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# Integrating Qualitative and Quantitative Methods for Organizational Diagnosis

## Possible Priming Effects?

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This study reviews considerations for integrating closed-ended items and open-ended questions in a single survey instrument, focusing on contextual effects as a potential pitfall in organizational diagnosis. A randomized posttest-only control group experiment was conducted in a field setting with a small (92 employees) for-profit firm wherein the *experimental group* received a mixed questionnaire (closed-ended, followed by open-ended, questions) and the *control group* received only open-ended questions. Individuals receiving the mixed survey responded with a lower response rate and fewer comments than those receiving only the open-ended questions. A thematic content analysis of responses revealed a practically significant difference between groups in respondents' perceptions of the organization's strengths. However, the reported weaknesses of the organization did not differ between groups.

**Keywords:** *mixed methods; priming; survey instrument*

To be effective in the 21st century, an organization requires flexibility and the ability to transform rapidly. Senior management's understanding of their organization's internal state is a prerequisite to developing more effective strategies to meet the challenges of today's competitive environment (see Armenakis & Bedeian, 1999; Beer & Spector, 1993; Cummings & Worley, 2005, for a review). Change practitioners often use organizational diagnosis to assess an organization's current level of functioning (Armenakis, Mossholder, & Harris, 1990; Di Pofi, 2001; Harvey & Brown, 1996). Diagnostic information generated is then employed to design appropriate change interventions to improve performance (Golden-Biddle, Wiebe, & Locke, 2006). Despite extensive literature extolling the virtues of a proper diagnosis, research has found that one reason for the high failure rate of change intervention efforts is the managers' or consultants' failure to diagnose the needs of the organization (Harrison & Shirom, 1999).

Comprehending the existing social and functional reality of an organization is the fundamental purpose of organizational diagnosis. Correctly diagnosing organizational issues is also a key facet of action research, as the success of any intervention is dependent on

accurately diagnosing the issues that are important to the organization (Styhre & Sundgren, 2005). An accurate diagnosis necessitates the generation of valid and useful information about the organizational system (Paul, 1996). In the field of organizational change, capturing essential diagnostic information is most commonly accomplished via administration of a self-report survey (Lasorsa, 2003). Survey questionnaires are a useful method for the collection of self-report data and continue to be the dominant mode of measurement when respondent attitudes are desired (Babbie, 2004). A questionnaire is a written instrument that conveys both the instructions and questions to respondents and supplies an area for them to complete their answers (Emory & Cooper, 1991). Change practitioners rely upon participants' answers to provide their beliefs, attitudes, and behavior intentions in their in situ environments (Lasorsa, 2003; Paul, 1996; Schwarz, 1999). The change practitioner, attempting to assess an organization, often uses questionnaires to collect and analyze vital information about the organization and to subsequently design appropriate organizational interventions (Armenakis et al., 1990).

Once consisting primarily of closed-ended items and assorted rating scales useful in quantitative analyses, many survey instruments have evolved to include open-ended questions designed to capture qualitative data in the form of text responses written in the respondents' own words (Jackson & Trochim, 2002). An increasingly attractive method adopted by change practitioners is to attach open-ended questions to a quantitative standardized survey instrument (Creswell, 2003). Combining closed-ended and open-ended items is a form of mixed methods research that has gained increasing popularity, largely due to its potential to capture the benefits of both quantitative and qualitative data collection and analysis at a relatively low cost to the researcher (Erickson & Kaplan, 2000). Whereas we recognize the ongoing epistemological debate between empiricists and interpretivists regarding the efficacy of respective methods (i.e., quantitative vs. qualitative) (Mingers, 2006; for a complete review, see Teddlie & Tashakkori, 2003), we adopt an inclusive view of *mixed methods* as articulated by Creswell, Shope, Plano Clark, and Green (2006); we specifically allow for the lesser role of qualitative methods in a mixed methods research design (for a complete review, see Creswell & Plano Clark, 2007). As such, the survey instrument used in this study that contained both closed-ended and open-ended items is referred to as a "mixed survey instrument."

Using multiple methodologies to collect data is recognized as an essential component of any organizational diagnosis (Paul, 1996). Moreover, triangulating data sources—a means for seeking convergence among qualitative and quantitative methods—is appreciated as an effective means to offset the inherent biases in respective methods (Creswell, 2003). Open-ended questions are attempts to access elicited qualitative information from the respondent free from the conceptual boundaries that exist in a structured quantitative survey instrument. On the other hand, a quantitative survey instrument is designed to elicit responses that are subsequently fitted to preconceived constructs and empirically tested via quantitative methods. When combining methods in a survey design, qualitative methods are recommended for letting respondents determine their own frame of reference for answers, whereas quantitative methods are recommended when quick tabulation or empirical generalizability is desired (Di Pofi, 2001; Weisburg, Krosnick, & Bowen, 1989). Mixing quantitative (closed-ended items) and qualitative (open-ended items) data collection approaches

within the same method (i.e., in the questionnaire) has also been labeled “intramethod mixing” (Johnson & Turner, 2003).

Although the practice of attaching open-ended questions to quantitative questionnaires is increasingly popular, there is a paucity of literature investigating the possible effects of combining these quantitative and qualitative data collection techniques. The existing theoretical and empirical research describing the contextual effects produced among responses to closed-ended items within quantitative survey instruments is plentiful, including answer construction in consumer behavior research (Peterson, 2005), answer retrieval and accessibility (Schuman & Presser, 1981), question comprehension in behavioral frequency reports (Schwarz, 1999), and relative scale context effects (Schwarz & Hippler, 1995). However, the research exploring the specific effect on responses to open-ended questions when preceded by closed-ended questions is limited. In fact, despite an extensive literature review, no research was discovered testing for context effects on responses to open-ended questions.

The goal of the present study was to determine whether responses to open-ended questions vary according to whether they are immediately preceded by a structured survey instrument containing only closed-ended questions. This field experiment was conducted with a single organization undergoing an organization diagnosis. The following paragraphs lay the groundwork for this study with a review of relevant literatures regarding mixed methods research, survey instrument concepts, and contextual effects as a result of survey instrument construction. The literature review is followed by the theoretical development of hypotheses. Finally, hypotheses are tested and results discussed in the context of organizational diagnosis.

## Literature Review

### Mixed Methods

Gathering accurate information is crucial to the success of an organizational diagnosis. Study designs integrating quantitative and qualitative data collection methods have become increasingly popular owing to the complimentary nature of the information obtained (Creswell, 2003). *Mixed methods research* refers to the research or lines of inquiry that integrate one or more qualitative and quantitative techniques for data collection and analysis (Borhan, 2004; Creswell 2003).

Qualitative collection methods, including interviews, focus groups, participant observation, and open-ended survey items have great potential for exploring new topics, assisting theory building, and providing context for quantitative data (Jackson & Trochim, 2002). Qualitative survey responses are often elicited in organizational research to collect information about an experience or topic, to explain or clarify quantitative findings, and to explore different dimensions of respondents' experiences (Jackson & Trochim, 2002; Sproull, 1988). For example, employees can provide “in their own words” why they are not satisfied with their job, why there is resistance to a particular organization change effort, or why they believe their work environment is unsafe. Open-ended questions are used in organizational research to explore, explain, or reconfirm existing ideas. Whereas quantitative methods work best in isolating variables and demonstrating correlates associated with variation,

qualitative data collection techniques are particularly effective at gaining insight into the processes and events that lead up to the observed variation (Borkan, 2004).

Indeed, the advantages of mixed methods research are well recognized throughout the literature. Combining, or linking, quantitative and qualitative data collection methods within studies can provide numerous benefits (cf. Fielding & Fielding, 1986; Greene, Caracelli, & Graham, 1989; Koch & Rhodes, 1979; Paul, 1996). Rossman and Wilson (1991) summarized these advantages, describing three broad reasons for linking qualitative and quantitative data: (a) to enable confirmation or corroboration of each other via triangulation; (b) to elaborate or develop analysis, providing richer detail; and (c) to initiate new lines of thinking through attention to surprises or paradoxes, providing fresh insight. Thus, mixed methods not only add to the research toolbox, but they also provide the opportunity for a synthesis of traditions.

However, to realize the synergistic advantages of integrating qualitative and quantitative analysis, study designers must account for possible unintentional effects resulting from combining the data collection methods in a single data collection procedure. Indeed, to retain the advantages of a multimethod design, the data must not unduly influence one another (Head, Griffin, Bateman, Lohman & Yates, 1988). As Onwuegbuzie and Johnson (2006) suggested, "When a sequential mixed design is used, it is possible that the meta-inference that arises is solely or largely the effect of the sequencing itself" (p. 58). To understand the potential confounding effects of combining qualitative and quantitative questionnaire items, we must first examine the nature of the questionnaire as an attitudinal measure.

## Dual-Conceptualization of Survey Instruments

The written survey instrument can be viewed from dual perspectives. It can be conceptualized both as a social encounter and as a series of cognitive tasks to be performed by the respondent (Sudman, Bradburn, & Schwarz, 1996). When viewed as a social encounter, survey instruments have much in common with ordinary conversations. Indeed, Bradburn, Wansink, and Sudman (2004) described survey respondents as "volunteer conversationalists," highlighting the noncompulsory nature of participation (p. 8). Sudman et al. (1996) also recognized the special nature of the survey, describing it as a "social encounter between two strangers" (p. 1). Although Sudman et al. were admittedly referring to a telephone survey, which is certainly more social than a written survey instrument, research suggests that respondents, having made the decision to participate, feel the responsibility to reply to the written survey instruments, much as they would in a dialogue with another person (Dillman, 2007).

The literature describing survey instruments as cognitive tasks also contributes to our understanding of the respondent's mental processes. Although the precise mechanisms that produce attitudinal changes among respondents during survey completion are not known, some of the cognitive processes involved are now understood (Bradburn et al., 2004). An individual's responses can be described as the result of four processes: (a) interpreting the question, (b) retrieving the answer from memory, (c) forming judgment, and (d) editing the answer (Sudman et al., 1996). Conceptualizing response construction as similar to social conversation and as a series of cognitive tasks contributes to the theoretical basis

of the hypotheses tested in this study. Relevant aspects of both perspectives are discussed in greater detail below.

## Context Effects

A primary concern in survey design has been effects due not to the question itself, but to influences extraneous to the question (Lasorsa, 2003; Schwarz, Hippler, Deutsch, & Strack, 1985). Context effects can be described as “contaminating influences that can collectively constrain the ability of researchers to explain or predict an attitude of interest” (Peterson, 2005, p. 348). Accordingly, a questionnaire cannot be viewed as a collection of completely independent questions that have no effect on one another. Each question must be evaluated on the basis of its individual content and also with regard to the larger context, which often adds or subtracts meaning (Dillman, 2007). For example, when a survey administrator supplies an individual with a questionnaire covering specific topics, the structured items may create attitudes not present previously.

Although differing opinions exist in the literature regarding the extent to which a respondent’s attitudes are constructed as opposed to stored in memory, there is strong evidence that at least some attitudes are changed by the kinds of thoughts made accessible by the survey questions. Schwarz and Sudman (1996) suggested that the pliability of an attitude is inversely related to its strength. That is, weaker attitudes may be more vulnerable to suggestion. In addition to being susceptible to suggestion effects, questionnaire responses are vulnerable to influence according to the complexity of questions or the length of the survey instrument (Schwarz & Sudman, 1996). Also, fatigue or boredom can influence responses to questions at the end of a long survey instrument (Lasorsa, 2003).

## Priming

*Priming* refers to the mechanism by which an attitude is created or influenced by a preceding question or questions (Moss & Lawrence, 1997). Priming is a context effect described as a subconscious form of human memory that is based on the idea that an individual’s subconscious is triggered by whatever information is available at the time (Tulving & Schacter, 1990). This triggering can occur as a result of new information or prompted recall of prior knowledge (Head et al., 1988). Priming is said to occur when aspects of a situation are made to appear more salient to an individual than they might be otherwise (Moss & Lawrence, 1997; Schuman & Presser, 1981).

Wyer and Hartwick (1978) found that when responding to a stimulus such as a questionnaire item, an individual will use whatever information is available at the moment. They called the routine a person uses to arrive at an answer to a survey question a *conditional inference process* and described the process as follows:

When persons are asked to report their belief in a target proposition, they typically do not engage in an exhaustive search of information bearing on it. Rather, they search only until they encounter a piece of information (i.e., another proposition) that they consider relevant . . . without taking into account other information that may also bear on the validity of the target proposition. (p. 501)

Moreover, the conditional inference process suggests that respondents' answers may be influenced greatly by factors that affect which of several alternative pieces of information they happen to retrieve in search of their memory. Thus, when respondents are provided information prior to a target response, this information becomes more salient and is more likely to be retrieved and used in the target response.

It follows that if priming does occur, any data collected contain artificially created attitudes, thus contaminating the measurements. Given the resultant bias, the priming effect is proposed as an artifact that may have a large impact on survey measures (Gibson & Bahrey, 2005; Head et al., 1988; Salancik & Pfeffer, 1977). The literature is replete with studies of priming effects, demonstrating that both the order in which questions were asked and the information provided prior to the question affected the answers (for a review, see Schwarz, 1999). For example, Schuman and Presser (1981) found that when parents were asked what they consider "the most important thing for children to prepare them for life," 61% of a representative sample chose the alternative "to think for themselves" when this alternative was offered on a list. Yet only 4.6% volunteered an answer that could be assigned this category when no list was presented (p. 245).

## The Present Study

The present research was conducted in a field setting to test for priming as a potential confounding effect of combining open-ended and closed-ended items in a self-report Internet-based survey instrument. This study extends the previous research that has established context effects in survey instruments with only closed-ended items, to testing for priming effects in mixed survey instruments (i.e., instruments that include both closed-ended and open-ended items). A single experimental manipulation was administered. Employees in the *experimental condition* received a mixed survey instrument with closed-ended (quantitative) questions placed immediately prior to a pair of open-ended (qualitative) questions. Employees in the *control condition* received only the open-ended questions. As discussed, the responses to the open-ended questions are of interest in this study. Accordingly, the closed-ended questions in the mixed survey instrument served exclusively as the treatment in this experiment.

The survey instruments administered in each condition (e.g., a mixed survey instrument and a survey instrument consisting of only open-ended items) are viable diagnostic tools, commonly used by change practitioners to elicit employee attitudes (Golden-Biddle et al., 2006). Whereas attaching only two open-ended questions to a structured, closed-ended survey may seem perfunctory to some, it would be a mistake to overlook the diagnostic value of obtaining organization members' personal observations of their organization's respective "strengths" and "weaknesses." The responses to the open-ended questions are useful to change practitioners as an analytical tool to help explain the diagnostic findings of the quantitative survey instrument and as tangible first-person perceptions that, when presented appropriately to the organization's leadership, may bolster the persuasiveness of the results presented.

The Burke-Litwin Performance Improvement Survey (B-L survey; Burke & Litwin, 1992; Falletta, 2005) served as the priming stimulus, or treatment, for the experimental

group. The B-L survey was chosen as the treatment for this study because it is considered an appropriate tool for organizational diagnosis and often used by change practitioners, both internal and external to the organization. Recognized as a comprehensive survey instrument covering all facets of organizational performance, the B-L survey consists of 90 items (employing a Likert response format) that assess 12 organizational dimensions. The items are designed to elicit employee perceptions regarding the following themes: external environment, mission and strategy, leadership, culture, structure, management practices, systems, work group climate, task requirement and individual skills, motivation, individual needs and values, and performance. As part of the diagnostic process, the diagnostician administers the survey to employees, then collects and aggregates the responses in each area and conducts a quantitative analysis to ascertain the strengths and weaknesses of the organization vis-à-vis the themes presented in the survey (Di Pofi, 2001; Falletta, 2005).

## Hypotheses and Theoretical Development

### Response Rate and Comment Quantity

Based on the reasoning suggested here, viewing the questionnaire as a social encounter subject to the rules of conversation, respondents completing the mixed survey instrument may feel relieved of the sense of responsibility for providing comprehensive responses to the open-ended questions, having just completed the closed-ended questions. Thus, respondents in the experimental condition may elect not to answer the open-ended questions so as to avoid providing answers redundant to the themes addressed by the quantitative items (Houtkoop-Steenstra, 2000). For example, having responded to closed-ended items soliciting their attitude toward “senior leadership,” respondents may be less likely to include statements regarding “senior leadership” as a strength or weakness in their subsequent responses to the open-ended items. The process of cognitive inference, as previously discussed, similarly supports the expectation of reduced responses provided by those receiving the priming treatment. It was expected that completion of the quantitative items immediately prior to the open-ended questions would produce a sense of “I’ve already covered that,” resulting in an “economy of thought” exercised by the respondent (Koch & Rhodes, 1979). Finally, responses to open-ended questions require construction and recording of thought (Miles & Huberman, 1994), not simply the act of marking the bubble on a scoring sheet. Thus, given this labor requirement and recognizing the treatment consists of 90 closed-ended items, one may expect employees in the experimental group will be more likely to skip the qualitative items due to possible fatigue or boredom (Lasorsa, 2003). Accordingly, the following two hypotheses are offered:

*Hypothesis 1:* The response rate to the open-ended questions will be lower for those employees in the experimental condition (receiving the mixed survey instrument) than for those employees in the control condition (receiving the open-ended survey instrument).

*Hypothesis 2:* Employees in the experimental condition (answering the mixed survey instrument) will respond with fewer comments to the open-ended questions than those in the control condition (receiving the open-ended survey instrument).



## Response Content

As discussed, a primary purpose of an organizational diagnosis is to discover the attitudes and perceptions of employees in the organization. Responses to interviews or questionnaires are often interpreted and aggregated to determine, as a whole, the salient concerns of the employees. For example, employees may complain more often about pay and benefits than any other area, followed by concerns about communication within the firm. The change practitioner often develops a plan based on a prioritized list of these concerns (Harrison & Shirom, 1999). Of primary interest in this study is whether the employee concerns reported in the responses to the open-ended questions vary according to whether the employees received the mixed survey (open-ended questions preceded by a 90-item structured questionnaire that allows only responses to closed-ended items) or the open-ended questions only. This study describes these areas of concern as *content themes*, indicating a grouping of comments that reference similar aspects of the organization (Krippendorff, 2004). These content themes can be thought of as categories of employee attitudes and perceptions.

The first cognitive inference task a respondent must complete when responding to a question is to determine the intended interpretation of the question (Sudman et al., 1996). The wording of a question may seem clear; however, the practical interpretation may nevertheless be ambiguous. To arrive at the intended interpretation of the question, respondents will rely on cues from previous questions as well as cues from previous responses (Schwarz, 1999; Schwarz & Sudman, 1996; Todorov, 2000). Suppose a participant is asked the following question in an open-ended-response format: "What are the strengths of your organization?" To provide a meaningful answer, the respondent must determine what "strengths" the researcher might be interested in. "Strengths" at the company level may include stock price, economic performance, and size of the company; or taken at the micro-level, the respondent may reply with what he or she enjoys about his or her job on a day-to-day basis. Schwarz (1999) found that if participants were first given a list of activities and later asked, "What did you do today?" respondents were more likely to reply with activities on the list. And as expected, they were less likely to reply with items not on the list (see Schuman & Presser, 1981; Schwarz, 1999; Schwarz & Hippler, 1995, for a review). Schwarz's finding is congruent with the cognitive inference process and accessibility research discussed earlier that proposes responses differ according to the availability of relevant context. Previous research has found that exposure to pertinent concepts makes them more accessible and thus more likely to be used in a subsequent response to which those concepts apply (Todorov, 2000).

The open-ended questions in the survey instrument used in this study were designed to elicit cognitive judgments regarding the state of the organization. As discussed, the B-L survey is a detailed comprehensive instrument that prompts respondents' consideration of numerous organizational facets. In this study, it is reasonable to expect that the thematic content of employees' qualitative responses will vary according to whether they received the mixed survey instrument (experimental condition) or the open-ended survey instrument (control condition). Specifically, it was expected that the strengths and weaknesses identified by employees would differ between those receiving the mixed survey instrument and those receiving the survey instrument containing only the open-ended items.

*Hypothesis 3:* The rank-ordered priority of themes, aggregated respectively for strengths and weaknesses based on the frequency of comments contained in each theme, will vary across survey conditions.

Whereas it was expected that the content of employee responses would vary according to their respective survey condition, it was less clear whether the employees' comments would differ in the proportion of observed strengths and weaknesses. Or, more simply, "Will employees receiving the mixed survey instrument judge their organization more or less harshly as a result of the mental processing triggered by the multiple choice items?" Lacking sufficient theory to support a conceptual hypothesis regarding this question, we proposed the following research question:

*Research Question 1:* Will the ratio of employee-perceived strengths to weaknesses vary according to survey condition?

## Method

### Organizational Context

The sample for this study consisted of the employees of a small for-profit firm in the property management industry. The firm had recently experienced turmoil largely resulting from a change in ownership. The ownership change was a bumpy process that took a year to complete, with the company "on the auction block" for most of that time. The transition included a failed takeover and ended with an insider buyout. This period was marked by employee uncertainty, reflected in a turnover rate exceeding 50% for the year. Under the new ownership, a shift in business strategy toward growing the retail business (e.g., family housing, apartment complexes, etc.) led to a reallocation of resources from commercial markets (e.g., selling off of shopping malls and office buildings). The commercial properties had previously accounted for approximately 50% of the firm's annual revenue. The new strategy included a plan to increase the retail business substantially and eliminate the commercial business. These changes resulted in a 10% increase in personnel employed by the firm.

The primary author was engaged as a no-fee consultant to perform an organizational diagnosis. Upon project completion, the CEO was provided feedback regarding the strengths and weaknesses of the organization as perceived by the employees. Employee comments were presented in aggregate. Any information that might result in identification of participants (e.g., direct quotes referencing work locations, etc.) was removed prior to the presentation.

### Participants

The firm employed 92 personnel in three states. Fifteen employees worked at the corporate headquarters, with the remaining individuals distributed among 17 locations. The CEO informed employees that they would receive a survey soliciting their feelings and opinions about the organization and encouraged their participation. All employees were told via meetings, newsletter, and e-mail that they would be given the opportunity to voluntarily participate in this research as part of an ongoing organizational improvement effort. Finally, the human resources manager sent a message with instructions describing

how to access the survey Web-link contained in the e-mail (RE: "click on link below"). Employees were granted time during normal work hours and private computer Internet access to complete the Web-based survey.

In total, 70 employees completed the survey. One had missing data, leaving 69 usable survey instruments, representing a 75% participation rate. Participants were 53% male (36.7 years' average age with 3.5 years' average tenure in the organization) and 47% female (32.7 years' average age with 2 years' average tenure in the organization). There were no significant differences ( $p > .05$ ) in gender composition, age, or tenure between the survey respondents and employees who chose not to participate (54% males, 37.5 years' average age, 3.5 years' average tenure; 46% females, 36 years' average age, 2 years' average tenure).

## Research Design and Procedures

This field study experiment can be described as a posttest-only control group design in which randomized assignment of participants to experimental groups relieves the need for a pretest (Campbell & Stanley, 1966). Analyses performed between groups for identifying characteristics (gender, age, tenure), revealed no significant differences between conditions. A single experimental manipulation was employed consisting of the placement of a series of closed-ended questions (i.e., the B-L survey) prior to the open-ended questions. The treatment for the experimental condition was operationalized as the administration of the B-L survey instrument prior to the open-ended questions.

A Web-based survey was chosen to facilitate ease of survey access for participants and permit the manipulation of survey instrument conditions. Respondents were linked to one of two different survey instrument conditions: a mixed survey instrument (experimental condition) and a survey instrument containing only open-ended questions (control condition). Participants were randomly assigned to survey type according to sequence of log-in. Each time the link was accessed, the software randomly selected the survey condition presented. Participants in the control condition ( $n = 35$ ) were asked to complete a questionnaire consisting of two open-ended questions: (a) "What are the strengths of your organization?" and (b) "What are the weaknesses of your organization?" The experimental condition ( $n = 34$ ) participants were asked to complete a mixed survey consisting of 90 items allowing only closed-ended response, followed by the same open-ended questions as the control group. Respondents placed in the experimental condition were unaware of the open-ended questions until the quantitative section of the survey was completed. Additionally, the survey was constructed to prevent experimental group respondents from revisiting the quantitative portion of the survey. Preventing the review of the closed-ended questions controlled for possible confounding effects on responses to the open-ended items that could be created by further reflection on previous answers (Schwarz & Hippler, 1995). All respondents were provided unlimited space in the qualitative reply text boxes to allow the opportunity for unconstrained replies.

## Measures

*Response rate.* Differences between respondents and nonrespondents can bias the results that are obtained in survey research, making this a very important issue to change practitioners

(Armenakis et al., 1990). Moreover, response rate has been linked to organizational turmoil, employee's hierarchical level, and questionnaire topic (Alderfer & Simon, 2002). Thus, differences in response rates between survey conditions are of interest in the present research. We define *response rate* as the number of survey responses containing at least one *comment* in the open-ended section as a percentage of the total responses submitted. Thus, for the purposes of this study, response rate reflects the relationship between surveys submitted *with* responses to the open-ended questions to those without responses to the open-ended responses.

Consistent with Miles and Huberman (1994), a *comment* was defined as a clause containing a single attitude consisting of a feeling or cognition and a target. Owing to the nature of open-ended survey questions as "free lists in context" (Jackson & Trochim, 2002, p. 308), items in the response boxes need only contain a target, as the question informed the feeling or affect toward the target. For example, the one-word reply "Training" to the question "What are the strengths of your organization?" constituted an opinion. Stated another way, the comment included within the stated context of the question could read "Training is a strength in my organization"; thus it was counted as a reply. Groups of sentences were also used if required to convey completeness of thought and provide coders with appropriate context (Miles & Huberman, 1994). The primary researcher identified and tagged the appropriate text as comments.

*Comment quantity.* Attempting to interpret organizational reality requires sufficient data. The two constituents of interest are (a) whether the aggregate number of comments reported by employees will differ between conditions and (b) if the number of comments varies according to question reference (i.e., addressed strengths or weaknesses of the company). Recognizing the parallel attentiveness of change practitioners to the strengths and weaknesses (Egan & Lancaster, 2005), the number of comments in the responses to the strengths and weaknesses questions was summed and compared across conditions. The ratio of comment quantity was computed by tallying the total number of comments submitted by participants in reply to each of the two open-ended questions.

*Comment themes.* Smith (1992) suggested that "the term 'thematic' connotes the analysis of story-like verbal material and the use of relatively comprehensive units of analysis" (p. 12). Accordingly, themes, as compilations of comments, are suitable for analysis by organizational researchers. The content of the comments that convey the attitudes and perceptions of the employees is of salient interest to the change practitioner. These data are the foundation for organizational diagnosis (Harrison & Shirom, 1999), as they represent the reality for employees. The old axiom "The symptoms of the problem must be located before the root causes can be discovered" conveys the importance of understanding the content of the comments in the employee responses.

## Analyses

The qualitative responses were measured in terms of response rate, number of comments, and thematic content of comments as it relates to the employee-perceived strengths and weaknesses of the organization. Identical open-ended questions were presented in

**Table 1**  
**Response Rate to Qualitative Items (Strengths and Weaknesses) Across Conditions**

Survey Condition	Possible Responses	Number of Responses	Response Rate <sup>a</sup>
Control	35	31	88.6%
Experimental	34	23	67.6%

a. Difference between rates is significant ( $p = .048$ ).

both surveys. The two open-ended questions were presented to elicit employee perceptions concerning (a) strengths of the organization and (b) weaknesses of the organization.

*Response coding.* The content analysis in this study identified a *comment* as the minimum size of a recordable unit. Krippendorff (2004) described recordable units as “units that are distinguished for separate description . . . and coding” (p. 100). The responses to the open-ended questions were coded and content analyzed using guidelines for analyzing qualitative data (Miles & Huberman, 1994). The primary researcher identified major themes, developed an initial set of themes, and examined the theme categories for consistency in meaning and context. The themes were iteratively refined using the constant comparison method (Krippendorff, 2004), until a relatively comprehensive set of themes was developed for analysis. The categorization of comments by theme was conducted separately and blindly by the primary researcher and an outside researcher familiar with content analysis.

*Interrater reliability.* The coders independently sorted the identified comments into distinct theme categories. Coders were provided the definitions and completed two example responses to code and compare. Coders worked independently of one another, and each coded all the comments. Coders agreed on the categorization of 143 of 152 comments, resulting in an agreement rate of 94%. The intercoder reliability was calculated using Cohen’s Kappa and found to be reliable (.91).

## Results

### Response Rate

As discussed, it was hypothesized that the response rate to the open-ended questions will be lower for those employees in the experimental condition (receiving the mixed survey instrument) than for those in the control condition (receiving only the open-ended survey instrument). A differences test for uncorrelated proportions and frequencies was made across conditions (Guilford & Fruchter, 1973, p. 162). Results indicated significantly lower proportion of responses ( $z = 1.98$ ,  $p < .05$ ) for the experimental condition (see Table 1). Thus, Hypothesis 1 was supported.

### Comment Quantity

It was hypothesized that employees in the experimental condition (answering the mixed survey instrument) would respond with fewer comments to the open-ended questions than

**Table 2**  
**Frequency of Comments Across Conditions**

Survey Condition	Number of Comments	Proportion of Total Comments <sup>a</sup>
Control	98	.65
Experimental	54	.35

a. Total number of comments = 152. Difference between proportions is significant ( $p = .045$ )

those in the control condition (answering the open-ended survey instrument). The number of comments in the qualitative responses for the employees was compared between survey conditions (Guilford & Fruchter, 1973, p. 162). The aggregate responses in the control group contained a total of 98 comments, whereas individuals in the experimental group reported 54 comments. Results indicated significantly lower number of comments ( $z = 2.106$ ,  $p = .035$ ) for those receiving the combined survey (see Table 2). Thus, Hypothesis 2 was supported, as employees in answering the mixed instrument *did* respond with fewer comments in the qualitative portion of the survey than those answering the qualitative-only survey.

### Content Analysis

It was expected that the rank-ordered priority of themes, aggregated for both strengths and weaknesses, based on the frequency of comments contained in each theme would vary across survey conditions. Several main themes emerged from the content analysis, to include work group climate, organization performance, management systems, resource allocation, leadership, incentives and promotion, management exchange, and human resource policies.

Those occurring with the greatest frequency are identified in Tables 3 and 4. The percentages of employees whose comments reflected a theme described as an organizational strength are shown in Table 3. The themes are displayed in descending order of relative frequency for the control condition. Table 4 is arranged similarly but illustrates employee-perceived weaknesses of the organization. The most prominent themes identified regarding the perceived strengths of the organization (see Table 3) were centered on (a) workgroup climate (45% of employees in the control condition, 26% of the employees in the experimental condition) and (b) organizational performance (35% for the control condition, 30% for the experimental condition). Table 4 illustrates the prominent themes perceived as weaknesses of the organization. These themes, with the percentages of employees in each condition reporting them as weaknesses, included incentives and promotions (52% of the employees in the control condition, 35% in the experimental condition), resource allocation (35% in the control group, 22% in the experimental group), and human resource policies (35% of the employees in both groups).

Hypothesis 3 was tested in two parts. First, observing that the rank-order of *strengths* differed between the experimental and control groups, a Spearman rank-order correlation coefficient was computed for strengths across conditions. Results indicated the rank-order of themes in the experimental and control conditions for strengths were not significantly

**Table 3**  
**Comparison of Response Themes for Strengths (Experimental and Control Conditions)**

Themes for Strengths	Percentage of Responses	
	Control ( $n = 31$ )	Experimental ( $n = 23$ )
Work group climate	45	26
Organizational performance	35	30
Management systems	19	4
Resource allocation	13	4
Management exchange	13	17
HR policies	10	0
Leadership	6	9
Incentives and promotion	3	17

**Table 4**  
**Comparison of Response Themes for Weaknesses**  
**(Experimental and Control Conditions)**

Themes for Weaknesses	Percentage of Responses	
	Control ( $n = 31$ )	Experimental ( $n = 23$ )
Incentives and promotion	52	35
Resource allocation	35	22
HR policies	35	35
Management exchange	32	17
Work group climate	10	4
Organizational performance	3	13
Management systems	3	0

correlated ( $r_s = .512, p > .05$ ). Whereas recognizing that the failure to reject the null hypothesis does not mean support for the alternative hypothesis, it is noted that the differences in rank-order between conditions is nonetheless “practically” significant.

Noting the rank-ordered *weaknesses* differed between conditions, a Spearman rank-order correlation coefficient was then computed for weaknesses across conditions. Results indicated the correlation of rank-ordered weaknesses in the experimental and control groups was statistically significant ( $r_s = .844, p < .05$ ). Therefore, the null hypothesis was rejected; the rank-ordered themes regarding weaknesses were related beyond chance. Whereas the rank-ordered strengths of the organization *were not* significantly correlated across experimental conditions, the rank-ordered weaknesses *were* highly significantly correlated across conditions. Therefore, Hypothesis 3 was only supported regarding the strengths of the organization. Hypothesis 3 was not supported for aggregated employee comments as to the weaknesses of the organization. That is, the rank-ordering of weaknesses of the organization as perceived by its members did not vary significantly according to the type of the survey they received.

**Table 5**  
**Percentage of Comments (Strengths and Weaknesses) Across Conditions**

	Control ( <i>n</i> = 98)	Experimental ( <i>n</i> = 54)
Strengths	45	25
Weaknesses	53	29

### Strengths Versus Weaknesses

The following research question was posed: Will the ratio of employee-perceived strengths to weaknesses vary according to survey condition? To answer the question, the number of reported strengths and reported weaknesses was tabulated separately for each condition (Table 5). A chi-square test revealed no significant difference ( $\chi^2 = .82$ ,  $df = 1$ ,  $p = .362$ ) between conditions. Thus, the ratio of weaknesses relative to strengths observed by employees was unaffected by survey condition.

### Discussion

Properly diagnosing organizational issues is a critical aspect of action research. The success of subsequent action research steps is dependent on accurately diagnosing the issues that are important to the organization. Action research's reliance on proper diagnosis makes minimizing bias and error during diagnosis a matter of significant importance to ensuring successful pragmatic solutions for the organization (Armenakis et al., 1990). Owing to its use of situation and context appropriate designs and methods (Onwuegbuzie & Johnson, 2006), mixed methods research seems particularly suited for action research. The action researcher's goal of bridging scholarly theory and workable solutions (Coghlan & Brannick, 2001) may be facilitated through the intimacy and fidelity of mixed methods research. The present research study was an authentic organizational diagnosis conducted in a field setting. The analytic comparison of emergent themes in the qualitative responses across the experimental and control groups was intended to capture differences in the attitudes. More specifically, this study sought to answer the question, "Does an employee's reflection on opinions, primed by a series of quantitative questions, result in different answers provided to change practitioners?" As is so often the case, the present research suggests that the answer is, "It depends." Differences in responses between employees completing the mixed and open-ended survey instruments were found in response rate, quantity of comments, and perceived strengths of the organization. As expected, those employees primed with the closed-ended items replied to the open-ended items less often and with fewer comments. Also, the aggregated observed strengths of the organization, having been rank-ordered, varied as to the survey condition. Thus, if the change practitioners are primarily interested in gathering the employee-perceived strengths of the organization, or are concerned with response rate and generating a higher quantity of comments, then they should be aware that attaching a few open-ended questions to quantitative survey items may provide disappointing results.



On the other hand, diagnosis is generally problem centered (Egan & Lancaster, 2005). As discussed, change practitioners gather data to interpret the reality of the organization. From these data, problem areas are identified and an action plan is set forth to facilitate the problem-solving process. Thus, it is very interesting that in this study, the rank-ordered weakness themes compiled from employee comments in both the mixed and open-ended survey instruments were highly correlated. Indeed, the first three problem areas identified (e.g., highest priority) were identical for both survey conditions. This finding suggests there is a certain rigidity regarding employee-perceived weaknesses of the organization. As theorized previously, perhaps the strength of an expressed attitude is negatively related to its malleability (Schwarz & Sudman, 1996). Stated another way, "As an employee, you can ask me whatever you want about this organization, but in the end, I'll tell you what is bothering me." Perhaps the priming influences were overcome by the salient concerns of participants. Given the amount of time spent by employees in the workplace, it is reasonable to expect concerns to be resident in their foremost thoughts. Thus, it appears that the responses to open-ended questions regarding weaknesses attached to a quantitative standardized questionnaire were not unduly influenced.

This rigidity of respondents' perceived organizational weaknesses may be further explained by the literature investigating context effects. The research on contextual effects consists largely of research investigating personal opinions (cf. Peterson, 2005; Schwarz, 1999; Schwarz & Hippler, 1995). Questions posed to participants include consumer preferences, religion, politics, and so on. These types of opinions regarding religion and politics tend to be more dependent on indirect sources of information (e.g., television, newspaper, books) and for most of us modified to some degree on a continuing basis. In contrast, organizational diagnosticians argue that after employees are on the job for a while, they have gathered enough information to be considered *subject matter experts* regarding their workplace (Harrison & Shirom, 1999). This is to say that the employees, by virtue of direct personal experience, are experts on the truth about their organization, as they see it.

The stability of qualitative responses regarding the employee-perceived *weaknesses* of their organization when prefaced by closed-ended questions provides preliminary support for the practice of using a mixed survey as an organizational diagnostic tool. Perhaps the most important finding derived from this study is that the increasingly popular practice of attaching open-ended questions to a quantitative standardized survey instrument is a statistically supported technique when problems in the organization are the primary interest of the change practitioner. Thus, the advantage of the high external validity of autobiographical accounts such as those given in reply to open-ended questions (Kramer, 1996) is preserved, even when attached to a quantitative standardized survey instrument.

## Limitations and Future Research

This study was conducted in a field setting within a small organization. As such, generalizability beyond this specific context should be viewed with caution. As a cross-sectional study, the diagnostic findings are subject to the vagaries inherent in a one-shot analysis of organizational change. Indeed, capturing organizational change within a single time frame has been criticized as unrealistic (Golden-Biddle et al., 2006). Additional longitudinal field

research employing a repeated-measures design to examine the relationship of qualitative and quantitative data collection methods over time could increase our understanding of the pragmatic effects of priming. This study was limited to the analysis of sequencing effects in one direction: open-ended items preceded by closed-ended items (compared to open-ended items only). Future research should consider studying the potential effects on responses to closed-ended items that are preceded by open-ended items. Findings would provide a more complete answer to the sequential validity questions posed by Onwuegbuzie and Johnson (2006).

Using a comprehensive questionnaire such as the B-L survey as the treatment in this study could be considered a limitation in that it is not conceptually specific. For example, had the priming device consisted of quantitative questions eliciting opinions exclusively toward leadership, perhaps the responses in the experimental group would have contained more statements referring to leadership. However, administering a narrowly focused questionnaire is not consistent with a comprehensive organizational assessment, and the B-L survey was chosen because it is recognized as a valid and reliable measurement tool (Falletta, 2005; Paul, 1996). Whereas we previously discussed the length of the survey as a contributor to the quantity (fewer comments in the experimental condition), we find no confounds regarding thematic content due to survey length. To mitigate the effects of survey length, the questionnaire was presented in two parts and respondents were prevented from revisiting answers.

An additional limitation is the incorporation of only two open-ended items as the qualitative portion of the mixed survey instrument. Though we have argued that this mixed survey is a realistic and useful tool, we recognize that in terms of mixed methods data collection, many researchers may believe the qualitative contribution too small to be considered a mixed method (cf. Denzin & Lincoln, 2005). Regardless of the label given the method, we believe the findings remain relevant for practitioners and scholars alike. This study sets the stage for continued discussion and additional testing of the hypotheses outlined. Repeated testing with larger organizations and varied quantitative questionnaires is necessary to generalize beyond the specific circumstance of this study.

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