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DOING RESEARCH THAT IS USEFUL TO PRACTICE: A MODEL AND EMPIRICAL EXPLORATION

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SUSAN A. MOHRMAN
CRISTINA B. GIBSON
ALLAN M. MOHRMAN, JR.

Center for Effective Organizations
Marshall School of Business
University of Southern California

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ABSTRACT

Drawing from literature on knowledge transfer and cognition, we develop a theoretical model for conducting research that is useful to practitioners. We explore the potential of this model by examining the usefulness of a research project involving ten companies. Perceived usefulness is related to the extent that members' organization self-design activities are informed by research results, and to the existence of forums where researchers and practitioners jointly interpret results. We discuss implications for the nature of organizational science.

Keywords: Research Methodology, Collaborative Research, Collective Cognition, Knowledge Transfer

DOING RESEARCH THAT IS USEFUL TO PRACTICE: A MODEL AND EMPIRICAL EXPLORATION

Today's world heightens the need for useful research. Many organizations grapple with new and poorly understood problems as they adapt to rapidly changing environments. They enact fundamental and rapid change in their forms (Meyer, Goes, & Brooks, 1993) and in their relationships to their employees (Rousseau, 1995; Rousseau & Wade-Benzoni, 1995). New technological capabilities have enabled, and new competitive environments are demanding, new organizational forms (Galbraith, 1993). As organizations adopt new approaches to organizing, organizational science has often lagged behind practice (Lawler, 1999). Researchers have an opportunity to further organizational science and to make research useful by generating knowledge that can impact changing organizational forms and contexts (Lewin & Stephens, 1993). Pragmatically, academic researchers are unlikely to gain access to an organization undergoing change unless the practitioners believe the research will be useful.

There have been a number of calls to increase the relevance and usefulness of organizational science to organizations (e.g., Aldag, 1997; Mohrman, Mohrman, Lawler & Ledford, 1999; Mowday, 1993, 1997). The usefulness challenge cannot be defined simply as getting practitioners to value and incorporate what academics learn. We believe the usefulness of research depends, in part, on the extent to which the perspectives of organizational members are included in the research process and the results are incorporated into those members' organization design activities that occur as the organization adjusts to its changing environment. Research is more likely to be seen as useful if there are opportunities for researchers and members to take each others' perspectives and to jointly participate in interpreting the results of the research.

There has been relatively little empirical examination and self-reflection about the practical usefulness of various organizational science research approaches, although there have been calls

for such activity (eg., Gergen & Thatchenkery, 1996; Mowday, 1997). Researchers operating in an action research mode have long advocated collaboration as an approach that yields understanding of organizational phenomena and usefulness to organizations (e.g., Eden & Huxham, 1996; Elden & Chisholm, 1993). The field of organization development and change has been concerned with intervention methods that usefully influence organizations, some of which involve data collection, analysis, and feedback. However, there has been little empirical investigation about how best to conduct and apply social science research methodology in a collaborative context when the researcher is not playing an action-oriented interventionist role.

This paper examines the usefulness of a previously conducted research project that followed ten companies during fundamental transitions in their organizational forms. The "Transition Project" was conducted by three researchers working collaboratively with study teams from each company. It applied qualitative and statistical approaches to investigate the organizational features that differentiated between operating units that were quick to become effective in the new organization designs and those that were struggling with the changes. We examine the usefulness of the Transition Project to participating companies by developing a theoretical framework and then testing a series of exploratory propositions about which features of collaboration contribute to usefulness.

THEORETICAL FRAMEWORK AND PROPOSITIONS

A linear view of knowledge transfer would hold that knowledge is objective, can therefore be used to guide actions, and is relevant across contexts. Alternatively, knowledge can be thought of as contextually dependent and subjectively constructed (Gergen, 1982; Gibson, 1999; Tenkasi & Mohrman, 1999). In accordance with this view, we suggest that usefulness (i.e., potential application of research) emanates from collaborative, contextual approaches to the design of research and interpretation of results. A number of arguments for a close relationship between research and social action (e.g., Argyris, Putnam, & Smith, 1985, Schon 1983; Cummings,

Mohrman, Mohrman, & Ledford, 1999; Gergen & Thatchenkery, 1996) also revolve around the idea that organizations are artifacts designed to achieve the purposes of their creators (Simon, 1969). This view stresses the need for theories and research that yield knowledge useful for creation, not simply for explanation and prediction (e.g., Argyris, 1996; Gergen, 1982). Thus, we argue that the usefulness of research also depends on the degree to which practitioners can interpret research results and apply them. We describe three antecedents of usefulness (organization self-design informed by research, perspective-taking, and joint interpretive forums) below.

Self-Design Informed by Research

The turbulence of current organizational environments has underscored the dynamic nature of organizing, and provides an opportunity for organizational research to inform practice**.** At the heart of this dynamism lie the action-oriented (behavioral) and cognitive processes that members use to redesign and reorganize their organizations (Thompson, 1967). We refer to these processes as self-design (Weick, 1993). The behavioral component is manifest during periods of transition, at which time an organization's form and processes are continually changing as a result of managerial decisions (Huber & Glick, 1993) and ongoing improvisation and learning throughout the organization (Tenkasi, Mohrman and Mohrman, 1998; Weick, 1990,1993; Weick & Westley, 1996). Organizations in transition generally undergo a vast number of change initiatives that involve collectives of organizational members trying to determine how to do things differently. Groups might be set up to house formal self-design activities, such as design, planning, and implementation teams. Many informal interactions will also be oriented to making sense of and deciding how to operate within the changing organizational context.

The cognitive component of self-design involves collective cognition at an organizational level. Collective cognition is the process involved in the acquisition, storage, transmission, manipulation, and use of information among collectives (Gibson, 1999; Hutchins, 1991; Wegner,

1987). In an organization, knowledge is distributed across individuals and across external storage systems, such as electronic files or intranet sites. Collective cognition occurs as a series of transactions when information is exchanged among individuals. Interactions that take place during self-design help bring problem-relevant information to light (Sniezek & Henry, 1990) and influence the individual-level cognitive processes of each group member (Larson & Christensen, 1993). Social interaction also serves as the vehicle by which individuals' perceptions, judgments, and opinions are combined to generate organizing solutions.

Action-oriented and cognitive aspects of self-design processes are salient in a transitional environment because these processes yield new agreements about values and purpose that must be shared to enable coordinated action (Thompson, 1967; Weick, 1993). Bartunek (1984) observed structural properties, interpretive schemes, and actions changing in interaction with each other in an organization undergoing fundamental change. One cannot help but be struck by the levels of uncertainty, the questioning of core values, and the amount of discord that are set in motion during periods of fundamental reorganization as organizational members try to develop new shared understandings of how the organization will operate. Knowledge that helps to inform these collective processes is likely to be valued by practitioners. We argue that when research generates results that are informative in collective self-design processes, it will be perceived as useful.

Proposition One (P1): To the extent that the organization's self-design activities are informed by research results, organizational members will consider the research to be useful.

Perspective-Taking

Perspective-taking is the recognition of knowledge, values, meanings, assumptions, and beliefs from a different community (Boland & Tenkasi, 1995; Duncan & Weiss, 1979; Shrivastava, 1983). Perspective-taking is necessary because knowledge is subjectively generated and consumed by different communities in relationship to that community's unique thought-

world (Dougherty, 1992; Fleck, 1979), interpretive conventions (Brown & Duguid, 1991), and specific social processes (Barnes, 1983). Because academics and practitioners are members of two different communities, practitioners will incorporate results generated through academically accepted research methods only if they are relevant and interpretable by the practitioner community. Academic research will need to be reconfigured to fit the organization's meaning system and context (Bruce & Peyton, 1990).

Structuration theory (Giddens, 1974; Poole & DeSanctis, 1994) argues that human behavior and understanding are contextual, guided by contextually determined interpretive schemes, norms, and power relationships that shape sense-making. Knowledge from another community will be rejected if it is discrepant from the receiving community's structurational conventions. Kanter and Eccles (1992), for example, noted that managers and academics at a conference regarding network research used very different kinds of data to draw conclusions. Managers tended to use egocentric and asymmetric data that viewed the network from their personal position in it and in terms of its implications for accomplishing their purposes. Academics depicted very complete networks and dealt with gross characteristics that, in the eyes of the practitioners, sacrificed the very subtlety and nuance that were paramount.

Thus both theory and experience argue for a broadening of researchers' thought-worlds, so they can interpret and communicate results, and practitioners' thought-worlds, so they can make sense of research results. This is difficult, because meaning systems are often tacit and taken for granted by a community; people often assume that the rest of the world's perspectives are more similar to their own than they actually are (Compton, 1980). Furthermore, one party may assume that its knowledge is superior to that of another party (e.g., Howes, 1980). Perspective-taking between academics and practitioners makes it more likely that research will relate to the experience and perspective of organizational members, such that practitioners will be better able to understand and apply theoretically-based research findings.

Proposition Two (P2): The greater the perspective-taking between researchers and practitioners, the more the research will be considered useful by organization members.

Beyond simply facilitating the perception that research is useful, perspective-taking is necessary for the research to be informative in self-design activities. Dougherty (1992) has found that even within the same firm, individuals representing different functions (marketing, engineering, and manufacturing) have trouble benefiting from each others' knowledge and integrating it into their collective work because of their different thought-worlds. This problem is even more pronounced between the academic and practitioner communities. Thus, when academics offer technical research findings based on models and abstractions, practitioners can find it difficult to turn those results into actions and practices, the essence of self-designing.

Different communities apply different criteria to knowledge (Holzner & Marx, 1979). Pragmatic criteria that stem from practical experience are applied by practitioners who seek effectiveness in accomplishing purposes; scientific criteria are applied by academics who seek explanation. In the anecdote presented by Kanter and Eccles (1992), practitioners considered networking a verb and wanted to know how to build networks between groups and individuals. Academics primarily used the word network as a noun and wanted to classify various forms of networks to depict, measure, and study with great methodological sophistication. This made working jointly exceedingly difficult and integrating perspectives nearly impossible. Yet that integration is exactly what Kanter and Eccles recommend is necessary to generate knowledge with both practical and theoretical importance.

Thus, we argue that perspective-taking is required if knowledge from the organizational science community is to be considered along side and integrated with the knowledge of the practitioner community to determine effective action. As both communities explore each other's perspectives, practitioners' frameworks are also altered or expanded so that they are able to incorporate new knowledge into their self-design activities.

Proposition Three (P3): The greater the perspective-taking between practitioners and researchers, the more that self-design activities will be informed by research results.

Joint Interpretive Forums

One way to increase the probability that perspective-taking will occur is to create joint interpretive forums (Boland, Tenkasi, & Te'eni, 1994; Denzin, 1989; Tenkasi & Mohrman, 1999). This concept builds on Argyris and Schon's notion that learning is facilitated by creating occasions for reflection (e.g., Argyris & Schon, 1978; Schon, 1983). Joint interpretive forums bring together members of different communities to *jointly* reflect and interpret information. They enable the surfacing of different knowledge structures for collective examination. In the context of a research project, examples might include sessions to craft the research project to ensure that both the organization's and the researchers' issues are taken into account; sessions to jointly examine and interpret data patterns; and sessions in which the possible action implications of research findings are collectively drawn and discussed. Perspective-taking can be fostered in joint interpretive forums where individuals can portray their own view of a situation, self-reflect, collectively re-examine, and come away with altered and enhanced interpretations and perspectives (Weick, 1990). Being involved in interpretation processes that take each other's viewpoints into account should facilitate the ability of each party to translate between, and at least partially integrate, their own and the other frameworks.

Proposition Four (P4): The use of joint interpretive forums that include researchers and practitioners will be positively associated with perspective-taking.

Joint interpretive forums are not just opportunities for fostering perspective-taking between researchers and organizational members; they are also instances of collective cognitive processes, and can set the stage for subsequent action planning. In particular, they connect with the ongoing collective cognitive processes of the organization that underlie self-design. Most models of collective cognition depict a sequential process consisting of at least four subfunctions: accumulation, interaction, examination, and transformation of knowledge (Corner,

Knicki, & Keats, 1994; Gibson, 1999; Ginsberg, 1990; Hinsz, Tindale, & Vollrath, 1997). Joint interpretive forums initially impact the accumulation phase, in which knowledge and information are perceived, filtered, and stored. As members perceive information, conversations ensue in attempts to discern its meaning. Afterward, members are more inclined to recall information as discussed and labeled rather than as perceived. The collective long-term memory then consists of ideas that have been codified by patterns of discourse and operationalized by the words and interactions of members (Sandelands & Stablein, 1987; Walsh & Ungson, 1991).

Joint interpretive forums provide opportunities for collective exchange, bringing new information to light, allowing for clarification, and encouraging joint development of labels that can facilitate subsequent recall during the latter phases of the collective cognitive process, even if the latter phases take place later and in a different forum. In this way, information discussed in joint interpretive forums can still, even without resulting in perspective-taking, be part of a larger collective cognition process and subsequently be informative in self-design activities.

Proposition Five (P5): Creation of joint interpretive forums among researchers and practitioners will be positively associated with the extent to which self-design activities are informed by research results.

Using the same logic, engaging in joint interpretive forums should allow participants to accumulate a richer and broader spectrum of information that better enables them to take action individually, even if perspective-taking is not achieved. If this is so, the research will be perceived as useful even if it does not specifically inform collective self-design activities. Thus, we argue that the creation of joint interpretive forums in and of itself will be related to perceived usefulness.

Proposition Six (P6): The more that joint interpretive forums including researchers and practitioners are created, the more the research will be considered useful by organization members.

Objectives

There has been very little exploration of what a collaborative approach to research looks like and whether and how it truly yields results useful to practitioners. We developed and empirically examined a theoretical model (see Figure 1) of useful research comprised of four elements: joint interpretive forums between researchers and practitioners, perspective-taking between researchers and practitioners, self-design informed by research results, and perceived usefulness of the research. Our overarching objective was to gain a greater understanding of the process of conducting collaborative research that is useful to participating organizations. Specifically, we were interested in whether the four elements in the model exist in practice, how participants in research projects might define and experience the four elements, and the interrelationships among the four elements. The general research question that guided our investigation was, "What are the roles of joint interpretive forums, perspective-taking, and self-design informed by research results in determining practitioner perceptions of usefulness?"

Insert Figure 1 about here

METHODS

To address our research question and refine our model, we examined a completed research project in which there was a conscious effort to be collaborative. We measured the degree the four elements of our model occurred and analyzed their interrelationships.

Setting: The Transition Project

The research project we examined was conducted during 1995-1997 across ten companies by three university-based researchers. It investigated the conditions and processes that foster accelerated organization learning when a company is in the midst of transition; thus we refer to it as the "Transition Project." In addition to testing and generating theory according to the strictures of normal organizational science, the researchers deliberately chose a collaborative

approach to increase the likelihood that participants would apply the findings. The collaborative processes varied across participating companies because of differences in company members' interest in, and ability to devote time and energy to, the project. As a result, the companies differed in the extent to which joint interpretive forums were created, the extent to which perspective-taking occurred, the extent to which there was self-design informed by research results, and the extent to which the research was perceived as useful. Thus, the Transition Project provides an ideal case context in which to examine our model of useful research.

Ten Fortune 500 companies in the avionics, consumer electronics, natural resources, and financial services industries participated in the Transition Project. These companies were fundamentally restructuring their organizational designs as well as the mechanisms and processes used to relate to customers. One financial services firm, for example, had changed from a centralized functional organization with regional sales and customer service units to a business-unit structure in which each region had strategic and product autonomy and responsibility for profit and loss. An electronics firm had eliminated product divisions and reconfigured into industry customer business units, each of which developed and sold a broad array of products that were previously in different divisions. The purpose of the research was to identify the factors that enable accelerated organization learning during restructuring. In each of these companies, from four to eight subunits (programs, regions, product lines) were studied. Half of the units were identified by management as rapidly and successfully implementing the new organizational design and achieving the intended performance results, and the other half were identified as struggling with implementation and experiencing performance problems. This research design allowed a systematic comparison of accelerated and struggling units along a number of dimensions drawn from the organizational learning literature. Participating companies were interesting in learning what they could do to accelerate the overall transition.

To set up the research relationship, one or more researchers visited the participating company to meet with individuals interested in sponsoring and hosting the research. These set-up sessions were intended to create a common understanding of the research, to enable an informed decision about participation, to allow researchers to learn about the company context, to solicit company perspectives about what they were interested in learning to ensure that the research incorporated these issues, and to make a joint determination about how to fashion the research process to fit the realities of the context. Two participating companies chose not to conduct set-up sessions because they had participated in previous research with the researchers and were familiar with the collaborative research approach. In fact, this study had been conceived in part in response to the concerns of managers in these two companies about the uneven implementation of new designs through their organizations. Researchers and sponsors in these two companies worked out by telephone the details of how to proceed.

The Transition Project consisted of two phases 12-14 months apart. Two of the ten companies terminated participation after the first phase was completed. In one case, the division hosting the study was merged into another business unit. In the other case, the results of the study's first phase led to internal restructuring of the host division, and the focus of attention turned to the restructuring.

Both phases in each company entailed data gathering (including structured interviews, surveys, and the collection of archival data) and feedback and interpretation meetings. The company determined who would attend the feedback meetings. At the meetings, aggregated multiple-company data and analyses as well as company-specific data were returned in one or more interactive sessions with company members. The survey data were presented as means of measures of dependent, independent, and intermediate variables. The data analyses consisted of correlations, regressions, and structural equation models. The results were presented as causal diagrams that showed the empirically determined antecedents of various measures of

organizational effectiveness during transition. The themes that emerged from coding and comparing the interview data across accelerated and struggling business units were shared in both qualitative documents and oral presentations along with observations about what elements were present or absent in the company's overall transition process. Examples from other companies were shared and members of the companies were encouraged to contact each other for more information.

Researchers spent one day on site returning data and interacting with attendees to ensure that they understood the results. A regular agenda item was the exchange of views between researchers and company members about the meaning of the data and the findings. The researchers shared data in increments by topic, for each topic asking the company members whether these findings made sense to them given their experience in the organization, and whether they felt they were important issues and why. In some cases the company members wanted to deal with action implications, but in most cases they used the time to talk about the meaning of the data and how it related to their reality. In some cases, participating companies arranged several feedback sessions for different groups. Some companies arranged additional sessions for examining the data and the findings further, for exposing a larger group of company members to the information and involving them in interpretation, and for drawing implications for action. The researchers used the information generated in the sessions to gain a deeper understanding of the phenomena being examined, particularly as experienced by the organizational members.

Input from Phase One sessions helped shape the second phase of the research. For example, there was an general tendency for company members to equate organization learning with training, and to look for training solutions to difficult transitions. In Phase Two we focused more attention on training and development to test their implicit hypothesis that more training could accelerate the transition.

At the end of each phase of the project, all participating companies were invited to a one-day conference where the "academic" results were shared with a broader audience of practitioners. This was followed by a half-day "networking" meeting that consisted only of representatives from participating companies to give them a chance to interact with each other and, collectively with researchers, to make sense of the overall domain under investigation. The researchers have continued to conduct analyses and prepare publications based on the project (e.g., Tenkasi et al., 1998). Briefly, the key findings of the Transition Project described the various organizational processes through which members arrive at shared understandings of the new organizational forms so that they can collectively operate effectively in them. These findings had implications for how the organizations were managing the transition to their new organizational designs.

Our investigation into the determinants of perceived usefulness of the Transition Project was carried out in six steps. The first four steps allowed us to confirm and expand the definitions for key elements in our model. Steps Five and Six explored the relationships among the elements.

Steps #1-#3: Collection of Data

In Step 1, we collected archival data from the Transition Project files about each of the ten companies that pertained primarily to the number of opportunities created for joint researcher/practitioner crafting and interpretation of the research. Researchers had kept project records chronicling all interactions with each site, including who attended and what was discussed. By enumerating the various forums for mutual exchange about the research, we captured the first element of our proposed model, the extent to which joint interpretive forums occurred. Companies varied substantially on this element. The archival data did not, however, provide much information about perspective-taking, whether self-design activities were informed by the research, or perceived usefulness.

In Step Two, therefore, we developed an interview protocol to expand on those elements of the proposed model that were not fully illuminated by the archival data. To create broad, open-ended questions guided by the very general theoretical framework and propositions, we referred to our element definitions as outlined in the preceding sections of this paper and the corresponding literature (see Table 1).

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Insert Table 1 about here
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Interviewees for Step 3 were in all cases the key contact in each company for the logistics of the Transition Project who were change agents responsible for supporting their organization's transition. All were staff members from human resources, organizational effectiveness, or quality/process improvement departments; all worked closely with business-unit line management; most were members of the management team. A total of ten 60-90 minute interviews were conducted in January and February 1999 by two researchers who had not participated in the Transition Project. The interview tapes were transcribed verbatim into a text database, which resulted in approximately 40 single-spaced pages of transcription text.

Step #4: Interview Analysis

According to Tesch (1990), qualitative analysis involves the process of making sense of data that is not expressed in numbers and is especially useful in the exploratory stages of theory development. Our inductive analysis was conducted in a manner consistent with that recommended by qualitative researchers (McCracken, 1988; Strauss & Corbin, 1990; Wolfe, Gephart, & Johnson, 1993). Two coders who were not part of the original Transition Project research team used the five-stage analysis technique advocated by McCracken (1988) to verify the existence of the four general elements and then elaborate upon and define them in terms of measurable variables.

First, four separate categories were created, one for each element of the model. We categorized the segments of text according to the question asked. For example, as shown in Table 1, interview Questions #2-5 probed the extent to which perspective-taking occurred; thus all responses to these questions were categorized as perspective-taking. During this process, our focus was more on confirmatory as opposed to emergent analysis, in that the answer was used to determine whether and in what ways the element was present.

We shifted to an emergent focus in the second stage to expand the categories and elaborate upon the elements. Coders reviewed text segments that also provided insight into a category other than the one intended by the question asked and cross-indexed those into both categories. Text segments often contained multiple thoughts, each of which referred to different categories. When answering Questions #2-5, for example, several interviewees, after describing some aspect of perspective taking, also stated that the subject matter of the research was practical and that this characteristic made the research useful. These segments of text were placed in both the perspective-taking category (because they contained responses to questions about perspective-taking) and in the perceived usefulness category (because they also contained an expanded definition of usefulness—practicality—that was not directly asked about in the usefulness questions).

In the third stage, coders independently identified themes in each category that appeared frequently and could therefore be used to define the category. Some of these themes simply confirmed our original theoretical specification of the elements. For example, three of the perspective-taking themes (*views taken into account*, *opportunity to make concerns known*, and *researchers comprehended issues*) directly reflected our interview questions derived from theory. Other themes that were not included in our original theoretical specification also emerged, however. For example, *practical* emerged as a key theme for the usefulness category.

Next, coders independently returned to the original interviews and read the text surrounding each text segment to verify contextually that the themes derived indeed pertained to the category designated. Last, they compared themes arrived at independently to eliminate overlap. The result of this multistage analysis was a set of themes within each category that were unique, comprehensive, and verified in context.

One theme for joint interpretive forums was confirmed from the qualitative data (*involved appropriate people*). It supplemented the archival data regarding participation in various phases of the research. For example, when answering Question 1 about who was involved in defining the research, one respondent commented:

> [Those who participated in defining the research] felt ownership and were also the team members that were interviewed as part of the [study] process. Plus the management team from the new product area was also in attendance.

We derived four themes for perspective-taking: *views taken into account, opportunity to make concerns known, researchers understood issues,* and *topics important to context*. For example, when answering Question 4 about whether participants had the opportunity to make concerns known during the process of designing and conducting the research, an interviewee said,

> Precisely, precisely, the ability of the researchers to draw the right information in either one-on-one or one-on-group format -- it was expressed or qualified by participants as being of high quality and high value altogether because it made them think and it made them recollect and also express not only what was on their minds, but also what was in their soul, in their heart so to speak

We derived three themes for self-design activities informed by research: *shared learnings, enabled dialogue,* and *action planning*. For example, when answering Question 6 about dialogue among organization members following receipt of the data and feedback reports, one respondent recalled:

> When you do a study…the results get some validation from people hearing it within the context of a solid template, a study template… it becomes easy to justify that the ownership

> of action is within ourselves…improvements begin with that picture being accepted and full responsibility by management to proceed.

For our fourth general element, perceived usefulness of the research, we derived five themes*:* *useful, actionable, practical, used*, and *developed a longitudinal relationship*. For example, when answering Question 11 about whether action could be taken based on the research, an interviewee stated:

> As a result of [the researchers] coming in, their findings around what it takes to really make that transition, we were able to get more focus on what it was we're trying to do. . . . . [W] e probably didn't even have a good idea as a management group ourselves of where we [were] trying to go. So I think once that was really pointed out to us we were able to get more clear with the management team, they were able to get agreement about where we were trying to go.

Other sample excerpts representing each theme are presented in Appendix A. In each category, each theme identified was operationalized in Step 5 as a separately measured variable for use in subsequent analyses. Table 2 summarizes our expanded definitions for each general element in the model. For each element, we list the appropriate archival and interview variables identified in Step 1 through Step 4 of the investigation (see Table 2).

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Insert Table 2 about here

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Step #5: Scores and Scales

The preceding four steps allowed us to confirm and expand the definitions of the key elements. To explore the relationships among the elements, we turned to a more quantitative approach to textual analysis (e.g., Carley, 1997; Jehn & Doucet, 1997; Earley & Mosakowski, 1999). This approach is particularly helpful in discerning relationships among elements in a model, because evidence of the relationships can be evaluated using statistical probabilities.

In Step 5, therefore, we created a quantitative database that contained scores for each company on each variable. We began with the archival data on joint interpretive forums. For example, a company's score on *pre-data collection collaboration* is equal to the number of

aspects of early collaboration that were present out of a possible three: whether company representatives participated in defining the research agenda, whether there was a set-up session to jointly plan the research, and whether line management got actively involved in pre-planning. *Dissemination of study results* at T1 was composed of the number of dissemination and learning forums that were set up in the company; a similar archival measure was created for T2. The extent of *multi-company interaction* at T1 (and again at T2) was a count of the number of people from the participating organization who attended the practitioner conference and the participant networking session.

Next, we developed quantitative scores on the variables derived from the interviews. Two independent raters who had not participated in the original Transition Project attended a 2-hour training session to learn definitions for each variable and how to use a five-point rating system to indicate the extent to which each variable was represented in the interviews. In this system, scores ranged from "1" (the variable did not exist) to "5" (the variable existed to a very great extent). During training, sample interviews were rated and ratings were compared to calibrate the rating system and ensure an interval rating scale.

Each rater then read each company's interview text and assigned a score between 1 and 5 for each company for each variable. Ratings were based primarily on the specific text segments that represented each variable, but raters took into consideration a comprehensive reading of the segment within the context of an entire interview to accurately characterize the intended meaning of the text (Wolf et al., 1993). A measure of inter-rater reliability (IRR) was computed by comparing the two raters' scores on each variable across companies. Initial IRRs were promising, ranging from .20 to .92 across the 13 variables, with an average reliability of .57.

To reconcile disagreements, the two raters discussed each company for whom their ratings on a particular variable differed more than one standard deviation. In these discussions, they referred back to the definition of the variable in Table 2. Each rater then arrived at a new score

for any variable for which there had been substantial disagreement. After reconciliation, IRRs ranged from .50 to .94 across variables, with an average inter-rater reliability of .77. Based on these higher IRRs, a final score was computed using the mean score across raters for each variable for each company.

Next, we explored the possibility of creating scales for each of the four general elements of the model. For each grouping of variables meant to measure one of the elements, we conducted principal component factor analysis. Then, keeping only those variables that loaded highly on the primary factor, we computed a reliability score for the resulting scale (Cronbach's alpha). It should be emphasized that we used these analyses for exploratory rather than validating purposes. Despite the small sample size, these analyses are useful for tightening and providing additional insight into the definition of the four elements.

Four of the six joint interpretive forums variables (*T1 dissemination, T1 cross-company interaction, T2 dissemination,* and *T2 cross-company interaction*) loaded on a single factor with an eigen value of 2.60, capturing 65% of the variance. Factor loadings ranged from .60 to .88. Two variables, *pre-data collection collaboration* and *involved appropriate people* loaded low on this factor. When these variables were deleted, reliability of the joint interpretive forums scale (Cronbach's alpha) was .81. Three of the four perspective-taking variables (*opportunity to make concerns known, researchers comprehended issues,* and *views taken into account*) loaded on a single factor with an eigen value of 1.27, accounting for 42% of the variance. Factor loadings ranged from .57 to .78. One variable, *important to context,* loaded low on this factor. When this variable was deleted, reliability of the perspective-taking scale was .39. All three of the self-design informed by research variables (*enabled dialogue, action planning,* and *shared learnings*) loaded on a single factor with an eigen value of 1.59, accounting for 53% of the variance. Factor loadings ranged from .47 to .86. Reliability of this scale was .55. Finally, for the perceived usefulness element, three of the five variables (*practical, useful*, and *used*) loaded on a single

factor with an eigen value of 2.41, accounting for 68% of the variance. Factor loadings ranged from .81 to .84. Factor loadings for two variables, *actionable* and *long-term relationship developed* were relatively low. After deleting these variables, reliability of the perceived usefulness scale was .69.

Given the exploratory nature of our investigation, we were willing to accept a more relaxed criterion for reliabilities. Nunnally (1967: 226) suggested the following rule of thumb: "In the early stages of research on predictor tests or hypothesized measures of a construct, one saves time and energy by working with instruments that have only modest reliability, for which purposes reliabilities of .60 or .50 will suffice." More recently, Pedhazur and Schmelkin (1991) have suggested that the matter is not one to be resolved by an authority decreeing that a given reliability coefficient is adequate. Rather, it is for the user to determine the amount of error to be tolerated. Our primary purpose was to explore relationships among the scores representing each element; thus we accepted the scales as defined above. Even given the small sample size, we were encouraged that the scales that emerged made sense at face value, and we were comfortable working with them in an exploratory mode.

Step #6: Analysis of Relationships Among Elements

To test the overall relationships among the four general elements of our model, we computed correlations among the scale scores representing each element (see Table 3). Given the small sample size and the nature of the rating system, we utilized non-parametric statistics. Non-parametric statistics are inferential tests designed for samples of ordinal measures or interval measures that are not normally distributed. They do not require any assumptions be made about the distributions of the population from which the samples were taken and are therefore often referred to as distribution-free tests. Non-parametric statistics are well suited for very small samples of interval data (Saslow, 1982).

Specifically, we computed the correlations using Spearman's Rho. Spearman's Rho is an ordinal-ordinal correlation often used to correlate intervally scaled variables, the distribution of which are possibly not normal. Sometimes with intervally scaled data, Pearson's r can result in a mistaken impression of the degree of association between two variables if there are a few extreme values on one or both of them. A solution to this skewed distributions problem is to rank the subjects on each variable from highest to lowest and correlate their ranks according to Spearman's formula. It should be emphasized that, given the exploratory nature of the study, these correlations are not definitive tests of propositions; rather, they illustrate potential relationships in the combined archival and qualitative database. We view the correlation patterns as particularly helpful in determining the most promising avenues for future research.

.....……..... Insert Table 3 about here .....…….....

Last, we computed Spearman's correlations between each pair of the individual variables comprising the four scales (see Table 4). We view these intervariable correlations as important, given that one of our objectives was to explore the definition of each of the four elements as expressed by the variables derived from our interviews.

.....……..... Insert Table 4 about here .....…….....

RESULTS

Support was strongest for proposition (P1) regarding the relationship between self-design activities informed by research and the perceived usefulness of the research (rho=.83, p<.01). Looking at the correlations between the specific variables that comprise the scales, we found several significant relationships. When more *action planning* occurred in an organization, the research was perceived as more *practical* (rho=.72, p<.06), more *useful* (rho=.77, p<.05), and

more *used* (rho=.95, p<.001). The more that the research *enabled dialogue*, the more *useful* it was (rho=.75, p<.05) and the more it was *used* (rho=.64, p<.06).

We found partial support for proposition (P2) regarding the relationship between perspective-taking and perceived usefulness. The correlation between the scales representing these elements was not statistically significant using the p<.10 probability level (rho=.46, p<.18). However, examining correlations between specific variables, we found four significant relationships, three of which involved the degree to which participants' *views had been taken into account*. The more that participants felt their *views had been taken into account*, the more they perceived the research to be *practical* (rho=.98, p<.001), *useful* (rho=.64, p<.06), and *used* (rho=.69, p < .05). Having the *opportunity to make their concerns known* to the researchers was also related to viewing the research as *practical* (rho=.58, p<.08).

There was little support for proposition (P3) that perspective-taking is related to whether self-design activities are informed by the research (rho=.11, ns). Examining correlations among variables representing these two elements, however, we found two significant relationships. When participants perceived their *views had been taken into account*, more *dialog* occurred in the organization (rho=.64, p<.08) and more *action planning* occurred (rho=.78, p<.05).

There was also little support for proposition (P4) that creation of joint interpretive forums is related to perspective-taking (rho=.18, ns). Examining the correlation between specific variables, we found two significant relationships. *Cross-company interaction at T2* and *dissemination at T1* were both related to the perception that *participants' views had been taken into account* (rho=.66, p<.08; rho=.57, p<.10, respectively). We found no apparent support for our proposition (P5) that joint interpretive forums are related to self-design activities being informed by the research. The correlation between the scales representing these elements was not statistically significant using the p<.10 probability level (rho=.43, p<.22), and none of the relationships among specific variables that defined these elements were statistically significant.

Finally, proposition (P6), that creation of joint interpretive forums is related to perceived usefulness, was supported (rho=.66, p<.05). Examining the relationships between specific variables, *T1 dissemination of results (*rho=.69, p<.05) and *T2 cross-company interaction* (rho=.75, p<.05) were significantly related to one variable on the perceived usefulness scale: the perception that the research was *practical*. Figure 2 illustrates the model that is suggested by these data.

……
Insert Figure 2 about here
..……..

DISCUSSION

This exploratory investigation supports the overarching proposition that practitioners view research results as useful when they are jointly interpreted with researchers and are informative to self-design activities. These findings support the frequently voiced contention that collaborative processes in research contribute to usefulness (e.g., Gergen, 1982; Lincoln & Guba, 1985). Our contribution is examining the particular aspects of collaboration that contribute to usefulness of a research project using conventional methodology. The primary purpose of the Transition Project was not intervention, nor was it a classic action research study in which researchers and organizational members collaboratively plan and study action. In the Transition Project, researchers were primarily interested in studying organizational transition processes but also built a relationship with the participating companies so members would find results generated through the study to be useful. By probing their perceptions of usefulness, the current investigation has provided evidence about which aspects of collaboration contribute to the transfer of research results into practice.

Clearly, we have found that perceived usefulness requires far more than simply doing research in relevant areas. Company members uniformly reported that Transition Project issues were highly relevant; presumably, this relevance underpinned their decision to participate in the

research. Despite this high interest level, there was far greater diversity in the extent to which they used the results and perceived the research as useful. That researchers investigate a topic important to practitioners may not necessarily mean that the researchers are able to apprehend what that topic means to practitioners, and vice versa.

We expected that joint interpretive forums would be directly related to perceived usefulness but are surprised that this is its only impact, especially because the same logic led us also to expect an impact on perspective-taking. Instead, only two of the twelve inter-variable correlations between joint interpretive forums and perspective-taking were significant. Perhaps the forums that were set up for joint interpretation did not enable the deep reflection and exchange that may be necessary for perspective-taking (Boland & Tenkasi, 1994). These joint interpretive forums may have influenced perceived usefulness by creating familiarity and trust rather than by influencing the interpretive schema of the various parties.

Perspective-taking is not irrelevant, however. Two of the scale's constituent variables were significantly related to perceived usefulness variables. The most important of these, whether the organizational members felt their *views had been taken into account*, was related to all three variables that comprised the perceived usefulness scale (*practical, used,* and *useful).* Furthermore, although the overall extent of mutual perspective-taking does not relate to the overall measure of whether self-design activities are informed by the research, *views taken into account* is related to two key aspects of self-design informed by research: *dialog* and *action planning*. Of the three perspective-taking variables, *views taken into account* clearly has the most face validity as a measure of the concept because it implies that researchers actually incorporated practitioners' views.

To explore this idea further, we did a post-hoc re-examination of the scale correlations. We computed a perspective-taking scale score based only on the variable *views taken into account* and re-computed the interscale correlations. The three correlations involving perspective-taking

all increase in size and have a smaller probability of occurring by chance. The links between perspective-taking and self-design informed by research (rho=.64, p<.05) and between perspective-taking and perceived usefulness (rho=.80, p<.01) become statistically significant. We recognize the draw-backs of using a one-item scale to represent perspective-taking and do not necessarily advocate such an approach; we simply present these post-hoc results to emphasize that perspective-taking is worthy of additional investigation.

Our findings make clear that if research is to be useful, attention must be paid to the relationship between researchers and practitioners, not simply to the content of the research. Researchers cannot simply treat organizations and their members as "subjects" (Argyris, 1999; Lincoln & Guba, 1985); they must take organizational members' views into account. As with all communication (Watzlawick, Beavin, & Jackson, 1967), there are both content and relationship aspects of this exchange. Collaboration requires dialog (Gergen & Thatchenkery, 1996) and bi-directional influence. If limited to one-way presentation of results from researchers to practitioners, an asymmetrical relationship is established that can introduce distortions into the communication and research (Argyris, 1999; Watzlawick et al., 1967).

The importance of the general researcher/practitioner relationship arises even when we try to understand why *pre-data collection collaboration* did not load with the joint interpretive forums variables and was not significantly related to any of the other variables. We had anticipated that *pre-data collection collaboration* would enable some perspective-taking. This may still be the case, because the two companies that did not have the in-person set-up sessions but instead substituted a telephone conference call about logistics had participated in previous studies with the researchers and had an ongoing relationship. In that sense they probably had the greatest amount pre-data collection collaboration even though they scored lowest. These two companies reported very high levels of usefulness for the Transition Project. In a small sample,

these two anomalies are sufficient to distort a possible relationship of *pre-data collection collaboration* to the other variables.

The strong relationship between self-design activities informed by the research and perceived usefulness is striking, especially given the lack of support for any relationships between self-design informed by research and joint interpretive forums. The perceived usefulness of the research depends strongly, as hypothesized, on the introduction of research results into ongoing self-design activities. The creation of joint interpretive forums to interpret the data does not, however, necessarily lead to the ongoing self-design in the organization being informed by that knowledge. Taken at face value, it would seem that researchers must do more than work collaboratively with organizational members to understand the research findings. Perhaps they must become part of an organization's self-design activities if they wish to promote usefulness. This would lead to a more standard action research model in which the researcher is also a change consultant and is heavily involved in internal organizational processes. Our post-hoc analysis suggests a different dynamic: joint interpretive forums only related to self-design informed by research when they result in perspective-taking that takes practitioners' views into account. Extrapolating from this finding, research may be usefully incorporated into self-design activities without extensive involvement of the researcher as interventionist if sufficient perspective taking occurs in the joint interpretive forums so the knowledge generated in the study can be introduced by organizational members into their self-design activities.

Creating a social system that fosters and houses collaboration between the two different thought-worlds violates the norms of both communities (Dougherty, 1992). Interviews revealed that some practitioners expected to receive definitive answers from the project and from the academics and did not want to invest the time required to build the relationship and go through the interpretation and self-designing processes. Traditional academic norms were also violated. Some segments of the organizational science research community have grave reservations about

conducting research in the close relational context provided by the Transition Project for fear of violating objectivity and jeopardizing the ability to generate “truth.” However, our findings indicate that a close relational context may be necessary if the research is to be perceived as useful by the practitioner community.

Limitations and Future Research

We chose a narrow definition of usefulness: usefulness as perceived by practitioners participating in the research. Other perspectives exist, and, depending on how one answers the question “useful for what?" (Goodman, 1999), research can be useful to practitioners by shaping ideas, behavior, policy, or organizing approaches. It may be that our results apply only to organizations undergoing design transitions. In particular, the Transition Project yielded results that helped organizations learn to function effectively under a new organization design. By interviewing practitioners who were keenly interested in helping their organizations be more effective, we may have gotten skewed perspectives. Future research should look at a more diverse set of research topics and a broader set of perceptions of usefulness from within and without the organization.

From a theory exploration perspective, the limitations of examining complex dynamics with a very small sample size are obvious. Ideally our investigation would have been conducted in two stages. The first would have been an inductive dimension-discovery investigation; the second would have been measurement of these dimensions and examination of their relationships in a different investigation. Because we discovered the themes and examined their relationship in the same data set, we ended up with a few blank cells where particular themes were not mentioned by particular interviewees. This may have been because these themes were not “top of mind” to the interviewees. In a two-stage research project, direct probes regarding each theme would have enabled a more systematic measurement and test of the propositions.

The perspective-taking element, in particular, needs further examination. A weakness of this investigation is that we failed to pick up direct indicators of half of the perspective-taking dynamic. Mutuality of influence has been stressed in previous writing about collaborative research (e.g., Reason, 1994). Our respondents focused primarily on researcher apprehension of practitioner perspectives. We do not have indicators of whether the practitioners were able to incorporate the researchers' frameworks and perspectives into their own understandings other than those comments that implied that joint interpretive forums were necessary for them to come to understand the significance of the findings. To fully understand how research results inform subsequent self-design, this aspect of perspective-taking must be examined. Also, future studies should focus on measuring the actual achievement of perspective-taking. As we found out, practitioners making concerns known and researchers comprehending the organization's issues does not necessarily result in researchers actually incorporating practitioners' views.

This investigation is both limited and strengthened by its retrospective nature. Interviewees were asked to comment on a project that occurred over an 18-month period two years prior to their interview. In some cases their memory was admittedly somewhat sketchy on some issues. More timely collection of perceived usefulness over the course of the study and data collected more quickly after the feedback processes occur would have been ideal. The delay did provide, however, time for action-taking. It provided a realistic assessment of whether an organization was able to learn from the project and to incorporate the knowledge into action. The time lag did not affect the quality of the archival data.

Conclusion

This exploratory study of the usefulness of research to ten participating companies found strong support for the proposition that a research project is viewed as useful by participants to the extent self-design is informed by its results. We also found support that perceived usefulness is related to the establishment of interpretive forums where researcher and practitioner thought-

worlds are joined. Finally, we found some initial support for the proposition that perceived research usefulness is related to perspective-taking between the academic researchers and the practitioners in the participating companies. Our post hoc delineation of relationships between joint interpretive forums, perspective-taking, and self-design informed by research needs to be substantiated with additional investigation. Can research findings be informative to ongoing self-design activities without the researchers taking an active part in the self-design processes? We believe this to be possible; our study is a first step toward understanding the complex phenomena that pertain to conducting research that is useful to practice.

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APPENDIX A
SAMPLE EXCERPTS FOR EACH VARIABLE/THEME

VARIABLE/THEME	SAMPLE EXCERPTS
Joint Interpretive Forums	
Involved appropriate people	Well the feedback was returned initially to myself and the Senior VP who was in charge basically who leads the workforce that was under study, so those two individuals pretty much felt ownership over the results and the data, but we shared those both in writing and in feedback sessions with the next level of management who has more day-to-day involvement with the workforce. So I would say both at the top level and the next level of management felt fairly strong ownership over what this data showed us. (Question 1)
Perspective-Taking	
Views taken into account	I know that when [the researcher] was working through some of the thoughts that she had she certainly would bounce them off of me and or my group and get feedback, so absolutely. (Question 3)
Concerns known	I think as all the data was in front of us and we were looking at you know how do you do this or how could you best do that, so we swapped stories and gave her our feedback on how things were working in the organization. (Question 4)
Researchers understood issues	…they saw all the dynamics, they also saw the problems that the organizational change was facing, where the research was not going to be able to be successful in altering. (Question 2)
Important to context	Yes, the study's general themes and issues were very much relevant certainly to our organization. (Question 2)
Self-design Informed by Research	
Shared learnings	What was useful was after the data was collected as we did a couple of things, one is that I distributed the data and results to the team, and we discussed them during we have these quarterly off-sites where everybody comes in for about 3 days and we work our, we review our metrics, business plan, and our projects, things of that nature and we went over the data at that point, and discussed it. And then of course [the researcher] came down and we had, she and I and some others had some discussions…(Question 9)
Enabled dialogue	Yes, we had a number of feedback sessions with various levels of the organization, in management and participants, etc. And I think those were very helpful , they helped us understand what came out of the data much more fully than we would have from a written report and enabled us to probe various issues that were particularly significant and certainly enable us to understanding where we measure against other pure companies and all those areas were very useful…(Question 6)
Action planning	…an opportunity to bring people together for a development of a common understanding of the rules of engagement and also getting role, responsibilities, interfaces, clearly laid out and accepted and adopted. All of those things were as a result of the study… Through the adoption of recommendations, the [committee name], a very senior body that looks at the health of that process was reinvigorated by virtue of the training element that became its focal point and where people got some excitement about how the process can become more of a positive (Question 7)

APPENDIX A
SAMPLE EXCERPTS FOR EACH VARIABLE/THEME (continued)

VARIABLE/THEME	SAMPLE EXCERPTS
Perceived Usefulness	
Practical	I think that there is no doubt in my mind that…that the theoretical underpinnings were sound but it did not come through as an abstract piece of work. (Question 15)
Useful	That's a two-part question. The findings were very relevant I think in terms of capturing the reality of what was going on in some of the learning. The readiness of the organization with the change it was going through as well as seeking data and absorbing and acting on it about that change was very very low and so you put those two together, you get very bad results in terms of very good information that could be helpful to the organization, the organization will have to be ready to absorb it and act on it. (Question 10)
Actionable	The study feedback was very much perceived and read with a lot of attention a lot of I guess preoccupation to extract from it some guidelines for our own resolve for action… It's not done on fuzzy theoretical grounding and conclusions, it's done on the basis of solid diagnosis that is presented against the background of a framework, presenting facts that speak loud about the actions that must be undertaken so it was for us most useful and important to follow its content.(Question 11)
Used	Yah, we viewed it as very useful and in fact, had a number of sessions with our general management team to try to incorporate the learning so that we could make use of the things that she found to improve the organization. (Question 12)
Longitudinal relationship developed	I think to have that sort of longitudinal view if the organization is really ready for it, what you do is begin building in collaboration and concerted action, measurement and the research methods and stack that against some set of criteria. And all that requires some discipline which is not easy in any organization quite frankly but that model where useful concepts are used towards a larger intent, that research might help inform you as to what's working as well as what's not working. (Question 15)

TABLE 1
Interview Questions For Transition Project Site Contacts

Element of Model Probed	Q #	Question
Joint Interpretive Forums	1.	Were the appropriate people involved in defining the issues to be investigated in this research?
Perspective-taking	2.	Do you feel that the issues examined in this study are important to organizational practice?
	3.	Do you feel that the research took into account the views of practitioners and the issues that practitioners face?
	4.	Did you or other members of your organization get a chance to make your concerns known to the researchers and to make sure they were incorporated into the study?
	5.	As they conducted the research, do you feel the researchers were able to hear and learn about the real issues and dynamics in the organization and to incorporate this into the study reports?
Self-design Informed by Research	6.	Did the feedback session(s) enable dialogue among organizational members and interpretation of the study findings?
	7.	Did the organization engage in action planning? Were changes actually carried out? What changes?
	8.	Was the information returned to a group of people who felt ownership over the issues?
	9.	How extensively were the study learnings shared in the organization?
Perceived Usefulness	10.	Did you view the study feedback as useful? Why or why not?
	11.	Did the study feedback have actionable implications for your organization?
	12.	Was the study feedback actually used by your organization? If so, how? If not, why not?
	13.	Learning During Transition was a 2 phase study. Was it useful to collect information and get information at two points in time? Why or why not?
	14.	In your view, what factors kept this research from being as useful as it might have been? (probe for overall dynamics—those on the side of the researcher house and those within the participating organization?)
	15.	What factors contributed to it being useful? (again researcher or organizational factors)
	16.	What suggestions, if any, do you have for increasing the value of the research to participating companies in the future?

TABLE 2
Expanded Definitions Of Key Variables

Variable/Theme	Definition
Joint interpretive Forums:	
Pre-data collection collaboration	Archival data: sum of scores on three steps of interaction prior to data collection (1=company participated, 0=company did not participate)
T1 dissemination and learning [b]	Archival data: sum of scores on five forms of interaction following first set of data collection (1=company participated, 0=company did not participate)
T1 multi-company interaction	Archival data: number of participants that participated in T1 multi-company interactions.
T2 dissemination and learning [b]	Archival data: sum of scores on five forms of interaction following second set of data collection (1=company participated, 0=company did not participate)
T2 multi-company interaction	Archival data: number of participants that participated in T2 multi-company interactions.
Involved appropriate people[a]	Describes extent to which the appropriate people were involved in the research effort within the company.
Perspective-taking: [a]	
Views taken into account	Captures extent to which the views of participants were taken into account when designing the research and collecting the data.
Opportunity to make concerns known	Captures extent to which participants had an opportunity to make their concerns known to the researchers in the design and collection of data.
Researchers comprehended issues	Describes the extent to which researchers were able to comprehend the issues prevalent in each organizational context.
Important to context	Describes the extent to which the research captured issues that were important in a given organizational context.
Self-design Informed by Research: [a]	
Enables dialogue	Captures the extent to which the research provoked discussion and conversation between participants within the organization.
Shared learnings	Describes extent to which findings, lessons, and learnings gained from the research were shared among employees in the organization.
Action planning	Captures extent to which organizational actors conducted strategic action planning for their organization as a result of participating in the research.
Perceived Usefulness [a]	
Useful	Captures extent to which the research was described as useful by participants.
Used	Describes the extent to which the research was used (in any manner) by the participants.
Practical	Describes the extent to which the research was viewed as practical by the participants.
Actionable	Describes the extent to which research was viewed as actionable.
Long-term relationship developed	Captures the extent to which a long term relationship was developed between participants and the researcher.

[a] Coded from interview transcripts using the following scale: 1=no extent, 2=to very little extent, 3=some extent, 4=a great extent, 5=completely.
[b] Scores calculated by doubling the original sums so weighted similarly to multi-company interaction scores.

TABLE 3
Means, Standard Deviations, and Correlations Among Scales

Variables	Mean	s.d.	1	2	3	4
1. Joint Interpretive Forums	18.80	10.34	1.00			
2. Perspective-taking	13.25	1.14	.18	1.00		
3. Self-design Informed by Research	9.94	2.66	.43††	.11	1.00	
4. Perceived Usefulness	11.90	2.01	.66*	.46†	.83**	1.00

*p<.05

**p<.01

†p<.18

††p<.22

TABLE 4
Means, Standard Deviations, and Spearman's Correlations Among Individual Variables

Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12
Joint Interpretive Forums														
1. Dissemination-Time 1	6.40	2.80												
2. Cross-company interaction-Time 1	5.30	3.23	.48											
3. Dissemination-Time 2	6.29	2.69	.67†	.13										
4. Cross-company interaction-Time 2	3.00	3.20	.69*	.32	.55									
Perspective-taking														
5. Opportunity to make concerns known	4.30	0.63	.13	-.21	.08	.34								
6. Researchers comprehended issues	4.30	0.59	.13	-.36	.42	-.30	.09							
7. Views taken into account	4.61	0.55	.57†	-.09	.27	.66†	-.46	-.15						
Self-design Informed by Research														
8. Enabled dialogue	3.72	1.37	.10	-.22	.25	.52	.37	.00	.64†					
9. Action planning	3.00	1.63	.09	-.17	-.14	.32	-.09	-.15	.78*	.56				
10. Shared learnings	3.21	1.25	.12	.08	.80	-.31	-.57	.20	-.14	.41	.62			
Perceived Usefulness														
11. Practical	4.65	0.41	.69*	.06	.61	.75*	.58†	.12	.98**	.44	.72†	-.12		
12. Useful	4.10	0.84	.32	.13	.62	.54	.37	.12	.64†	.75*	.77*	.56	.65*	
13. Used	3.15	1.16	.09	-.22	.39	.53	-.03	-.02	.69*	.64†	.95**	.27	.47	.52

†p<.10
*p<.05
**p<.01

FIGURE 1
Proposed Model for Conducting Useful Research

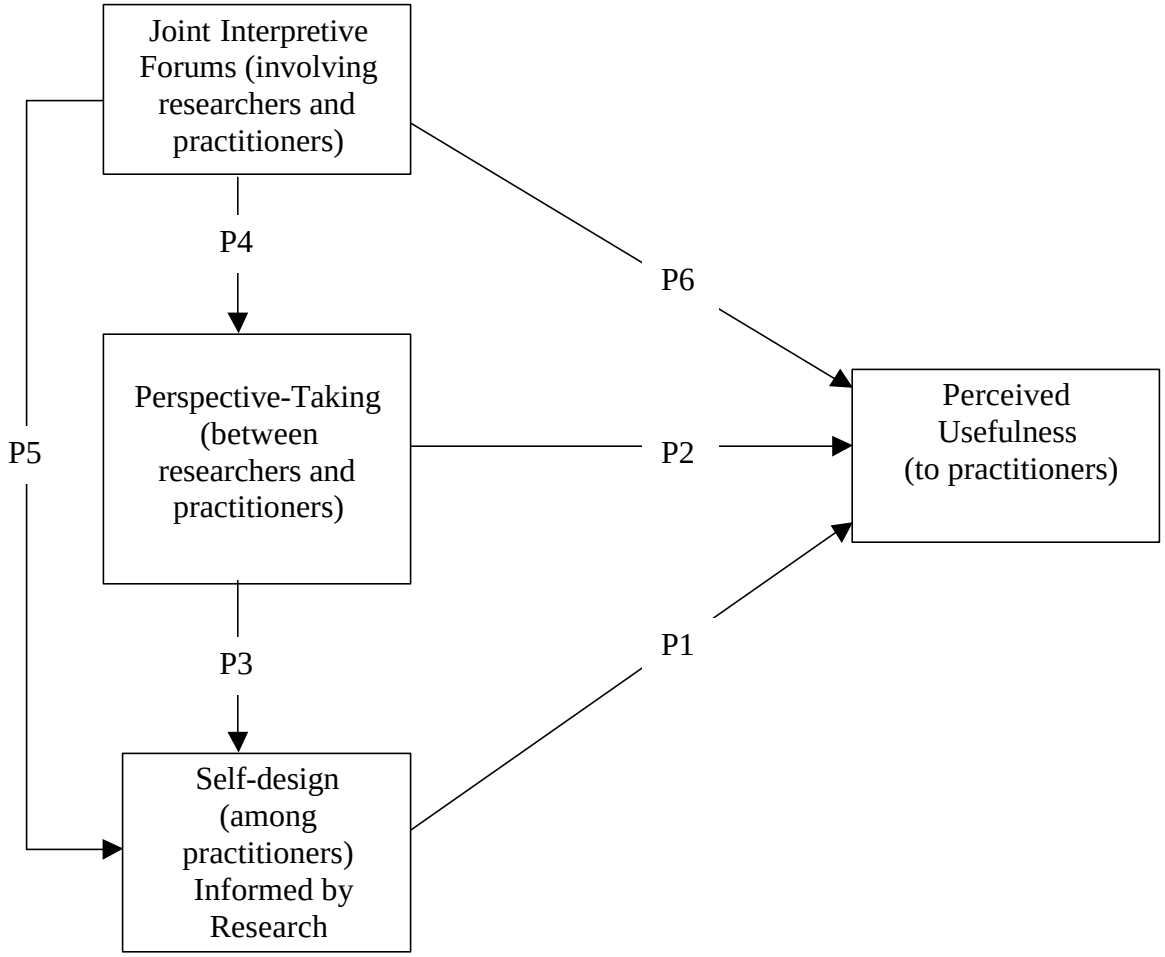
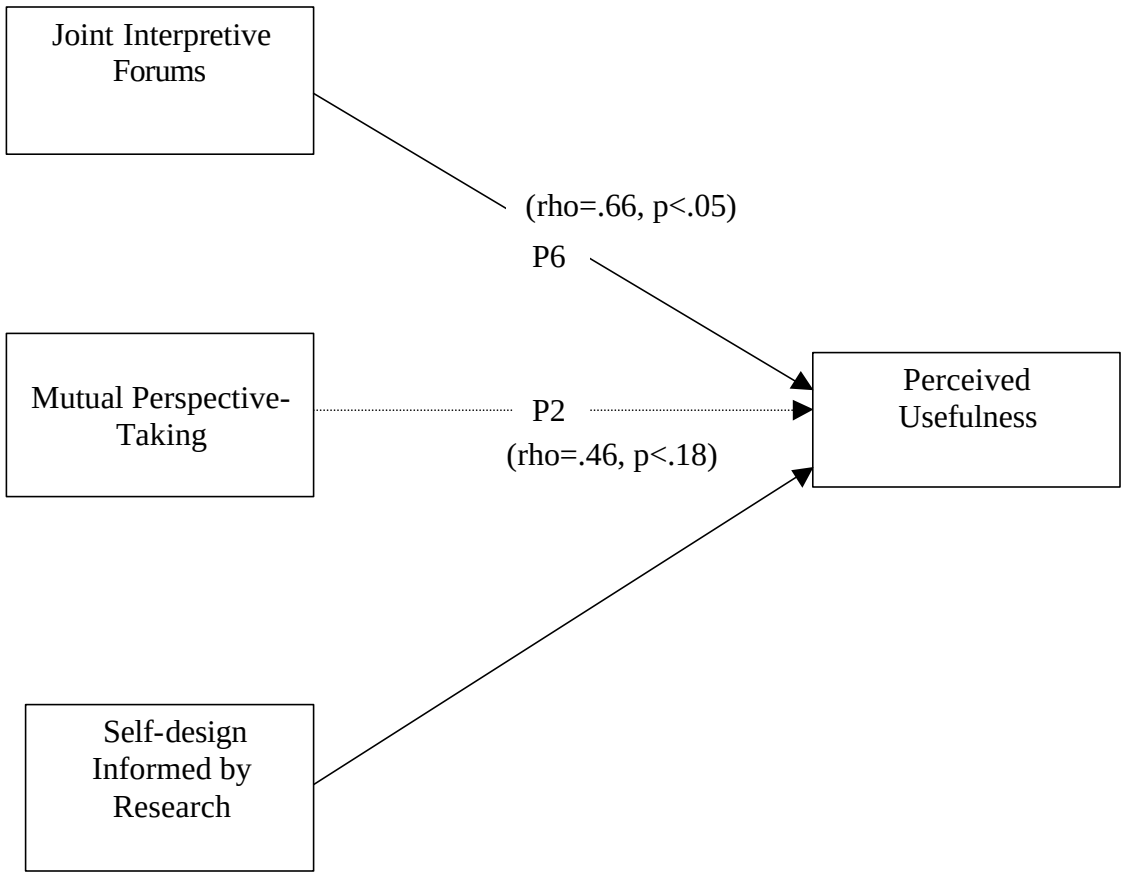


FIGURE 2
Model Suggested By Findings



Note: Dotted line indicates partial support for P2.

Author Profiles:

Susan Albers Mohrman (Ph.D., Northwestern University) is Senior Research Scientist at the Center for Effective Organizations, Marshall School of Business, University of Southern California. Her research focuses on organizational design, lateral structures and processes, and organizational learning and knowledge management. She has written about research processes that yield usefulness and theory advancement.

Cristina B. Gibson (Ph.D., University of California-Irvine) is currently Assistant Research Professor at the Center for Effective Organizations, University of Southern California. Her research focuses on interaction and effectiveness in teams, the impact of culture and gender on work behavior, and social cognition. She is a co-investigator on an extensive three-year research grant from the National Science Foundation examining cognitive processes in virtual teams.

Allan M. Mohrman, Jr. (Ph.D., Northwestern University) is a co-founder of the Center for Effective Organizations at the University of Southern California. His research has focused on performance management, organizational learning and change, and on team and other lateral forms of organizing. He has helped shape the Center for Effective Organizations as an institution dedicated to research that yields findings that are useful to organizations.