Survey Representativeness among Multiple Modes of Administration using Random Assignment

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The purpose of this study was to assess the extent to which demographic and occupational characteristics of individuals influenced response rates and completion rates to a survey administered by three different modalities. We used an experimental design in which employee workgroups were randomly assigned to one of three response modes: paper-and-pencil, internet, and interactive voice response (IVR). Overall response rates by mode were 40.5%, 33.6% and 37.3%, respectively. African American and Asian racial groups had lower response rates when assigned to survey modes other than paper-and-pencil, as did staff with direct customer contact and hourly occupations. These findings suggest that some groups within organizations may be in danger of being under-represented using survey modes of administration other than paper-and-pencil.

The use of media other than paper-and-pencil to survey employees has increased dramatically over the last decade (Church, 2001; Kraut, 1996). Researchers and organizations have turned to using automated interactive voice response (IVR) and internet modes of administration to collect data. Several user-friendly websites have emerged, such as Survey Monkey and Zoomerang, which have facilitated the ease of designing and collecting survey data through the internet.

Before the advent of the internet and IVR methods, most survey research relied on paper-and-pencil self-report questionnaires or telephone interviews. The administration of internet surveys, however, is now common in organizational settings and is being used more frequently than paper-and-pencil methods (Kraut, 1996). The internet mode of administration is less expensive, more efficient, easier to use, allows more customization, and is generally less error-prone than paper-and-pencil methods of data collection (McDaniel & Gates, 2002; Simsek & Veiga, 2001; Stanton, 1998). Another alternative method for organizational survey administration is interactive voice response (IVR) technology. Under this method, respondents are provided a toll-free telephone number to access a high-quality voice recording of survey items. Participants respond by using the keys.
on a touch tone phone to indicate their responses to survey items. This method is distinct from telephone interviews involving a live interviewer. Although completing a survey by telephone may be more time consuming, an advantage of IVR is that it makes use of a more widely-available and familiar technology and may be more accessible for certain groups because it does not require computer access (Corkrey & Parkinson, 2002).

Evaluating Survey Research Quality

Organizations conducting surveys will want to evaluate the effectiveness of a survey administration to be able to have confidence in the generalizability of the results. This information can help managers decide how to proceed with future survey administrations. Three important measures of survey effectiveness are the overall response rate, survey completion rate and the representativeness of the respondents.

**Overall response rate.** The survey response rate is the percentage of individuals who respond to the survey over the total number of sampled individuals. Low response rates present several problems to researchers, including a reduction in analytic power, increased confidence intervals around point estimates, (i.e., a wider “margin of error”), and an increased possibility of nonresponse bias (Rogelberg, Luong, Sederburg & Cristol, 2000). Patterns of nonresponse have been noted as a particular challenge in research involving group diversity, which can result in attenuated observed correlations (Allen, Stanley, Williams & Ross, 2007). In a review of over 350 surveys over a ten year period, only 17% of the results discussed nonresponse analysis based on socio-demographic characteristics of respondents and nonrespondents (J. V. Cook, Dickinson & Eccles, 2009), suggesting it may be overlooked in the research community.

A low response rate presents specific problems for managers, because they have an incomplete picture of how all members of the organization think and feel about the specific survey domains. This may lead managers to intervene on factors rated lower by only a small group of individuals, while missing factors that may be important to the broader group of nonresponders. In addition, managers may find it difficult to obtain additional support or resources to address issues identified from a survey with a low response rate.

For employees, a low response rate could reflect how they view the credibility of the survey results and their likelihood to participate in future surveys. A low response rate may also influence employee perceptions regarding the representativeness of the survey and may influence the extent to which they will support recommendations and changes from management.

Survey length has been examined as one factor influencing response rates, with conflicting results. In a meta-analysis conducted on internet surveys, the length of the survey was strongly and inversely associated with response rate (C.
Cook, Heath & Thompson, 2000). However, a review of mailed paper surveys found no correlation between survey length and response rate (Heberlein & Baumgartner, 1978).

**Respondent representativeness.** Another issue for survey research quality consideration is the degree to which survey respondents are demographically similar to the total population (i.e., respondent representativeness). Representativeness may be as important as actual response rates (C. Cook et al., 2000). Survey administrators planning an organizational assessment with an electronic component should consider what percentage of organizational members may not have access to the necessary resources (e.g., internet access) or may not be comfortable with that mode of administration.

For example, some individuals may have administrative functions that allow easy access to a computer while other groups, such as front line staff, housekeeping and/or maintenance personnel may not have routine access to a computer. Likewise, individuals in different demographic groups may prefer one type of survey modality over another. Barriers related to access or familiarity with the technology could result in the organization inadvertently dissuading certain demographic groups of employees from responding, leading to erroneous conclusions about those sub-populations and the organization as a whole (Best, Krueger, Hubbard & Smith, 2001).

Thus, if an organization uses the internet modality for administration, survey analysts should examine the extent to which the results are representative of the company as a whole. One way to examine survey representativeness is to compare the demographic characteristics of those who responded to the survey with the demographic distribution of all employees. Due to limited access to administrative personnel data or lack of comparable data, it may not always be possible to examine demographic representation.

Researchers may adjust survey scores based on mode of response and respondent characteristics. For example, patient assessment of hospital care is publically reported. To allow a fair and accurate comparison among hospitals, patient survey responses are adjusted using both survey mode of administration (e.g., phone, mail) and patient-mix variables (e.g., age, self-rated health) (Centers for Medicare & Medicaid Services, 2008). Mode effects are generally larger than total patient-mix effects and consistent across hospitals (Elliot et al., 2009).

Differences in response rates to survey modalities have been examined in observational design studies. In an early study of individual preference for survey modes using trained telephone interviewers, respondents indicated the type of contact they would have preferred for completing the survey. The majority of the study sample reported a preference to be surveyed by telephone (39%), with a smaller percentage preferring to be contacted by mail (28%) or face-to-face interviews (23%) (R. M. Groves & Kahn, 1979). In a study comparing IVR to a live telephone interview, the average age of the respondent and education level were lower for those using the IVR (Havice & Banks, 1991). This may be due to
older respondents having less familiarity with or knowledge about the technology interface (Albisser, Harris, Sakkal, Parson & En Caho, 1996).

Survey response quality may be affected by psychological appraisal of the survey mode. In one conceptual framework (Robling et al., 2010), five key psychological appraisal factors were represented to explain survey response: the degree of impersonality; survey administrator legitimacy; cognitive burden (Tourangeau, Rips & Rasinski, 2000); leverage-saliency theory (R. M. Groves, Singer & Corning, 2000); and social exchange theory (Dillman, 2000). Compared with the IVR or internet mode, Robling and colleagues suggested that employees view the paper-and-pencil mode of administration as being more personal, important to the organization, and having a lower cognitive burden. Therefore, we hypothesized that employees assigned to the paper-and-pencil modality would be more likely to respond.

Several studies on college students have also found that minorities are less likely to participate in internet surveys, even when controlling for socioeconomic factors (Goree & Marszalek, 1995; Sax, Ceja & Teranishi, 2001). Another study found that males were more likely to participate in internet based surveys than women (Simsek & Veiga, 2001). Individuals may have a preference on how they would like to take a survey, but how these preferences translate into the actual practice of completing the survey has not explicitly been examined, nor have more modern methods of survey administration (for example, live phone interview as compared to IVR) been compared using random assignment to modality. Given these previous studies, we hypothesized significant differences in response rates across mode of administration for employee demographic variables, such as gender and racial background.

**Survey completion rate.** The survey completion rate is the percentage of items that were answered compared to the total number of possible items the respondent received. Failure to answer a survey question may be caused by lack of clarity, complicated or ambiguous phrasing, questions that are not applicable, or respondent fatigue. A high rate of missing responses on a survey can create biased estimates when analyzing data (Sherman, 2000). A respondent who does not answer all the questions in a multi-item scale can diminish the ability to compute the internal consistency reliability of the measure, if a listwise deletion (i.e., dropping a respondent with at least one missing response) procedure is used to compute Cronbach’s alpha. A high rate of missing data may be problematic for constructs measured by a single item, as is frequently done regarding intentions to leave the organization or overall job satisfaction. For instance, missing data on such measures means less information for decision-making and potentially spurious findings when, for example, correlating the results for those who did respond with actual turnover rates.

If respondents cannot determine how long a survey will take or how close they are to the end, they may not finish the survey, resulting in a lower completion rate. Many internet surveys now include a progress bar that provides
feedback to the respondent about the remaining length of the survey. Respondents can draw inferences on how long the survey will take based on the progress bar, and presumably having this information would encourage more respondents to stay on task. This feedback, however, might also lead some to drop out if they feel the bar is not progressing at a fast enough pace (Matzat, Snijders & van der Horst, 2009). With paper-based administrations, individuals know the length of the survey at the outset and can estimate how much time it will take to complete (Crawford, Couper & Lamias, 2001). We hypothesized that there would be significant differences in survey completion rate among modes of administration, with paper-and-pencil respondents demonstrating a higher completion rate.

**Current Study**

Many researchers have examined whether different survey modes result in differential response rates among participants. Although several review studies have examined response rates for internet studies (e.g., Cook et al 2000) and interactive voice response (IVR) (e.g., Corkrey et al., 2002), few studies have examined the potential impact of demographic characteristics (e.g., race) and occupational characteristics (e.g., job type) when responding to different survey modalities using an experimental design. The purpose of this study was to examine the relationship of respondent demographic and job characteristics to completion rates and response rates under three different randomly assigned modes of administration – paper, IVR, and internet.

**Methodology**

**Participants and Procedures**

As part of the development process for a national employee survey, we pilot tested in 2003 an organizational survey using three different response modalities described below. Some items for this survey were drawn from surveys originally administered in 1997 and 2001, with item selection based on psychometric and criterion validation analyses. Other items were new additions. The pilot was conducted at six Department of Veterans Affairs (VA) medical facilities and two administrative office centers. This was the first time the survey instrument was used in the organization, although a longer version had been administered to a census of employees using paper-and-pencil mode only in 2001.

All locations volunteered to participate in the pilot study as a way of obtaining additional feedback about staff perceptions. The number of employees per site ranged from 144 to 2,063; all employees at each site were invited to participate. The locations were geographically diverse across the United States. Site coordinators were identified at each location and had responsibility for
identifying employee workgroups. Workgroups were generally defined by the service provided or by setting (e.g., primary care, human resources).

Within each facility, workgroups were randomly assigned to one of three survey modes; employees had access only to the assigned modality. A total of 9,268 surveys were distributed among the three survey modes as follows: 3,215 (35%) to paper, 2,539 (27%) to IVR, and 3,514 (38%) to the internet condition.

Workgroup supervisors distributed survey instructions, workgroup numbers and a paper version of the survey items to employees in all three response mode conditions. A few weeks after the initial contact, a follow-up e-mail reminder was sent out to all employees to complete the survey and use the assigned mode for response. To encourage candid responses, employees were informed that an external vendor handled all aspects of the survey administration, thus insuring confidentiality; no linkage between individuals and responses was possible. Individuals in the paper-and-pencil modality entered their responses to the items by marking their responses directly on a scannable survey booklet and mailed the form back to the external vendor for processing. Individuals in the IVR modality were given a phone number and instructed to use the touch tone numbers on a telephone to enter their responses. Individuals in the internet modality were directed to a website where they entered their responses to the survey by clicking on the box next to their answer for each item. Individuals were able to complete the surveys either at work or outside the workplace. No incentives were offered for completing the survey.

Instrument

The survey consisted of three sections designed to assess employee experiences and perceptions of the workplace at three different levels: individual, workgroup, and organization. The individual-level section of the survey consisted of 13 items concerning traditional facets of job satisfaction. These items were written in terms of the discrepancy between current conditions on the job and the respondent’s preferred (“should be”) state (Nagy, 2002). A sample item is “Compared to what you think it should be, what is your current overall level of satisfaction with your job?” All items in this section used a 5-point response scale from not at all satisfied (1) to very satisfied (5).

The workgroup section was based on an extensive survey developed by the Federal Office of Personnel Management and designed for use across government agencies (Gowing & Lancaster, 1996). Several items were also drawn from the NIOSH Generic Stress Questionnaire (Hurrell & McLaney, 1988). All questions in this section used a 5-point scale that ranged from strongly disagree (1) to strongly agree (5). A sample item is “Employees in my work group are involved in improving the quality of products, services and work processes.” In the present study, two different versions of the workgroup section were administered: a 20-item form and a 39-item form. The survey with the
additional items was part of a pilot testing procedure and was randomly distributed across each survey modality.

The organization-focused component asked respondents for their perceptions of the location-wide culture. Two versions of this section were tested. One, using the 20 items with a five-point response scale formats based on the Competing Values Framework (Zammuto & Krakower, 1991) as adapted for healthcare settings (Shortell et al., 1994), and the other version contained 20 items but required individuals to assign 100 points among each of four descriptions in five sections depicting the organizational culture (i.e., bureaucratic, entrepreneurial, rational and group) at their medical facility.

**Individual Characteristics**

The survey included seven demographic questions to assess individual characteristics. Sex was assessed dichotomously as male or female. Four categories of race (Caucasian, African American, Asian, Other/Multi-racial) were created from a more extensive list of five checklist survey options. Ethnicity was assessed dichotomously for individuals identifying themselves as Spanish, Hispanic, or Latino or not. Five age categories were also collected from survey responses (less than 30, 30-39, 40-49, 50-59, and 60 years or older). Tenure was assessed using five categories (less than 1 year, 1 to 5 years, 6 to 10 years, 11 to 20 years, and 21 or more years). Supervisory status was assessed using four levels (none, team leader, first line supervisor, and manager or executive). Three occupation categories were created based on a larger list of specific job titles; direct customer contact (i.e. clinical service providers), administrative, and hourly employees. Missing values were not recoded.

**Analyses**

All analyses were performed at the individual level. We first examined response rates by mode of survey administration using analysis of variance model with post-hoc tests. We conducted chi-square tests to determine if there were differences among individual characteristics by survey modality. We computed the survey completion rate for each respondent by summing the number of answered responses and dividing by the total of possible questions (Stanton, 1998). We regressed survey completion rate on individual demographic characteristics using an ordinary least squares model that modeled the effects of survey modality using the IVR modality as the referent group.

**Results**

The overall response rate was 37% (n=3,427). There were significant differences among response rates by modality $F(2,9265) = 17.20, p < .001$, and post-hoc comparisons revealed that the response rate in the paper-and-pencil
condition was the highest at 40.5% (1,301 respondents), followed by IVR at 37.3% (946 respondents), and the internet at 33.6% (1,180).

Table 1 displays results of the chi-square tests examining response rate by individual characteristics and survey modality. Of the seven demographic characteristics we examined, only two significant results emerged. First, we found a significant difference for race, \( \chi^2(6) = 50.46, p < .001 \). Individuals identifying themselves in the Caucasian group had a higher than expected response rate to the internet and paper mode. Individuals in the African American and Asian respondent groups had a higher than expected response rate in the paper mode and a lower response rate in the internet or IVR modes. We also found differences based on occupation, \( \chi^2(4) = 47.34, p < .001 \). Direct customer contact staff had a higher than expected response rate to the paper mode, while administrative staff had a higher than expected response rate to the internet mode. Hourly staff had a higher than expected response rate for the paper and IVR modes. The other demographic characteristics did not show significant deviations from expected proportions. Both the race and occupation differences remained significant at \( p < .01 \) when applying a Bonferroni correction for multiple comparisons.

Next, we examined survey completion rates. The internet mode had the highest survey completion rate (98.2% \( SD = 7.6\% \)) which differed significantly from both the paper-and-pencil condition (96.2%; \( SD = 14.7\% \)) and IVR (87.9%, \( SD = 31.2\% \); \( F(2,3424) = 83.15, p < .001 \). Post-hoc tests indicated that all comparison groups differed significantly from each other.

Results from the ordinary least squares regression model regressing survey completion rate on respondent characteristics indicate that African Americans (\( b = -0.94, p = .02 \)) had significantly lower survey completion rates compared to Caucasians and that Hispanics (\( b = -1.78, p = .05 \)) had significantly lower survey completion rates compared to non Hispanic respondents. Direct customer contact (\( b = 1.80, p < .01 \)) and administrative occupations (\( b = 1.90, p < .001 \)) had higher survey completion rates compared to hourly employees. Perhaps just as important, there were no other significant completion differences between survey modalities on any of the other demographic variables or on length of the survey. The results for the variables of African American, administrative occupation, and direct contact occupation were significant at \( p < .05 \) when applying a Bonferroni correction, while the variable for ethnicity failed to meet this adjusted threshold level.

Because surveys were assigned by workgroup, we also conducted a multilevel linear analysis that clustered employees within workgroups. We found parameter estimates to be similar to the non-clustered model. Our conclusions, using a .05 value for significance, did not change for any variable. The intraclass correlation or portion of total variance accounted for by differences between workgroups was .02, suggesting limited effects of survey completion based on workgroup.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Internet</th>
<th>IVR</th>
<th>Paper</th>
<th>Difference</th>
</tr>
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<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>417 (33.9)</td>
<td>307 (25.0)</td>
<td>506 (41.4)</td>
<td>$\chi(2)=3.49, p = .17$</td>
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<tr>
<td>Female</td>
<td>741 (36.8)</td>
<td>505 (25.0)</td>
<td>769 (38.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>736 (37.9)</td>
<td>481 (24.8)</td>
<td>723 (37.3)</td>
<td>$\chi(6) = 37.00, p &lt;.001$</td>
</tr>
<tr>
<td>African American</td>
<td>276 (32.6)</td>
<td>201 (23.7)</td>
<td>371 (43.8)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>78 (32.9)</td>
<td>50 (21.1)</td>
<td>109 (46.0)</td>
<td></td>
</tr>
<tr>
<td>Other/Multi</td>
<td>42 (31.1)</td>
<td>56 (41.5)</td>
<td>37 (27.4)</td>
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<td><strong>Spanish, Hispanic or Latino</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1109 (35.7)</td>
<td>778 (25.1)</td>
<td>1216 (39.2)</td>
<td>$\chi(2) = .96, p = .62$</td>
</tr>
<tr>
<td>Yes</td>
<td>40 (35.1)</td>
<td>33 (28.9)</td>
<td>41 (36.0)</td>
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<tr>
<td><strong>Age</strong></td>
<td></td>
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<tr>
<td>Less than 30</td>
<td>49 (36.3)</td>
<td>37 (27.4)</td>
<td>49 (36.3)</td>
<td>$\chi(8) = 6.40, p = .60$</td>
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<td>30 – 39</td>
<td>160 (34.2)</td>
<td>129 (27.6)</td>
<td>179 (38.3)</td>
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<td>40 – 49</td>
<td>363 (34.4)</td>
<td>274 (25.9)</td>
<td>419 (39.7)</td>
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<tr>
<td>50 – 59</td>
<td>478 (36.7)</td>
<td>301 (23.1)</td>
<td>523 (40.2)</td>
<td></td>
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<tr>
<td>60 years or older</td>
<td>106 (37.9)</td>
<td>70 (25.0)</td>
<td>104 (37.1)</td>
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<tr>
<td><strong>Tenure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 1 year</td>
<td>91 (38.2)</td>
<td>62 (26.1)</td>
<td>85 (35.7)</td>
<td>$\chi(8) = 11.08, p = .20$</td>
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<tr>
<td>1 to 5 years</td>
<td>241 (32.5)</td>
<td>203 (27.4)</td>
<td>297 (40.1)</td>
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<tr>
<td>6 to 10 years</td>
<td>168 (36.0)</td>
<td>122 (26.1)</td>
<td>177 (37.9)</td>
<td></td>
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<tr>
<td>11 to 20 years</td>
<td>351 (35.1)</td>
<td>244 (24.4)</td>
<td>404 (40.4)</td>
<td></td>
</tr>
<tr>
<td>21 or more years</td>
<td>314 (38.7)</td>
<td>179 (22.0)</td>
<td>319 (39.3)</td>
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<td><strong>Supervisory status</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>793 (35.5)</td>
<td>568 (25.5)</td>
<td>871 (39.0)</td>
<td>$\chi(6) = 5.87, p = .44$</td>
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<td>Team leader</td>
<td>159 (37.3)</td>
<td>91 (21.4)</td>
<td>176 (41.3)</td>
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<tr>
<td>First line supervisor</td>
<td>106 (38.8)</td>
<td>67 (24.5)</td>
<td>100 (36.6)</td>
<td></td>
</tr>
<tr>
<td>Manager / executive</td>
<td>101 (32.9)</td>
<td>84 (27.4)</td>
<td>122 (39.7)</td>
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<tr>
<td><strong>Occupation</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct contact</td>
<td>570 (34.1)</td>
<td>386 (23.1)</td>
<td>714 (42.8)</td>
<td>$\chi(4) = 47.34, p &lt; .001$</td>
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<td>Administrative</td>
<td>545 (39.5)</td>
<td>378 (27.4)</td>
<td>457 (33.1)</td>
<td></td>
</tr>
<tr>
<td>Hourly</td>
<td>65 (25.2)</td>
<td>90 (34.9)</td>
<td>103 (39.9)</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Cell count and (percentages) presented.*
Discussion

This study was the first to our knowledge to directly compare response rates involving three modalities using a design where survey mode was randomly assigned to respondents by workgroup. In support of our first hypothesis, we found that the highest overall response rate was for the paper-and-pencil mode (about 41%) whereas the internet condition had the lowest response rate (about 34%). For our second hypothesis pertaining to response rate differences by survey mode for demographic characteristics, we found significant differences among racial groups and occupations for both survey participation rates as well as survey completion rates. Our findings suggested that administering only the paper-and-pencil mode may have resulted in a more representative sample of respondents with regard to race for this organization at the time of study. We also hypothesized that survey completion rate would be higher in the paper-and-pencil mode of administration. However, we found the internet mode had a significantly higher completion rate (98%) compared to paper-and-pencil (96%) and IVR (88%).

At the time of our study, the internet was a new mode of survey administration for the organization. Our finding, that individuals preferred the paper-and-pencil modality, may reflect an avoidance of the novel internet modality and a preference for more familiar modalities. Prior to this administration, almost all of the employee surveys had been conducted using a paper-and-pencil modality. Repeat survey administrations utilizing internet and IVR modalities have been known to obtain larger response rates as employee familiarity with those survey modes increases (Simsek & Veiga, 2001; Singer, Mathiowetz & Couper, 1993). Offering multiple modalities during a survey administration has also been associated with greater response rates compared to offering only a single mode of administration (Kroth et al., 2009). Indeed, more recent administrations of the annual VA employee survey have obtained a response rate greater than 70%, and more than 80% of the respondents did use the internet mode, even though the options of paper-and-pencil and IVR were made available. Future research would benefit from investigating: a.) the response rates to different modalities over an extended period of time and b.) factors that facilitated greater acceptance and use of internet and IVR among employees.

Our findings also suggest that some minority groups may be less likely to respond to either the internet or IVR, and more likely to respond to a paper survey. The importance of this finding cannot be overstated. If it is indeed true that minorities are less likely to respond to survey modalities other than paper-and-pencil administrations, then organizations need to understand that eliminating this mode may result in survey results that do not reflect the feelings of minorities within their organization. In other words, implementing only internet (or IVR) survey modalities could have the effect of under-representing the minority perspective in an organization. If this were to occur, and if organizational interventions were undertaken based on the results of a survey that did not reflect
the minority perspective, then an organizational survey designed to improve employee relations might have the unintended effect of reducing morale among minorities.

This study’s results also suggest that individuals who are direct customer contact or hourly employees may prefer paper versions of surveys. This may be partly due to difficulty accessing the internet. In comparison, administrative personnel, who were more likely to have access to a dedicated computer and internet service, had a greater than expected response rate when assigned the internet condition.

In follow-up analyses, we examined the interaction between racial and occupational respondent categories. We did not find any significant differences in response rates between minority and non-minority employees who held administrative positions. This finding suggests that occupational category may moderate sample representativeness differences for racial categories. Thus, if minorities are more likely to be represented in direct customer contact and hourly positions than administrative positions in a particular organization, then using only an internet-based survey may diminish the likelihood that these individuals will voice their opinions.

In terms of survey completion rates, although the general rate was very high, minorities answered slightly fewer questions across all survey modalities. Hourly staff had lower survey completion rates compared to direct customer contact and administrative staff. Future research should explore this issue further to determine if employees in certain occupations are less likely to complete surveys and, if so, why that may occur. Although the potential respondents assigned to the internet modality had the lowest response rate, they did have the highest survey completion rate compared to the other two modes. This finding is consistent with previous research that found the internet modality produced a higher survey completion rate than other survey modalities (Boyer, Olson, Calantone & Jackson, 2002; Denscombe, 2006). The low survey completion rate for the IVR mode may reflect the greater cognitive attention requirements inherent in that survey modality; it takes longer to listen to a question being read by the IVR. This additional cognitive demand and longer time requirement may have led to survey fatigue and lower survey completion rates. Even though respondents did have the option to enter a response to the question before verbal recording was finished, it is not clear how many respondents waited for the entire question to be read.

In terms of planning for the surveys, the paper and pencil mode did have a higher cost for the organization, but it also resulted in a higher overall response rate compared to the internet and IVR. In an organization of 1,000 employees, the paper mode (40.5% response rate) would have 32 more respondents than the IVR mode (37.3% response rate) and 69 more responses than the internet mode (33.6%). Moreover, we found that minorities and employees within certain occupational categories are more likely to respond to the paper-and-pencil modality than the more cost effective internet and IVR modalities. Although the
additional respondents may not change organization-level means, sub-group analyses may be impacted by the difference in response rates by modality. Organizations should weigh the benefits of an increased response rate as well as potentially greater sample representation from minorities and employees in non-administrative positions against the higher cost of paper-and-pencil surveys.

Rogelberg (2006) discussed practices at the organizational level to facilitate high response rates to organizational surveys, including public relations activities, emphasizing the importance of survey, offering incentives for survey participation, tracking and monitoring response rates, and sending reminder notices. Additionally, organizations aiming to increase response rates may consider having an outside party conduct focus groups prior to the survey to understand why employees may decline participation, then address those concerns before the survey administration (Rogelberg, 2006).

As this was the first internet survey administration in the organization, several cautionary notes and suggestions are in order. While the internet mode of administration offers the opportunity to personalize the survey to respondents (i.e., substituting text names for referent groups, efficient survey branching logic, and completion reminders), it is important to balance this with employee concerns about privacy (Fenalson & Suckow-Zimberg, 2006). To the extent that employees feel their identity is compromised when accessing a survey by computer, they may be less likely to respond or to respond honestly. While the current survey was anonymous in the sense that unique identifiers were not used, common identification numbers were assigned to employees by workgroups, and administrators sent general reminder notices. We did not assess attitudes about privacy or confidentiality concerns. A potentially useful approach in future studies would be to include some questions asking respondents about their trust in the confidentiality of the data and whether they felt pressured to respond in a particular way.

The location where the survey was completed could be an area for further research. We did not record whether the survey was taken at home or at the work place. During the marketing of the survey it was emphasized that individuals could complete the paper, IVR or internet survey away from the work place to alleviate concerns about being identified. Location might have a differential effect on response rates and completion rates. For example, if individuals assigned to the IVR mode in the present study were also more likely to attempt to complete the survey at home, this might be associated with an increased probability of interruption. Direct customer contact staff and hourly staff assigned the internet mode may have been more likely to complete the survey at home if they had computer access.

This study was not able to distinguish between passive and active nonresponders to the survey (Rogelberg & Luong, 1998). Passive nonresponders are individuals who wanted to complete the survey but could not (i.e., lack of access). In the current study, individuals assigned to the internet modality without computer access on their job or at home who wanted to respond would fall into
this category. Our findings suggest that organizations undertaking an internet survey that do not provide computer terminals to access the survey may have lower sample representativeness for certain occupational categories and minorities. These groups would be passive nonresponders; as a consequence, the results of the survey may not be representative of the entire employee population. We would suggest that organizations do provide a safe and highly accessible place to allow all employees to complete surveys, even for administrative staff who may have regular computer access.

Additionally, we did not measure workgroup-level variables (e.g., unit type, workgroup diversity) that could potentially influence response rates. Further research to examine the influence of such workgroup characteristics on responding should be considered to provide a more detailed understanding of the impact of these contextual characteristics.

The complicated nature of the experimental design employed here should also be noted. It may not be easily replicated in other organizations. An extensive amount of time and effort on the part of the site coordinators and survey administration companions was necessary to ensure that the appropriate set of instructions and survey mode were assigned to the appropriate workgroups in each facility. While we suggest using site coordinators and survey administration companions is an effective practice, (one which continues to be used in the current organization, but without assignment of survey modality to workgroups), there are several organizational resource and constraint issues that make implementation challenging. Additionally, this study occurred in 2003. Since then, response patterns may have changed because of increased access to and familiarity with internet and computer technology.

Conclusion

As the frequency and breadth of content of organizational surveys continues to expand, organizations look for ways to facilitate employee participation and representativeness in surveys. Given the increased usage and ease of the internet as a survey modality, a challenge for some organizations may be how to facilitate participation of its members who have limited access to computers. If the internet mode had been used exclusively in this study, the obtained responses may have been biased by administrative personnel because they were more likely to respond using this method. Moreover, the obtained results from an internet-only survey may have also underrepresented minority perspectives. If only paper had been used, more minorities and direct customer contact staff and hourly staff may have responded, perhaps presenting a different view of the organization. In addition, our results suggest that organizations that are strictly administrative may do very well with offering only the internet-based method, whereas organizations with a large number of direct customer contact staff or hourly staff may fare better by offering the paper-and-pencil version if they were able to select only one method. In the final analysis, the best solution
may be to offer multiple survey modalities to ensure that diverse employee perspectives are reflected.

References


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