Research Methods for Theory Building in Applied Disciplines: A Comparative Analysis

Richard J. Torraco

The online version of this article can be found at:

http://adh.sagepub.com/content/4/3/355

Published by:

$SAGE

http://www.sagepublications.com

On behalf of:

HRD

Academy of Human Resource Development

Additional services and information for *Advances in Developing Human Resources* can be found at:

Email Alerts: http://adh.sagepub.com/cgi/alerts

Subscriptions: http://adh.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

Citations: http://adh.sagepub.com/content/4/3/355.refs.html

>> Version of Record - Aug 1, 2002

What is This?

Research Methods for Theory Building in Applied Disciplines: A Comparative Analysis

Richard J. Torraco

The problem and the solution. This volume presents an anthology of methods for theory building in applied disciplines. Each chapter has described the assumptions and methods of distinct approaches for developing theory. This chapter takes a collective view of research methods for theory building. Although the theorist can choose from a menu of the methods that have been discussed, certain characteristics of the methods themselves can lead to more productive theorizing depending on the particular research purpose of the theorist. This chapter presents a comparative analysis of research methods for theory building that leads to deeper understanding of the methods and their unique contributions to theoretical knowledge.

The chapter offers a perspective on theory building that cuts across the specific methods presented in separate chapters of this volume. First, specific theory-building methods are reviewed for their particular strengths, limitations, and primary indications for use. Then, theory-building methods are discussed collectively to examine how different research methods are used to make different contributions to theoretical knowledge. In this discussion, three selected theory-building methods are used to examine the same phenomenon as the basis for understanding the unique merits and contributions of each specific method. Examining the same issue with different approaches to theory building forces us to probe more deeply into why a theorist might choose one method over another when seeking new theoretical knowledge about a phenomenon. This discussion also takes us beyond the primary indications for using a particular theory-building method to deeper questions about the assumptions, meanings, and unique contributions of various approaches to theory building. An integrative summary of theory-building methods based on our comparative analysis is provided that includes indications for the selection and use of these methodologies.

This chapter takes a broad perspective on theorizing that offers the reader an integration and summary of the specific methods for theory building. In addition, a section of the chapter focuses on selected theory-building meth-

ods to provide an in-depth examination of the unique features of these methods. From these discussions, we glean insights into the distinctive properties of the theory-building methods that allow more judicious choices about their use for theory building.

Five Specific Research Methods for Theory Building

Researchers and theorists approach scholarly activity from different paradigmatic perspectives, using their own preferred strategies and methods for developing new theoretical knowledge. Although alternative methods for theory building are available (five specific methods are presented in this volume), theorists tend to pursue their work in ways that reflect their deep-seated values and assumptions about what constitutes knowledge (epistemology), the nature of being or existence (ontology), what constitutes value (axiology), and other basic ideological and philosophical beliefs. These beliefs are fundamental to the theorist's choice of research purpose, subject, and methodology. The theorist's personal intention and choice in these matters notwithstanding, some theory-building methods are better suited for the particular purposes of theorizing than others. This section presents a concise review of the five specific methodologies for theory building discussed in this volume with emphasis on the strengths, limitations, and primary indications for use of each method. The following sections discuss these features of Dubin's method, grounded theory, meta-analytic theory building, the social constructionist approach, and theory building from case study research, respectively. It concludes with an integrative summary of these methods and some guidelines for their selection and use.

Dubin's theory-building method. Dubin's (1978) method for theory building follows the quantitative research tradition and takes a hypothetico-deductive approach to knowledge creation. This method is based on the assumptions that knowledge is created to explain, predict, and control the phenomenon of interest; that new knowledge (theory) should serve technical/utilitarian interests for interrelating means and ends; and that the discovery of generalizable laws and explanations of human and organizational phenomena is possible and desirable.

Chapter 2 of this volume describes Dubin's method, which provides a specific, eight-phase process for theory building. An advantage of Dubin's method is that the theory-building purpose of each phase of the methodology is clearly specified and interrelated to other phases. The first five elements of Dubin's approach specify the methods for the initial construction and development of the theory. The last three elements of Dubin's methodology represent the process of taking the theory into real-world contexts to conduct research for empirical verification. Thus, the method is comprehen-

sive in providing for the initial development of theory and for the research to empirically verify the theory. Dubin's method is commonly used by those who adopt a theory-then-research strategy for theory building (see Tables 1 and 2, which summarize additional information about this method).

Grounded theory building. Unlike Dubin's method, grounded theory follows an inductive approach to generating or discovering theory. Theory evolves during grounded theory building through continuous interplay between analysis and data collection. Throughout the research process, theory is provisionally verified through a rigorous process of continuous matching of theory against data. Thus, grounded theory is distinctive in its approach to theory building because of its singular commitment to allowing new theoretical understandings to emerge from the data. Theory derived in this way is intended to be closely connected to evidence through the continuous analysis and comparison of data and emergent theory. Rigorous matching of data with theory is pursued for verification of the resulting hypotheses throughout the course of the theory-building process. In this way, grounded theory strives for authenticity—that is, a faithfulness to the data that closely reflects the meanings and understandings of those involved in the phenomenon being modeled by the theory. Theory building using this approach is particularly well suited to generating novel theoretical understandings and tentative hypotheses about the phenomenon of interest. Grounded theory is also of value when the type of theoretical knowledge needed is free from the need for empirical confirmation (or disconfirmation) of preexisting conceptions (see Tables 1 and 2).

Meta-analytic theory building. Meta-analysis uses formal statistical techniques to sum up a body of separate but similar empirical studies. The purpose of meta-analysis is to synthesize and organize existing empirical findings on a topic into a coherent pattern. The meta-analytic approach seeks general conclusions across multiple studies as the basis for theory building. Chapter 4 of this volume describes a five-step process for meta-analytic theory building that leads to confirmation or disconfirmation of existing theory and/or the search for alternative theory. Theory is not always fully confirmed using meta-analysis, a finding that implies the need for the refinement or modification of existing theory based on these studies. On the other hand, disconfirmation of theory indicates the need for further theory building in the search for alternative theory. Meta-analytic theory building offers several distinctive features to those seeking to build theory or refine existing theory (see Tables 1 and 2).

Social constructionist theory building. Theory building for the social constructionist is not undertaken to uncover a theoretical truth or reality but to model an understanding of the sense that people make of the social world in their everyday lives. Social constructionist theory building is concerned with seeking

TABLE 1:   Summary of Research Methods for Theory Building

Theory-Building Method	Values and Assumptions	Strengths and Indications for Use	Limitations of Method
Quantitative research: Dubin's theory-building methodology	• Knowledge is created for the purpose(s) of explanation, prediction, and/or control of the phenomena of interest. • New knowledge (theory) should serve technical/utilitarian interests for interrelating means and ends. • The discovery of generalizable laws and explanations of human and organizational phenomena is possible and desirable.	• Dubin's methodology can be used for hypothetico-deductive knowledge creation. • Dubin's methodology offers a specific, multiphased process for theory building. Each phase of theory building is clearly specified and interrelated to other phases. • The methodology is comprehensive in providing for the initial development of theory and for the research to empirically verify the theory.	• Dubin's methodology cannot be used for inductive knowledge creation. • This methodology has been criticized as linear, sequential, and unable to adequately represent the fluidity and emergent nature of many social and organizational phenomena.
Grounded theory research	• Theory grounded in the interplay of data collection and theoretical analysis yields valuable social science knowledge. • Grounded theory rejects both strict determinism and nondeterminism—actors possess the means of controlling their destinies by their responses to conditions.	• Grounded theory is of particular value for generating new insights and tentative hypotheses, regardless of existing theoretical explanations of a phenomenon. • Grounded theory's commitment to closeness of fit between theory and data yields theory with strong descriptive and explanatory power.	• Grounded theory should not be used when breadth and generalizability of theoretical explanations are sought.

Meta-analysis research	• Cumulating and synthesizing the findings of separate but similar studies of an issue produce worthwhile new knowledge. • Rigorous research design and statistical analysis allow the researcher to remain impartial and detached from the outcomes of the research.	• Meta-analysis is capable of integrating and synthesizing existing empirical studies of a phenomenon as the basis for theory building. • Meta-analysis can help theorists to identify fruitful areas of new knowledge at the outset of theory building and can offer guidance for concept selection and research design. • Meta-analysis provides aggregate assessments of the relationships between explanatory factors and outcomes, thus revealing patterns of causal relationships. In this way, meta-analysis offers a unique evaluation of efficacy of competing theories.	• Meta-analytic theory building cannot be used for inductive knowledge creation. • Meta-analytic approaches cannot be used for topics on which there are few studies.
Social constructionist research	• Knowledge is created through understanding and explanation of how social experience is created and given meaning. • The complexity of lived experience and the variability of social relations mitigate against attempts to claim causality or generalizability in social constructionist theory.	• Social constructionist theory building can model and enhance our understanding of how people intersubjectively create, understand, and reproduce social situations. • By emphasizing the specific, the local, and the particular, social constructionist theory building more closely represents the lived experiences of those studied.	• The use of social constructionist theory building is limited to the declared purpose of the research—seeking understanding of the sense that people make of the social world in their everyday lives.

(continued)

TABLE 1   Continued

Theory-Building Method	Values and Assumptions	Strengths and Indications for Use	Limitations of Method
Case study research	• Because this methodology is consistent with positivistic, naturalistic, or both paradigmatic approaches to the discovery of new knowledge, it can reflect the values and assumptions of both paradigms.	• Theory building from case study research is of particular value when a focus on single settings is the optimum context for theory building. • Because it does not rely on previous literature or prior empirical evidence, this methodology is particularly appropriate in situations when little is known about a phenomenon, when current theory seems inadequate, or when present perspectives conflict with each other or common sense.	• This methodology has been criticized for producing theory that is rich in detail but overly complex and lacking a coherent, integrative perspective on the phenomenon.

TABLE 2:   Contributions of Research Methods to Theory-Building Research

Chapter	Type of Research		Driving Rationale		General Theory-Building Research Phase				
	Quantitative	Qualitative	Deductive Driven	Inductive Driven	Conceptual Development	Operationalization	Confirmation or Disconfirmation	Application	Continuous Refinement and Development
1. General method of theory building (Lynham)	X	X	X	X	X	X	X	X	X
2. Quantitative research/ Dubin (Lynham)	X		X		X	X	X	X	X
3. Grounded theory research (Egan)		X		X	X			X	
4. Meta-analysis (Yang)	X		X		X	X	X		X
5. Social constructionist (Turnbull)		X		X	X	O		X	
6. Case study research (Dooley)	X	X	X	X	X	X	X	X	X

Note: X = definite role; O = limited role.

explanations about how social experience is created and given meaning. The distinguishing features of social constructionist theory building are its emphasis on the specific, the local, and the particular as means to more closely represent the lived experience of those studied. Social constructionist theory attempts to extrapolate these insights to seek transferability of ideas toward a redefinition of existing theoretical frameworks. Unlike other approaches to theory building, social constructionist research seeks increased powers of perception and understanding as an end in itself, whether it is rooted in interpretive, explanatory, or emancipatory objectives. In aiming for understanding and reconstruction of reality, the social constructionist researcher remains visible and self-declared during the process of research and theory building, so that it is clear when the researcher's own voice is represented and when the voices of others are put forward. Thus, social constructionist theory seeks to present authentic meaning through carefully crafted narratives of how people make sense of the social world in their everyday lives (see Tables 1 and 2).

Theory building from case study research. Case study research focuses on understanding the dynamics present within single settings. Although case study research and theory building from case study research are both based on the study of phenomena present within case settings, these research activities represent distinct contributions to new knowledge. Case study research takes advantage of the rich context for empirical observation provided by case settings to study a selected phenomenon using qualitative or quantitative methods without offering formal theoretical interpretations of the study. On the other hand, theory building from case study research generates explicit theoretical statements that explain the dynamics of phenomena occurring within case settings. An advantage of using case study research for theory building is that it does not rely on previous literature or prior empirical evidence. Thus, this method is particularly appropriate when little is known about a phenomenon, current perspectives seem inadequate because they have little empirical substantiation, or they conflict with each other or common sense (Eisenhardt, 1989). Another unique feature of this approach to theory building is that case study research is a methodology that is consistent with positivistic, naturalistic, or both paradigmatic approaches to the discovery of new knowledge. As we will see later in this chapter, this feature allows case studies to be used for multiparadigm research, and it allows theorists to preserve opposing paradigmatic perspectives while developing richer, more diverse theory for complex phenomena (see Tables 1 and 2).

At this point, we shift gears from our examination of individual theory-building methods to a comparative analysis across several methods. An important convention for all research endeavors is that the problem, opportunity, or need to be addressed by the research determines the methodology and design of the research. As applied to theory-building research, this is interpreted to mean that the problem to be addressed by theory (i.e., the need for new theory, reformulation of existing theory, and so on) can determine

the theory-building method to be used. For example, theory building using case study research may be the method of choice when little is known about the phenomenon of interest and when current perspectives in the literature and prior empirical evidence are inadequate. On the other hand, when extensive research exists on a topic, a meta-analytic approach may be the most effective method for synthesizing current empirical studies on an issue as the basis for theory development. Although it is clear that the problem or need to be addressed by theory can determine the theory-building method to be used, the same issue can be explored using different research paradigms. The following section presents a comparative analysis of theory-building methods to explore how these methodologies contribute differently to knowledge creation.

A Comparative Analysis of Three Methods for Theory Building

The phenomenon of work groups and teams has been researched extensively in a variety of organizational settings. Can this issue be studied using different paradigmatic approaches to theory building? At one level, the answer is clearly "yes." Many studies of this topic, both positivistic and naturalistic, have been conducted to date. Yet how does the knowledge yielded from these studies differ in its contribution to theory building? This section examines this phenomenon using different approaches to theory building—grounded theory, meta-analytic theory building, and case study research for theory building. These three approaches represent both major research paradigms; meta-analysis follows the positivistic research tradition, grounded theory takes a naturalistic approach to inquiry, and case study research can be pursued using the research methods of either paradigm. Our purpose is to explore how different research approaches contribute in unique ways to our theoretical knowledge of work groups and teams in organizations. From this discussion, we glean insights into the distinctive properties of these theory-building methodologies that allow more judicious choices about their use for theory building. Research using these three methods was selected for this discussion based on three criteria. All articles chosen for this discussion needed to have the following characteristics:

1. Research methods had to be clearly described,
2. the primary focus of the study had to be some aspect of work groups and teams in organizations, and
3. the research had to make a distinctive contribution to new theoretical knowledge about work groups and teams.

Grounded theory. We begin with the use of grounded theory approaches to enhancing our theoretical understanding of the phenomenon of work groups and teams in organizations. Sullivan's (1995) study of a group was initiated without a predetermined goal other than to conduct

an inquiry into the nature of a social work group, to raise its predominant features in an attempt to generate some theoretical knowledge of group dynamics; and at the same time, to acquire experience and skill in this theory building model of qualitative research. (p. 17)

Reflecting the aims of grounded theory, the author stated, "This undertaking was begun hypothesis-free, the only assumptions being that observation of a particular group practice would yield some social interaction features, themes, or operating norms of a characterizing nature" (p. 17). The study examined the group dynamics among members of a group learning more effective child-rearing behaviors over a 10-month period. Because the aim of the study was not predetermined, data collection and analysis were initiated with an open perspective.

My [the author's] task was to identify the salient features of this particular group practice; to abstract them to conceptualized categories, and, possibly, to move further from these categories to a class of group practice to which this group belongs. (p. 19)

The research methodology relied on extensive field notes taken during 30 group sessions and "ethnographic content analysis" of field notes, observations, and documents related to the specific practices of the group. Seven general group practice descriptors (i.e., significant classes of things, persons, and events and the properties that characterize them) were abstracted from the data collected over a 10-month period. Worker control as a focus of study emerged in the early stages of data coding and analysis; a full profile of its role in the development of the group crystallized during the later stages of analysis. The study identified conflict between the task achievement objectives of the group's leader and the need to develop relationships and mutual assistance among group members. The study called for further research to carefully examine how leader-member interactions influence group ownership and control and, ultimately, group development.

In another grounded theory study, Fraser and Russell (2000) examined the importance of the group in women's acquisition of self-defense skills. Most prior studies of groups participating in women's self-defense courses have focused on course outcomes such as enhancing women's confidence in their self-defense capabilities. Seeking to broaden the scope of research to include process dimensions of the group experience, the authors studied the participation of 59 women in a self-defense course to examine the role of the group context in the course's efficacy. Data were collected from semistructured interviews conducted 5 months after these women graduated from the self-defense course. Data were analyzed using constant comparative analysis and consensus coding to arrive at 43 major themes that emerged from the interview data. Results indicated that the group context was instrumental in helping women to acquire self-defense skills and develop feelings of empowerment. Aspects of the group that were critical to course effectiveness included cohesiveness, altruism, emotional containment, modeling, exploration of boundaries, and new relationships with other women. The authors integrated grounded theory generated from this study with existing

theoretical and empirical reports of small group dynamics to offer propositions for monitoring the functioning of small groups more sensitively and accurately.

Finally, the grounded theory study of Cairns, Burt, and Beech (2001) examined the concepts of cohesion and conflict as they were manifested in the interactions of a management team during their yearlong participation in a management development program. The authors' primary interest was the study of coherence—"the wholeness or consistency in managing strategic change and competition, which has to embrace both thought and action, in intra and intercompany relations" (p. 24). They studied coherence as it was manifested by the top management team of a rapidly expanding organization. The authors took this definition and their theoretical framework for coherence from the work of Pettigrew and Whipp (1991). Data were collected from 120 top, senior, and middle managers using observations, field notes, and structured and informal interviews during a series of workshops to develop their skills and opportunities for business development. Describing their research methodology, the authors stated,

> From the raw data, categories of emergent themes were identified, using grounded theory (Glaser and Strauss, 1967) and these were critically compared with the primary conditioning features and secondary support mechanisms of the coherence model of Pettigrew and Whipp (1991). (p. 27)

Thus, the authors used grounded theory generated from their data and existing theory on coherence from Pettigrew and Whipp to further develop the theoretical understanding of this phenomenon. Analyzing data for commonality of language, expression, explicit meaning, and metaphorical implications, themes were identified from the data and emergent categories were drawn as descriptors of the influences and barriers to the development of coherence.

The study found that deterrents to the development of coherence among the managers studied included a management control system that perpetuates "seeking approval" rather than the entrepreneurial pursuit of organizational goals, conflict between an espoused theory of management that encourages a culture of dialogue and innovation and a reward system that encourages the opposite (i.e., beating sales targets, competition among departments), and the lack of an inclusive strategic management process to facilitate involvement and exchange among members of the management team. The authors' critical comparison of these findings with Pettigrew and Whipp's (1991) theory of coherence yielded new insights into this phenomenon, including the notion that the development of unitary thought and action (coherence) by the organization can only occur where there is already cohesion among members. The authors concluded that the lack of secondary support mechanisms for coherence (i.e., senior management team integrity, uniting espoused theories [or intent] with implementation) becomes a barrier to the development of the desired organizational cohesion.

Theoretical perspectives from grounded theory. These grounded theory studies offer unique contributions to the theoretical understanding of work groups and teams. Although each study examined particular aspects of different kinds of teams, the use of grounded theory yielded a type of knowledge for which this methodological approach is well suited. Consistent with the assumptions and paradigmatic underpinnings of grounded theory, the intent of these authors was to allow the properties and meanings for new theoretical understandings to emerge from the data. Because none of the authors sought empirical confirmation (or disconfirmation) of preexisting conceptions, each study offered new insights and tentative hypotheses about the groups, regardless of existing theoretical explanations of this phenomenon. In addition, because research goals were not contingent on focusing on specific characteristics or dimensions of these groups, specific elements of research design were allowed to take shape only after the grounded theory process began, a feature that yielded knowledge in areas of group dynamics that may or may not have been anticipated by the researchers. Thus, genuinely novel findings about these groups (i.e., new insights into group ownership and control, coherence develops in teams only when there is already cohesion among members) were generated by these studies using grounded theory methods.

Meta-analytic theory building. In this section, we examine the use of meta-analytic approaches to enhancing our theoretical understanding of the phenomenon of work groups and teams in organizations. Macy (1986) conducted a meta-analysis of 56 studies of work innovations involving self-managed teams. Each study was coded by type of change strategy, moderator variables (for example, size of organization, use of consultants, type of control group), and dependant variables (for example, quality of output, absenteeism, job satisfaction). Findings from the meta-analysis indicated that whereas self-managed teams consistently had positive effects on productivity, they exhibited a negative association with ratings of general satisfaction and job satisfaction. Because it was surprising that job satisfaction was not positively associated with self-managed teams, these results prompted the need to reconsider existing theoretical conceptions of teams, including innovations in work design involving autonomy and self-management.

In a later meta-analysis that substantially expanded the scope of the analysis, Macy and Izumi (1993) studied autonomous work groups and related aspects of organizational structure, human resource management practices, and technology in 131 field studies. The authors found that indicators of financial performance showed the greatest improvements when multiple changes were made simultaneously in organizational policies, structure, and work practices. Among the 506 effect size estimates produced by the meta-analysis, including measures of financial performance as dependent variables, they found that interventions with the greatest impact included autonomous work groups and work patterns redesigned to increase

employee involvement. In addition to making significant contributions to financial indicators, these interventions improved behavioral measures of absenteeism and turnover. Interestingly, employee attitudes including job satisfaction again showed little systematic improvement with these interventions.

Meta-analyses such as these have yielded much theoretical knowledge of work groups and teams. Thanks to the broad perspective on this phenomenon provided by meta-analytic studies, we now know that differences in the outcomes of interest including financial performance and productivity are generally the results of large-scale, multiple-system interventions that include self-managed teams, not just the dynamics of self-managed teams themselves. In addition, we should not expect to see improvements in general satisfaction or commitment to the organization with such interventions. Instead, improvements occur due to changes in specific attitudes about responsibility, control, skill variety, and fulfillment in one's own job and work area.

In another meta-analysis, experimental studies published between 1980 and 1990 were analyzed to examine the relationship between the use of group support systems (GSS) and several group process and outcome measures of interest to organizations (McLeod, 1992). The specific group process and outcome variables examined were degree of task focus, equality of participation, time to decision, decision quality, consensus, and member satisfaction. GSS, the independent variable in this analysis, referred to the use of communication technologies (i.e., e-mail, videoconferencing, and teleconferencing) that supported both geographically dispersed groups and face-to-face groups. The meta-analysis offered results on all six dependent variables (degree of task focus, equality of participation, time to decision, decision quality, consensus, and member satisfaction) using combined effect sizes and standard deviation Z-scores. The use of GSS was found to increase decision quality, time needed to reach decisions, equality of participation, and degree of task focus and to decrease consensus and group member satisfaction. Although the four results showing positive relationships were based on moderate combined effect sizes and were consistent across the studies analyzed, there was considerable inconsistency in the effect sizes about the relationship between GSS use and consensus and group member satisfaction.

Finally, Evans and Dion (1991) examined group cohesion and performance in their meta-analysis of 27 studies of this relationship. They sought to determine if cohesive groups were more productive than noncohesive groups by asking, Is the relationship between group cohesion and performance a positive one? They also considered the impact of situational variables on the relationship of these two constructs by asking, Is the variance among the studies in the meta-analysis great enough to warrant further study

of possible moderators? The research analyzed included studies of sports teams, experimental groups, and military units. Group cohesion was measured by the extent to which individuals' attitudes agreed with the group's attitudes as measured by one of three attitude scales. Performance measures included supervisors' ratings of the team's work outcomes, time and accuracy of task completion, and win-loss records of sports teams. Evans and Dion's meta-analysis found a stable and positive correlation between work group cohesion and the performance of work groups ($r = +.419$). The average cohesive group performed 18 percentile points above the average noncohesive group.

Theoretical perspectives from meta-analysis. Methodological expedients constrain the use of meta-analyses for theory building—without a sufficient volume of acceptable studies in the area of interest, the basis for new knowledge from meta-analyses will not be robust enough to support findings for use in theory building. The four meta-analyses reviewed here all studied important aspects of groups. However, these studies were not uniform in scope and focus; they included a wide range of factors related to group processes and outcomes. This reflects a disadvantage of using meta-analysis for theory building—theorists must use what is provided by existing studies; they cannot include new variables or reconfigure the factors examined in the original studies.

These considerations notwithstanding, meta-analytic findings provide powerful prescriptions for new theoretical understandings that are scientifically derived from bodies of existing studies. Thanks in part to meta-analytic research, we now have a sound foundation for understanding the group environment factors that are associated with improvements in decision quality, time needed to reach decisions, and equality of participation. Moreover, meta-analytic findings offer the scope and depth necessary for substantive advances in theoretical understanding because these findings are based on aggregated knowledge across studies of known quality. This capacity to integrate and synthesize empirical studies has yielded valuable contributions to theory about work groups and teams. For example, the 506 effect size estimates from Macy and Izumi's (1993) meta-analysis of 131 field studies helped to establish the importance of large-scale, multiple-system interventions that may include self-managed teams but are not necessarily the result of creating and developing teams alone. Meta-analytic findings have also helped to clarify the now well-established relationships between team structure, task design, employee involvement, and job satisfaction.

Thus, meta-analysis makes a distinctive contribution to theory building—it is unique in its ability to cumulate existing empirical findings and to offer integrated results that can be used to develop or refine theoretical knowledge. This is particularly valuable for theorists seeking to resolve problems created by new developments in organizations that are inade-

quately explained by existing theory, a situation commonly found in applied disciplines when extensive research may already exist on these organizational phenomena. Meta-analysis can help theorists to identify new directions for theorizing at the outset of theory building in a way that charts the proper course to fruitful areas of new knowledge.

Case study research and theory building. Goodman's (1979) case study of the Rushton Mining Company provides an early example of the use of case study research for developing theory on work groups and teams. The case study of the Rushton Mining Company describes one of the most comprehensively evaluated adoptions of self-managing teams (Goodman, 1979). Interestingly, Eric Trist headed the change team that introduced self-managing teams to the Rushton coal mine. Recall that Trist's classic work on self-managing teams was based on work in an English coal mine (Trist & Bamforth, 1951). In addition to providing new insights into prerequisites for team success including the need for clear goals, management support, team training, autonomy, and shared incentives, the Rushton case was one of few studies at the time that demonstrated the importance of looking beyond the structure and activities of the team itself; it showed that successful team implementation requires broader organizational changes that may be independent of team interventions but that are essential to the effective functioning of teams.

In the Rushton case, team effectiveness was related in part to a joint labor-management committee with oversight for the implementation and early development of teams and to a new single-rate pay system that reinforced common responsibilities among workers and greater openness to sharing job knowledge. This case study emphasized the need for theory to specify factors and relationships that are specific to the group or team itself as well as to the organizational considerations necessary for effective team functioning. Moreover, the research established that adequate conceptualization of the physical environment and technology was missing in existing theory on teams. It proposed that advances in understanding how teams function in work environments must be based on a thorough understanding of the technological system because some of the greatest leverage points on outcomes are within the team's control, whereas others—related to equipment, technology, and the physical environment—are not (Goodman, 1979).

Perlow's (1999) qualitative study of the work practices of a software engineering team in a high-technology corporation was undertaken to study how software engineers spend their time, why they use their time in certain ways, and whether their ways of using time were in their own best interests and those of their organizations. Noting the immense pressure of very short product development cycles in high-tech product engineering, prior studies of such environments have lauded the willingness of engineers to work extremely long hours in response to these pressures and have celebrated

their intensity and total devotion to work. In contrast, Perlow's case study of a software engineering team revealed the problematic nature of the current way of using time, which was destructive to individuals' lives outside of work and negatively affected the collective productivity of the software engineering team. Perlow's study examined the full team responsible for developing the first product of an important new product line including the group's manager, 3 project team leaders, and a corps of software engineers (17 members in total). This team was studied throughout the period of the product's 9-month development cycle, from the commitment of funding until the product's launch. Data from five sources—participant observation, interviews of all team members, shadowing of each of the members, tracking logs, and performance data—were analyzed to explore how engineers spent blocks of work time, the types of activities that consumed these time blocks (i.e., individual activities, interactive activities, social activities, or personal activities), the sequencing of these activities, and the systemic effects of these sequences.

The research showed that interactions structured individuals' use of time by fragmenting uninterrupted, individual blocks of time. Blocks of time were not set aside for engineers to work individually. Rather, individual activities occurred by default when engineers were not involved in interactive activities. Although engineers perceived these interactions as disruptive to their work, they identified nearly all of these interactive activities as helpful. This demonstrated that the same interactive activities produced both positive benefits associated with interacting and negative consequences associated with interruptions. The study concluded that effective time use for a work group or team requires a sufficient number of interactive activities to achieve the group's goals, but it also requires the synchronization of these interactive activities to best ensure that they occur at times that do not continuously interrupt group members' individual activities. The study also found that a crisis mentality and the organization's system of rewards based on individual heroics perpetuated the pattern of constant interruptions observed in the group's work environment.

Brooks (1994) used a qualitative multiple case study of the research and development unit of a high-technology manufacturing company to identify team learning tasks and to examine how differences in the distribution of formal power among individual members of four research and development teams affected the collective team learning outcomes for producing useful new knowledge. Selected members of the four teams were interviewed formally, with additional discussions with various team and organizational members and formal observations of team meetings occurring over a 4-month period.

Findings showed that collective team learning seemed to require that team members engage in both active and reflective work. Reflective work

tended to occur during team meetings and consisted of posing problems, sharing information, and integrating that shared knowledge. Active learning consisted of gathering data from outside the team and disseminating new team knowledge to the organization. Team members with low power encountered problems undertaking either reflective or active work. The author found that controlling the power difference among team members led to new knowledge in the technical domain, whereas removing power differences led to new knowledge in the social domain. The study concluded that the exclusion of low-power employees from the team learning process, although reflective of cultural patterns in the United States, has serious implications for organizations that are attempting to transform or adapt to function or compete better in a diverse, technologically complex, and quickly changing global environment.

Additional contributions from case study research to theoretical knowledge of groups and teams include the works of Katzenbach and Smith (1993); Ancona and Caldwell (1990); Currall, Hammer, Baggett, and Doniger (1999); Druckman and Bjork (1991); and Hinojosa et al. (2001).

Theoretical perspectives from case study research. Case study research has followed both positivistic and naturalistic research traditions. The current literature on work groups and teams in organizations now contains both quantitative and qualitative case studies of this phenomenon. The case studies of Goodman (1979) and Katzenbach and Smith (1993) are positivistic in nature, whereas those of Perlow (1999) and Brooks (1994) are qualitative case studies. Herein lies a unique opportunity for theorists using case studies for developing theory—those using case study research for theory building can take a positivistic, naturalistic, or both paradigmatic approaches to the discovery of new knowledge. This attribute of case study research offers significant benefits for those seeking to develop theory in new, largely unexplored areas and for organizational phenomena that are particularly complex and paradoxical.

The judicious use of case study research by theorists allows multiparadigm research that moves beyond existing single paradigmatic perspectives of complex phenomena. Theorists in applied disciplines can take advantage of this unique characteristic of case study research by conducting parallel studies of the phenomenon of interest that preserve the theoretical conflicts of opposing paradigms (Lewis & Grimes, 1999). For example, Bradshaw-Camball and Murray (1991) presented three parallel accounts of organizational politics—each grounded in contrasting assumptions—as a way of depicting the intricacies and contradictions of organizational life. The use of case studies for multiparadigm research can also take the form of sequential studies that offer opposing perspectives on complex phenomena. Sequential studies allow researchers to develop diverse accounts of organizational experiences to purposefully inform each other, because the outputs

of one paradigm-specific perspective provide inputs for a subsequent account of the same phenomenon.

Although separate studies from different paradigms such as those reviewed above can explore the richness of the dynamics present within single settings, case study research is unique among the five specific methods we have presented in allowing theorists to preserve opposing paradigmatic perspectives while developing richer, more diverse theory for complex phenomena.

Grounded Theory, Meta-Analysis, and Case Study Research—A Summary

We have examined in detail three approaches to theory building—grounded theory, meta-analysis, and the use of case study research. Our focus on a single topic, work groups and teams, has aided in the comparison of how these methods make different contributions to theoretical knowledge. What are the distinctive properties of these methods for their use in theory building? What unique contributions do these approaches offer to those seeking new theoretical knowledge?

Each of the three methods yielded insights about groups and teams of a distinctly different character and potential utility for theory building. Consistent with grounded theory's naturalistic assumptions and objectives to allow new theoretical understandings to emerge from the data, grounded theory studies of work groups uncovered novel ideas and relationships, many of which were unanticipated by the researchers. The qualitative case studies reviewed here also offered surprising conclusions about heretofore "known" group phenomena as stimulants for reconceptualizing existing theory. Meta-analytic studies, on the other hand, deliberately focused on known relationships and sought verification of the value of existing concepts and interrelationships that constitute our current knowledge of groups and teams. So, by uncovering promising new concepts on one hand and verifying the degree of validity and generalizability of existing conceptions on the other, both grounded theory and meta-analysis generated valuable theoretical understandings to our knowledge of work groups and teams.

On the basis of this comparative analysis of grounded theory, meta-analysis, and case study research, a set of observations that summarize the distinctive features of these theory-building methodologies is provided next.

Grounded Theory

- Grounded theory is of particular value when the authenticity of the theory generated is paramount to the researcher. Grounded theory is distinctive in its approach to theory building because of its singular

commitment to allow new theoretical understandings to emerge from the data. This unique property of grounded theory, faithfulness to the substantive data, allows a closeness of fit between theory and data.

- Grounded theory is of particular value when the type of theoretical knowledge needed is free from the need for empirical confirmation (or disconfirmation) of preexisting conceptions. This approach is best for generating new insights and tentative hypotheses, regardless of existing theoretical explanations of the phenomenon of interest.
- Because grounded theory allows specific elements of research design to take shape after the research process has begun, the knowledge yielded may or may not have been anticipated by the researchers. Thus, truly novel findings about the phenomenon are likely.

Meta-Analysis

- The capacity of meta-analysis to integrate and synthesize empirical studies provides a valuable contribution to theory. Meta-analytic findings offer the scope and depth necessary for substantive advances in theoretical understanding because these findings are based on knowledge aggregated across multiple studies of known quality.
- Meta-analysis is unique in its ability to cumulate existing empirical findings and to offer integrated results that can be used to develop or refine theoretical knowledge. This is particularly valuable for theorists seeking to resolve problems created by new developments in organizations that are inadequately explained by existing theory, a situation commonly found in applied disciplines when prior research on such phenomena may already exist.
- Meta-analysis can help theorists to identify new directions for theorizing so that the proper course to fruitful areas of new knowledge is found at the outset of the theory-building process. Meta-analytic findings identify significant (and nonsignificant) relationships between variables and show the relative magnitudes of effect size estimates in the domain being studied. Thus, meta-analysis offers valuable insights on important concepts for further study and new directions for theorizing. Meta-analysis can also help theorists give new meaning and interpretations to the existing body of theory.

Case Study Research

- Use case study research when a focus on single settings is the optimum context for theory building. A distinctive feature of case study

research for theory building is its focus on understanding the dynamics present within single settings. This method is of particular value when the type of theoretical knowledge needed is best obtained from the in-depth study of single settings.

- Use case study research when current theory seems inadequate because it lacks sufficient empirical substantiation, when little is known about a phenomenon, or when current perspectives conflict with each other or common sense. Theory building from case study research is particularly appropriate in these situations because it does not rely on previous literature or prior empirical evidence.
- Case study research is a theory-building methodology that is consistent with positivistic, naturalistic, or both paradigmatic approaches to the discovery of new knowledge.
- Case studies can be used for multiparadigm research. This feature makes case study research particularly useful to those seeking to develop theory in new, largely unexplored areas and for organizational phenomena that are particularly complex and paradoxical. Case study researchers can conduct parallel studies or sequential studies to examine such phenomena.
- Thus, case study research is unique among the five methods we have presented in allowing theorists to preserve opposing paradigmatic perspectives while developing richer, more diverse theory for complex phenomena.

Conclusion

By taking a collective view of research methods for theory building, this chapter has attempted to create a deeper understanding of theory-building methods and their unique contributions to theoretical knowledge. Five theory-building methods were reviewed and their particular strengths, limitations, and primary indications for use were summarized. A comparative analysis of three of these methods was presented to explore how the different methods contribute in unique ways to theoretical knowledge. Although theorists can choose from a menu of these theory-building methods, the analysis showed that characteristics of the methods themselves can lead to more productive theorizing depending on the particular research purpose of the theorist.

References

Ancona, D. F., & Caldwell, D. G. (1990). Information technology and work groups: The case of new product teams. In J. Galegher, R. Kraut, & C. Egido (Eds.), *Intellectual*

teamwork: Social and technological foundations of technological work (pp. 173-190). Hillsdale, NJ: Lawrence Erlbaum.

Bradshaw-Camball, P., & Murray, V. (1991). Illusions and other games: A trifocal view of organizational politics. *Organization Science*, *2*, 379-398.

Brooks, A. K. (1994). Power and the production of team knowledge: Collective team learning in work organizations. *Human Resource Development Quarterly*, *5*(3), 213-235.

Cairns, G., Burt, G., & Beech, N. (2001). Coherence and complexity: Ambiguity and (mis)understanding across management teams. *Strategic Change*, *10*, 23-35.

Currall, S. C., Hammer, T. H., Baggett, L. S., & Doniger, G. M. (1999). Combining qualitative and quantitative methodologies to study group processes: An illustrative study of a corporate board of directors. *Organizational Research Methods*, *2*(1), 5-36.

Druckman, D., & Bjork, R. A. (Eds.). (1991). *In the mind's eye: Enhancing human performance*. Washington, DC: National Academy Press.

Dubin, R. (1978). *Theory building* (Rev. ed.). New York: Free Press.

Eisenhardt, K. M. (1989). Building theory from case study research. *Academy of Management Review*, *14*(4), 532-550.

Evans, C. R., & Dion, K. L. (1991). Group cohesion and performance: A meta-analysis. *Small Group Research*, *22*(2), 175-186.

Fraser, K. L., & Russell, G. M. (2000). The role of the group in acquiring self-defense skills: Results of a qualitative study. *Small Group Research*, *31*(4), 397-423.

Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.

Goodman, P. S. (1979). *Assessing organizational change: The Rushton quality of work experiment*. New York: Wiley-Interscience.

Hinojosa, J., Bedell, G., Buchholtz, E. S., Charles, J., Shigaki, I. S., & Bicchieri, S. M. (2001). Team collaboration: A case study of an early intervention team. *Qualitative Health Research*, *11*(2), 206-220.

Katzenbach, J. R., & Smith, D. K. (1993). *The wisdom of teams*. Boston: Harvard Business School.

Lewis, M. W., & Grimes, A. J. (1999). Metatriangulation: Building theory from multiple paradigms. *Academy of Management Review*, *24*(4), 672-690.

Macy, B. A. (1986). *Meta-analysis of United States empirical organizational change and work innovation field experiments: Methodology and preliminary results*. Paper presented at the 46th annual meeting of the National Academy of Management, Chicago.

Macy, B. A., & Izumi, H. (1993). Organizational change, design, and work innovation: A meta-analysis of 131 North American field studies—1961-1991. *Research in Organizational Change and Development*, *7*, 235-313.

McLeod, P. L. (1992). An assessment of the experimental literature on electronic support of work groups: Results of a meta-analysis. *Human-Computer Interaction*, *7*(3), 257-280.

Perlow, L. A. (1999). The time famine: Toward a sociology of work time. *Administrative Science Quarterly*, *44*, 57-81.

Pettigrew, A., & Whipp, R. (1991). *Managing change for competitive success*. London: Blackwell Business.

Sullivan, N. (1995). Who owns the group? The role of worker control in the development of a group: A qualitative research study of practice. *Social Work With Groups*, *18*(2), 15-32.

Trist, E. L., & Bamforth, K. W. (1951). Some social and psychological consequences of long-wall methods of coal getting. *Human Relations*, *4*, 3-38.