The Group Dynamics Q-Sort in Organizational Research: A New Method for Studying Familiar Problems

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This article unveils a new research methodology for the study of group decision making in organizations—the group dynamics q-sort (GDQ). The GDQ is a 100-item instrument designed to study group process across a wide variety of situations and using a wide variety of data sources. It combines the descriptive richness of the qualitative approach with the rigor of a quantitative approach by creating a common data language to describe process across groups, observers, and time. This article introduces the GDQ in the following five sections: (a) the development of the group dynamics q-sort, (b) comparisons of the GDQ with other traditional research methods (i.e., questionnaires, case studies, experiments, and behavioral process coding), (c) the mechanics of employing the GDQ, (d) a demonstration of the method for studying dynamic group processes over time, and (e) summary and other potential applications of the method.

Perhaps the greatest impediment to the study of group process in organizations is finding research methods suitable for studying process dynamically rather than statically (Weingart, 1997). That is, group researchers often posit dynamic process in groups (e.g., Gersick, 1988; Hackman, 1987, 1990; Janis, 1982; Moreland & Levine, 1982) but most often study group process statically with cross-sectional research methods, such as single surveys or experiments. These methods are static because they assess changes in group process over time after group decisions already have occurred rather

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than tracking how group process unfolds over time. These static approaches create at least one of two interrelated problems. The first problem concerns asking people to make retrospective judgments about group process. In general, retrospective recall of information encourages biased recall of information (Fiske & Taylor, 1991). Retrospective recall of group process specifically has been shown to encourage people to combine knowledge of their groups' successes or failures with their implicit theories of the process-outcome quality relationship to report only information consistent with their implicit theory (Guzzo, Wagner, Maguire, Herr, & Hawley, 1986; Staw, 1975). Hence, retrospective recall of group process can lead the researcher to mistakenly confirm naive implicit theories of group process and outcome and prevent learning what processes actually occurred.

Even when the research method does not require retrospective recall, such as behavioral coding, the method still may not provide information about the dynamics of group process. For example, behavioral coding schemes used to assess live group process (e.g., videotapes) provide information about how many times a particular event happened, but they often do not provide information about what preceded or followed the event each time (see Weingart, 1997). In other words, there is no information about the sequence of events or behaviors that lead to a particular outcome. As a result, the insight that can be gained from such schemes is limited.

To study group process dynamically, some scholars have turned to case study or ethnographic methods (e.g., Hackman, 1990; Sutton & Hargadon, 1996). The principle advantage to this methodology is its great descriptive richness and sensitivity to change over time. The detailed and nuanced storytelling quality of this research strategy gives it both intuitive and persuasive appeal. Compared to most quantitative studies, the "thick" descriptions of group process provide a more thorough understanding of dynamic processes in groups over time as well as the context in which each group is imbedded.

The classic problem with the case study approach from a social science perspective, of course, is the lack of generalizability and rigor. The problem of generalizability comes from the unique language and emphasis of each researcher. Although the use of unique language usually is where special insight into group functioning is created, it is also the cause of difficulty in assessing agreement between researchers. It is often exceedingly difficult to assess the level of agreement between two experts who research the same group. Scholar A may emphasize a group's camaraderie and espirit de corps, whereas Scholar B emphasizes its sense of purpose in vanquishing opponents. Here, the reader might be left with the impression that these two scholars disagree about the dynamics of the group when they are in fundamental agreement about a complex reality. Understanding the differences between multiple researchers' descriptions of the same popularly studied groups is difficult enough (e.g., the Challenger disaster), but the task of identifying consensus becomes nearly impossible when trying to make comparisons across different groups studied by different scholars (e.g., many scholars writing about many different top management teams). There is, in short, no good systematic way of combining many case studies together to come to reliable conclusions (Verba, 1967). Without a coherent understanding of where there is underlying consensus, it is impossible to build a cumulative knowledge of group dynamics. This concern can be addressed in part through the use of a systematic comparisons of topics and terminology between cases (Snyder, 1985). However, standardizing case study language also compromises the descriptive richness of the method.

The second classic problem with case studies is their lack of rigor. The concern about rigor often is blamed on sloppy scholarship—a problem that can be addressed through systematic interviewing and careful scholarship (Yin, 1994). However, the more fundamental concern about lack of rigor comes from the problem of retrospective recall discussed earlier. Constructing case studies requires retrospective reconstruction of a series of events by any definition of the method (see Yin, 1994, for multiple definitions of the case study method). It is nearly impossible to know the extent to which a scholar or a scholar's sources have been subject to bias in information processing during the retrospective recall process of writing a case study. As such, the method does not address one of the fundamental problems in past efforts to study group process dynamically.

Our purpose in this article is to propose an additional way of studying the dynamic processes in groups that can blend some of the richness and time sensitivity of the qualitative approach with the rigor of the empirical approach—the group dynamics q-sort (GDQ). The GDQ is an advance in the study of organizational groups because it can be used to address the concerns of scholars who want a dynamic approach to studying group process but who do not want to forgo the rigor of a quantitative assessment. The GDQ is, in brief, a 100-item instrument that requires the user to place each item on a 1 to 9 Likert-type scale. Each item has two polar opposite statements (e.g., *Group members devote enormous attention to detail* versus *Group members are oblivious to detail*). Raters are asked to identify the extent to which one or the other of the extreme statements characterizes the group in question. The set of items is designed to provide extensive depth and breadth of description for understanding most organizational groups. To ensure that this is the case, the items were reviewed by experts in group decision-making and organizational theory. The preliminary set of items then was tested on a broad array of organizational groups (e.g., top management teams in the gaming industry and teams of accountants) and revised. The method has empirical rigor because the 100 items in the instrument are standardized, rank-ordered, and placed in one of nine categories for statistical comparisons that can pinpoint specific differences between perspectives on a group.

The GDQ also embraces many of the strengths of the case study approach by providing an extensive array of questions assessing the detail of interaction of group members, group boundaries, and the context in which the group is located. The GDQ also allows for longitudinal group research by allowing for repeated measures of process over the lifetime of a group. Moreover, the method can draw on a variety of data sources that historically have been available to qualitative researchers but that are of limited use for quantitative study (e.g., academic historical case studies, popular press accounts of group dynamics, participant observation, etc.). The GDQ allows for theory testing across case studies or detailed group description across numerous groups with a standardized data language. The q-sort method, therefore, addresses some of the weakness of both qualitative and quantitative methods (e.g., surveys, experiments, and behavioral coding).

What is this new method and how can it be used? These are the questions addressed here in five sections. First we present a brief history of the q-sort method and its recent adaptation for research on groups in organizations. This is followed by a comparison of the GDQ with other research methods currently available to group researchers (e.g., self-report questionnaires, case studies, behavioral coding, and experiments). We then discuss the technical aspects of how the GDQ works (instructions, scales, etc.) and

provide an example. Finally, potential future applications of the GDQ to the study of groups in organizations are discussed.

The Development of the Group Dynamics Q-Sort

Although only recently introduced to the small groups literature, the q-sort method actually is not new. The method was developed in the 1940s and 1950s by William Stephenson (1953) and refined by Jack Block (1978) as a method for assessing personality. The idea behind the q-sort is that the instrument should ask an extensive variety of questions within a specified domain, for example, items about all aspects of an individual's personality (e.g., extroversion, openness to new experiences, agreeableness, emotional stability, and conscientiousness) or a group's functioning (e.g., cohesion, norms of behavior, leadership, tolerance for dissent, situational stress, boundary management, etc.). The set of items should be extensive in order to give a rich sense of the domain rather than a focused set of questions about one particular hypothesis or theory. The number of items in the q-sort should be sufficient to give depth and breadth of understanding about the person or group being assessed. There is no set number of items, but the most common number is 100.

Q-sorts are also ipsative. That is, the number of items that can be placed in each category is specified. When the raters are forced to use the same distribution of items, this has two beneficial effects on the quality of the data. First, it encourages the raters to think more carefully about each item (reducing random error variance). Second, the forced distribution completely eliminates the form of interjudge disagreement (really, pseudodisagreement) that comes from the individual tendencies of judges to be more moderate or extreme in their placement of items (Block, 1978). This procedure decreases the total amount of error in the data, resulting in a reduced need for research participants (often a significant problem for group researchers). The one drawback of the restricted categories is that there is not complete independence of item placement. That is, the 100th item is determined once the first 99 have been placed. Strictly speaking, this requirement violates the independence assumption of most statistical models. With 100 items, however, the data analytic effects are minimal (see Block, 1978, for a discussion of this).

One important property of a q-sort is that it requires idiographic assessments. That is, topical experts (personality observers or group researchers) must make decisions about which items are more descriptive than others (i.e., the most extreme items are most descriptive). Thus, because items are rank ordered relative to each other, the data are ordinal in nature. The advantage of this property is that q-sort items and scales can legitimately be compared to highlight key areas of similarity and dissimilarity between groups. For example, Tetlock, Peterson, McGuire, Chang, and Feld (1992) used a q-sort methodology to confirm Janis's (1982) hypothesis that groupthink groups show greater rigidity and conformity than do vigilant decision-making groups.

Each of the items in a q-sort also requires raters to assess mesolevel impressions of the group or individual being assessed. This is distinct from individual-level behavioral (e.g., Bales, 1950, 1958) coding that builds group-level constructs statistically from behaviors observed at the individual level. On the other extreme, the items are not designed to assess overall organization-level process impressions (e.g., group cohesion or leader strength). Rather, q-sorters are asked to make specified impressions

based on discrete sets of behaviors. For example, Item 3 in the GDQ asks raters to assess the extent to which "group members are blocking the efforts of the leader" rather than counting specific behaviors related to that or asking about overall "leader strength."[1]

Another important feature of the q-sort methodology is the ability to create theoretically derived "ideal types" and compare them directly with the actual groups or individuals being studied (see Bem & Funder, 1978, and Block, 1978, on template matching). More specifically, a theory can be translated into a q-sort by categorizing the items according to that theory. For example, groupthink theory can be translated into an ideal type by asking the question, "How would Janis (1982) have placed the items for groupthink?" Actual groups in the study then can be compared statistically to assess the overall degree of fit between the theoretical ideal and the studied groups. Peterson, Owens, Tetlock, Fan, and Martorana (1998), for example, compared Janis' (1972, 1982) groupthink theory with a number of top management teams and found that Lee Iacocca's early administration of Chrysler was the strongest match to the theoretical ideal of groupthink.

The group dynamics q-sort. The q-sort first was adapted for use in studying groups in an article by Tetlock et al. (1992) that studied elite political decision-making teams (e.g., presidents and their cabinets). This version of the q-sort was designed explicitly to assess the dynamics of political leadership groups. It was developed by asking experts in political science, history, leadership, and group decision making to rate a number of groups with more than 300 potential GDQ items. The number if items was reduced to 100 through empirical testing and advice from the experts suggesting items that could be combined or eliminated. The study itself used the GDQ to explore the theoretical and empirical foundations of the groupthink theory. This was done by using the GDQ to assess the group dynamics of the 10 decision episodes Janis (1982) studied. Each of Janis's portrayals also was compared to at least three other historical sources on the group dynamics of the cases. Results suggested general agreement between Janis and the historical sources but also underlying problems with the theoretical constructs in the groupthink model.

Peterson et al. (1998) later created an organizational version of the GDQ (the one presented here) by rewriting the items in the political version of the GDQ to eliminate specific reference to the elite political environment and replace it with an organizational context.

For example, Item 91 in the political GDQ,

> The leadership group is confident that even if its current plans fail, it will be bailed out by powerful protectors (guaranteed rescue from its own ineptitude; little incentive to take on unpleasant political-economic tasks)
>
> vs.
>
> The leadership group realizes it is on its own (success or failure depends on its own efforts)

became the organizational GDQ Item 91,

> The group is confident that even if its current plans fail, it will be "bailed out" by powerful protectors (i.e., the group believes there will be guaranteed rescue from its own

ineptitude; little incentive to take on unpleasant tasks). (Note: Protection could come from large cash reserves, government action, reputation, etc.)

vs.

The group realizes it is "on its own" (i.e., success or failure depends on its own efforts, and failure could lead to bankruptcy or the folding of the corporation).

Many of the items are identical in the two versions of the q-sort. The purpose of doing this was to create an instrument that could make detailed assessments of groups in organizations. The resulting instrument is quite well suited to the organizational and corporate decision-making environment. See Appendix A for a listing of the 100 items. This version of the GDQ was used, in fact, to study successful and unsuccessful decision making in top management teams of *Fortune* 500–size corporations (Peterson et al., 1998).[2] A general version of the GDQ also was used to study leader directiveness in city councils in the San Francisco Bay area and in laboratory-created groups (Peterson, 1997). In short, a wide variety of groups have been studied successfully with the GDQ methodology. Moreover, these studies have used a variety of data sources not typically used by quantitative researchers studying group dynamics (e.g., academic historical case studies, videotapes of official government meetings, popular press accounts of group dynamics, etc.).

The 100 items of the GDQ are grouped into eight Process Indicator scales. The scales were derived by clustering conceptually related items that were correlated in a sample of work teams. They provide an easy way to summarize the large number of individual items. The scales include (a) Intellectual Rigidity-Flexibility, with higher ratings indicating a greater likelihood of seeing problems in multidimensional ways and changing one's mind in response to new evidence; (b) Sense of Control-Crisis, with higher ratings indicating a sense of urgency or emergency; (c) Optimism-Pessimism, with higher ratings indicating that the group is pessimistic about achieving its goals; (d) Leader Weakness-Strength, with higher ratings indicating greater leader control over the group and a more directive approach to other group members; (e) Factionalism-Cohesion, with higher ratings indicating a group in which the members get along with each other and work together as a mutually supportive team; (f) Legalism-Corruption, with higher ratings indicating a group run by backroom deals, nepotism, and self-serving interests; (g) Decentralization-Centralization of power, with higher ratings indicating a group that is more centrally controlled by a strong leader or a small subgroup; (h) Risk Aversion–Risk Taking, with higher ratings indicating a group willing to take calculated risks. These eight scales represent the broad group process dynamics. However, the GDQ is quite versatile. Any number of other scales could be developed from the 100 items to test specific constructs or theories. For example, Peterson (1997) created scales for (i) Leader Process Directiveness or the degree to which the leader regulates the process by which the group reaches a decision, (j) Leader Outcome Directiveness or the degree to which the leader advocates a favored solution, and (k) Process Quality or the degree to which the group considered all available evidence before coming to a decision. In sum, the 100 items of the GDQ can be used to test a very broad spectrum of group theory because the items explore a diverse array of group dynamic concerns.

One additional feature of the q-sort methodology is that ideal types can be created for template matching of theory-derived descriptions of group dynamics with actual groups (cf., Bem & Funder, 1978, and Block, 1978, on template matching with the

q-sort methodology). The process of template matching involves first creating a template by q-sorting the group dynamics described by a particular theory (such as groupthink). Each template then describes an ideal type that can be compared with the q-sort of the dynamics in an actual group. The strength of this template-matching approach over more impressionistic case study comparisons is that the theory (i.e., the template) and the actual cases are translated into the same data language. This allows for detailed and systematic comparisons between an actual group and the theoretical ideal type of interest using a Pearson correlation. For example, Tetlock et al. (1992) used an ideal groupthink type to pinpoint how Janis (1982) overemphasized conformity, optimism, and rigidity in the cases he studied.

Based on a survey of the literature in organizational behavior, 10 ideal types were created for the GDQ. Each of these 10 ideal types is an influential analysis of group decision making. The first two types developed were Janis's (1982) groupthink and vigilant decision making. The groupthink type was based on the type from Tetlock et al. (1992) and Janis's (1982) *Victims of Groupthink*. Janis (1982, 1985) argued that extreme pressures for uniformity can build in a cohesive group that confronts serious threats (high stress) and lacks norms of deliberative decision making. These pressures cause decision makers to censor any misgivings they may have, ignore outside information, and overestimate the group's chances of success. This pattern of concurrence seeking, Janis argued, is a recipe for ineffective decision making that invites disaster for the group. Janis (1982) argued that Kennedy's Bay of Pigs fiasco was a particularly good example of this phenomenon. It explains how groups of otherwise intelligent and thoughtful people make serious miscalculations that result in disastrous outcomes. The vigilant decision-making type was drawn primarily from Janis's (1982) prescriptions for preventing groupthink and also from later work (Janis, 1989; Janis & Mann, 1977, 1992) as well as from George's (1972) multiple advocacy. The focus of these prescriptions is to "counteract initial biases of the members, prevent pluralistic ignorance, and eliminate other sources of error that can arise independently of groupthink" (Janis, 1982, p. 262). Exemplary groups include the Marshall Plan committee and the Kennedy administration decision making during the Cuban Missile Crisis.

The third ideal type created is from Pfeffer and Salancik's (1978) *The External Control of Organizations*, which was used to represent the ideal effective decision-making team within the "resource dependence" perspective. For this type, an effective management team reduces dependencies by (a) using symbolism to create a compelling sense of stability, (b) creating organizational slack to cushion the team through lean times, and (c) deflecting demands made by outside constituencies.

The fourth template is the corporate social responsibility type created from Etzioni's (1993) *Spirit of Community*, which emphasizes the communitarian responsibilities of corporations. In particular, the need for management and corporate boards to feel accountable not only to shareholders (the neoclassical profit-maximization model) but also to diverse stakeholders within the organization (employees) and outside it (e.g., customers, suppliers, surrounding localities). Ben and Jerry's Homemade is a prototypical example of such a company (Cohen & Greenfield, 1997).

The fifth and sixth theoretical ideal types were created from work on organizational life cycles by Kimberly and Miles's (1980), *The Organizational Life Cycle* and Adizes's (1988) work *Corporate Lifecycles*. Two organizational life cycles that represent the management dynamics in mature organizations were developed. The first is

the prime organization. This is an organization that has reached maximum productivity by balancing the flexibility of entrepreneurial stages of development with the controllability found in complex control systems of mature organizations. IBM in the 1970s under the leadership of Frank Cary is a good example of this (Peterson et al., 1998). In the organization in decline template, control systems are highly developed to the point of being oppressive. The organization seeks predictability and safety at the expense of risk taking and flexibility. The sclerotic management of IBM in the mid 1980s and Xerox in the 1970s are good examples of this type (Peterson et al., 1998).

The seventh and eighth ideal types were derived from McGregor's (1966) classic writings on Theory X and Theory Y styles of management. The Theory X manager assumes that people dislike work and responsibility, so the manager or leader must coerce, control, direct, threaten, and punish people to get them to work. The Theory Y manager, on the other hand, believes that people naturally are inclined to be responsible and care about their work. The work of the Theory Y manager is to motivate participation in the problem solving of the organization by encouraging personal development of the worker and a full understanding of organizational problems. McGregor cites IBM in the 1950s as an example of a Theory Y company.

Ouchi's (1982) Theory Z style of management was the ninth ideal type created. This style of management creates a clan-like culture in the organization that encourages collective decision making and managers with a holistic view of the organization. This is accomplished by having managers train in a variety of functional areas of the firm rather than specializing in only one area so that they are committed to the entire organization rather than only their own function or division. This style is prototypical in Japanese companies but relatively rare in American ones. Ouchi does cite examples such as Hewlett-Packard in the 1980s as an American version of the Type Z organization.

The tenth and final ideal type, absolutist cult, was derived from historical political sources (see Tetlock et al., 1992). This type describes an organization in which authority and power are completely centralized in one person who claims to embody the culture and direction of the organization. An illustrative example of this type is Lee Iacocca's administration of Chrysler Corporation after the company repaid the government-backed loans. Iacocca betrayed his absolutist tendencies by repeatedly justifying his opinions on many things with the assertion that he had "saved the damn company" (Ingrassia & White, 1994). Iacocca also was so closely identified with Chrysler that most Americans never knew he already had had a long career at Ford.

The item placement for the 10 ideal types described here are listed in Appendix B. These 10 types demonstrate the versatility of the template-matching feature of the q-sort methodology. Any number of other templates or ideal types could be developed from the 100 GDQ items. Thus, the q-sort technique is a highly flexible research tool suitable for studying a vast array of group dynamic theories.

Comparing the GDQ With Other Traditional Research Methods

Although no method for developing and testing group theory is perfect, the GDQ offers some distinct advantages over other traditional research methods for studying groups in organizations. In this section of the article, we discuss the benefits and costs of using the GDQ compared to a number of other traditional research methods. As dis-

cussed at the outset of this article, the GDQ offers some advantages over case studies of group process. Case studies can be rigorously researched and beautifully written, but they do not easily "add up" (Verba, 1967). Comparisons across a few case studies on the same group by different scholars are problematic enough, but it is nearly impossible to make systematic comparisons across scores of analysts' assessments of the same group, across assessments of the same group at different times, and across assessments of different groups. The GDQ addresses this problem by (a) providing a common descriptive language for capturing expert assessments of group dynamics and (b) creating a standardized metric for interjudge and intergroup comparisons. Accepting the common language of the GDQ does, of course, result in some loss of the rich descriptive detail of a well-written case study. This loss of descriptive richness may be unacceptable when great detail is necessary to truly understand group functioning. However, the loss is limited by the extensiveness of the set of 100 items available. In exchange for some loss of descriptive richness, the researcher gains the ability to make systematic and quantitative comparisons across groups, researchers, and time. This seems to be a more acceptable tradeoff for scholars interested in the hypothetico-deductive study of groups compared with the virtually complete loss of systematic comparison involved with the use of case studies only.

Indeed, the GDQ can be used to translate case studies themselves from prose into the standardized data language to pinpoint areas of agreement and disagreement across case studies (for examples, see Peterson et al., 1998; Tetlock et al., 1992, and the demonstration later in this article). The GDQ therefore can even be used to quantitatively test specific hypotheses suggested by the literature on retrospective recall discussed earlier. For an example of this, see the demonstration of the method later in the article. It is also important to note that using case studies as the raw data source GDQ assessments generates some of the same concerns as using case studies. Specifically, skeptics can question the accuracy of the research conclusions derived from cases because they are constructed retrospectively or because they may not be well researched. The GDQ instrument can produce reliable assessments of group dynamics that are not externally valid—garbage in leads to garbage out. Hence, GDQ data derived from case studies require an additional burden of proof of validity that q-sort data generated from observation or participation may not have.

The tradeoffs of using experiments, on the other hand, are almost a mirror image. Experimentation allows for strong causal inferences, but this comes at the cost of loss of virtually all information about how groups manage their boundaries and respond to context (i.e., external validity). The great strength of the experimental method also defines its very real weakness—control of external influences. Experiments are useful for clarifying a relatively narrow causal link, but they neither assess as wide a range of attributes of group functioning nor describe groups in as idiographically sensitive a way as do case studies or the GDQ. Sometimes, of course, there is no substitute for clearly establishing the causal link between two constructs. When this can be done in a controlled laboratory study, experimentation is the way to proceed. For group scholars interested in understanding how real world work groups interact, manage their boundaries, and interact with context, however, experimentation is limited in its potential value. Moreover, if the GDQ is used to successively track groups over time, it can be used to test causal hypotheses as experiments do (see Peterson, Owens, & Martorana, in press, for an example). As with case studies, the GDQ does not supplant the

need for well-controlled experiments. Indeed, the GDQ even can be used in experiments to describe the process experienced by a laboratory group (see Peterson, 1997, for an example of this).

Questionnaire studies require two things for success that the GDQ does not. First, they require that the researcher have a very specific set of questions to be asked. In an ideal research setting with highly specific hypotheses, this certainly would be the case. When a theory offers such specific direction, a questionnaire or survey might be best. Such specific direction from theory is, of course, not always the situation confronting a researcher. Sometimes theoretical models are not detailed enough to suggest specific questions. At other times, researchers are interested in conducting exploratory research in a setting they think is interesting. In either of the latter two situations, the relative descriptive richness of the GDQ may offer an advantage over focused questionnaires and surveys. The extensive battery of questions in the GDQ has been tested for validity, reliability, and their ability to distinguish between different types of group decision-making styles. Thus, they are likely to contain some useful items for addressing the questions of the researcher. Multiple q-sorts over time also offer a more dynamic view of the group than a focused questionnaire because the extensive set of items in the GDQ would provide insight into which group processes changed and in which order the processes changed (as the Process Indicator scale scores change). Repeated q-sorting of a group also allows for testing a variety of theoretical perspectives on why the group processes changed over time. A more narrowly focused questionnaire generally would allow only for confirmation or disconfirmation of one or two theoretical perspectives. Moreover, the GDQ allows for a wider band of behaviors to be measured than does a survey, including a variety of interpersonal behaviors that written questionnaires do not capture.

The second requirement for a successful survey is direct access to respondents or participants to complete the instrument. This is no small requirement when studying organizational groups, particularly high-status groups such as top management teams or boards of directors. Organizational groups are often loath to allow direct access to group members for legal, security, or time reasons. They may allow access for observation, for example, but not for the time to complete questionnaires, or they may not allow access at all, but one group member later will write an account of group functioning (e.g., memoirs, expose, etc.). Neither of these situations is ideal for research purposes, but sometimes it is all that researchers have. Questionnaire studies, or virtually any other kind of quantitative study, with such data historically has been quite limited. However, the GDQ is a viable option with these kinds of data. The GDQ can be completed from group observation or historical accounts of group functioning. In sum, when the research questions are highly specific and there is direct access to appropriate respondents, then a questionnaire is likely to be a better choice than the GDQ. When the research questions are not highly specific and/or there is not direct access for questionnaires, the GDQ may be a better alternative. For example, Peterson (1997) had highly specific research hypotheses but no direct access to the subject population of interest (i.e., city council members). He used the GDQ to code publicly available videotapes of city council meetings to test his hypotheses.

Like the GDQ, behavioral coding (i.e., Bales, 1950) has proven useful for making systematic and quantitative assessments of process across groups and observers. It even can be used to assess group process changes over time by recording the order of

behaviors (see Weingart, 1997). The problem with behavioral coding, however, is that it does not assess as wide a range of attributes of group functioning or describe group dynamics in as idiographically sensitive a way as does the GDQ. Behavioral coding generally builds group assessment from observing behavior at the individual level, and thus group-level assessments are inferred from individual-member behavior. To determine the degree of centralization of authority in a group (Item 41), for example, a behavioral coding scheme might assess the percentage of times group members go to the leader for permission to act. The problem with inferring such group-level phenomenon from individual-level data is one of reductionism. Behavioral coding cannot tell the difference between (a) someone who makes five statements that are supportive of the dominant group view and acknowledges one potential weakness in the argument and (b) someone else in the group who makes five supportive statement followed by a sarcastic comment that clearly indicates a lack of support for the dominant group view. Q-sorters using the GDQ make molar judgments about the group when such subtle judgments should be made. The potential risk of doing this, of course, is that the GDQ assumes observers are able to make such judgments reliably and accurately. Reliability is easily measured, although it is no guarantee of validity. Reliability can be the product of shared misconceptions among the q-sorters or authors of case studies used as data sources. This limitation should not be exaggerated, however. Confidence in the method can be justified by convergence of theory and history. The patterns of match and mismatch of findings must mesh nicely with existing theory and evidence derived from the other research methods discussed here—case studies, laboratory experiments, and use of questionnaires in field investigation.

In sum, the GDQ would seem to be particularly useful when conducting research when the hypotheses are not highly specific or the study is exploratory. The GDQ also is especially useful when the hypotheses are specific but access to participants and/or data sources is limited. The GDQ can be used with historical cases, participant observation, memoirs, and many other data sources that historically have been of limited use for quantitative study. Most important, however, the GDQ combines some of the qualitative richness of the case study approach with the rigor of a quantitative methodology. The extensive set of items in the GDQ provides an idiographically sensitive and nuanced method for describing group process across observers, groups, and time. Thus, the GDQ is a bridge methodology between qualitative and quantitative methodologies. The bridge is admittedly imperfect—it does not have the descriptive richness of a case study, the control of an experiment, or the precision of a focused questionnaire. It is nevertheless a bridge between the increasingly divergent camps of scholars who study organizations qualitatively versus quantitatively.

The Mechanics of Employing the Group Dynamics Q-Sort

The GDQ is a 100-item set of questions designed to permit the portrayal of virtually any kind of organizational group. The 100 items of the GDQ ask a wide variety of questions about group functioning. Each item has two polar opposite statements that the q-sorter must place in one of nine categories from "the top statement is extremely characteristic" of the group in question (Category 1) to "the bottom statement is extremely characteristic" (Category 9). The middle (Category 5) is for items in which there is conflicting evidence or no information is available. For example, Item 31 reads:

The group perceives a serious external threat to its continued existence (e.g., unfriendly takeover, government regulators, tough competitors, creditors, etc.)

vs.

The group perceives the business environment to be placid and relatively benign (the environment may even be supportive).

The number of items that can be placed in each category also is restricted to force a quasinormal distribution of items. See Table 1 for the prescribed item distribution. This process forces the rater to make fine-tuned distinctions between items and eliminates individual tendencies to place items at the extremes or in the middle (a significant source of variability). Data sources for q-sorting can be individual experience (a member of the group sorts from personal impressions of group functioning), observation of a group (the personal impressions of a nongroup member about group functioning), videotapes of group interaction, a written text, and so forth.

The item texts usually are printed on cards and issued with instructions, which are summarized in the next section.

Instructions for the Group Dynamics Q-Sort

The purpose of the 100 items in the group dynamics q-sort is to describe group experiences. The items are designed to permit the portrayal of virtually any kind of group in an organization including top management teams, task forces, committees, and self-directed work teams. There should, for all practical purposes, be no limit to the range of group dynamics that can be described by the q-sort.

The q-sorting procedure is simple but somewhat time consuming. With the group to be assessed in mind, look through the deck of 100 cards. You will note that each card has an upper statement and a lower statement that are opposites. First, sort the cards into three stacks in a column. Place in the upper stack all those cards for which the upper statement is characteristic of the group. Place in the lower stack all of those cards for which the lower statement is characteristic of the group. Place in the middle the remaining cards where there is conflicting evidence or a lack of evidence. No attention need be paid to the number of cards in each grouping at this time.

When the three stacks have been established, they must be divided further into a column of nine categories, each with an exact number of cards in it—5, 8, 12, 16, 18, 16, 12, 8, and 5. For example, you should place the five most characteristic statements in each of the two end rows (as shown in Table 1). You may feel frustrated by the constraints of the sorting procedure. In justification, it should be noted that specifying the number of cards to be assigned to each category has proven to be a more valuable procedure than the freer situation in which a judge can assign any number of cards to a category. Past research indicates that we underestimate the degree of interjudge agreement when there are no constraints on sorting. The reason is simple. When we compare two free-form q-sorts, there are three causes of disagreement at work: real differences in point of view, random error variance (mood, carelessness, etc.), and differences in how judges use the rating scale (we know that some people make extreme judgments, whereas others are fence-sitters). When we compare two forced-distribution q-sorts, we eliminate this third source of interjudge disagreement (really, pseudodisagreement) by standardizing how everyone uses the rating scale. This forced-distribution q-sort also has another related advantage. Because the q-sort technique limits the number of items per scale value category, the forced-distribution q-sort puts pressure on judges to make frequent comparisons of the relative descriptive appropriateness of items. It is possible to highlight only so many items in the extremely characteristic categories. One must ask oneself the following: "Given that I

Table 1
Q-Sorting Distribution Constraints

Category	*Label*	*Number of Cards*
Upper statement		
1	Extremely characteristic	5
2	Highly characteristic	8
3	Quite characteristic	12
4	Slightly characteristic	16
Middle category		
5	Neither upper nor lower statement is characteristic	18
Lower statement		
6	Slightly characteristic	16
7	Quite characteristic	12
8	Highly characteristic	8
9	Extremely characteristic	5

can highlight only a handful of statements as extremely characteristic, which ones are particularly worthy of being singled out?" Making compromises of this sort is not easy, but it does increase both the interjudge reliability and predictive value of q-sorts.

Scales and ideal types. The eight scales of items described earlier were created by clustering theoretically related and empirically correlated items together. Each scale rating is calculated by taking the mean rating across all of the items in the scale so that the scale scores are nicely comparable and on the same metric as individual items (i.e., 1 to 9 scoring). This also means that each scale is bipolar. The scale items include (a) Intellectual Rigidity-Flexibility (Items 19, 37, 40, 58 reversed, 66 reversed, 68, 71, 74 reversed, 81, 82 reversed, 88, 98 reversed), (b) Sense of Control-Crisis (Items 10 reversed, 21 reversed, 31 reversed, 38, 46, 54, 56 reversed, 75, 93 reversed), (c) Optimism-Pessimism (Items 8, 17 reversed, 22, 64 reversed, 76 reversed), (d) Leader Strength-Weakness (Items 32 reversed, 39, 60, 63, 83 reversed, 97), (e) Factionalism-Cohesion (Items 1 reversed, 3 reversed, 7, 11, 23, 41 reversed, 47, 51, 55, 59, 70 reversed, 72 reversed, 73 reversed, 96 reversed, 99), (f) Legalism-Corruption (Items 16, 18 reversed, 67, 79 reversed, 89 reversed, 95 reversed), (g) Decentralization-Centralization of Power (Items 4 reversed, 5 reversed, 12 reversed, 53 reversed, 82), (h) Risk Aversion–Risk Taking (Items 25 reversed, 29 reversed, 50, 62 reversed, 84, 87 reversed). Given the breadth of items in the GDQ, it is also possible to create additional scales to test most group theories.

The 10 theoretical ideal types described earlier were created by Randall Peterson and Pamela Owens (average initial $r = .84$). The item placement for each of the types is listed in Appendix B. These ideal types can be used to gauge the resemblance of each theory to the actual groups that have been q-sorted (cf., Bem & Funder, 1978; Block, 1978, on template matching). This comparison is made best by calculating a simple Pearson correlation (by transposing the data and correlating across the 100 items, see Block, 1978). Again, it is possible to use the GDQ to create templates for a variety of group theories or variables.

A Demonstration of the Method for Studying Dynamic Group Processes Over Time

To demonstrate the power of the GDQ to track group dynamics over time, we chose the top management team at Chrysler Corporation during the tenure of Lee Iacocca as Chief Executive Officer. Iacocca's tenure as chief executive officer (CEO) at Chrysler from September of 1979 to December of 1991 had three distinct phases—salvaging Chrysler from near bankruptcy (1979-1983), incredible fame and unparalleled power for a CEO (1984-1988), and finally decline and return to near bankruptcy (1989-1991). Before coming to Chrysler, Lee Iacocca had a brilliant career at Ford, creating the Mustang and landing the president's job at a remarkably young age. He had been fired publicly from that job, however, for openly expressing dislike of Henry Ford. Iacocca was hired by Chrysler in 1979 to rescue the ailing car company from near extinction. Iacocca immediately mobilized resources for Chrysler that included getting the Chrysler Federal Loan Guarantee Act passed in 1979, bringing in critical new talent in the "Gang of Ford," and completely reorganizing the company. Iacocca's place in corporate history was ensured when he repayed the $1.2 billion federally backed loan on July 13, 1983, 8 years ahead of schedule. Chrysler's return to health and the publication of his autobiography elevated Iacocca to the position of "straight-talking" hero. He even was seriously courted to run for the Democratic party nomination for president for the 1988 election. All of the celebrity perks and power eventually went to Iacocca's head, however. He became increasingly rigid, intolerant of disagreement, and insensitive to other's points of view. The result was a rift between Iacocca, who wanted to keep turning out the same cars with slight variations, and other members of his top management team (e.g., Bob Lutz and Francois Castaing) who believed Chrysler was making "yesterday" cars. To make matters worse, this factionalization of the team coincided with one of the worst recessions in the history of the automobile industry in the late 1980s.

To coincide with the three distinct periods of Lee Iacocca's tenure as CEO of Chrysler, three time periods were selected for study (1980-1981, 1984-1985, and 1989-1990). For each time period, two sets of dependent measures were assessed in this demonstration. First were measures of group process. The eight Process Indicator Scales described earlier were used to track changes in group dynamics across the top management team over time. If the Process Indicator Scales measures are valid, then they should detect the differences reflected in the verbal descriptions of changes over time. Group cohesion, for example, should be relatively high in the first two time periods and drop precipitously in the third as Iacocca became more autocratic and insensitive to others. Sense of crisis, on the other hand, should be high in the first and third periods as bankruptcy looms and relatively low in the second when record profits were being recorded.

The second set of dependent measures assessed were the pattern matches between theory-derived ideal types and the three time periods. Here again, we hypothesized that the pattern matches would change over time. The second period (1984-1985) was characterized by a strong leader, a highly cohesive top management team, and exuberance about the future of the company. These are all symptoms of groupthink (Janis, 1982). The third period (1989-1990), on the other hand, demonstrated much lower levels of cohesion and a lack of enthusiasm for the long-term prospects of the company. As a result, we expected the match to groupthink to be much lower in the last period.

The raw data for this study were business histories of Chrysler's top management team. Only major books written by authors with inside working knowledge of the company were used as sources. Two sources were identified for each of the three time periods. Four hypothesis-blind observers carefully read each source assigned and completed a q-sort that captured as closely as possible the portrayal of the group in the source. Q-sorts were based on the group as portrayed by the author of the text, rather than on the way the q-sorter believed the group to be. Q-sorters also were instructed not to carry information contained in one source into another q-sort. The order in which raters read texts was counterbalanced to control for any possible carryover effects. In addition, the q-sorters received standard procedural instructions for how to place the items in a standard quasi-normal distribution (for details, see the section on mechanics of the q-sort). Two of the q-sorters rated all six sources, and the other two sorters rated a subset of sources. For the 1980 to 1981 period, we used Levin's (1995) *Behind the Wheel at Chrysler* and Moritz and Seaman's (1981) *Going for Broke*. For the 1984 to 1985 period, we used Gordon's (1985) *The Iacocca Management Technique* and Levin (1995). For the 1989 to 1990 period, we used Ingrassia and White's (1994) *Comeback* and Levin (1995). Thus, we have one "current" (as of the time of the period) source and one retrospective source for each time period.

Three measures of q-sort reliability are reported here. The first is interrater reliability—"Do readers of the same case study interpret the text in similar ways?" Interrater reliability was good with an average Pearson correlation of .75, ranging from .69 to .86 (based on 18 comparisons). These reliabilities are within standard acceptable range for widely used psychological tests and justified proceeding to the next level of analysis: collapsing across raters to create composite q-sorts for each case.

At the level of analysis, we tested intertext agreement—"Do different historical accounts lead readers to similar conclusions?" Intertext agreement was also good. The average agreement was .75, with .79 for the 1980 to 1981 period, .71 for the 1984 to 1985 period, and .77 for the 1989 to 1990 period. This level of text agreement is important for two reasons. First, good intertext agreement is important because it justified collapsing across texts to create supercomposites that could be compared directly to each other and to theoretical ideal types. The second reason intertext agreement is important is because it provides a testable alternative hypothesis about the effects of outcome knowledge on descriptions of group process. Remember that in each of the time periods studied, we had one source that was "current" as of the time and another that was written well after Iacocca retired from Chrysler. It is possible that the authors fell prey to the certainty of hindsight effect and allowed outcome knowledge to contaminate their assessments of group process. For example, the beginnings of the factionalization of the top management team that were to later help destroy the team by 1990 were in place by 1985. If the eventual outcome of the group changed the portrayal of group dynamics, then one would expect the "current" source (Gordon, 1985) to have underplayed these problems and the later source (Levin, 1995) to have overplayed these problems in order to explain Chrysler's poor performance a few years later. This did not occur. High intertext agreement indicates that knowledge of eventual outcomes for Chrysler did not dramatically affect descriptions of group process in this case. These results are even more compelling if one considers that the normative tone of the two sources were polar opposites (Gordon, 1985, is glowingly positive, and Levin, 1995, is scathingly critical).

The third type of reliability was of the Process Indicator scales. The average Cronbach's alpha for the eight Process Indicator scales was .88. Individual coefficients were .97 for Intellectual Rigidity-Flexibility, .77 for Sense of Control-Crisis, .91 for Optimism-Pessimism, .87 for Leader Weakness–Leader Strength, .88 for Factionalism-Cohesiveness, .84 for Legalism-Corruption, .91 for Decentralization-Centralization of Power, and .90 for Risk Aversion–Risk Taking.

Process Indicator Scales

Table 2 presents the Process Indicator Scale scores for the three supercomposite q-sorts (collapsed across raters and texts). Results confirm our expected changes over time. The biggest difference in Process Indicator scales from Time 1 to Time 2 was a reduced sense of crisis (2.1), risk taking (1.8), and pessimism (1.7). Between Time 2 and Time 3, there was increased pessimism (4.3), sense of crisis (2.7), and intellectual rigidity (1.8). This difference between these two time periods also reflects Lee Iacocca's diminished status as a leader (1.9).

Comparison of Cases With Theoretical Ideal Types

Table 3 presents the correlations between the three supercomposite q-sorts and the 10 theoretical ideal types. Here again, results confirm our expectations that groupthink would be a good match for the first two time periods studied but not for the third.[3]

Even more, however, we can pinpoint where each of the actual cases diverge from each of the theoretical ideal types. For the 1980 to 1981 time period, groupthink is the best descriptive ideal type. Chrysler differs from the groupthink ideal type in demonstrating greater intellectual flexibility ($M = 5.0$ versus 2.3), leader strength ($M = 8.4$ versus 7.0), and legalism (lower corruption) ($M = 3.8$ versus 5.2). For the 1984 to 1985 time period, absolutist cult is the best-matched ideal type. Chrysler differs significantly from the absolutist ideal type by showing greater optimism (lower pessimism) ($M = 2.5$ versus 4.6), legalism (lower corruption) ($M = 4.7$ versus 6.2), and intellectual flexibility ($M = 4.7$ versus 2.3). Finally, the 1989 to 1990 period was again best matched to absolutist cult, but the differences between the ideal type and Chrysler were reflected in a different set of Process Indicator scales. Chrysler showed a greater sense of crisis ($M = 7.8$ versus 5.0), pessimism ($M = 6.8$ versus 4.6), and leader weakness (lower leader strength) ($M = 6.4$ versus 8.0) in 1989 to 1990 than the absolutist cult ideal type.

The Group Dynamics Q-Sort and Organizational Research

The GDQ is a significant addition to the research methodologies available for studying groups in organizations. It permits systematic, quantitative, and reliable comparisons across observers, time, and groups. We demonstrate the first two of those in this article. We pinpointed areas of agreement and disagreement between multiple data sources on the same group at the same time (e.g., different authors' accounts of group process in the top management team at Chrysler in the same time period such as Gordon, 1984, and Levin, 1995) and the same group at different times (e.g., the Chrysler team in 1980 to 1981 and 1984 to 1985). We also could have compared different

Table 2
Process Indicator Scores for Chrysler's Top Management Team

Period Studied	*1980-1981*	*1984-1985*	*1989-1990*
Rigidity-flexibility	5.0	4.7	2.9
Sense of control-crisis	7.2	5.1	7.8
Optimism-pessimism	4.2	2.5	6.8
Leader weakness-strength	8.4	8.3	6.4
Factionalism-cohesiveness	6.9	6.1	4.7
Legalism-corruption	3.8	4.7	5.8
Decentralization-centralization	5.8	6.2	6.5
Risk aversion–risk taking	7.4	5.6	5.2

Table 3
Correlations With Theoretical Ideal Types and Chrysler's Top Management Team

Period Studied	*1980-1981*	*1984-1985*	*1989-1990*
Groupthink	.57	.50	.34
Vigilant decision making	.08	−.01	−.61
Resource dependence	.44	.38	−.28
Corporate social responsibility	.08	−.07	−.45
Theory X	.34	.36	.43
Theory Y	.28	.19	−.52
Theory Z	.36	.15	−.20
Prime organization	.38	.47	−.42
Organization in decline	.01	−.08	.28
Absolutist cult	.38	.54	.54

groups (e.g., the top management teams of Chrysler and General Motors, as in Peterson et al., 1998). As our database of different groups grows, we will be able to make an increasing number of historical comparisons and use those comparisons in more precise and differentiated ways. The GDQ could become an important decision aid to which top management teams can compare themselves. Are we more like Chrysler in 1985, IBM in 1979, or Disney in 1997? Or how are we like or different from Jack Welch's leadership of GE in 1995? The other important comparisons are with the theoretical ideal types. Is this group more like groupthink, prime organization, or resource dependence? Matching groups with theoretical ideal types also could be useful for prescribing advice to management teams. If the group strongly resembles groupthink, for example, then Janis's (1982) prescriptions for avoiding groupthink should be followed. The template matching approach is also useful for testing the descriptive strength and predictive validity of a theoretical perspective. For example, a q-sort from Gordon's (1985) glowing report of Chrysler's top management team in 1985 would have suggested groupthink as a problem and predicted a high probability of downfall in the near future.

There is, of course, a great deal to learn about the GDQ. Q-sorts are completed by people who are, like everyone else, subject to the many biases documented in the social cognition literature (see Fiske & Taylor, 1991). These limitations are inevitable as long

as people must make judgement calls in research. Moreover, the method has a few distinct disadvantages when compared to other existing methods—for example, it neither has as much descriptive richness as a case study nor permits the clean causal claims that experiments do. Thus, we should clarify that we are not advocating the abandonment of existing methodologies. We simply wish to advocate for the GDQ as an additional research tool. This tool is potentially significant because it is well suited to the study of organizational groups over time and because it is extremely versatile for testing the utility of theories across different researchers, groups, and contexts. Thus, the GDQ provides the opportunity for group researchers to address the concerns discussed at the outset of this article: How can we empirically test dynamic theories of group process? Can we do more than simply confirm implicit theories of group process and outcome? Will the study of groups over time reveal new insights into group functioning? Answers to these questions will advance group theory. These answers will be the *real* tests of the GDQ's contribution because the advance of theory is what ultimately matters.

APPENDIX A
Item Listing for the Organizational Group Dynamics Q-Sort

1. The group requires absolute loyalty (i.e., members must show 100% dedication to the group and/or organization or they are out)

   vs.

   The group places no importance on loyalty (i.e., members are loyal either only to themselves or to external constituencies whom they represent).

2. There is a widely shared belief that leadership requires technical or scientific knowledge unique to that industry

   vs.

   The group has no use for technical or scientific knowledge.

3. Group members make good faith efforts to implement the leader's policies, even when they do not agree with those policies

   vs.

   Influential members of the inner decision-making circle are blocking the group leader's policies.

4. The group deeply dislikes delegating power and sharing responsibility (i.e., control must be all or nothing)

   vs.

   The group appreciates the value in delegating power and living with fluid, power-sharing relationships.

5. The group believes in a top-down, pyramidal, and control-oriented style of management (i.e., lots of rules, checks, and surveillance)

   vs.

   The group believes in a bottom-up style of management that encourages initiative and self-control among employees with minimal reliance on formal rules and surveillance.

6. The group is aware of and believes that it should be responsive to community concerns

vs.

The group is oblivious to or ignores community concerns.

7. Group members are acerbic and confrontational in their dealings with each other

vs.

Members are tactful and accommodative in their dealings with each other.

8. There is an infectious can-do spirit within the group

vs.

The group's spirit is broken (i.e., apathy, despair, and defeatism prevail).

9. Communication within the inner circle of decision makers is highly formal with few breaches of protocol

vs.

Group meetings are raucous informal affairs with frequent and loud interruptions. (Note: Code as neutral if the meetings are orderly but relaxed.)

10. The group focuses exclusively on short-term concerns (e.g., next quarter profits or current public image)

vs.

Long-term concerns loom large in group decision making.

11. Group members see their own success as inextricably tied to the failure of other group members (i.e., members have individual, subgroup, or divisional agendas)

vs.

Group members assume they share a common fate (i.e., either they will succeed together or fail together).

12. The group cloaks its deliberations in the highest secrecy

vs.

The group is remarkably open about its deliberations with those outside the group.

13. Group members devote enormous attention to detail

vs.

Group members are oblivious to detail.

14. The group believes in sophisticated and sensitive means of monitoring trends, problems, and performance throughout the organization

vs.

The group does not place a priority on keeping in touch with important trends and problems within the organization.

15. Members in good standing of the group must conform to strict norms in their personal lives (i.e., group membership implies holding certain attitudes)

vs.

The group tolerates a wide range of lifestyles among its members (i.e., how group members live is their own business).

16. There is a pervasive belief that standards of appropriate conduct should apply to everyone

vs.

Corruption is rampant; cronyism, nepotism, favoritism and backroom deals are accepted as a natural part of life.

17. The group has lost faith in its capacity to control events

vs.

The group feels fully in control of events.

18. False appearances and deceptive manipulation are so common as to be a way of life (i.e., nothing can be taken at face value)

vs.

Group members are remarkably open and candid in their dealings with one another.

19. The group refuses to abandon failing or unsound policies in response to serious setbacks (i.e., an aversion to serious self-criticism)

vs.

The group adjusts failing policies in a timely fashion (i.e., the group recognizes shortcomings and attempts to cut its losses by making midcourse changes).

20. The group places enormous importance on public relations (i.e., appreciates the need to manipulate public perceptions of the group, the organization and its products)

vs.

The group is oblivious to these concerns.

21. The group cannot act decisively without the stimulus of a crisis

vs.

The group is capable of decisive action before problems deteriorate into crises. (Note: Item implies a capacity both to anticipate events and to mobilize resources to shape those events.)

22. The group is confident in its legitimacy (i.e., it assumes there is widespread acceptance of its "right" to lead)

vs.

The group is very unsure and self-conscious of its legitimacy. (Note: Item refers to group's perception of its legitimacy, not to others' perceptions of the group; see Item 93.)

23. Relations among group members are charged with hostility and/or rivalry

vs.

Relations among group members are warm and friendly. (Note: Code as neutral if relations among group members tend to be affectively neutral and businesslike.)

24. Group members compete in obsequious and sycophantic ways for the attention of the leader (i.e., members of the group have become fawning "yes-men")

vs.

The group consists of a number of dominant (and approximately equally dominant) personalities.

25. Advocates of a more risk-taking business strategy hold the upper hand within the group

vs.

Advocates of a more cautious strategy hold the upper hand within the group.

26. The group has achieved a balance of expertise from different functional domains critical to organizational survival (e.g., marketing, product design, manufacturing, finance, law)

vs.

One functional division of the organization dominates decision making (i.e., key areas of expertise are not represented).

27. The group abandons well-reasoned policies at the first hint of trouble or controversy (i.e., no capacity to stay the course)

vs.

The group sticks by well-reasoned policies even in the face of adversity.

28. The group single mindedly focuses on maximizing bottom-line or financial performance indicators

vs.

The group tries to balance many objectives in decision making (i.e., profitability is but one of many concerns).

29. The group consists of visionaries driven to achieve extremely ambitious objectives

vs.

The group consists of "satisficers" content with adopting any acceptable option that comes along.

30. Group members represent a variety of constituencies and points of view

vs.

The group is remarkably homogeneous.

31. The group perceives a serious external threat to its continued existence (e.g., unfriendly takeover, government regulators, tough competitors, creditors, etc.)

vs.

The group perceives the business environment to be placid and relatively benign (the environment may even be supportive).

32. The leader has complete control over who is admitted to the group

vs.

The group consists of individuals with autonomous bases of power (i.e., group members do not owe their positions to the leader).

33. Peculiar, even pathological, conduct by the leader is tolerated

vs.

Peculiar or pathological conduct is not tolerated.

34. Interaction among group members is confined to official meetings and work-related gatherings

vs.

Group members know each other well and socialize together.

35. There is a genuine common commitment to solving problems confronting the group (i.e., a no-nonsense, task-oriented feeling to the group)

vs.

Group members invest little energy in their work.

36. The group leader makes no secret of his or her policy preferences

vs.

Members are often in doubt as to exactly where the group leader stands on important issues.

37. There is a great deal of xenophobia or suspiciousness toward outsiders within the group

vs.

The group is open to a wide range of cultural and intellectual influences.

38. The group easily can cope with existing problems and challenges

vs.

The group is under enormous pressure or stress (i.e., challenges far exceed capabilities).

39. The leader is passive and withdrawn (i.e., apparently has lost interest in the job and in achieving original goals)

vs.

The group leader is an extremely forceful and ambitious personality.

40. Dissent is not acceptable even within private group meetings; the group ostracizes dissenters and punishes them severely

vs.

Private criticism within group meetings is not only acceptable but also actively encouraged as a way of improving decision making.

41. The group is united on the pace of change

vs.

There is a serious rift within the group between the forces of organizational change and forces supporting the traditions, privileges, and understandings of the past.

42. The group attaches remarkably little importance to maximizing efficiency. (Note: This is not the same as profitability)

vs.

The group places enormous importance on maximizing efficiency.

43. The group is amazingly tolerant of lackadaisical and shoddy performance

vs.

The group demands maximum effort and exceptional performance from executives, managers, and workers.

44. The leader closely monitors the work of other group members

vs.

The leader has a laissez-faire governing style (i.e., leader allows wide latitude in completion of responsibilities or pays no attention to how other group members manage their responsibilities).

45. The group lavishes rewards on a select few

vs.

The group has little tolerance for income inequality within the organization (i.e., tries to minimize the gap between best and poorest paid employees).

46. The group can afford to make a variety of mistakes (i.e., the group/organization can draw on enormous resources—financial, reputational, etc)

vs.

The group cannot afford to make mistakes (i.e., the group/organization is on the precipice of ruin, even one mistake can ruin them).

47. Authority within the group is highly fragmented, with different facets of policy becoming the autonomous provinces of different individuals

vs.

Authority is highly centralized; policy in different domains is tightly controlled and integrated.

48. Group members have no financial stake in the success or failure of the organization

vs.

Group members' personal fortunes are linked completely to the success or failure of the organization.

49. The group has a bewildering array of information at its disposal; the amount and complexity of incoming information strains the capacity of even brilliant managers (e.g., a very rapidly changing business environment)

vs.

The group has remarkably little to do (e.g., the industry is relatively static).

50. The group attaches great importance to preserving traditional arrangements and understandings

vs.

The group attaches no importance to preserving traditional arrangements and understandings.

51. The group consists of representatives of various interest groups and bureaucratic constituencies

vs.

The group consists of generalists who are not obliged to represent any particular power base.

52. The group functions like a think tank (i.e., people pursue whatever projects interest them, with no central coordination)

vs.

The group functions like a Prussian military unit (i.e., everyone is assigned a well-defined project that fits into a well-defined master plan).

53. Power is concentrated within a small subgroup

vs.

Power is dispersed across a wide range of constituencies and interest groups.

54. The group can act decisively in emergencies

vs.

Even in emergencies, the group cannot act decisively.

55. The group shows no team spirit and group solidarity

vs.

The group shows strong team spirit.

56. The group cannot reconcile the conflicting demands of important constituencies

vs.

The group has no difficulty satisfying all important constituencies.

57. The group leader fails to deal with the succession problem

vs.

The leader personally has designated a successor or specified a procedure for identifying one.

58. Group members are highly attuned to their environment and major changes occurring around them

vs.

Members are extremely slow to recognize the major changes occurring around them.

59. Group members devote virtually all their time to playing self-serving political games (e.g., claiming expensive perks, redefining criteria for success, etc.)

vs.

Group members have no time for gamesmanship; their focus is on achieving shared goals.

60. The leader often is ignored or even overruled by group members

vs.

The group displays automatic and unquestioning obedience toward the leader. (Note: Code as neutral if the group leader generally can expect deference but does not have license to rule arbitrarily.)

61. The leader behaves in a stable, predictable manner

vs.

The group leader behaves in an unpredictable, even mercurial, manner.

62. The group pursues bold or high-risk initiatives

vs.

The group acts in highly cautious or risk-averse ways.

63. Members harbor serious doubts about the leader's effectiveness

vs.

Group members are convinced that the leader possesses skills that are critical for achieving group goals.

64. The group suffers from an inferiority complex

vs.

The group displays enormous confidence in itself and its traditions.

65. Key group members are megalomaniacs who have lost all sense of their limitations

vs.

Key group members are balanced people who know the limits of their own skills and usefulness to the organization.

66. The group places heavy emphasis on consultation and soliciting expert advice

vs.

The group places little emphasis on consultation and expert advice.

67. The group always is careful to act within the law

vs.

The group is unconstrained by law or common conceptions of morality.

68. The group leader is insulated from criticism

vs.

The leader is exposed to a wide range of views and arguments. (Note: Item refers to whether the leader is exposed and not whether leader responds; see Items 92 and 40.)

69. The group has a chaotic, seat-of-the-pants managerial style and structure (i.e., no rules, blurry lines of responsibility)

vs.

The group has a crisp, organized managerial style and structure (i.e., explicit rules, clear lines of responsibility).

70. The group leader demonstrates intense loyalty to close supporters and advisors (i.e., keeps them aboard long after they have become political liabilities)

vs.

The leader shows no loyalty to close supporters and advisors (i.e., abandons them at the earliest signs of trouble).

71. Key members are open, confident people who are willing to consider that they might be wrong

vs.

Key members of the group are defensive, insecure people who respond sharply to any criticism.

72. The group never acts unless unanimity has been achieved

vs.

The group frequently undertakes decisions that a substantial fraction of the group opposes.

73. There is intense pressure to forget disagreements and forge a common front

vs.

There is little external pressure to forge a common front.

74. The group recognizes that painful and divisive choices cannot be avoided

vs.

The group believes that trade-offs can be avoided (i.e., that it will be possible to achieve everything on its wish list).

75. The group has formidable problem-solving skills and is adept at improvising solutions to unexpected events

vs.

The group has no problem-solving skills (i.e., clueless when something out of the ordinary happens).

76. The group has suffered serious setbacks (i.e., injuries to its collective self-esteem)

vs.

The group is "riding high" as a result of past successes (i.e., an euphoric atmosphere in group meetings).

77. The group acts impulsively (i.e., the group responds emotionally and rarely makes contingency plans)

vs.

The group acts in a methodical and deliberate manner.

78. The group demonstrates a capacity for "double-loop learning" (i.e., the capacity not only to monitor performance with respect to established indicators but also to undertake periodic reassessments of performance indicators to ensure they are measuring the right things)

vs.

The group has no capacity for self-reflective learning (i.e., group shows no interest in rethinking indicators of success that are customary to the organization).

79. There is a pervasive lack of accountability within the group (e.g., when key projects fail, resignations or censure of responsible decision-makers do not follow)

vs.

Group members feel strictly accountable for their job performance (i.e., when they fail, they take full responsibility).

80. A new generation of leadership recently has come to power

vs.

A new, fresh cohort of leaders systematically is being excluded.

81. The group leader is insensitive to other points of view within the group and society at large

vs.

The leader is a good listener (i.e., pays careful attention to what others say or good at understanding divergent viewpoints).

82. The group believes that it should be responsive to employee concerns

vs.

The group is oblivious to employee concerns (in extreme cases, may even be hostile to employee concerns).

83. No member of the group comes even close to matching the skills and stature of the leader

vs.

The leader is overshadowed or eclipsed by other group members.

84. The leader has positioned himself or herself in the middle of the continuum of opinion within the group

vs.

The leader is identified with an extremist wing of the group.

85. The group plausibly can blame others for current woes (i.e., even outside observers agree that responsibility lies elsewhere)

vs.

The group must accept responsibility for current woes (i.e., the group is being held accountable for their problems).

86. The group consists of innovative pioneers (i.e., people who have created new technologies, opened up new markets, etc.)

vs.

The group consists of professional managers and bureaucrats (i.e., people who have experience in keeping large organizations on steady trajectories).

87. There is a radical atmosphere in the group (i.e., rethink old approaches, adopt new strategies and goals)

vs.

There is a conservative, "don't-rock-the-boat" atmosphere in the group.

88. The group subscribes to a rigid, dichotomous view of the world (i.e., there are good guys and bad guys and nothing in between)

vs.

The group has a flexible, multidimensional world view (i.e., good guys are not always good, bad guys are not always bad, and reasonable people often can disagree over what counts as good or bad).

89. The group blatantly discriminates against disliked ethnic, racial, or religious groups

vs.

The group bends over backward to display its ethnic, racial, and religious impartiality.

90. The most influential members of the group are poorly educated (i.e., little formal education or narrow technical training)

vs.

The most influential members are extremely well educated (i.e., advanced degrees from major universities).

91. The group is confident that even if its current plans fail, it will be "bailed out" by powerful protectors (i.e., the group believes there will be guaranteed rescue from its own ineptitude; little incentive to take on unpleasant tasks). (Note: Protection could come from large cash reserves, government action, reputation, etc.)

vs.

The group realizes it is "on its own" (i.e., success or failure depends on its own efforts, and failure could lead to bankruptcy or the folding of the corporation).

92. The leader respects the concerns and feelings of other group members and honors private understandings with them

vs.

The leader shows contempt for other group members (i.e., may attempt to bully or intimidate them).

93. The group's legitimate authority has been utterly discredited

vs.

The group's legitimacy is widely accepted. (Note: Item refers to perceptions of others, not to group's perception of its legitimacy; see Item 22.)

94. The relationship between the group leader and other group members is remarkably easygoing and relaxed (i.e., people feel free to speak their minds, even to joke)

vs.

The relationship is formal and tense (e.g., no spontaneity or humor).

95. Group members are opportunists guided only by calculations of personal self-interest

vs.

Members are strongly committed to the norms, roles, and goals of the organization (i.e., want to do the "right thing" for the "right reasons").

96. The group leader is charismatic and inspiring (i.e., gives subordinates something to believe in and to shoot for)

vs.

The leader is bland and uninspiring at best (an embarrassment at worst).

97. The group leader makes major efforts to persuade others to redefine their goals and priorities

vs.

The leader places little emphasis on persuading others (i.e., works within or around current opinion).

98. The group assumes that most policy decisions require a fluid process, weighing competing values and making subtle trade-off judgments (i.e., decisions are made in many ways depending on the circumstances)

vs.

The group assumes there are clear right and wrong and good and bad ways of making decisions (i.e., the process by which decisions are made is rigid).

99. There is an atmosphere of suspicion and fear within the group (i.e., no one knows who will be next to fall out of favor and into oblivion)

vs.

There is an atmosphere of trust and mutual support among group members.

100. Virtually all we know about the group is based on speculative reconstruction of fragmentary evidence

vs.

There is a great deal of reliable evidence about the internal functioning of the group.

APPENDIX B
Items for the Theoretical Ideal Types

Ideal Type	*Category*	*Item Numbers*
Groupthink (Janis, 1982)	1	1, 40, 72, 73, 88
	2	4, 8, 24, 31, 36, 37, 53, 68
	3	3, 12, 19, 22, 35, 44, 54, 70, 77, 83, 94, 97
	4	10, 15, 18, 25, 32, 49, 56, 59, 61, 62, 65, 75, 80, 81, 85, 96
	5	5, 9, 20, 21, 28, 29, 33, 41, 42, 45, 48, 50, 57, 76, 86, 89, 91, 100
	6	2, 6, 13, 14, 16, 26, 27, 51, 52, 58, 79, 82, 84, 87, 90, 93
	7	7, 17, 23, 43, 46, 47, 63, 67, 69, 71, 92, 95
	8	30, 34, 39, 60, 64, 66, 98, 99
	9	11, 38, 55, 74, 78
Vigilant decision making (Janis, 1982)	1	16, 35, 66, 92, 98
	2	13, 26, 29, 30, 71, 74, 75, 78
	3	6, 8, 14, 41, 47, 49, 54, 58, 61, 67, 82, 94
	4	1, 22, 25, 31, 38, 48, 51, 52, 60, 69, 72, 80, 84, 86, 87, 96
	5	2, 3, 15, 17, 20, 23, 34, 39, 42, 46, 50, 56, 62, 64, 70, 76, 90, 100
	6	9, 12, 28, 32, 43, 44, 45, 57, 63, 73, 79, 83, 85, 91, 93, 97
	7	4, 5, 7, 10, 21, 24, 27, 33, 55, 65, 77, 89
	8	18, 19, 36, 37, 53, 68, 95, 99
	9	11, 40, 59, 81, 88
Resource dependence (Pfeffer & Salancik, 1978)	1	20, 58, 74, 85, 98
	2	22, 26, 31, 42, 54, 71, 78, 96
	3	3, 8, 14, 30, 35, 49, 61, 66, 73, 75, 83, 97
	4	1, 2, 6, 12, 13, 15, 29, 32, 41, 44, 47, 51, 52, 67, 82, 84
	5	5, 9, 16, 24, 25, 34, 36, 45, 48, 69, 70, 72, 80, 86, 89, 92, 94, 100
	6	4, 7, 18, 23, 33, 37, 38, 39, 40, 43, 50, 55, 59, 62, 68, 87, 90
	7	27, 28, 46, 53, 57, 60, 76, 79, 81, 95, 99
	8	10, 11, 17, 56, 63, 64, 77, 93
	9	19, 21, 65, 88, 91
Corporate social responsibility (Etzioni, 1993)	1	6, 16, 30, 67, 92
	2	14, 20, 22, 26, 50, 51, 66, 98
	3	1, 2, 3, 42, 47, 49, 60, 61, 74, 94, 96, 97
	4	8, 10, 15, 35, 36, 44, 46, 54, 56, 58, 69, 71, 72, 85, 87, 91
	5	13, 21, 27, 31, 38, 39, 41, 52, 57, 70, 73, 75, 76, 78, 80, 82, 86, 100
	6	9, 17, 19, 25, 29, 37, 40, 43, 48, 55, 62, 63, 64, 83, 84, 90
	7	7, 11, 23, 33, 34, 59, 65, 68, 77, 79, 95, 99
	8	12, 18, 24, 45, 53, 81, 88, 93
	9	4, 5, 28, 32, 89
Theory X (McGregor, 1966)	1	4, 5, 40, 44, 53
	2	9, 22, 28, 36, 48, 95, 97, 99
	3	2, 3, 14, 16, 32, 34, 45, 54, 55, 68, 81, 83
	4	10, 11, 12, 13, 24, 31, 33, 50, 51, 56, 59, 63, 65, 67, 73, 88
	5	15, 17, 18, 23, 25, 26, 37, 38, 41, 46, 62, 64, 75, 76, 80, 89, 90, 100
	6	6, 7, 19, 20, 29, 30, 49, 58, 61, 74, 77, 78, 84, 85, 87, 96
	7	8, 21, 27, 35, 43, 57, 71, 72, 79, 86, 91, 93

(continued)

APPENDIX B Continued

Ideal Type	*Category*	*Item Numbers*
	8	1, 39, 42, 66, 70, 82, 92, 98
	9	47, 52, 60, 69, 94
Theory Y (McGregor, 1966)	1	8, 16, 35, 82, 94
	2	1, 22, 47, 54, 71, 92, 96, 98
	3	3, 14, 29, 41, 52, 61, 66, 67, 70, 78, 80, 84
	4	13, 20, 25, 26, 30, 38, 50, 51, 58, 62, 72, 73, 74, 75, 83, 87
	5	2, 6, 9, 15, 23, 31, 32, 33, 36, 45, 46, 49, 57, 63, 85, 86, 89, 100
	6	10, 12, 17, 21, 24, 27, 34, 39, 44, 56, 60, 68, 76, 77, 90, 91
	7	7, 19, 37, 40, 42, 48, 64, 81, 88, 93, 97, 99
	8	11, 28, 43, 53, 65, 69, 79, 95
	9	4, 5, 18, 55, 59
Theory Z (Ouchi, 1982)	1	1, 15, 16, 35, 82
	2	8, 37, 41, 50, 70, 72, 73, 88, 92
	3	6, 20, 22, 26, 31, 42, 61, 67, 78, 89, 94
	4	3, 9, 13, 14, 19, 21, 36, 38, 40, 49, 68, 71, 74, 84, 96, 97
	5	17, 18, 24, 29, 32, 39, 44, 46, 47, 52, 54, 57, 58, 75, 76, 80, 83, 100
	6	2, 12, 27, 33, 48, 51, 56, 60, 66, 69, 81, 85, 87, 90, 91, 93
	7	4, 5, 23, 25, 28, 43, 62, 63, 64, 65, 86, 98
	8	7, 10, 30, 45, 53, 55, 77, 79
	9	11, 34, 59, 95, 99
Prime organization (Adizes, 1988; Kimberly & Miles, 1980)	1	8, 35, 58, 75, 98
	2	1, 13, 14, 16, 22, 54, 74, 78
	3	5, 6, 20, 29, 38, 62, 67, 70, 71, 82, 86, 96
	4	2, 3, 23, 25, 26, 30, 31, 36, 45, 46, 61, 66, 84, 87, 94, 97
	5	12, 15, 32, 34, 39, 41, 44, 49, 50, 51, 52, 57, 80, 83, 89, 90, 92, 100
	6	7, 9, 18, 24, 33, 37, 47, 48, 53, 56, 60, 63, 68, 73, 81, 85
	7	10, 27, 40, 42, 43, 59, 65, 72, 76, 77, 79, 91
	8	4, 11, 19, 21, 55, 64, 88, 93
	9	17, 28, 69, 95, 99
Organization in decline (Adizes, 1988; Kimberly & Miles, 1980)	1	9, 22, 43, 50, 88
	2	5, 10, 19, 21, 40, 42, 46, 79
	3	15, 18, 37, 41, 53, 59, 65, 68, 72, 73, 81, 91
	4	1, 3, 4, 14, 16, 20, 24, 28, 39, 45, 57, 67, 70, 84, 85, 89
	5	2, 8, 12, 23, 27, 32, 35, 36, 38, 44, 48, 55, 61, 63, 83, 92, 99, 100
	6	11, 13, 26, 33, 34, 51, 52, 60, 71, 74, 75, 76, 82, 95, 96, 97
	7	17, 30, 31, 47, 49, 56, 66, 80, 90, 93, 94, 98
	8	6, 7, 29, 54, 58, 69, 77, 78
	9	25, 62, 64, 86, 87
Absolutist cult	1	1, 24, 33, 37, 83

APPENDIX B Continued

Ideal Type	*Category*	*Item Numbers*
(Tetlock, Peterson, McGuire, Chang, & Feld, 1992)	2	4, 12, 32, 53, 68, 88, 96, 99
	3	5, 18, 19, 28, 40, 44, 45, 62, 65, 77, 81, 97
	4	3, 9, 15, 23, 25, 29, 35, 36, 46, 54, 57, 59, 73, 87, 89, 93
	5	10, 20, 27, 31, 34, 41, 42, 49, 50, 51, 69, 70, 75, 76, 82, 86, 90, 100
	6	2, 6, 7, 8, 13, 14, 17, 21, 22, 38, 56, 72, 79, 80, 85, 95
	7	11, 30, 47, 48, 52, 55, 63, 67, 71, 84, 91, 94
	8	26, 58, 61, 64, 66, 74, 78, 98
	9	16, 39, 43, 60, 92

Notes

1. Most q-sorts are designed for topical experts. However, there are self-rated q-sorts (called *s-sorts*) for both personality (Stephenson, 1953) and groups research (Alberts, 1998).

2. Peterson, Owens, Tetlock, Fan, and Martorana (1998) used the organizational group dynamics q-sort (GDQ) to study the top management team group dynamics of seven large companies. That article did not, however, give details of the method (e.g., publish the full content of the ideal types, instructions for q-sorters, etc.) and did not systematically compare the GDQ to other research methods as we do here.

3. Differences in fit between ideal types can be tested by treating the correlations between each ideal type and case as a score and conducting paired *t*-tests (Block, 1978). See Peterson et al. (1998) for an example of how this can be done. We were not able to engage in significance testing here because we had a sample of only two independent observations (i.e., cases) for each time period studied.

References

Adizes, I. (1988). *Corporate lifecycles: How and why corporations grow and die and what to do about it.* Englewood Cliffs, NJ: Prentice Hall.

Alberts, K. S. (1999). *Diagnosing decision-making groups: A validity and reliability check of the self-administered group dynamics q-sort.* Unpublished doctoral dissertation, Northwestern University.

Bales, R. F. (1950). *Interaction process analysis: A method for the study of small groups.* Reading, MA: Addison-Wesley.

Bales, R. F. (1958). Task roles and social roles in problem solving groups. In E. E. Maccoby, T. M. Newcomb, & E. L. Hartley (Eds.), *Readings in social psychology* (pp. 437-446). New York: Holt, Rinehart & Winston.

Bem, D. J., & Funder, D. C. (1978). Predicting more of the people more of the time: Assessing the personality of the situations. *Psychological Review, 85,* 485-501.

Block, J. (1978). *The q-sort method in personality assessment and psychiatric research* (2nd ed.). Palo Alto, CA: Consulting Psychologists.

Cohen, B., & Greenfield, J. (1997). *Ben & Jerry's double dip: Lead with your values and make money, too.* New York: Simon & Schuster.

Etzioni, A. (1993). *The spirit of community.* New York: Crown.

Fiske, S. T., & Taylor, S. E. (1991). *Social cognition* (2nd ed.). New York: McGraw-Hill.
George, A. L. (1972). The case for multiple advocacy in making foreign policy. *American Political Science Review, 66*, 751-785.
Gersick, C. J. (1988). Time and transition in work teams: Toward a new model of group development. *Academy of Management Journal, 31*, 9-41.
Gordon, M. M. (1985). *The Iacocca management technique.* New York: Dodd, Mead.
Guzzo, R. A., Wagner, D. B., Maguire, E., Herr, B., & Hawley, C. (1986). Implicit theories and the evaluation of group process and performance. *Organizational Behavior and Human Decision Processes, 37*, 279-295.
Hackman, J. R. (1987). The design of work teams. In J. Lorsch (Ed.), *Handbook of organizational behavior* (pp. 315-342). Englewood Cliffs, NJ: Prentice Hall.
Hackman, J. R. (1990). *Groups that work (and those that don't).* San Francisco: Jossey-Bass.
Ingrassia, P., & White, J. B. (1994). *Comeback.* New York: Simon & Schuster.
Janis, I. L. (1972). *Victims of groupthink.* Boston: Houghton Mifflin.
Janis, I. L. (1982). *Victims of groupthink* (2nd ed.). Boston: Houghton Mifflin.
Janis, I. L. (1985). Sources of error in strategic decision making. In J. M. Pennings (Ed.), *Organizational strategy and change* (pp. 157-197). San Francisco: Jossey-Bass.
Janis, I. L. (1989). Crucial decisions: Leadership in policy-making and management. New York: Free Press.
Janis, I. L., & Mann, L. (1977). *Decision making: A psychological analysis of conflict, choice and commitment.* New York: Free Press.
Janis, I. L., & Mann, L. (1992). Cognitive complexity in international decision making. In P. Suedfeld & P. E. Tetlock (Eds.), *Psychology and social policy* (pp. 33-50). Washington, DC: Hemisphere.
Kimberly, J. R., & Miles, R. H. (1980). *The organizational life cycle: New perspectives for organizational theory and research.* San Francisco: Jossey-Bass.
Levin, D. P. (1995). *Behind the wheel at Chrysler.* Orlando, FL: Harcourt Brace.
McGregor, D. (1966). *Leadership and motivation.* Cambridge, MA: MIT Press.
Moreland, R. L., & Levine, J. M. (1982). Socialization in small groups: Temporal changes in individual-group relations. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 15, pp. 137-192). New York: Academic Press.
Moritz, M., & Seaman, B. (1981). *Going for broke: The Chrysler story.* New York: Anchor.
Ouchi, W. (1982). *Theory Z: How American business can meet the Japanese challenge.* Reading, MA: Addison-Wesley.
Peterson, R. S. (1997). A directive leadership style in group decision making is both virtue and vice: Evidence from elite and experimental groups. *Journal of Personality and Social Psychology, 72*, 1107-1121.
Peterson, R. S., Owens, P. D., & Martorana, P. V. (in press). Cause or effect? An investigation of the relationship between top management team group dynamics and organizational performance. In M. A. Neale, E. A. Mannix, & R. Wageman (Eds.), *Research on managing groups and teams: Vol. 2. Context.* Greenwich, CT: JAI.
Peterson, R. S., Owens, P. D., Tetlock, P. E., Fan, E., & Martorana, P. (1998). Group dynamics in top management teams: Groupthink, vigilance and alternative models of organizational failure and success. *Organizational Behavior and Human Decision Processes, 73*, 272-305.
Pfeffer, J., & Salancik, G. R. (1978). *The external control or organizations: A resource dependence perspective.* New York: Harper & Row.
Snyder, J. (1985). Richness, rogor, and relevance in the study of Soviet foreign policy. *International Security*, 9, 3.
Staw, B. M. (1975). Attributions of the "causes" of performance: A general alternative interpretation of cross-sectional research on organizations. *Organizational Behavior and Human Performance, 13*, 414-432.
Stephenson, W. (1953). *The study of behavior.* Chicago: University of Chicago Press.

Sutton, R. I., & Hargadon, A. (1996). Brainstorming groups in context: Effectiveness in a product design firm. *Administrative Science Quarterly, 41*, 685-718.

Tetlock, P. E., Peterson, R. S., McGuire, C., Chang, S., & Feld, P. (1992). Assessing political group dynamics: A test of the groupthink model. *Journal of Personality and Social Psychology, 63*, 403-425.

Verba, S. (1967). Some dilemmas in comparative research. *World Politics, 20*, 111-127.

Weingart, L. (1997). How did they do that? The ways and means of studying group process. In B. Staw (Ed.), *Research in organizational behavior* (Vol. 19, pp. 189-239). Greenwich, CT: JAI.

Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, CA: Sage.

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