent, presents provisional explanations of phenomena, often introducing a new construct and proposing relationships between it and established constructs. Although the research questions may allow the development of testable hypotheses, similar to mature theory research, one or more of the constructs involved is often still tentative, similar to nascent theory research.

This continuum is perhaps best understood as a social construction that allows the development of archetypes. Consequently, it is not always easy to determine the extent of theory development informing a potential research question.³ We propose a continuum rather than

³ We thank an anonymous reviewer for pointing this out and Terry Mitchell for suggesting how we might address this issue. To gain insight into raters’ agreement on this categorization approach, we prepared short descriptions of fourteen research questions that each began with a brief summary of the state of prior work on the topic. The fourteen cases included the articles described in this paper, along with a few additional field research studies. We then asked four organizational researchers to categorize them according to definitions of the three stages of theory we provided. The average overall agreement with our intended classifi-

clear stages to acknowledge that the categories we suggest are not obvious or inviolable and to recognize the potential for debate on the status of prior work related to a given research question. In short, our aim is to help field researchers think about methodological fit in a more explicit, systematic way, using exemplars from the organizational literature to illustrate how the state of current theory informs methodological decisions.

Developing Sensible Connections to Prior Work

In a given field study, the four elements in Table 1 should be influenced by the stage of development of the current literature at the time of the research. In general, the less known about a specific topic, the more open-ended the research questions, requiring methods that allow data collected in the field to strongly shape the researcher's developing understanding of the phenomenon (e.g., Barley, 1990). In contrast, when a topic of interest has been studied extensively, researchers can use prior literature to identify critical independent, dependent, and control variables and to explain general mechanisms underlying the phenomenon. Leveraging prior work allows a new study to address issues that refine the field's knowledge, such as identifying moderators or mediators that affect a documented causal relationship. Finally, when theory is in an intermediate stage of development—by nature a period of transition—a new study can test hypotheses and simultaneously allow openness to unexpected insights from qualitative data. Broadly, patterns of fit among research components can be summarized as in Table 2.

We begin our more detailed exploration of fit between theory and method with a discussion of mature theory, because it conforms to traditional models of research methodology and so serves as a conceptual base with which to compare the other two categories. By drawing primarily on the topic of work teams, we demonstrate that the state of prior knowledge for

specific research questions within one broad topic can vary from mature to nascent.

Mature Theory Research

Mature theory encompasses precise models, supported by extensive research on a set of related questions in varied settings. Maturity stimulates research that leads to further refinements within a growing body of interrelated theories. The research is often elegant, complex, and logically rigorous, addressing issues that other researchers would agree from the outset are worthy of study. Research questions tend to focus on elaborating, clarifying, or challenging specific aspects of existing theories. A researcher might, for example, test a theory in a new setting, identify or clarify the boundaries of a theory, examine a mediating mechanism, or provide new support for or against previous work.

Specific testable hypotheses are developed through logical argument that builds on prior work. Researchers draw from the literature to argue the need for a new study and to develop the logic underlying the hypotheses they will test. This hypothesis-testing approach examines relationships between previously developed constructs (and variables) to produce *variance theory* (an increase in some X is associated with an increase in some Y; Mohr, 1982). Although the most compelling test of a theory may be experimental (e.g., Campbell & Stanley, 1963), field researchers usually cannot manipulate independent variables randomly across units. Research questions and designs thus utilize correlation-based analyses consistent with causal inferences supported by logic (e.g., while a person's sex may predict salary level, it would be nonsensical to assert the reverse). These studies rely heavily on statistical analyses and inferences to support new theoretical propositions.⁴

Many excellent examples of published work could be used to illustrate fit in mature theory research. Stewart and Barrick's (2000) research

cation was 86 percent, with seven of the fourteen research questions achieving 100 percent accuracy and agreement; the raters also had 86 percent overall agreement with each other.

⁴ Research explaining team effectiveness, boasting many empirical studies providing statistical support for consistent explanatory models, fits this category. See, for example, Hackman (1987). Multiple empirical studies lend support to the basic model (e.g., Campion, Medsker, & Higgs, 1993; Cohen & Ledford, 1994; Goodman, Devadas, & Hughson, 1988; Wageman, 2001).

TABLE 2
Three Archetypes of Methodological Fit in Field Research

State of Prior Theory and Research	Nascent	Intermediate	Mature
Research questions	Open-ended inquiry about a phenomenon of interest	Proposed relationships between new and established constructs	Focused questions and/or hypotheses relating existing constructs
Type of data collected	Qualitative, initially open-ended data that need to be interpreted for meaning	Hybrid (both qualitative and quantitative)	Quantitative data; focused measures where extent or amount is meaningful
Illustrative methods for collecting data	Interviews; observations; obtaining documents or other material from field sites relevant to the phenomena of interest	Interviews; observations; surveys; obtaining material from field sites relevant to the phenomena of interest	Surveys; interviews or observations designed to be systematically coded and quantified; obtaining data from field sites that measure the extent or amount of salient constructs
Constructs and measures	Typically new constructs, few formal measures	Typically one or more new constructs and/or new measures	Typically relying heavily on existing constructs and measures
Goal of data analyses	Pattern identification	Preliminary or exploratory testing of new propositions and/or new constructs	Formal hypothesis testing
Data analysis methods	Thematic content analysis coding for evidence of constructs	Content analysis, exploratory statistics, and preliminary tests	Statistical inference, standard statistical analyses
Theoretical contribution	A suggestive theory, often an invitation for further work on the issue or set of issues opened up by the study	A provisional theory, often one that integrates previously separate bodies of work	A supported theory that may add specificity, new mechanisms, or new boundaries to existing theories

serves as a recent exemplar in the area of team effectiveness. The researchers asked whether the relationship between team structure and team performance changes as a function of task type and whether intrateam processes mediate the structure-performance relationship. The first question gave rise to hypotheses about moderators of the relationship between structural inputs and performance outcomes (notably, when team task is conceptual, the relationship between team interdependence and performance will be stronger than when team task is behavioral). These hypotheses were inspired by incon-

sistent findings within a large body of previous work that had identified relationships between facets of team structure (such as interdependence) and team effectiveness. Because these inconsistencies suggested the presence of a moderator, the researchers investigated whether differences in task type might account for differences in the relationship between team structure and effectiveness. The second question addressed an untested assumption in the literature—that inputs such as team structure affect team processes, which, in turn, explain team effectiveness (McGrath's

[1984] input-process-output model)—to test a precise specification of team process as a mediator between team interdependence and performance.

Nine hypotheses were developed from these two questions, using constructs specified by prior work. For instance, Stewart and Barrick did not need to observe teams to determine what type of tasks teams performed; instead, they reviewed the literature and identified a distinction between conceptual and behavioral team tasks. Similarly, prior work had identified team structural elements and clarified structures that appeared most related to team effectiveness (interdependence and team self-leadership). Stewart and Barrick could then draw on this work to further specify the conditions under which those relationships were present.

The researchers used a cross-sectional design, collecting quantitative survey data from forty-five manufacturing teams in three plants. This methodology was appropriate because the constructs themselves were well understood. Reliable, valid measures of them existed in the literature, and quantitative data were needed to test the hypotheses. Data analyses began with statistical tests to ascertain whether data aggregation from the individual to the team level of analysis was justified,⁵ and standard reliability analyses were conducted to ensure convergent and discriminant validity of the measures. Hypotheses were then tested with regression analyses, using a quadratic term to test the hypothesized curvilinear relationship—that high levels of team performance would be observed at high and low levels of team interdependence, whereas low levels of team performance would be observed at moderate levels of team interdependence.⁶ Data analyses also tested for moderation and mediation effects.⁷

⁵ Two commonly used statistics for determining whether it is appropriate to aggregate individual responses to team-level data are the intraclass correlation coefficient, or ICC (James, 1982), and R_{wg} (James, Demaree, & Wolf, 1984). Others have also used the eta-squared statistic (Georgopolous, 1986).

⁶ Hierarchical regression analyses testing for a curvilinear relationship proceed by regressing the dependent variable in step one and then adding the independent-variable-squared term in step two. A significant increase in the amount of variance accounted for by the second equation (i.e., a significant increase in R-squared) supports the existence of a curvilinear relationship.

⁷ See Baron and Kenny (1986) for details on conducting moderator and mediator analyses. Other useful sources for

The contributions to the literature were a more refined specification of factors that enhance team effectiveness, a clarification of task type as a moderator, and tests of process mediators. The authors suggested that the input-process-output model of teams is more useful in explaining the relationship between interdependence and performance when team tasks are conceptual and less useful when the tasks are behavioral. Including task type as a boundary condition helped refine team effectiveness theory. Finally, the study showed that team process mediates the relationship between team structure and team effectiveness, providing empirical evidence for assumptions made in prior theoretical work.

As this example demonstrates, precise models, supported by quantitative data, are characteristic of effective field research in areas of mature theory. Other examples in team research include work by Wageman (2001) and by Chen and Klimoski (2003). Table 3 compares these three studies to highlight commonalities, thereby summarizing basic attributes of field research that achieves methodological fit within mature theory related to work teams.

The examples in Table 3 are not intended to suggest that there is never a benefit in revisiting well-trodden theoretical territory with a completely open mind. In the sections that follow, we show how researchers can—given certain conditions—develop greater understanding of existing relationships or mechanisms by embracing a qualitative or hybrid approach. Next, we turn to exploratory methods appropriate for understanding phenomena still in early stages of theory development.

Nascent Theory Research

On the other end of the continuum is nascent theory—topics for which little or no previous theory exists. These topics have attracted little research or formal theorizing to date, or else they represent new phenomena in the world (e.g., “virtual” or geographically dispersed work teams). The types of research questions conducive to inductive theory development include understanding how a process unfolds, develop-

deciding on appropriate statistical tests include Cohen and Cohen (1983), Keppel (1991), Klein and Kozlowski (2000), Pedhazur (1982), and Tabachnick and Fidell (1989).

TABLE 3
Similarities Among Mature Theory Studies

Element	Stewart and Barrick (2000)	Wageman (2001)	Chen and Klimoski (2003)
Nature of the research question	Testing theory-driven hypotheses that the relationship between team structure and team performance changes as a function of task type and that intrateam processes mediate the structure-performance relationship	Testing theory-driven hypotheses about the contributions of team leader coaching and team design to the effectiveness of self-managed teams	Testing theory-driven hypotheses that individual differences along with motivational and interpersonal processes predict role performance in individuals who are new to project teams engaged in knowledge work
Primary method of data collection	A survey instrument that yields quantitative measures of team process, task type, and other established constructs in the team effectiveness literature	An interview protocol for team members, with resultant qualitative data later systematically coded to produce quantitative measures of leader coaching, team design, and other established constructs in the team effectiveness literature	A survey instrument that yields quantitative measures of empowerment, role performance, and other established constructs in the team effectiveness literature; created two measures of established constructs in order to assess them appropriately for the given sample
Data analysis	Statistical tests: team agreement tests (ICCs), followed by correlation and regression	Statistical tests: correlation and regression	Statistical tests: team agreement tests (ICCs), followed by hierarchical regression and structural equations modeling
Contribution	A precise model: team process mediates the effects of team structure on team effectiveness; task type alters relationship between team structure and team effectiveness	A precise model: team design affects team effectiveness more than team leader coaching; design and coaching interact to positively impact team effectiveness	A precise model: self-efficacy and self-expectations affect team newcomers' role performance through motivational processes, while prior experience and others' expectations affect team newcomers' role performance through interpersonal processes

ing insight about a novel or unusual phenomenon, digging into a paradox, and explaining the occurrence of a surprising event. Interest in these problems can arise from unexpected findings in the field, from questioning assumptions or accepted wisdom promulgated in the extant literature, and from identifying and addressing gaps in existing theory. The research questions are more open-ended than those used to further knowledge in mature areas of the literature. In studies where theory is nascent or immature, researchers do not know what issues may emerge from the data and so avoid hypothesizing specific relationships between variables.

Because little is known, rich, detailed, and evocative data are needed to shed light on the

phenomenon. Interviews, observations, open-ended questions, and longitudinal investigations are methods for learning with an open mind. Openness to input from the field helps ensure that researchers identify and investigate key variables over the course of the study. Data collection may involve the full immersion of ethnography⁸ or, more simply, exploratory interviews with organizational informants.

⁸ Ethnography is the "written representation of culture (or selected aspects of a culture)" (Van Maanen, 1988: 1) that often reveals not only the inner workings of the culture but also the context in which the culture exists, and how the culture both affects and is affected by the context (see also Denzin & Lincoln, 2000). Organizational ethnographies study

Researchers frequently use a *grounded theory* approach to connect these data to existing and suggestive new theory (Glaser & Strauss, 1967). Instead of a sequential process in which hypotheses are formed and data are collected and then analyzed, data analyses often alternate and iterate with the data collection process. Content analyses help reveal themes and issues that recur and need further exploration. Through this iterative process, theoretical categories emerge from evidence and shape further data collection (Eisenhardt, 1989a; Glaser & Strauss, 1967). In this analytic journey, both the organization of qualitative data into coherent stories of experience and sensemaking processes are essential analytic activities.

Working within the nascent theory arena requires an intense learning orientation and adaptability to follow the data in inductively figuring out what is important. Effective papers present a strong, well-written story to make sense of compelling field data. The essential nature of the contribution of this type of work is providing a suggestive theory of the phenomenon that forms a basis for further inquiry.

To continue our focus on work teams, we chose Barker's (1993) paper as an exemplar of fit in nascent theory. Barker investigated how individuals handled the transition from working in a bureaucratic organization to working together in self-managed teams in a production environment without formal control systems. Prior literature maintained that organizations had moved over time from simple control (e.g., direct, authoritarian) to technological control (e.g., assembly lines) to bureaucratic control (e.g., hierarchies, rules), with each new form of control created to overcome the problems of the earlier form.

Many drawbacks had been identified with bureaucratic control systems, such as endless "red tape" that made it difficult to accomplish simple tasks. Weber (1958) had called the resulting system of rules, regulations, and rigid structure an "iron cage" that trapped employees in its impersonal grasp. To overcome the stifling nature of highly developed bureaucracies, firms began implementing self-managed teams to allow employees greater discretion, empowerment, lati-

tude, and personal control over their work lives. The new system relied on "concertive control," where team members worked together to negotiate behavioral norms. Yet little formal theory and research existed to understand how this process worked. Barker's question thus focused on the nature of concertive control, its development over time in a single organization, and whether such a system truly represented a step toward greater personal freedom compared to a bureaucratic control system.

This research question was well matched to an in-depth qualitative study of newly formed self-managed work teams in a small manufacturing firm. Barker's immersion in the setting allowed him to gain detailed data on people's experiences over time, and thus to develop an understanding of how teams cope with the interpersonal challenges of self-management. Data collection spanned two years, including six months of weekly half-day plant visits; informal conversations and interviews with manufacturing workers and other employees; and considerable observation of teams working, meeting, and interacting informally. These first-hand data were supplemented by company documents and surveys. Finally, Barker followed one team closely for four months.

Throughout the fieldwork, Barker engaged in an iterative process of analyzing data, writing up his understanding of the situations and events, and developing new questions to shape subsequent data collection. Because his research question focused on understanding differences between control practices in the new self-managed teams and those in the old bureaucratic system, Barker elicited control-related themes that he refined as he collected new data. He used "sensitizing concepts" (Jorgensen, 1989) drawn from previous research on value-based control (Giddens, 1984; Tompkins & Cheney, 1985) to guide his work. His work illustrates how sensitizing concepts can be a valuable tool in nascent theory research to guide questions and help identify key themes. Moreover, as Barker reports, reviewing emergent ideas with colleagues who lack prior knowledge of the firm or its teams is also an important source of feedback.⁹

the cultures of firms or groups within firms using in-depth qualitative field research.

⁹ See Adler and Adler (1987) for a discussion of the value of feedback from research project outsiders.

As this study illustrates, when researchers do not know in advance what the key processes and constructs are, as they could if mature theory on their topic were available, they must be guided by and open to emergent themes and issues in their data. Iterating between data collection and analysis provides the flexibility needed to follow up on promising leads and to abandon lines of inquiry that prove fruitless. The results of Barker's application of this investigative process showed how what began as a challenging and engaging process for employees shifting to self-managed work teams degenerated into a stressful, fear-inducing, ever-tighter iron cage. He explained how concertive control in teams could be as or more restrictive than a hierarchical bureaucracy. Barker's process description, told in a compelling narrative form, shed new theoretical light on a previously obscure construct.

In addition to Barker's work, Table 4 summarizes attributes of two more research projects that demonstrate methodological fit for nascent theory. The research questions guiding these field studies were exploratory, designed to generate new theory or propositions. Gersick (1988) explored how temporary project groups develop over time, and Maznevski and Chudoba (2000) explored processes that allow geographically dispersed industrial technology teams to effectively interact and produce successful results. In each case, theory relevant to the topic existed but either failed to fit with observed processes (Gersick, 1988) or was not well enough developed to motivate testable hypotheses related to the particular question (Maznevski & Chudoba, 2000). Including Barker (1993), each investigator chose to collect qualitative data, through open-ended interview questions, observations of meetings, and review of archival qualitative

TABLE 4
Similarities Among Nascent Theory Studies

Element	Gersick (1988)	Barker (1993)	Maznevski and Chudoba (2000)
Nature of the research question	Exploring how short-term project groups develop over time and how developmental shifts in groups are triggered	Exploring how the control systems of self-managed teams emerge, are experienced by team members, and differ from bureaucratic control systems	Exploring factors and processes that allow global virtual teams to operate effectively
Primary method of data collection	Observation of all group meetings, supplemented by interviews of half the study sample, that yielded qualitative data about group task strategies, actions, changes, and task completion; longitudinal data collection (ranging from seven days to six months)	Observation, conversations, and in-depth interviews that yielded qualitative data about team interactions and control system development; longitudinal data collection (over two years)	Observation of meetings, semi-structured and unstructured interviews, communication logs, questionnaires, and access to company documentation that yielded qualitative data about team interaction methods, timing, and communication content; longitudinal data collection (twenty-one months)
Data analysis	Iterative, exploratory content analysis	Iterative, exploratory content analysis	Iterative, exploratory content analysis
Contribution	An importation of a new construct —punctuated equilibrium—and a suggestive model of the temporary project group life cycle	A new construct —concertive control—and a suggestive model of how teams move from values to norms to rules that become binding, limiting, and invisible	A suggestive model of how virtual teams manage social interactions and a new emphasis on the rhythmic pacing of team member encounters over time to create effective outcomes

data. Almost all data were collected longitudinally, with researchers spending anywhere from seven days with a single group (Gersick, 1988) to over two years in the field (Barker, 1993).

These papers introduced or elaborated constructs—*punctuated equilibrium*, *concertive control*, and *temporal rhythms*—that could be further developed in subsequent studies. All presented process models supported by repeating patterns across data sources (or cases), highlighting similarities of procedural stages or phases across units. Instead of reasonably conclusive results, each study provided suggestive theoretical insights to inform and inspire future research on an interesting phenomenon.

Intermediate Theory Research

Intermediate theory research draws from prior work—often from separate bodies of literature—to propose new constructs and/or provisional theoretical relationships. The resulting papers may present promising new measures, along with data consistent with the provisional theory presented. Such studies frequently integrate qualitative and quantitative data to help establish the external and construct validity of new measures through triangulation (Jick, 1979). Careful analysis of both qualitative and quantitative data increases confidence that the researchers' explanations of the phenomena are more plausible than alternative interpretations.

One trigger for developing intermediate theory is the desire to reinvestigate a theory or construct that sits within a mature stream of research in order to challenge or modify prior work. For example, Edmondson (1999) married insights from organizational learning research (tacit beliefs impede learning) with theory on team effectiveness (structural differences across teams explain performance) to propose a provisional explanatory model of team learning that focused on how differences in interpersonal climate across teams affected both team learning and performance.

Research questions conducive to developing intermediate theory include initial tests of hypotheses enabled by prior theory (e.g., Edmondson, 1999) and focused exploration that generates theoretical propositions as output (e.g., Eisenhardt, 1989b). The latter may include very preliminary quantitative analysis to reinforce the logic underlying the qualitatively induced

propositions. A single study may describe patterns that suggest both *variance theories* (an increase in X leads to an increase in Y) and *process theories* (how a phenomenon works, how a process unfolds), although effective papers tend to emphasize one over the other (Mohr, 1982). Just as quantitative methods are appropriate for mature theory and qualitative methods for nascent theory, intermediate theory is well served by a blend of both. This blend works to support provisional theoretical models. The combination of qualitative data to help elaborate a phenomenon and quantitative data to provide preliminary tests of relationships can promote both insight and rigor—when appropriately applied (e.g., Jick, 1979; Yauch & Steudel, 2003). At the same time, integrating qualitative and quantitative data effectively can be difficult (e.g., Greene et al., 1989), and there is a risk of losing the strengths of either approach on its own.

Examples of research achieving methodological fit within intermediate theory are growing in number, although there are fewer than the two more familiar categories. To continue our focus on teams, we use Edmondson (1999) to illustrate this category. This field study introduced a new construct, *team psychological safety*, and investigated its effect on team learning and performance. The ideas were grounded in two reasonably mature but separate theoretical perspectives—team effectiveness and organizational learning—and included eight hypotheses about factors that enhance or inhibit team learning and performance. The design integrated qualitative and quantitative data, providing an explicit rationale for doing so:

Most organizational learning research has relied on qualitative studies that provide rich detail about cognitive and interpersonal processes but do not allow explicit hypothesis testing. . . . Many team studies, on the other hand, utilize large samples and quantitative data but have not examined antecedents and consequences of learning behavior. . . . I propose that, to understand learning behavior in teams, team structures and shared beliefs must be investigated jointly, using both quantitative and qualitative methods (Edmondson, 1999: 351).

Data were collected in a company where teamwork and collective learning were salient and varied across teams. Variance was essential for addressing the research question of whether psychological safety predicted team

performance; the salience of teams and learning for the company was helpful in ensuring that informants took the topic seriously and provided careful, informed reports of their experiences. The study involved three stages, starting with observations and interviews with eight teams to develop new survey measures to supplement existing team measures and to further the researcher's understanding of both psychological safety and team learning processes in a business setting.

In the second phase a team survey¹⁰ was distributed to 496 members of 53 teams in the firm. An additional survey was given to two or three internal customers of each team's work to provide data on the team's learning behavior and performance. To promote confidence in the quantitative measures, additional data from other sources were collected. For example, a research assistant, blind to the study's hypotheses, collected additional structured interview data from managers familiar with one or more of the teams to generate independent quantitative measures of four team design variables¹¹ so as to mitigate common method bias. Last, the study used an extreme-case-comparison technique, contrasting high- and low-learning teams, to understand how they differed and how these differences were related to team performance.

Standard statistical analyses were used to analyze the quantitative data,¹² and the results generally supported the hypotheses. The findings were enriched by supplemental qualitative data to help explain the quantitative findings—shedding light on how those teams worked together. These comparisons allowed a more fine-grained analysis of what was occurring “behind the numbers” within the teams. The results of

the study broaden our understanding of team effectiveness from a structural emphasis to include interpersonal factors such as team psychological safety.

Other studies illustrating fit in intermediate theory include Eisenhardt (1989b) and Allmendinger and Hackman (1996), as shown in Table 5 to summarize basic attributes of methodological fit in this category. Blending qualitative and quantitative methods occurs in two basic ways in these studies. One approach supplements qualitative work with quantitative data, allowing researchers to discern unexpected relationships, to check their interpretation of qualitative data, and to strengthen their confidence in qualitatively based conclusions when the two types of data converge (e.g., Eisenhardt, 1989b). The other approach supplements quantitative tests with qualitative data that enable a fuller explanation of statistical relationships between variables, ensuring in particular that the proposed theory constitutes a valid analysis of the phenomenon rather than artifacts of measurement. This approach also provides a deeper understanding of and rationale for a proposed new construct (e.g., Edmondson, 1999). In summary, hybrid strategies allow researchers to test associations between variables with quantitative data and to explain and illuminate novel constructs and relationships with qualitative data (Yauch & Steudel, 2003).

Intermediate theory research sheds light on how theory in management moves from the nascent stage toward maturity. Scholars have long advocated cycling between inductive theory creation processes and deductive theory-testing strategies to produce and develop useful theory (e.g., Cialdini, 1980; Fine & Elsbach, 2000; Weick, 1979). As our examples illustrate, theory in organizational research rarely marches steadily forward from nascent to mature, instead spawning tangent studies that both build and diverge. Although some studies build on prior theory to elaborate and specify models more precisely (e.g., Stewart & Barrick, 2000), others use prior work to inspire investigations in a brand new direction (e.g., Barker, 1993). Intermediate theory describes a zone in which enough is known to suggest formal hypotheses, but not enough is known to do so with numbers alone or at a safe distance from the phenomenon (e.g., Edmondson, 1999). In summary, intermediate theory studies propose provisional models that ad-

¹⁰ Analyses of qualitative data in Phase I included examining fieldnotes and interview transcripts to identify variables of interest and to assess differences between teams on those variables, as well as to shape the development of new survey measures through empathic design (Alderfer & Brown, 1972).

¹¹ The four team design variables were the extent to which a clear goal was present, the extent to which the team's task was interdependent, the extent to which the team composition was appropriate, and the amount of context support each team received.

¹² These analyses included tests of internal consistency reliability, discriminant validity (e.g., Campbell & Fiske, 1959), group-level variables (Kenny & LaVoie, 1985), regression analyses, and GLM analyses.

TABLE 5
Similarities Among Intermediate Theory Studies

Element	Eisenhardt (1989b)	Allmendinger and Hackman (1996)	Edmondson (1999)
Nature of the research question	Generating testable research propositions about how different variables were related to strategic decision speed; exploring how firms make fast decisions effectively	Assessing orchestra characteristics under contrasting conditions of contextual change; exploring factors that distinguished successfully adapting groups from others	Preliminary tests of theory-driven hypotheses about how team structure and team beliefs affect team learning and performance; exploring how psychological safety and learning behavior in teams are related
Primary method of data collection	An interview protocol with direct observations that yielded qualitative data about decision making in fast-paced environments; also archival data and industry reports; quantitative data about firm performance	Archival and interview data that yielded qualitative data about orchestras' environmental context and histories; group surveys with established constructs yielding quantitative data , along with interviews and observations, to assess relationships among variables in this unusual group context	An interview protocol that yielded qualitative data , followed by the creation of an empathically developed questionnaire used to collect quantitative data for main analyses, supplemented by new qualitative data to explain quantitative relationships
Data analysis	Content analysis of qualitative data; pair-wise comparisons of stories between cases; quantitative analyses mentioned as supportive of qualitative data	Content analysis of qualitative data; statistical analyses to assess differences in theoretically relevant variables across orchestra types and contexts	Content analysis of qualitative data for input to questionnaire development; statistical analyses as initial tests; qualitative analysis for deeper understanding
Contribution	Iteratively developed research propositions and a provisional model of how firms make fast decisions	Provisional contingency framework of when and why previously established theoretical models are useful for understanding how groups respond to environmental change	New construct incorporated into a provisional model with roots in a mature theoretical model, and new integration of theoretical perspectives

dress both variance- and process-oriented research questions. Using both qualitative and quantitative data, these studies can identify key process variables, introduce new constructs, reconceptualize explanatory frameworks, and identify new relationships among variables.

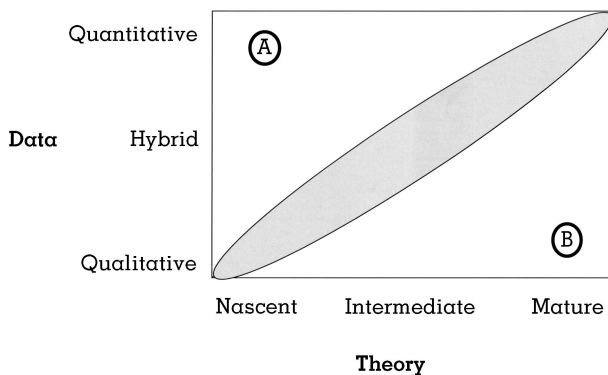
Mean Tendencies and Off-Diagonal Opportunities

Above we presented a pattern in which the maturity of theory and research in a given narrow area strongly influences the design of field research conducted in that area. To show how methods vary in form across a theoretical con-

tinuum, we drew from a range of articles produced from original data collected in real organizations. We chose studies that concentrated on teams to enable focused comparisons, without varying too many factors at once. In summary, mature theory spawns precise, quantitative research designs, maturing or intermediate theory benefits from a mix of quantitative and qualitative data to accomplish its dual aims, and nascent theory involves exploring phenomena through qualitative data. These archetypal categories of organizational field research can be positioned along the diagonal in Figure 1.

Congruence among the state of prior theory, the research question, and the research design

FIGURE 1
Methodological Fit As a Mean Tendency



help a new field study make a compelling new contribution to the literature. As illustrated in the preceding pages and tables, the nature of this contribution varies as research travels along the diagonal, from a suggestive new theory that invites further research to a provisional, partially supported theory that may introduce new constructs or integrate previously disparate bodies of literature to a precise theory that adds new specificity to the existing theoretical models in a given body of literature.

This pattern of archetypes cleanly situated along the diagonal represents a mean tendency in effective field research, but by no means does it comprise a rigid rule. First, the oval shape of the diagonal line is intended to suggest leeway in research design. For instance, as noted above, intermediate theory may draw primarily from qualitative data, with minimal quantitative data in the background, or it may rely extensively on quantitative data, with supplementary qualitative data to shed light on mechanisms. Second, off-diagonal opportunities exist when—with awareness of the literature on a particular topic—a study's focus is reframed from the broad to the narrow. In his study of self-managed teams, for example, Barker (1993) did not ask what makes self-managed teams effective but, rather, how team members create and cope with the social pressures of self-management. Thus, despite the maturity of research on self-managed work teams, Barker used qualitative data to suggest compelling new theory with evocative case descriptions of real work teams. Methodological fit in this example was created in an initially off-diagonal location by framing the study's focus narrowly

and examining an area where theory no longer could be categorized as mature.

Perlow's (1999) ethnographic investigation of how people use their time at work provides another illustration of this approach. Contemplating a relatively mature body of research on work/life balance and time management, Perlow saw unanswered questions about people's day-to-day experience of time constraints. She set out to understand how—and why—people really used their time at work, as well as whether their time usage patterns were effective for both themselves and their workgroups. Her qualitative study of seventeen engineers in a software development group in a Fortune 500 company revealed patterns of work interruption that greatly limited individual and group productivity, increasing the engineers' work hours. The second phase of the study included a small experiment imposing "quiet time" to ameliorate the counterproductive pattern, improving productivity briefly until old habits prevailed after the researcher's departure. From these findings, Perlow (1999) suggested a need for a "sociology of time" to recognize the interdependence of social and temporal contexts at work. In sum, she started with a more mature area of research but diverged from there to explore a key phenomenon—interactions among individuals' time management—to suggest new theory to inspire and inform future discussions in this area.

These two examples can be located conceptually at the intersection of initially mature theory and qualitative data marked by B in Figure 1. In contrast, we consider the intersection of nascent theory and quantitative data, marked by A in Figure 1, an approach that is more difficult to justify. For instance, a strategy of collecting extensive quantitative data to explore for statistical associations runs the risk of finding significance by chance, merely because of the large number of potential relationships (Rosenthal & Rosnow, 1975). Moreover, because data collection in organizational field research is expensive and often moderately intrusive, it should be collected with care for a deliberate purpose. The space below the diagonal in Figure 1, therefore, may present creative opportunities for theoretical contributions, whereas work in the space above is not likely to produce compelling field research.

Finally, sometimes an initial diagnosis of study type must be revised because of unex-

pected findings. For example, a research project might start in the upper right-hand corner and migrate down to intermediate status after a surprising quantitative finding seems worth investigating further. Such a journey was described in an initially mature theory study of nursing team effectiveness using medical error rates as a dependent variable (Edmondson, 1996). Startled to discover that team effectiveness and team leader coaching were correlated with *higher*, not lower, detected error rates, the researcher suspected that differential reporting climates accounted for the unexpected result. To explore this possibility, a research assistant, blind to the quantitative data and to the new hypothesis, explored how each team worked as a social system. This additional qualitative data provided tentative support for *interpersonal climate* as a hidden variable accounting for the unexpected result, reclassifying the study as a hybrid design working within intermediate theory.

DISCUSSION

We argue that methodological fit promotes the development of rigorous and compelling field research. We delineate archetypes of methodological fit in field research, in which three levels of prior work (nascent, mature, and intermediate) correspond to three methodological approaches (qualitative, quantitative, and hybrid). Our framework is not intended as an inflexible set of rules but, rather, as a clarifying heuristic that articulates tacit principles embedded in effective field research and that builds on methodological rules and guidelines covered elsewhere (e.g., Bouchard, 1976; Lee et al, 1999; McGrath, 1964).

Some problems of poor fit can be solved by reframing a paper or reanalyzing qualitative data; others may require new data or a fresh start. Our framework—with both on- and off-diagonal opportunities—is intended to help researchers (and reviewers) ascertain which cases fall into the former category, as well as when and how to shape and reshape a research project and its outputs in such a way that the conclusions are compelling. Off-diagonal opportunities exist when a researcher intentionally opens a new area of focused inquiry within a broadly familiar topic, thereby pursuing a new topic related to an old phenomenon (e.g., con-

trastive control in self-managed teams). More commonly, however, researchers who stray from the diagonal are unaware of doing so—in part owing to the complexity of field data—and may run into a small number of predictable problems.

Problems Created by Poor Fit

For each of the three levels of prior work articulated above, we suggest that using either of the alternative (off-diagonal) methodologies creates problems that diminish the effectiveness of the research products. Table 6 summarizes the six problems and their three essential outcomes.

Two types of poor fit in areas of mature theory. When prior work related to a research question (e.g., what explains team effectiveness?) has produced some reasonably robust findings, a study that relies on purely qualitative data risks rediscovering known factors in its “new” theory—the problem of *reinventing the wheel*. Pouring through qualitative data to find out what distinguishes, for example, two high-performing from two low-performing teams, a researcher is likely to identify such factors as goal clarity, group process, or the adequacy of team composition or resources (e.g., Hackman, 1987). In short, systematically analyzed qualitative data will tend to uncover similar factors in response to similar questions. Given the time invested in the analytic process and the other sunk costs in the study, a researcher may then feel pressure to overstate the novelty or implications of his or her findings. An alternative in this situation would be to analyze the data to investigate a different question (e.g., how team members cope with the pressures of self-management and peer control; Barker, 1993).

In a second type of poor fit, a study informed by a mature body of literature that integrates qualitative and quantitative research in a single paper faces the problem of the *uneven status of evidence*. First, juxtaposing the interpretive nature of qualitative analysis with statistical tests highlights the different functions of the two data types. Specifically, qualitative data illustrate and may reveal processes, but they do not test or prove as well as quantitative data. Second, the combination will lengthen a research paper without increasing the strength of its conclusions. If hypotheses are anchored in the literature and are well argued, quantitative measures and tests should provide powerful and

TABLE 6
Problems Encountered When Methodological Fit Is Low

Prior Work on Research Question	Data Collection and Analysis	Problems Encountered	Outcome
<i>Mature</i> : Extensive literature, complete with constructs and previously tested measures	Qualitative only	Reinventing the wheel : Study findings risk being obvious or well-known	Research fails to build effectively on prior work to advance knowledge about the topic
	Hybrid	Uneven status of evidence : Paper is lengthened but not strengthened by using qualitative data as evidence	
<i>Intermediate</i> : One or more streams of relevant research, offering some but not all constructs and measures needed	Quantitative only	Uneven status of empirical measures : New constructs and measures lack reliability and external validity and suffer in comparison to existing measures	Results are less convincing, reducing potential contribution to the literature and influence on others' understanding of the topic
	Qualitative only	Lost opportunity : Insufficient provisional support for a new theory lessens paper's contribution	
<i>Nascent</i> : Little or no prior work on the constructs and processes under investigation	Qualitative only	Fishing expeditions : Results vulnerable to finding significant associations among novel constructs and measures by chance	Research falls too far outside guidelines for statistical inference to convince others of its merits
	Hybrid	Quantitative measures with uncertain relationship to phenomena : Emergent constructs may suggest new measures for subsequent research, but statistical tests using same data that suggested the constructs are problematic	

sufficient support for the ideas. In some cases, incorporating one or more stories may be useful to familiarize readers with an unusual context or to illustrate a finding, but when presented as formal evidence, they usually fall short.¹³ In

¹³ To better understand why this is usually the case, recall the three basic designs noted above for combining qualitative and quantitative data to develop and support a new theory: (1) explore first, through interviews and observations that guide the development of subsequent quantitative samples and measures; (2) collect follow-up qualitative data to better understand—usually surprising—quantitative findings; or (3) collect both types of data at the same time, to triangulate. When researchers can articulate good hypotheses from prior research and new logic, and can support these with quantitative analyses, all three hybrid approaches present risks. In the first case, preliminary field interviews or observations may help in the wording of survey items but generally would not be needed to discern or develop new constructs and, thus, would not play a key role in suggesting

sum, long qualitative reports from the field are unlikely to strengthen research projects that present and test hypotheses relating known constructs.

Fortunately, this problem has a simple solution; the study should rely on the quantitative data as evidence and should use only as much qualitative data as necessary to introduce or

or supporting the theory. In the second case (follow-up qualitative data), stories may illustrate how a theory works, but they cannot provide evidence of a relationship between constructs because the qualitative data are a biased sample, collected by a biased observer. In the third case (simultaneity), the mix works well to triangulate across sources for new measures, but for known measures, triangulation is unnecessary. All three cases thus share the problem that the qualitative data are redundant and may undermine the clarity of the quantitative analyses if presented as results rather than as background or illustrative material.

discuss the research context. To illustrate such a journey, the authors of a mature theory paper arguing that tacit knowledge increases the heterogeneity of learning curves across teams (Edmondson, Winslow, Bohmer, & Pisano, 2003) originally presented the paper at the Academy of Management annual meeting and then submitted it to *Decision Sciences* using a blend of quantitative and qualitative analyses as evidence. The paper tested theory-driven hypotheses—that knowledge type moderates the relationship between experience and rate of learning in surgical teams and that team stability promotes team efficiency. To supplement quantitative measures of established constructs in the team and knowledge literature, the authors also presented qualitative interview data. Reviewers, confused by the inclusion of the qualitative data, pushed back. Initially attributing this response to closed-mindedness, the authors reluctantly removed the qualitative data from the findings, leaving only an anecdote or two in the discussion to convey the nature of the teams' learning challenge. Despite the authors' reluctance, the clarity of the paper was greatly improved by the reviewers' feedback, because prior work on tacit knowledge and learning curves was sufficiently mature that stories to elucidate mechanisms were unnecessary. The authors' initial unflattering attributions about the reviewers' judgment might have been avoided had the reviewers used the language of methodological fit to convey why the qualitative data did not strengthen support for the paper's conclusions.

The challenge lies in realizing when qualitative data—while complex, interesting, and subtle—does not serve an evidentiary function, given the state of knowledge at the time. In areas of mature theory, scholars thus encounter problems when qualitative data are presented as evidence, and these problems lessen the potential contribution of their work, as noted in Table 6. In short, mature theory is advanced with compelling quantitative studies.

Two types of poor fit in areas of nascent theory. When little or no prior work related to a research question exists, researchers face problems when they seek to collect purely quantitative data. First, it almost certainly will be the case that the quantitative measures will have an ambiguous relationship to the phenomena under study. The measures may capture prelim-

inary ideas about emergent constructs, and the analyses, which pertain to the measures rather than to the phenomena themselves, do not aid the researcher in truly learning from the field setting. Others (e.g., Nunnally & Bernstein, 1994) have illuminated the issues of measurement validity and reliability thoroughly; here we simply note that it is difficult to create measures of acceptable external validity or reliability when phenomena are poorly understood.

Another problem with using quantitative measures with nascent theory is that investigators, even with the best of intentions, are tempted to go on *fishing expeditions*. Any statistically significant relationships among variables that emerge by chance are likely to be overinterpreted as evidence to support an emergent theory. Further, given the measurement issue outlined above, it is difficult to interpret the true meaning of observed statistical relationships or counts. Researchers need to go through the process of building new ideas iteratively, with extensive exposure to the phenomenon and an open mind, before becoming captivated by potentially chance associations.

Similarly, a hybrid approach also suffers from the *uncertain status of (quantitative) measures* that are employed before sufficient exploration of a new area has pinned down factors to measure. Quantitative measures indicate a priori theoretical commitments that partially close down options, inhibiting the process of exploring a new territory (Van Maanen, 1988). Yet even if the qualitative and quantitative data are staggered in phases, the initial exploratory qualitative phase in a nascent area of research is unlikely to yield more than one new variable ready for formal tests—even preliminary ones—in the same study. Statistical tests, thus, are unlikely to be as informative as they may seem to the researchers. Quantitative tests take on a certain illusion of accuracy that may mislead in this context. For example, some years ago, the first author submitted a paper attempting to integrate qualitative and quantitative data to explain how teams navigate the challenge of learning a new technology. The quantitative measures were not only technically deficient (new and unvalidated) but also at odds with the espoused goal of *exploring* team processes. Eliminating the quantitative analyses strengthened the paper considerably, allowing an appropriate focus on understanding the team

learning process (Edmondson, Bohmer, & Pisano, 2001).

When addressing a novel question, researchers collect—as they should—qualitative data opportunistically such that they are free to chase new insights that emerge in an interview or observation. The sample is, by design, path dependent. For instance, subsequent interview questions (or interviewees) are determined iteratively as interesting ideas emerge in the process. Data analysis and data collection overlap, as noted above. This approach allows new insight and theory to take shape, but it precludes the systematic sampling and consistent use of measures required for meaningful statistical inference—even with the most lenient standards. Thus, in nascent areas the inclusion of qualitative data in a hybrid design does not overcome the problems associated with the use of quantitative data.

Both of these fit problems stem, in part, from the likely failure of quantitative measures and analyses used in a nascent area to conform sufficiently to basic assumptions of statistical inference. Although organizational researchers tolerate deviations from ideal samples and accept imperfect measures in their quantitative field studies, designs that fall completely outside the guidelines for normal science—because they have sampled in a snowballing manner and/or deliberately used inconsistent questions and techniques to collect data—distort the use of these powerful tools. As argued above, when little is known about a research topic or question, initial steps must be taken to explore and uncover new possibilities before useful quantitative measures can be informative. Subsequent studies, building on an accumulation of early qualitative work, are better able to conduct preliminary statistical tests of emergent theoretical ideas.

Two types of poor fit in areas of intermediate theory. Finally, when prior work related to a research question falls between nascent and mature, such as when a new construct appears likely to explain an outcome of interest, research designs that use either exclusively quantitative or qualitative data both encounter problems. In the former case, new measures introduced to capture new constructs lack credibility when used without qualitative illustration and triangulation. For example, when the construct of team psychological safety was introduced (Ed-

mondson, 1999), qualitative evidence of differences across teams in interpersonal climate was important for establishing the external validity of the construct, as well as for showing a clear relationship between the construct and the new measure. Without such data, the new survey measure would lack support for its implicit claim that it captured a distinct new construct and would be more vulnerable to concerns about common method bias. Therefore, research in an area of intermediate theory that combines new and established measures without supporting qualitative data is likely to suffer from the *uneven status of empirical measures*.

In contrast, a purely qualitative study in an intermediate theory area encounters the problem of *lost opportunity* for preliminary statistical support for its hypotheses. Although intermediate theory hypotheses may suffer in comparison to hypotheses relating well-established constructs, when clearly argued, they merit initial tests. By not taking advantage of this opportunity, research products are likely to be less compelling than otherwise.

Complementing Prior Work on Organizational Research Methods

For organizational researchers, a highly developed body of work prescribes rules and guidelines for how to collect and analyze data (e.g., Cohen & Cohen, 1983; Miles & Huberman, 1994; Pedhazur, 1982; Rosenthal & Rosnow, 1975; Tabachnick & Fidell, 1989). In a growing body of work, researchers expound the legitimacy of qualitative research as a means of expanding organizational knowledge (e.g., Eisenhardt, 1989b; Glaser & Strauss, 1967; Lee et al., 1999; Miles & Huberman, 1994), and many advocates view qualitative methodology as particularly, if not exclusively, valuable (Morgan & Smircich, 1980). Others debate the appropriateness of combining qualitative and quantitative methods in a single study (see both Sale et al., 2002, and Yauch & Steudel, 2003, for reviews). While the importance of matching methods to questions has been recognized (Bouchard, 1976; Campbell et al., 1982; Lee et al., 1999; McGrath, 1964), guidelines have not been articulated to help researchers make choices among the variety of potential sources of data they face in the field—only

some of which provide a good fit with their research questions.

To this prior work we add a framework for promoting methodological fit in field research, with a particular emphasis on the conditions under which hybrid designs are most effective. Our goal is to help researchers think through their options more systematically and explicitly so as to produce high-quality field research that advances theory and practice. We also propose that our framework may help reviewers and editors assess manuscripts reporting on field research. We suspect that few are immune to the need for this help.

For instance, while revising this manuscript, we encountered repeated real-life reminders of how challenging it can be to achieve methodological fit in field research. First, a graduate student engaged in a qualitative dissertation in a nascent area gave a talk that presented a set of induced variables, compared via t-tests, to support new theory. Seduced by the apparent certainty of quantitative data, the young researcher saw the statistical tests as more powerful than the careful thematic analyses that produced the new variables. Perhaps this was inexperience speaking. Yet, shortly thereafter, a mid-career researcher, with quantitative expertise, requested feedback on a beautifully written qualitative paper—addressing a mature theory question. Enthusiastic about the richness of verbatim data, the author failed to recognize that the gist of the paper's findings replicated much that was already known in the relevant literature. Third, an even more accomplished scholar reported plans to collect survey data—triggered by a field site's desire to be surveyed—in a highly unusual context about which little was known.

The Fitting Process

As others have noted (e.g., Fine & Elsbach, 2000), iterating between inductive theory development and deductive theory testing advances our understanding of organizational phenomena. This advance is rarely a sanitized linear progression that starts with a literature review, moves on to the research question, data collection, and analysis, and ends seamlessly with publication, as illustrated in Figure 2. We conceptualize the process of field research as a journey that may involve almost as many steps backward as forward. More specifically, we argue that methodological fit is achieved through a learning process.

Although our first-hand knowledge is limited to just a few of the studies described in this article, from these we conclude that creating fit is an iterative process that centrally involves feedback and modification at many stages. We model the fitting process as a funnel, drawing (not incidentally) from the product development literature (Wheelwright & Clark, 1992). The funnel symbolizes the relatively greater latitude and choice early in a project, which progressively narrow as time goes on. Before a single piece of data is collected, the options are almost unlimited. At a certain point, feedback contributes only to minor refinements in output—the slate is no longer blank. Figure 3 depicts this model.

The fitting process necessarily starts—or in some cases restarts—with some level of awareness of the state of prior work in an area of interest. Ideally, a researcher develops a reasonably good understanding of major streams of work in one or more bodies of research literature and then begins to shape a research question. This question substantially narrows down the possibilities for the research design. In this way a study design (set-

FIGURE 2
Traditional Implicit View of the Field Research Process

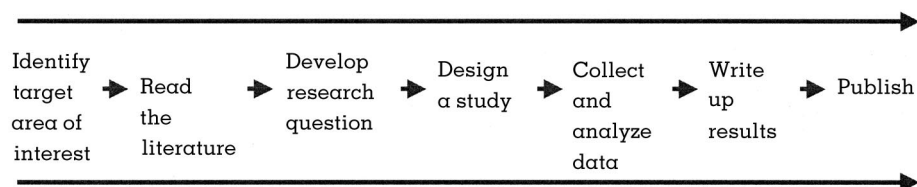
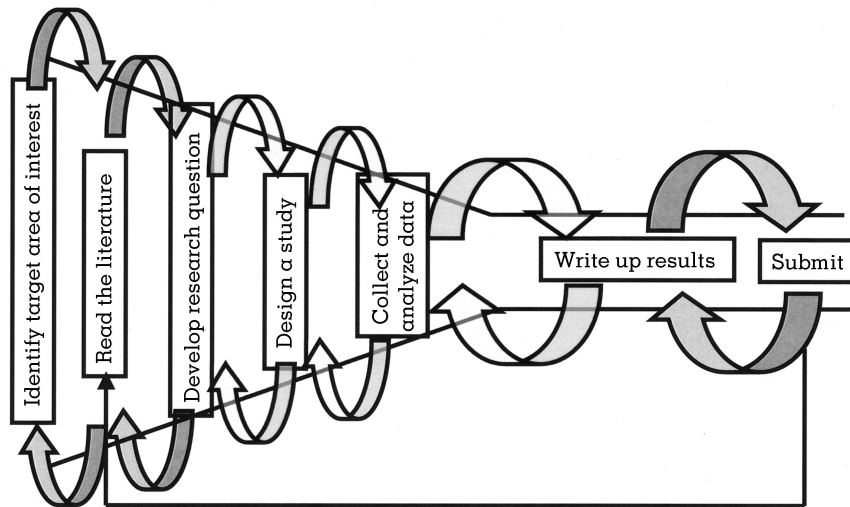


FIGURE 3
Field Research As an Iterative, Cyclic Learning Journey



ting, type of data, sample, analyses) follows logically from and addresses issues of interest to the researcher as well as to others in the field who care about the same topics. In short, a researcher is agreeing to engage in a dialogue—albeit a slow and stilted one—with peers who care about related issues and questions. This dialogue transpires primarily through papers, the written products of our research.

As Figure 3 conveys, options decrease as decisions are made. Because data collection narrows the scope of subsequent decisions, it is important to spend sufficient time iterating within the first three stages in the process, as indicated by the wider cyclical arrows in the model. As a research question becomes more focused, initial research design ideas emerge and are refined and elaborated. Design choices broadly involve the type of data to be collected and the methods used to collect the data (e.g., observation, interviews, surveys). As a researcher strives to resolve the tension between the ideal version of his or her project and one that is feasible and viable, the design evolves. Considering how to operationalize, explore, or test different research questions often leads to the realization that those questions or hypotheses need to be sharpened, revised, or scrapped.

Just as consideration of design choices may result in reformulation of research questions,

experiences during data collection may suggest that the research design be modified. For instance, work that focuses on validating a new construct and understanding how it functions (a process orientation) is likely to be conducted with qualitative methods. During the course of the investigation (e.g., through interviews or observations), information may arise that suggests that a new construct is related to other, more established variables of interest (e.g., performance) in ways that appear predictable. This may lead a researcher to create a measure of the new construct and to use established measures of other relevant constructs to collect quantitative data in order to tentatively investigate variance-based hypotheses.

In the messy reality of field research, data collection opportunities may emerge before the researcher has a clear idea about how the data will be used. At other times original research designs may be disrupted by layoffs or other environmental changes beyond the investigator's control. In such situations the researcher must iterate back up the funnel in Figure 3, returning perhaps to the literature for direction, or deciding to collect new data of a different nature to deepen understanding of a different phenomenon (e.g., see Meyer, 1982, for a superb example of researcher flexibility).

Once data are collected, an effective researcher employs analytic techniques that

match the nature and amount of data.¹⁴ The process of writing up the results of the analyses may trigger additional questions for the researcher, or suggest investigating alternative explanations during data analysis. Finally, as anyone who has submitted a manuscript for publication knows, the researcher can expect additional cycles of learning prior to publication. Even rejected manuscripts arrive with comments and suggestions from reviewers that can inform revision of the manuscript in preparation for submission to another journal. It is not uncommon for reviewers to suggest that authors return to the literature to further develop their hypotheses or research questions from prior theory or to better inform the discussion of their results. By framing these suggestions and recommendations as inputs in a learning process, rather than as devastating criticism, researchers improve the quality of their research.

The journey varies in certain predictable ways across the continuum. In more mature areas, intensive conceptualization occurs early in the process while the literature is being digested, and compelling hypotheses and models are developed. Before collecting extensive quantitative data, the researcher wants to be confident that the key hypotheses are sensible and likely to be supported. This requires extensive conceptual work to develop the ideas carefully, obtaining considerable feedback from others, and refining the predictions before data collection. Once hundreds of surveys are sent out, for instance, the stakes are quite high and the data irreversible. In contrast, in the nascent stage, the intensive conceptualization work occurs later in a project, during and after data collection, through an inductive process of seeking patterns to explain the data. More data can be collected to dig into anomalies encountered. Thus, at both extremes, effective research projects require learning cycles, but the timing of intense theoretical development varies. For all field research endeavors, however, a learning-oriented mindset that values and welcomes

critical feedback is an essential asset of the field researcher seeking methodological fit.

Educating the New Field Researcher

One implication of an emphasis on methodological fit in field research is that researchers who wish to explore different types of questions in their careers must be methodologically versatile. New field researchers need exposure to both quantitative and qualitative techniques, and they need to develop specific skills as well as general awareness of when each is most appropriate. In this way the researcher will gain a larger toolbox with which to work, expanding the types of research questions he or she can answer effectively, and thereby also benefiting the field. Although not every researcher will become a renaissance methodologist with deep expertise and skill in all research techniques, a realistic goal is to provide students with enough awareness of multiple methods to become effective collaborators with others whose deep skills in particular methodologies complement their own skills and preferences.

A second implication of these ideas for methodological education is the need to explicitly teach the notion of methodological fit. We offer several suggestions for how to do this. First, new field researchers can be taught methodological fit by deconstructing exemplars, similar to our approach in this paper. A set of exemplars can be put together based on topic (e.g., teams) or method (e.g., hybrid approach) to help students identify a range of issues and trade-offs that unfold in real research projects. Students can identify strengths and weaknesses of decisions or trade-offs they discern, suggest changes that might have improved the work, and appreciate the ways that the researchers' choices were effective and mutually reinforcing.

Second, students can be invited to create research proposals that include preliminary ideas about each of the elements of field research shown in Table 1, to be evaluated by professors and peers. In this way students can obtain feedback on the degree of logical consistency among the proposed elements. Because it is easier to detect others' fit gaps than one's own, this feedback is invaluable. Such research proposals involve students in their areas of interest, while allowing them to view and shape the process of developing a research project. This learning

¹⁴ As previously mentioned, many sources for data analysis techniques can be recommended; for example, we refer the interested reader to Miles and Huberman (1994) for information on the analysis of qualitative data and to Tabachnick and Fidell (1989) for information on conducting multivariate analyses of quantitative data.

process is likely to require a climate of psychological safety to help students take the interpersonal risks of sharing early efforts at designing research. Group dialogue is particularly useful when it allows students to think through ideas together, raise questions, help each other evaluate their own decisions in terms of methodological fit, and identify potential pitfalls. Attention to methodological fit complements strategies others have suggested for devising significant and satisfying research questions (Campbell et al., 1982).

Third, involving students in the planning and execution phases of professors' research is another way to enhance their access to the reasoning, decisions, and trade-offs early on and throughout the research process. This close involvement demands time and patience on the part of professors, which pays off in effective experiential learning through apprenticeship.

Fourth, explicit thought experiments can help students think through issues of methodological fit in field research. For instance, a professor might begin by posing a research question and asking his or her students to determine how the question should be refined to become actionable. From there, students can be asked to identify how the piece of research might be different, depending on where along the continuum from nascent to mature the existing literature is positioned.

In sum, implications of our framework for educating new field researchers include the need for skill set versatility, the use of exemplars (or models of fit in published work) as case studies from which to induce implicit principles, direct experience of the research process, and generative conversation about possibilities to supplement training in specific methodological tools and techniques. Thus, we advocate experiential education rather than lecture in communicating these ideas. To the extent possible, methodological fit should be "discovered" by students rather than merely described to them. The satisfaction of discovering them firsthand may make the lessons more powerful and lasting.

Limitations and Boundaries

First and foremost, the ideas in this paper are intended for field research, thereby excluding many important areas of management scholarship. It is also important to point out that our

data sources in developing the framework were drawn from research in micro- and meso-organizational behavior focused on teams, because this is the area we know best—the literature we read most often, the papers we review, and the research we conduct. Although this helped narrow the scope of inquiry into a manageable body of data, it is possible that the framework presented here would need to be modified for other areas of management research.

Second, a key limitation on the production of methodological fit is the versatility of the researcher. The aim of this paper is to explicitly discuss methodological fit to help researchers make more informed decisions as they work through the iterative, nonlinear process of conducting field research. Yet we recognize that many, if not most, management scholars have strong preferences for methods they feel comfortable with. As such, a contingency approach may not always seem desirable or feasible. When research questions call for the flexibility of a contingency approach, scholars may need to collaborate with those whose skills and preferences are different from and complementary to their own.

Third, our framework does not address more narrow and precise methodological fit choices, such as which type of interviewing style to use in a given research site or which statistical tests provide the best fit for a given data set. We do not describe techniques for quantitative and qualitative data collection and analysis or for sampling, topics that have been well covered elsewhere (e.g., Cohen & Cohen, 1983; Cook & Campbell, 1979; Eisenhardt, 1989b; Glaser & Strauss, 1967; Keppel, 1991; Miles & Huberman, 1994; Nunnally & Bernstein, 1994; Tabachnick & Fidell, 1989).

CONCLUSION

This article pulls together key elements from management field research into a single framework that provides language and advice for discussing and promoting methodological fit. We drew on contemporary research on teams to show a spectrum of theoretical development and its methodological implications. We do not advocate one method over others but, rather, clarify how methodological choices can enhance or diminish the ability to address particular research questions. In developing a new

framework, we revisited old territory with a modern lens that acknowledges the growing importance of field research for developing theory at all stages.

We showed that fit is achieved by logical pairings between methods and the state of theory development when a study is conducted. As an area of theory becomes more mature with greater consensus among researchers, most important contributions take the form of carefully specified theoretical models and quantitative tests. Conversely, the less that is known about a phenomenon in the organizational literature, the more likely exploratory qualitative research will be a fruitful strategy. In the middle, a mix of qualitative and quantitative data leverages both approaches to develop new constructs and powerfully demonstrate the plausibility of new relationships.

This article emphasizes fit as a critical, but not exclusive, input to high-quality field research. Notably, the quality of the individual elements of research, including the review of related literature and effective techniques for data collection and analysis, matters greatly. Our argument is simply that fit is important and potentially overlooked by busy or inexperienced researchers who may fail to see larger patterns that give rise to inconsistencies between their aims and their methods. The exemplars discussed in this article illustrate how fit among the elements of field research can be achieved across different field research contexts. In this way we hope to encourage other researchers to consider methodological fit in their efforts to contribute to our collective understanding of organizational phenomena and management practice.

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