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# Organizational Survey Nonresponse

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This paper advances a theoretical model that explains organizations' nonresponse to surveys as a predictable aspect of organizational behavior and structure. We argue that survey researchers must take into account the authority, capacity, and motive to respond of both the organizations sampled and the designated respondent within the organization. Our analysis identifies a series of organizational sources of nonresponse that have clear consequences for final sample bias. These include resource independence from the environment, subsidiary status, information dispersal in large establishments, and lack of staff dedicated to information processing. We provide suggestions for future organizational survey design and for analysis strategies to cope with sample selection bias. •

Organizational surveys often have fairly low response rates. Sample surveys with low response rates can produce biased samples, particularly if key organizational characteristics affect the pattern of survey response. In this paper we develop an organizational theory of survey response that details why well-known organizational characteristics should be expected to influence the probability that an organization will respond to a survey request. We then test the empirical predictions of this theory on a survey of private, for-profit employment organizations.

Most reported response (or cooperation) rates for surveys of heterogeneous organizational populations have been significantly lower than the 70 to 75 percent that is normal for general population surveys of individuals. Two of the most substantively prominent examples in the literature are Lincoln and Kalleberg (1985) and Blau et al. (1977), who reported 35 and 33 percent cooperation rates, respectively, for surveys of U.S. manufacturing plants. The mailed establishment survey that forms the basis for this research had a 53-percent response rate, again substantially lower than that expected in surveys of individuals. Recently, Spaeth and O'Rourke (1994) and Osterman (1994) have reported organizational survey response rates of 65 and 66 percent, respectively. These better rates suggest that poor response to organizational surveys is not inevitable. But even these rates leave much room for improvement.

The high rate of nonresponse typical of organizational sample surveys creates the potential for large statistical biases in the final sample. We believe that the application of survey methods must come to grips with the differences between organizations and individuals. It is likely that some of the high level of nonresponse in organizational surveys represents the application to organizations of survey techniques developed for populations of individuals, without regard for these differences. A systematic theory of survey nonresponse as it applies to organizations needs to be developed. Additional survey techniques may be necessary.

## **DEVELOPING AN ORGANIZATIONAL THEORY OF SURVEY NONRESPONSE**

In general, conventional theory of survey nonresponse treats survey administration as a variant of more general rules for

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interpersonal interaction. To increase the capacity and motive of individuals to respond to a survey we typically give them ample opportunity (multiple call-backs, scheduling at the respondent's convenience, attempts at refusal conversion), convince them of the importance of the project (personalized contacts, legitimized sponsor, salient topics), demonstrate that the costs are low (confidential, short printed forms or promises of "only a few minutes"), and provide some rewards (attention and conversation, respondent input into policy or science creation, copy of results, or even some token monetary or other tangible reward). Most importantly, survey administration relies on the norm of reciprocity in conversation. Once an interview begins, it is conversationally impolite for the respondent to break off the interview and, so, few do (Galtung, 1967; Fein, 1970; Dillman, 1978; Goyder, 1987).

While informants in surveys of organizations are individuals, the organizations are not, and attempts to improve survey methodology must deal with the differences. In contrast to individuals, organizations are differentiated and hierarchical. These characteristics, together with their routinized behavior patterns, may condition organizational response to survey requests. We see three general processes that may affect organizational survey response. We conceptualize the likelihood that an organizational respondent will respond to a survey request to be a function of their authority to respond, capacity to respond, and motive to respond. We see each of these to be the outcome of general organizational processes that can either enhance or erode the probability of survey response.

Authority to respond refers to the degree to which a designated respondent has the formal or informal authority to respond to a survey request. Authority may be limited by position, establishment rules relating to surveys, and relationships with parent organizations. Authority to respond, unlike capacity and motive, is generally a function of specifically organizational processes that have no routine parallel in surveys of individuals. Organizational capacity to respond refers to organizational practices and divisions of labor and information that facilitate or inhibit the assembly of relevant knowledge to reply adequately to survey requests. Capacity may have important implications for responding to specific survey items as well as for the overall decision to complete the survey. Motive to respond refers to both individual and organizational motivations to disclose information about the organization. It reflects the interaction between organizational relationships with the environment, the attributes of the designated respondent for the organization, and the salience of the specific survey instrument. Although authority to respond is particularly problematic in organizational surveys, all survey designs must deal with respondent capacity and motive. What is unique about organizational surveys is not these general design considerations, but the uniquely organizational processes that determine the authority, capacity, and motive to respond within organizational settings.

## Survey Nonresponse

### Key Organizational Processes and the Theory of Nonresponse

Organizational complexity can be an important influence on both the authority and capacity to respond. Large firms and establishments tend to be more complex. That complexity has both vertical and horizontal components. The vertical component includes the growth of hierarchy and attendant centralization of decision-making authority. To the extent that the designated respondent is empowered by his or her place in the organizational hierarchy or the decision-making structure of the organization, he or she is more likely to have the authority to respond.

Horizontal differentiation occurs through technical and social divisions of labor, the founding of branch plants and subsidiaries, and the creation of multipurpose enterprises (e.g., conglomerates).<sup>1</sup> This horizontal differentiation can produce a fragmentation of knowledge about the firm, thus reducing any designated individual's capacity to respond. In the small, single-establishment firm, the owner, much like a head of household, is likely to be able to answer most questions on a survey and has the authority to do so. In a large, single-establishment firm, the owner will have the authority but may no longer have the knowledge. Unless the survey is designed to make it easy for the top official to delegate portions of the survey to appropriate officials, we risk survey nonresponse or high levels of item nonresponse. In establishments within larger corporations, the establishment manager may have the knowledge but lack the authority to fill out the survey. By contrast, headquarters may have the authority but neither the knowledge nor the motivation—perhaps because of local salience designed into the questionnaire—to complete the survey. In very large corporations, both knowledge and authority may be so diffuse as to make it quite difficult for even moderately complex surveys to be completed.

Organizational environments can be expected to influence the capacity and motive to respond. Environmental threats, pressures, and uncertainties will influence the development of both internal organizational structures and practices, as well as typical responses to environmental intrusions. Some organizations, as part of their daily operation must manage complex and changing relationships with their environment. These organizations may develop boundary-spanning units that try to limit the impact of the environment on their core activities by routinizing strategies (Thompson, 1967). Other organizations deal with a relatively fixed and small group of suppliers and consumers and, therefore, do not develop boundary-spanning units. This contrast has clear implications for organizational capacity to respond to survey requests. In general, we expect organizations with regular interchanges with a fluid environment to be more likely to respond to surveys than those that do not. Large service organizations, like telephone companies, and branch manufacturing plants of large conglomerates are both likely to be vertically and horizontally differentiated, but establishments within the service organization are more likely to have created boundary-spanning units. Thus they may have a better

**1**

We refer to such branches, subsidiaries, and franchises as establishments when we want to distinguish single sites from the firms or organizations of which they are parts.

developed and more routinized organizational capacity to respond to requests for information from their environment, including surveys. The branch plant may have little or no administrative capacity or organizational roadmaps for responding to requests for information and help from survey researchers. To the extent that boundary-spanners exist, they are far away in the headquarters office and function to shield the technical core (i.e., the production plant) from environmental intrusions, like surveys. To the extent that interaction with outsiders is a normal part of organizational functioning, the likelihood of responding to survey requests can be expected to increase.

While routine activity provides an explanation of differential capacity to respond, it does not deal with motive. We conceptualize organizational motive to reflect whether or not it is in the organization's or its dominant coalition's interest to disclose information. Some organizations, because of either environmental dependencies or regulations, have higher motives to disclose organizational information. Organizations insulated from their environment and in unregulated environments may have little interest in disclosing information. It is possible that establishments that are dependent on their environment for resources have a higher motive to respond to appeals for information from the environment (Pfeffer and Salancik, 1978; Burt, 1983). These establishments may be particularly motivated to respond if the survey appeal is couched in terms of the self-interest of the establishment (e.g., "business needs" or "increased managerial efficiency"). Publicly traded firms are encouraged by both regulations and relations to current and potential stockholders to disclose performance and other organizational information (Verrecchia, 1983; Donto, 1989; but, for qualifications, see Dye, 1986; Jung and Kwon, 1988). Firms with controversial reputations may have a heightened interest in self-disclosure in order to manage their public images, while firms at risk of hostile takeover can be expected to be very reluctant to disclose financial or other information. It is also our experience that many managers are skeptical of academic promises of confidentiality. We expect establishments to transfer to survey requests their habits and methods of responding and disclosing in other domains.

There is also an individual-level decision to cooperate with the survey. We are asking respondents to accomplish an extra task, most likely not covered in their job descriptions. It seems reasonable to predict that individuals whose personal identities are tied to the goals of the firm are more likely to go beyond their job description and take the time to respond. Certain aspects of highly bureaucratized organizations tend to limit that identification with the firm. In large firms, normative controls for collective goals may be weaker, thus giving individuals less motive to respond to surveys about collective activity. In centralized structures, individuals may be disempowered and, so, have less motivation to act beyond their job descriptions. Similarly, in formalized structures, individuals may develop a work-to-rules orientation that discourages them from responding to nonroutine work requests.<sup>2</sup>

**2**

As a reviewer reminded us, however, members of highly bureaucratized organizations may welcome the break from their routine that responding to a survey would provide, thus increasing the motive to respond. The two processes could cancel each other out.

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Of authority, capacity, and motive, none alone is likely to be sufficient to assure response. At some minimal level, each is a necessary condition, a formulation pointed out by the following ironies: Public relations staffers at the boundary of the organization may have a strong motive to respond and may have the authority, but in organizations large enough to have public relations offices, staff members are unlikely to have the capacity; technocrats, deep in the organization (Galbraith, 1971), may have the capacity but lack either the authority or the motive; and chief executives have the authority and sometimes the motive but, in large organizations, may well lack the capacity. The three conditions favorable to response are probably best combined in a small, simple, single-establishment firm with frequent information transfers across its boundary.

## EVALUATING THE ORGANIZATIONAL THEORY OF SURVEY NONRESPONSE

### Data

In January through March of 1989 the North Carolina Employment and Health Survey was administered by phone to a random sample of employed North Carolinians, aged 18 and older, with a response rate of 73 percent. These individuals were asked for the name and address of their employer. Six hundred thirty-seven functioning private-sector establishments with one or more employees were identified through the survey of individuals. These establishments made up the sample for the subsequent organizational survey. Only 8.5 percent of these establishments were dropped from this sampling frame due to incomplete address information, leaving a sampling frame of 583 private-sector, for-profit establishments.<sup>3</sup>

The North Carolina Business Needs Survey was administered to this sample of establishments in the spring and summer of 1989. The survey was designed as a ten-page mail survey and asked questions on barriers to business expansion, public policy, relationships with suppliers, consumers, and parent firms, employment size and practices, and current financial situation. After telephone screening for correct address and the name of the top official (e.g., owner, president, plant manager, branch manager), the survey, along with a personalized cover letter and business reply envelope, was mailed to the sample. After two weeks, a follow-up postcard went to all nonrespondents, followed by a second mailing three weeks later, followed by a third, registered mailing four weeks after that (Dillman, 1978). The principal investigator called all refusals and attempted to convince the respondent of the worth of the project. Refusals also received an additional replacement survey and personalized letter. The North Carolina Business Needs Survey had an overall response rate of 53 percent. Table 1 describes the disposition of cases, first in the creation of the sampling frame from employee reports, then in the North Carolina Business Needs Survey, and finally in a short follow-up telephone survey of nonresponding establishments.

### 3

This high level of successful establishment identification has been replicated in two other hypernetwork surveys of establishments (Spaeth, 1989; Parcel, Kaufman, and Jolly, 1991). In the General Social Survey application of this method as part of the National Organizations Survey, however, only 79 percent of nominations were ultimately usable (Spaeth and O'Rourke, 1994).

Table 1

**Disposition of Population Cases**

	Number of cases	
<b>Establishments nominated by employees in first-stage North Carolina Employment and Health Survey</b>		
Total list of establishments	652	
Out of business before or during establishment survey	15	2.3
Base sampling list	637	97.7
		<b>% of Base sampling list</b>
Complete address with mail and/or phone contact	583	91.5
Incomplete address	54	8.5
<b>Sampling frame for second-stage, North Carolina Business Needs Survey</b>		
Total establishments surveyed	583	
Establishment survey respondents	306	52.5
Establishment survey nonrespondents	277	47.5
<b>Survey of nonrespondents</b>		
Total nonrespondents	277	
Contact with reason for nonresponse	189	68.2
Contact, refusal	75	27.1
No contact	13	4.7

This two-stage approach to generating an organizational sampling frame is called hypernetwork or multiplicity sampling (McPherson, 1982; Parcel, Kaufman, and Jolly, 1991). This method has been used for both voluntary organizations (McPherson, 1982) and employment establishments (Spaeth, 1989; Parcel, Kaufman, and Jolly, 1991; Spaeth and O'Rourke, 1994). The sampling frame generated from the first-stage survey of employees produces a list of establishments that is a random sample of employment (or voluntary) organizations, proportional to employment (or membership) size (Kish, 1966). The resulting sampling frame has advantages in that it is a probability sample of the population of organizations, and noncoverage, to the extent that it exists, is likely to be a function of individual rather than organizational characteristics. The hypernetwork-generated sampling frame generally has much broader coverage of the population than available list-based sampling frames for general populations of organizations (see Kalleberg et al., 1990, for an evaluation of alternative list-based sampling frames). As each respondent in the first-stage survey of individuals nominates an organization, the second-stage sample of organizations gives organizations with many members a higher probability of selection. Because, as we discuss below, the likelihood of responding is inversely proportional to size, hypernetwork samples of organizations are likely to have lower response rates, all else being equal, than sampling strategies that favor smaller establishments.

We exploit a further advantage of the hypernetwork sampling frame strategy in this paper: The organizational member or employee who identifies the organization for the

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sampling frame can also provide other information about the organization. This information describes organizations that ultimately both will and will not respond to the organizational survey, and it can thus be used to estimate the direction and size of any bias that arises from nonresponse. While the use of employees' estimates of organizational characteristics for these purposes has limitations (Parcel, Kaufman, and Jolly, 1991), it is vastly preferable to no information on nonrespondent organizations.

In September 1989, a telephone survey of nonresponding organizations asked for the status of the response and why the survey had not yet been returned. Usable information on the reason for nonresponse was secured from 68 percent of nonresponding establishments. Table 2 reports the common reasons offered for not responding to the establishment survey. Twenty-six percent of establishments said that they were not willing to divulge the financial information requested in the survey. This was the most common reason given and parallels the sensitivity of individuals about income data in surveys. It suggests that response rates to organizational surveys might be considerably higher when financial information is not required or can be collected by some other means, such as from corporate reports. Further evidence that asking for financial data can reduce response comes from the establishment surveys that were returned. Financial items had high levels of missing data (between 21 and 26 percent), suggesting that these are sensitive or difficult questions to try to answer in an establishment survey.

Table 2

Reason	Percent
Do not want to divulge confidential financial information.	26
Survey would take too long to fill out.	25
Headquarters is responsible for the decision to respond.	22
We forwarded the survey to headquarters.	21
General policy against filling out surveys.	16
Some of the survey questions were not appropriate for this business.	9
Other	9
I never saw the survey.	8
The company has just been bought or is in the process of being bought.	4
The responsible person is sick/incapacitated.	4
Unsure/Don't know.	2

\* Some establishments report multiple reasons for not responding.

The other common reasons for nonresponse all had to do with time and policy constraints. Deferring to headquarters was particularly notable. While we believe that this primarily reflects lack of local authority to respond, it may also signal low capacity or disinterest, i.e., poor motivation. One of the striking findings in Table 2 is that most of the reasons given



for not responding seem to reflect primarily organizational constraints.

### **Variables**

We expected that nonresponse to organizational surveys would vary as a function of the authority of the establishments' respondents, their capacity, and their motive to respond. We used multiple measures tapping dimensions of authority, capacity, and motive to respond. Table 3 details specific measurement strategies and sources of information, including employees from the first-stage survey, parent-firm records, and published industry characteristics.

Both the quality and coverage of our measures varied substantially. For example, employees probably produced better reports of some organizational characteristics, such as establishment size or subsidiary status, than of others, such as the degree of formalization of rules or the centralization of decision making. For this reason, as well as because of limitations in available measures, empirical models could not capture all organizational constraints on survey response. The theory outlined above suggests that organizations can be expected to vary in their probability of responding, both according to the designated respondent's position in the establishment and according to the characteristics of the establishment. The North Carolina Business Needs Survey was sent to the pre-identified chief decision maker (e.g., owner or plant manager) in the establishment, thus eliminating sources of variation in response due to the respondent's position in the establishment. The empirical analysis therefore focused primarily on the authority constraints on survey response that were associated with establishment characteristics and relationships of establishments to parent firms.

The authority of the chief decision makers in our sample of establishments should have been a function of the following three factors: (1) *Centralization of decision making*: In a centralized establishment, the chief decision maker should have more authority to respond than in a decentralized establishment with routinely differentiated patterns of authority. Thus we expect higher survey response rates with higher centralization. (2) *Distant decision maker*: When decision making is geographically removed from the establishment, perhaps due to nonlocal ownership, authority to respond may be diminished, leading to lower response rates. (3) *Subsidiary status*: Establishments that are subsidiaries of parent corporations may have limited authority, therefore lowering response rates.

Establishments can be expected to vary in their capacity to answer surveys at all. In large and complex organizations, the information necessary to respond may be dispersed. Routinized organizational information systems that emphasize reporting and record keeping may also enhance the capacity to respond. Organizations that have boundary spanners whose role is to respond to environmental demands, like surveys, should be more likely to respond. Similarly, the presence of a professional/administrative workforce could enhance organizational capacity to respond. Organizations with greater financial resources should be

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Table 3

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### Measures for Survey Nonresponse Analyses\*

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#### Authority measures

*Centralization scale*: Location of decisions on how work gets done, hiring and firing, overtime and salary, buying new machines. A subscale (alpha = .51) of the Aston Centralization Scale (Pugh et al., 1968). [E]

*Distant decision maker*: Person who "really runs this company, the one who makes the ultimate financial decisions" is local (0), in state (1), or out-of-state (2). [E]

*Subsidiary status*: Dummy variable (1 = establishment owned by another company). [E]

#### Capacity measures

*Establishment size*: Coded as less than ten employees (1); between ten and 25 (2); between 25 and 50 (3); between 51 and 100 (4); between 101 and 500 (5); between 501 and 1,000 (6); between 1,001 and 10,000 (7); over 10,000 (8). [E]

*Firm size*: Natural log of total employment in the parent company.† [P]

*Multi-establishment*: Number of different establishments or locations parent company has: less than 5 (1); between 5 and 10 (2); between 10 and 30 (3); over 30 (4). [E]

*Formalization scale*: Employee manual or handbook, employment contracts, formal letters of appointment, written job descriptions, or instructions. A subscale (alpha = .54) of the Aston Formalization Scale (Pugh et al., 1968). [E]

*Variation in the locus of decision making*: Sum of the absolute values of the deviations of the three centralization items from the establishment's centralization index value (alpha = .83). [E]

*Price-regulated industry*: Public utilities (MacAvoy, 1992). [I]

*Safety-regulated industry*: Mining, construction, automobiles, and various heavy polluting manufacturing industries (MacAvoy, 1992). [I]

*Finance-regulated industry*: Banks, savings and loans, insurance and other financial establishments (MacAvoy, 1992). [I]

*R&D intensity*: From Internal Revenue Service data at the industry-group level as R&D tax credits per establishment (U.S. Internal Revenue Service, 1992). [I]

*Profits per establishment*: Natural log of average industry three-digit profitability per establishment (U.S. Department of Commerce, 1991). [I]

#### Motive measures

*Profits per establishment* (see above)

*Sales concentration*: Natural log of the three-digit industry 8-firm sales concentration ratio (U.S. Department of Commerce, 1991). [I]

*Safety-regulated* (see above)

*Price-regulated* (see above)

*Public*: Dummy variable (1 = parent firm is publicly traded). [P]

*Firm size* (see above)

*Centralization* (see above)

*Formalization* (see above)

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\* [E] means the data were obtained in the first-stage employee survey on the basis of which the establishment sample was formed. [P] and [I] mean the data were obtained from archival records on the parent firm or industry, respectively.

† For single-establishment firms, firm size is equal to the midpoint of the category of the ordinal establishment-size scale.

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more likely to respond, as well. The capacity to respond to the survey should be a function of the following: (1) *Establishment and firm size*: As both establishment and firm size increase, information will be dispersed across functional and geographic units and the capacity to respond will decline. (2) *Multi-establishment*: Establishments that are part of increasingly complex organizations may also have diminished access to information and thus have lower capacity to respond. (3) *Formalization*: The greater the use of formal records in routine operations, the more likely that

required information is readily available, and so the capacity to respond is enhanced. (4) *Variation in locus of decision making*: When organizations create an administrative division of labor, then the chief decision maker is less likely to be overburdened with other duties. This might also imply some organizational efficiency, if it represents decentralization of decision making to the functionally appropriate location. This would suggest that when organizations have some variation in the locus of decision-making activity, survey response rates should be higher. (5) *Regulated industries*: Although we do not have direct measures of the presence of boundary spanners in the establishment, we reason that establishments in regulated industries must have boundary spanners to cope with regulatory reporting and to monitor rule changes and interpretations. Establishments in regulated industries, because of these boundary spanners, should be more likely to respond to surveys. We identify price-, safety- and finance-regulated industries. (6) *Research and development intensity*: While we lack direct measures of professional/administrative capacity, we reason that establishments in industries with substantial research and development (R&D) activity are more likely to have substantial professional and administrative capacity, thus increasing the likelihood of response. (7) *Profits per establishment*: Establishments with greater financial resources are more likely to have the organizational slack to complete a survey. The consequences of this slack might be manifest in superior record keeping technology, more free time for the chief decision maker, or a better administrative staff. The greater the profit, the more the organization may have the capacity to respond.

Finally, while organizational surveys are no different from surveys of individuals, in that the motive of the individual to cooperate is an important determinant of response rates, organizational goals can spawn collective motives for survey response. Resource dependency theory suggests that organizations that are more dependent on their environments may be more motivated to respond. In addition, the need to influence public opinion should increase response, particularly for establishments in publicly traded firms and in industries with low consumer trust, reputations as polluters, or dangerous workplaces. It may also be that having public relations activity increases the capacity of the firm to respond, through routine public relations functions. Finally, certain aspects of bureaucracy, such as large firm or establishment size, centralization, and formalization of job roles, are hypothesized to reduce identification with organizational goals and individuals' motive to exert themselves beyond their job descriptions.<sup>4</sup> The motive to respond to the survey request may be a function of the following: (1) *Profits per establishment and sales concentration*: Establishments in profitable and concentrated industries are less dependent on their environment for resources and so are less likely to respond to the survey. (2) *Safety- and price-regulated*: Establishments in industries with problems of workplace safety or consumer trust need to appear forthcoming to the public, creating a motive to respond. If we find that safety and price regulation, but not finance-market regulation, influence response, we will

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In this analysis, because all respondents are chief decision makers, available measures of authority are likely to have weak or no effects.

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reason that problems with public relations are responsible for efforts to manipulate public opinion, and these variables will be interpreted as tapping motive rather than capacity to respond. (3) *Public*: Establishments whose parent companies are publicly traded may have greater motives to disclose organizational information. (4) *Firm size, centralization, and formalization*: These three aspects of bureaucracy are hypothesized to reduce employee identification with the firm's goals and so reduce individual motive to respond. The prediction for firm size here is the same as for capacity to respond. The predictions for formalization and centralization here are the opposite of what they were for capacity and authority, respectively. The sign of the effect on the log odds of response is a direct test of the competing interpretations for formalization and centralization.

## EVALUATION OF ORGANIZATIONAL SURVEY NONRESPONSE

We examined the authority, capacity, and motive predictions outlined above by comparing the characteristics of responding and nonresponding establishments. We used both bivariate cross-classifications and a multivariate logistic regression model, estimating the log-odds of response as a function of the hypothesized organizational characteristics.

It should be remembered that many of our organizational characteristics are measured through employee reports of the characteristics of their workplaces. Parcel, Kaufman, and Jolly (1991) caution that employee reports of organizational characteristics are more error prone than the reports of top managers. In addition, our measures of formalization and centralization were limited to the personnel matters asked about in the survey. The measurement error introduced by relying on employees for indicators of organizational characteristics probably attenuated the estimates of their effects on survey response reported below. The estimated effects of the industry-based measures on establishment response should have been attenuated at least as much, since there is considerable establishment-level heterogeneity within most industries (Tomaskovic-Devey, 1983).

Table 4 provides the bivariate relationships between survey response and the variables outlined above. It includes industry, which is the primary variable used in other studies (e.g., Parcel, Kaufman, and Jolly, 1991; Spaeth and O'Rourke, 1994) to gauge sample bias. We reserve interpretation of these relationships for the multivariate analysis to follow. Respondents and nonrespondents came from somewhat different industries. Establishments in extractive, construction, and transportation/utility industries were more likely to respond. Those in retail, personal service, and social service industries were less likely to respond. Larger establishments, subsidiaries, and establishments in firms with many establishments were all less likely to respond. More formalized establishments were less likely to respond. Establishments in safety-regulated industries were more likely to respond. Establishments in industries with high profits per establishment and higher levels of market concentration were less likely to respond. The other variables were not significantly related to survey

response at the bivariate level. Overall, Table 4 suggests that an organizational analysis of survey nonresponse is warranted. It also suggests that sample selection bias may be a problem in substantive analyses of these data, since the pattern of nonresponse is clearly not random relative to central organizational attributes (Heckman, 1976; Winship and Mare, 1992).

Table 5 introduces a logistic regression model of survey response. The full logistic regression model correctly classifies 64 percent of cases. Since the survey had a response rate of 53 percent, the organizational factors make for a modest improvement in prediction. It is immediately apparent that it was not industry per se that caused the significant difference in response across industries that is reported in Table 4. Neither the set of industry dummies nor any of the individual categories was significantly associated with response once organizational characteristics were taken into account.

We focus on the trimmed model. It was derived by the method of backward selection using a generous criterion for inclusion ( $p \leq .10$ ). Only one indicator of authority to respond is significantly associated with survey response in the multivariate models. Subsidiaries are only .62 times as likely to respond as independent firms. Because we sent the survey to the chief decision maker in the establishment, the absence of other authority effects is not surprising. Still, the uniquely organizational authority factors certainly do not dominate this analysis of nonresponse.

Reasons for nonresponse that were associated with authority, however, were prominent in the survey of nonrespondents (see Table 2). These reasons included claiming headquarters was responsible (22 percent), forwarding the survey to headquarters (21 percent), and a general policy against replying to survey requests (16 percent). We suspect that the claim that financial information is confidential was also associated with limited authority to respond. Additional analyses show that subsidiaries were more likely than others to claim that financial information is confidential. Similarly, distant decision makers were particularly associated with forwarding the survey to headquarters or claiming that headquarters was responsible.

Quite a few variables tap some aspect of the capacity of the establishment to respond. As establishment size increased, the probability of responding to the survey decreased. Establishments with more than 1000 employees have predicted response rates about 12 percent lower than establishments with between 10 and 25 employees. We interpret this to reflect dispersal of information in large establishments (capacity) and, alternatively, reduced employee identification with firm goals (motive). Finally, establishments in industries with high research and development expenses were significantly more likely to respond to the survey. We interpret this measure to represent an enhanced staff capacity to process information routinely, including survey requests. Multi-establishment, firm size, formalization, variance in locus of decision making, and finance-regulated are all not significantly associated with

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Table 4

### Comparison of Respondents and Nonrespondents on Organizational Attributes\*

	Nonrespondents		Respondents		Probability of difference
	% or Mean	N	% or Mean	N	
Industry					d.f. = 8
Extractive	38.5%	5	61.5%	8	$p = .036$
Construction	22.9%	8	77.1%	27	
Manufacturing	48.7%	112	51.3%	118	
Transport, utility	34.8%	8	65.2%	15	
Wholesale trade	40.7%	11	59.3%	16	
Retail trade	54.0%	61	46.0%	52	
Business service	48.6%	36	51.3%	38	
Personal service	55.0%	11	45.0%	9	
Social service	60.0%	24	40.0%	16	
Firm employment size (ln)	5.583 (4.249)	277	4.909 (4.349)	299	d.f. = 1 $p = .060$
Establishment employment size	3.956 (1.956)	277	3.470 (1.906)	295	d.f. = 1 $p = .003$
Subsidiary					d.f. = 1
Yes	57.6%	76	42.4%	56	$p = .013$
No	44.3%	201	55.7%	243	
Multi-establishment	2.310 (1.398)	277	2.024 (1.270)	299	d.f. = 1 $p = .010$
Distant decision maker					d.f. = 2
Local	43.4%	111	56.6%	145	$p = .195$
In state	51.4%	109	48.6%	103	
Out of state	49.6%	57	50.4%	58	
Formalization of employment relationship	1.553 (.997)	251	1.328 (1.012)	268	d.f. = 1 $p = .007$
Centralized decision making	2.983 (.687)	272	3.015 (.678)	296	d.f. = 1 $p = .570$
Variance in locus of decision making	.570 (.454)	272	.624 (.482)	296	d.f. = 1 $p = .167$
Price-regulated industry					d.f. = 1
Regulated	30.0%	3	70.0%	7	$p = .255$
Not regulated	47.8%	274	52.2%	299	
Safety-regulated industry					d.f. = 1
Regulated	29.1%	16	70.9%	39	$p = .006$
Not regulated	49.4%	261	50.6%	267	
Finance-market regulated industry					d.f. = 1
Regulated	55.6%	15	44.4%	12	$p = .392$
Not regulated	47.1%	262	52.9%	294	
Industry profit per establishment	\$5,270 (2,017)	277	\$4,756 (1,602)	306	d.f. = 1 $p = .001$
Industry 8-firm sales concentration ratio (ln)	2.782 (.840)	277	2.463 (.938)	306	d.f. = 1 $p = .000$
Industry group R&D per establishment (\$000s)	\$2142 (2470)	276	\$2101 (2449)	299	d.f. = 1 $p = .842$
Public					d.f. = 1
Publicly traded	45.7%	58	54.3%	69	$p = .638$
Not traded	48.0%	219	52.0%	237	

\* Standard deviations are in parentheses.

survey response. Given our theoretical development and the sign of the empirical estimates, the significant effects of price-regulated, safety-regulated, and profits per establishment will be interpreted in the discussion of motive to respond, below.

Table 5

**Logistic Regression of Establishment Respondents (1 = Respondent, 0 = Nonrespondent) on Organizational Attributes (N = 575)\***

	Prediction†			Full model		Trimmed model		
	A	C	M	B	p	B	Odds	p
Industry					.812			
Extractive				1.23	.267			
Construction				.80	.567			
Manufacturing				-26.35	.549			
Transport & utility				-3.32	.635			
Wholesale trade				.61	.325			
Retail trade				.77	.506			
Business services				.39	.423			
Personal services (reference category = social services)				-.29	.622			
Centralization	+			.01	.959			
Distant decision maker	-			.04	.745			
Subsidiary	-			-.49	.030	-.48	.62	.028
Establishment size		-		-.12	.070	-.14	.87	.016
Firm size (ln)		-		.00	.969			
Multi-establishment		-	-	-.06	.462			
Formalization		+	-	-.09	.374			
Variation in locus of decision making		+		.27	.172			
Price-regulated		+	+	1.49	.137	1.85	6.37	.017
Safety-regulated		+	+	.85	.108	.80	2.21	.017
Finance-regulated		+		.74	.356			
R&D expenditures		+		.006	.535	.000	1.0001	.002
Profits/establishment		+	-	-.20	.013	-.16	.85	.021
Sales concentration			-	-.26	.067	-.30	.74	.016
Public			+	.59	.038	.53	1.71	.022
Intercept				-2.04	.754	1.78		.000
Model chi-square					60.86			51.06
Degrees of freedom					23			8

\* Eight cases were dropped because they were missing data on industry.

† Theories of A = authority; C = capacity; M = motive; predictions of positive (+) or negative (-) effects on the log odds of survey response.

While the effects of regulated industries and profits were significant, they have a motive rather than a capacity interpretation in the absence of a significant finance-regulated effect. Establishments in price- and safety-regulated industries would have a higher motive to cooperate with requests for information because of their need to shape public opinion. Similarly, establishments that are owned by publicly traded firms are 1.71 times more likely to respond than establishments in privately held firms.

Because profits per establishment and sales concentration have significant negative effects, we follow a classic resource dependency interpretation. Establishments in profitable and concentrated markets are relatively independent of their environments and so are less concerned with reacting to environmental requests such as surveys.

Table 5 shows motive variables to have been very important in explaining nonresponse. Not only are five of eight variables statistically significant, but they cover various domains of motive, including resource dependency, desires to shape public opinion, and being publicly traded. Capacity to respond had two significant aspects: information dispersal

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and staffing. Authority to respond, in contrast, had only the constraint of subsidiary status influencing response, although the importance of this variable should not be underestimated given the ubiquitousness and growth of this organizational form. While measures of response capacity and authority were less strongly tied to survey response than measures of motive, their effects were not trivial. In a companion paper on item nonresponse (Tomaskovic-Devey, Leiter, and Thompson, 1994), we found that measures of capacity and authority to respond are as powerful as measures of motive in predicting the amount and pattern of item nonresponse. This suggests to us that motive may be particularly central to the decision to respond to survey requests but that all three are equally important in governing the quality of survey responses.

## IMPLICATIONS FOR SURVEY DESIGN

Establishment survey response was hypothesized to be a function of the authority, capacity, and motive of the organization and the designated organizational respondent. Organizational characteristics do predict the probability of survey response. Organizations in which information is not dispersed and a professional staff is available to process information have greater capacity to respond. Organizations that are dependent on their environments for resources and need to manage their public images have increased motives to respond. CEOs in establishments that are not subsidiaries have more authority to respond.

These analyses convince us that organizational surveys need to supplement survey techniques developed for individuals with sensitivity to organizational characteristics. The survey of nonrespondents clearly suggests the types of issues that organizational survey research should anticipate:

*Financial information.* Requests for financial information can easily trigger nonresponse because of barriers of authority, capacity, and motive. Researchers should only ask for financial information if it is central to the study's purposes. This is particularly a problem in subsidiaries and multi-establishment firms.

*Headquarters responsibility.* Establishments that are part of larger companies may be unsure about responsibility for survey response. The primary solution to this problem is to give clear instructions that responses should come from the establishment, not headquarters. If it is known from the sampling frame that certain establishments are part of larger organizations, it might make sense, after the first or second wave of mailed surveys or a telephone survey refusal, to contact the target respondents at the establishments and ask if this is an issue blocking their response. Researchers could either reassure them that it is establishment information that is desired or offer to secure authorization from headquarters.

*Time burden and information dispersal.* Another prominent reason given for not responding was that the survey would take too long to fill out. This is an organizational as well as a traditional survey problem. In large organizations this may be a problem, particularly when information is dispersed across



different people in the establishment. It might make sense to ask the chief decision maker, in preliminary telephone calls, to identify proper respondents for sections of the survey. The survey could then be customized to correspond to functional responsibilities of the respondents identified (e.g., personnel, finance, product development). This strategy would be much easier to implement in a telephone survey using a computer-aided telephone interview (CATI) system. Delegation of survey response from the top down should also increase total response rates, since subordinates are likely to see a delegated survey response as an order. Of course, this suggestion requires flexible survey administration and high resources per case.

*Survey administration flexibility.* Because time burdens and access to information limit the ability of establishments to respond, it makes sense to be flexible in the mode of survey administration. If the survey is designed as a mail survey, offer the option of a telephone interview to respondents who claim they are too busy to sit down and fill out the survey. Conversely, offer a mail option to telephone respondents who refuse or claim they are too busy (Parcel, Kaufman, and Jolly, 1991; Spaeth and O'Rourke, 1994). Providing choice should increase survey response not only because it increases the opportunity to respond but also because, by giving respondents a choice that does not include refusal, researchers increase their involvement in the interaction and make it more awkward to refuse.

Aside from the reasons given for not responding, it is clear that certain organizations are less likely to respond. Large establishments and subsidiaries of larger companies were less likely to respond to the survey. This suggests that additional survey resources may be required for such establishments. These resources might entail those in the approaches outlined above, such as special follow-up calls for large or complex nonrespondents, encouraging the delegation of completing parts of the survey, or obtaining response authorization from headquarters. Luckily, most organizations are quite small (Granovetter, 1984) and will not require these special efforts. The following approaches should be considered:

*Survey protocols sensitive to establishment characteristics.* Because establishments that are part of larger firms have special constraints, it might be wise to design different survey protocols for these establishments. This also raises design costs, but problems of administration need not be great with in-person or telephone interviews that include filtering questions. Beyond better response rates, multiple protocols would have the additional benefit of removing some nonapplicable questions from the single-establishment survey form. Administration of different survey forms runs some risk of introducing additional measurement error, but we think that any bias introduced would be small and more than outweighed by gains in response rates. Similarly, Leicht, Parcel, and Kaufman (1992) advocated the use of different measurement strategies for the same concept across diverse organizational types. They found that a diverse array of measures was almost equally reliable across organizational types. These findings suggest that different

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measurement strategies are not only practical but also are unlikely to have negative consequences for measurement reliability. Response rates seem to be the larger problem in organizational surveys.

*Careful attention to motive considerations.* Because motive variables seem to have the most systematic effect on survey response, it seems reasonable to pay particular attention to motive in designing surveys. As researchers, we have no control over the organizational attributes that affect motive. We can, however, pay close attention to the salience and reward characteristics we build into organizational surveys to enhance motive. During the pretest and focus-group stages of survey design, it would seem prudent to explore directly the salience of the survey topic and presentation and try to use this information to develop a survey appeal that will motivate response.

Most of this discussion has been developed in the context of sampling a general population of private-sector organizations. If, as is common in organizational research, the survey problem targets a more limited population, the typical organizational characteristics of that population can be used to make educated guesses as to the magnitude of the nonresponse problem. Surveys of small firms are likely to have higher response rates. Surveys in industries with public relations problems are likely to have higher response rates. In resource-dependent populations, survey response should be higher. Populations with large professional/administrative staffs are more likely to respond. If the target population typically lacks some or all of these favorable characteristics, the researcher needs to be especially careful to design the survey to increase the likelihood of cooperation. This may require additional resources of time, money, and staff to achieve adequate response.

## **SAMPLE SELECTION BIAS**

The presence of significant associations between organizational characteristics and the probability of responding means that, for the North Carolina Business Needs Survey, the sample of survey respondents differs from the population in potentially nontrivial ways. It is very likely that other organizational surveys with large levels of survey nonresponse (or noncoverage in list-based sampling frames) will have similar sampling biases. What consequences does this have for analyses of organizational survey data, and what, if anything, should be done about it? For the estimation of population means and distributions for individual traits (i.e., variables) some weighting of the data to conform to known population distributions would be a reasonable approach (Kalton, 1983). In multivariate analyses, in which the goal is generally to estimate causal relationships, sample selection bias may compromise inferences. Sample selection bias can usually be ignored in causal modeling when the sample selection is not associated with the dependent variable (Winship and Mare, 1992). Because sample selection in these data is associated with industry, firm, and establishment size, organizational structure and formalization, market competition, and profitability, it is difficult to imagine a substantively

interesting organizational analysis that is not potentially compromised. When the researcher suspects that a sample is truncated on the dependent variable of interest, some sort of sample selection correction is probably warranted. The standard Heckman (1976) correction for sample selection bias uses a logistic regression model similar to the trimmed model in Table 5 to create a variable that measures the odds of survey response. This variable would then be used as a control variable in substantive analyses to compensate for potential selection biases on estimates of substantive effects.

Such sample-selection corrections require knowledge of the distribution of key organizational characteristics for the whole sample, including nonrespondents. Surveys of large firms in the past could rely on disclosures required by law of publicly traded firms for this information. The increasing propensity of large firms to go private limits this approach. Detailed information on most small firms is simply not published systematically. Moreover, surveys of establishments should not simply rely on firm-level characteristics. For these reasons, hypernetwork sampling, which allows for the gathering of some establishment data about all establishments in the sampling frame, becomes more valuable. An alternative is to collect key establishment data (e.g., employment size, subsidiary status, parent-firm name, and industry) during the screening interview, when the researcher confirms the name, phone number, and address of the CEO or other designated respondent.

This paper assumes that raising response rates is the prime consideration in organizational surveys. Because most organizational research relies on case studies or very limited samples, it should be remembered that even a sample survey with a low response rate is likely to produce more generalizable results than a design that does not attempt to contact a general sample at all. We hope that many researchers with well-articulated theoretical concerns will attempt sophisticated organizational surveys in the future. Perhaps the findings from this research will help them increase the generalizability of their research and their confidence in statistical inferences.

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