A PROFILE OF TELEPHONE ANSWERING MACHINE OWNERS AND SCREENERS

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Within just over a decade the telephone answering machine has become practically a fixture of modern day life. In 1985, the incidence of answering machine ownership among U.S. households was just 13 percent (Roper Organization 1985). Three years later the penetration level of machines was estimated at approximately 23 percent (Roper Organization 1988). In the study presented here, the figure now stands at 52 percent of all households.

As the ownership of answering machines continues to spiral upwards, it is important to monitor both the characteristics of owners and the patterns of usage of the machine. The reason for this is straightforward. If individuals routinely use their machines for screening purposes, then the effectiveness of the telephone survey as a data-gathering mechanism is potentially threatened.

Virtually all previous studies of the effect of the answering machine on the conduct of telephone survey research themselves have relied upon data gathered through the telephone survey (Baumgartner 1990; Piekarski 1990; Tuckel and Feinberg 1991; Piazza 1993; Xu, Bates, and Schweitzer 1993; Oldendick and Link 1994). This methodology is particularly suitable for measuring the overall extent to which potential respondents remain inaccessible to telephone surveyors due to the presence of the answering machine. Telephone surveyors can use the answering machine call disposition as a "behavioral" measure by which to gauge the effect of the machine on limiting access to potential respondents. As a mechanism by which to identify the characteristics of answering machine owners and those who use their machines to screen calls, however, the telephone survey suffers from an inherent drawback. Information pertaining to the characteristics of owners and those who engage in the practice of screening will be delimited precisely to the extent that potential respondents elude telephone surveyors through the use of the answering machine. To take an extreme example, consider those individuals who screen all their calls. In this instance, it is clear that the telephone survey would be less than an ideal vehicle through which to gather information about these individuals.

In the present study we attempt to overcome the above stated deficiencies of carrying out reseach on the answering machine by relying upon face-to-face interviews. Our study has three principal objectives: (1) to construct a profile of answering machine owners, (2) to gauge the extent to which individuals use their machines to receive messages when they are not at home, and (3) to delineate the characteristics of owners who use their machines to screen calls with varying frequency.

Method

The results of this study are based upon interviews with a nationwide cross-section of 1997 men and women who were interviewed face-to-face in their homes. The sampling methodology consisted of a multistage, stratified probability sample of interviewing locations. Respondents were interviewed for this study between May 14-21, 1994. (For a detailed exposition of the methodology, see the Appendix.)

Ownership Of Answering Machines

Recently, Oldendick and Link (1994) compiled a profile of answering machine owners based upon the pooled results of nine telephone surveys carried out among residents of South Carolina. The surveys spanned the time period from November, 1989 to November, 1992 and altogether totalled 7,649 respondents. For the entire sample, Oldendick and Link found that 31 percent were answering machine owners.[1] In the present study we find that a majority of all households in the United States (52%) now possess an answering machine.

Consistent with the findings uncovered by Oldendick and Link, our analysis reveals that both family income and level of education are positively related to the incidence of ownership. There is also a considerably higher proportion of whites who are owners than non-whites.[2]

Unlike the Oldendick and Link study, our data indicate that the inhabitants of cities are just as likely to be

owners of machines as are the residents of comparably-sized suburban areas surrounding these cities. Noteworthy, too, is that the ownership level among inhabitants of either large cities or large suburbs surpasses that of all other locales.[3]

Our study further shows that the relationship between percentage of owners and household size is curvilinear with the incidence of ownership increasing steadily from one- to four-member households and tapering off thereafter. With respect to the age variable, the percentage of owners increases noticeably as the age category shifts from 18-29 to 30-44, declines moderately among those in the 45-64 age category and then plummets among those in the 65 and over age group.

Not unexpectedly, there is a relationship between employment status and level of ownership: as involvement with the paid labor force increases, ownership rises. Among retired individuals, a scant 28 percent report owning a machine and among homemakers, only 42 percent say they are owners. By comparison, 58 percent of part-time workers and 65 percent of full-time workers say they are owners. Interestingly, this same basic relationship is maintained controlling for spousal labor force participation. In households in which both spouses are working full-time or one is working full-time and the other part-time, the incidence of ownership hovers around 70 percent. In households in which one partner is working full-time and the other is a homemaker, the incidence of ownership drops to 57 percent. Lastly, among households in which neither partner is working full-time, the level of ownership is a bare 33 percent.

In line with the findings about the effects of income and education, the data reveal that among part- or full-time workers, the level of ownership increases as occupational status changes from blue collar to white collar to executive-professional. Ownership furthermore rises as individuals demonstrate a higher degree of political/social activism. For example, among respondents who say they did not participate in any of a list of 12 political/social activities in the past year, only 45 percent are owners of machines.[4] On the other hand, close to 80 percent of individuals who report participating in 4 or more activities from this list are owners. Marital status too appears to have a bearing on the incidence of ownership with married respondents being much more likely to be owners than members of the other marital status groups. Finally, there is considerable geographic variability in the percentage of owners. A markedly lower percentage of owners is found in the South than in the other three major census regions of the country.

To assess the relative importance of the demographic characteristics of answering machine ownership, we undertook a stepwise logistic regression analysis. The dependent variable in this analysis was assigned a value of 1 if a respondent was an owner and a value of 0 if a respondent was a non-owner. The independent variables consisted of the same set of demographic correlates discussed above. Household income was coded on a scale ranging in values from 1 (under $7,000) to 11 ($75,000 and over). Level of education was scored on a scale with values going from 1 (no formal education) to 7 (post-graduate education). Political/social activism was measured using a summated scale going from 0 (no activities) to 12 (all 12 activities). To capture the curvilinear nature of the relationship between age and ownership, first- and second-degree polynomial terms were inserted in the equation. Similarly, first- and second-degree polynomial terms were created to model the curvilinear nature of the relationship between number of household members and ownership. Race was a dichotomously coded variable with white being accorded a value of 1 and non-white being accorded a value of 0. Finally, five different sets of dummy variables were created to measure the remaining socio-demographic characteristics: (1) size of place of residence (with small town/rural area being the reference category), (2) census region (with the South being the reference category), (3) employment status (with "other" being the reference category), (4) occupation status (with non-labor force participants serving as the omitted category) and (5) marital status (with widowed being the omitted category).

The results of this analysis show that household income is the most important determinant of ownership of machines. The R statistic is +.19. Large-sized households, age and level of education vie for second place in terms of their order of importance. The corresponding R statistics are all in the direction which would be predicted upon the preceding bivariate analysis. Occupying a third tier of importance is the level of political/social activism (R=+.05) and being part-time employed (R=+.04). None of the other variables in the analysis achieved statistical significance at the .05 level.

Use Of The Answering Machine When Owners Are Not At Home

By a substantial margin, owners of machines report they use them frequently to receive messages when they are not at home. In response to the question, "How often do you leave your answering machine on to receive messages when you are not at home?" fully 76 percent say "always" and an additional 11 percent say "most of the time." Only 13 percent answer this query by responding either "not very often" or "never."

There is little variability among demographic subgroups in terms of the extent to which they keep their machines on to receive messages when absent from home. There are a few groups, however, which display a somewhat greater tendency to keep their machines on all the time when not at home. These include: one member households (80%), residents of small towns (88%), individuals from either the Mountain states (81%) or the Pacific states (86%) and separated or divorced respondents (80%). It is also instuctive to note that individuals who score higher on the political/social activism scale are more likely to leave their machines on all the time when away from home than their less active counterparts. The proportion who utilize their machines this way rises progressively from 72 percent among the least active participants (0 activities) to 80 percent among the moderately active (1-3 activities) to 85 percent among the most active (4 or more activities).

Use Of The Answering Machine To Screen Calls

In the study conducted by Oldendick and Link (1994, p. 265), owners of machines were posed the question, "Does anyone in your household ever use this telephone answering machine to screen unwanted calls?". The authors observed that the overall incidence of call screening among owners increased from 38 percent to 48 percent during the time period from November, 1989 to November, 1992. Importantly, the authors noted that, with the exception of the age variable, demographic characteristics did not appear to be strongly associated with the incidence of screening. They concluded that (p. 271) "to the extent that call screening is related to background characteristics, it is mainly due to the higher incidence of answering machine ownership among certain groups rather than to differences between groups in likelihood of screening."

In the present study, we measured the level of screening with the question, "How often do you use your answering machine to avoid receiving unwanted calls when you are at home ... always, most of the time, some of the time, not very often, or never?". A sizable proportion of owners report they engage in the practice of screening on a frequent basis. Over a quarter of the owners (28%) say they screen "always" and an additional 11 percent say they screen "most of the time." Those who report they screen "some of the time" constitute 21 percent of the sampled members who are owners while those who say "not very often" make up 16 percent and those who respond "never" comprise 24 percent.

The data show there is considerable variability in the proportion who are "frequent screeners" (i.e., those who say they screen "always"/"most of the time") among several demographic subgroups. One of the most pronounced differences in terms of the proportion who are frequent screeners relates to size of place of residence. Individuals from large sized cities and their surrounding suburbs are much more likely to routinely screen their calls than all other individuals in the sample. Age, too, appears to be associated with the incidence of screening. The proportion who are frequent screeners rises progressively from the 18-29 age group to the 45-64 age group and then declines sharply among the oldest age category. A third background variable associated with level of call screening is occupational status. White collar employees are demonstrably more likely to screen their calls on a frequent basis than are either executive-professionals or blue collar workers. Also noteworthy is that the level of political/social activism is related to the extent of screening. As individuals participate in an increasing number of activities, they display less of a tendency to screen their calls on a regular basis.

To examine the effects of all of the background variables considered together on call screening, we performed a stepwise multiple regression analysis. In this analysis, we assigned numeric values to the response categories of the call screening question (the dependent variable). The numeric values we assigned were 0, 25, 50, 75 and 100 corresponding to the response categories "never," "not very often," "some of the time," "most of the time" and "always." The independent variables consisted of the set of socio-demographic characteristics and were coded the same way as in the multivariate analysis of answering machine ownership.

The results of the multiple regression analysis reveal a number of variables exert an independent influence on

the degree of screening. Both living in a big city or their surrounding suburbs and being a white collar employee are positively related to the extent of screening. Conversely, working full-time, being retired, being married and being more politically active are negatively associated with call screening.[5]

Discussion

A number of major findings have emerged from this study. First, the ownership of answering machines continues to trend upwards. At present, a majority of all U.S. households (52%) possess an answering machine. As the cost of these devices becomes ever more affordable, it is reasonable to assume that the level of ownership will continue to increase.

Paralleling the findings from other studies, the profile of answering machine owners is distinct from that of non-owners. The most important factor which distinguishes these two groups is household income which is positively associated with the level of ownership.

The results of this study also buttress the notion that the main reason people purchase answering machines is to receive messages when they are not at home. The overwhelming majority of owners (87%) affirm they leave their answering machines on either "always" or "most of the time" to receive messages when absent from home. This proportion is markedly greater than the proportion who say they use their answering machines either "always" or "most of the time" to screen calls when at home (39%). Also, full- or part-time employees are far more likely to be owners of machines than are either homemakers or retired individuals. One can safely assume that the members of the former group are away from home more than those in the latter group.

While the primary reason people purchase machines is to receive messages when they are not at home, a considerable portion of sampled members report screening their calls on a routine basis. Two-fifths of the respondents from answering machine households say they use their machines to avoid unwanted calls when at home either "always" or "most of the time." These "frequent screeners" tend to be disproportionately found among those who are between 45-64 years of age, residents of large cities and their surrounding suburbs and white collar employees.

The finding that such a large contingent of answering machine owners frequently engage in the practice of call screening raises an intriguing question. If so many owners are regularly screening their calls, why has past research found that the overwhelming majority of answering machine households are accessible to telephone surveyors? Oldendick and Link, for example, observed that on average only 2.5 percent of the numbers dialled to households consistently yielded an answering machine call disposition or a combination of an answering machine and "no answer" call dispostions (p. 266). Clearly, the incidence of screening is not to be equated with the number of owners who are unable to be contacted or who refuse to participate in a telephone survey. There are many reasons why people might screen their calls and it should not be assumed that individuals who practice call screening are more averse to survey participation than the population as a whole. What the level of screening reported here measures is the potential maximum degree to which the answering machine might serve as a barrier to telephone researchers.[6] This upper limit would be reached only if all individuals who routinely screen their calls were to filter out all survey requests.

That past reseach has indicated that the vast majority of answering machine households are accessible to telephone surveyors, however, should not serve as grounds for complacency. It is almost certainly the case that the incidence of "noncontacts" owing to the presence of the answering machine today is significantly greater than the figure cited above from the Oldendick and Link study (2.5 percent). First, the number of households equipped with answering machines today is much higher than the number in the Oldendick and Link study (52% vs. 31%). Second, as already noted, the Oldendick and Link study did not cover individuals living in very large cities where, as our data show, the level of screening is at its highest. Most compelling, though, are recent figures compiled by industry representatives concerning the effect of the answering machine on nonresponse to telephone surveys. One company, for example, examined the outcome of calls in several national random digit dial surveys conducted in the Summer of 1994. The results showed that after an average of over 4 call attempts the proportion of numbers dialled to households which consistently produced an answering machine call dispostion ranged between 4.6 percent to 5.4 percent.[7] These figures, moreover, represent a conservative estimate since they are based solely on calls which yielded only an answering machine call disposition and not on a

combination of answering machine and "no answer" call dispositions.[8]

Finally, there is an additional reason why survey researchers should not be indifferent to the effect of the answering machine on telephone response rates. As revealed in this study, a fairly large segment of answering machine owners say they screen their calls on a frequent basis. Even if most of these individuals share the same orientation towards survey participation as others, becoming inured to the practice of screening itself may inhibit participation. While the original impetus for screening may have little to do with averting calls such as those from telephone surveyors, the practice of screening may acclimatize individuals towards not answering the phone and, in the process, have the secondary effect of reducing the possibility of establishing contact with surveyors. As the incidence of screening continues to grow, this effect is likely to become more pronounced.

Appendix

A nationwide cross-section of 1997 respondents were interviewed face-to-face in their homes for this study. The respondents comprise a representative sample of the population of the contiguous United States, age 18 and over, exclusive of institutionalized segments (military barracks, nursing homes, prisons, etc.).

A multi-stage probability sample of interviewing locations was employed for this research. The probabilities of selection at each stage were based on 1990 U.S. Census population data and detailed Census maps were used to identify and locate the selected areas.

At the first stage, all the counties in the 48 contiguous states and the District of Columbia were rank ordered by population size within 18 strata. The strata were constructed by classifying counties as metropolitan and non-metropolitan within each of the nine Census Geographic Divisions. One hundred counties were then selected with probabilities proportionate to the adult population.

At the second stage, two Census block groups were selected with probabilities proportionate to households after stratifying the block groups by size of place in which located.

At the third stage, within each sample block group, two blocks were selected, again, with probabilities proportionate to size (households), from a cumulative computer listing. The interviewer was assigned a starting point and a path to proceed around each sample block.

Quotas for men and women over and under age 45 were imposed, as were quotas for employed individuals. In addition, it was required that interviewing on half the assigned blocks be conducted after 5 PM on weekdays or on Saturday and Sunday to facilitate fulfilling the employment quota. While the assigned quotas produced the proper number of men and women over and under 45, there were small imbalances when the sample was examined in finer age terms, e.g., too few 18-29 year-olds, too many 30-44 year-olds. Accordingly, the sample was weighted to achieve the correct proportions of men and women 18-29, 30-44, 45-59 and 60 and over.

Footnotes

[1]The number of owners increased from 25 percent to 39 percent during the three year interval.

[2]Among the non-whites in the sample, blacks constituted the overwhelming majority (77%).

[3]The study carried out by Oldendick and Link did not include residents from "any very large metropolitan areas" (p. 272).

[4]The list of political/social activities included the following: (1) written your Congressman or Senator, (2) attended a political rally or speech, (3) attended a public meeting on town or school affairs, (4) held or run for political office, (5) served on a committee for some local organization, (6) served as an officer of some club or organization, (7) written a letter to the paper, (8) signed a petition, (9) worked for a political party, (10) made a speech, (11) written an article for a magazine or newspaper, and (12) been a member of some group like the League of Women Voters, or some other group interested in better government.

[5]To determine if the results of this analysis were a function of the particular numeric values assigned to the categories of the dependent variable, we employed several different coding schemes. For example, in one coding scheme we combined the value "never" with the value "not very often" and the value "most of the time"

with the value "always." In another coding scheme we lumped together the three intermediate values ("not very often," "some of the time," "most of the time"). In still other coding schemes, we gave different numeric scores to the values "not very often" and "most of the time" while retaining the same ordering of the categories of the dependent variable. In each instance, except one, the same set of variables emerged as being significant. In the one exception, the quadratic term for age, rather than the dummy variable for retirement, was found to be significant. Both of these variables tap a similar construct -- older age.

[6]Oldendick and Link also took note (pp. 267-269) of the discrepancy between the low percentage of household numbers which consistently yielded an answering machine call disposition and the much higher level of self-reported screening. They, too, accounted for this discrepancy by viewing the incidence of self-reported screening as measuring "the potential barrier" which exists for telephone researchers.

[7]Telephone interview with Mr. Scott Waller, Vice President, CRC Information Systems (New York City), October 28, 1994.

[8]Even more startling are the figures gathered by this same company concerning the effect of the answering machine on nonresponse in the 21 largest Areas of Dominant Influence (ADIs). Here, the results of one recent study show that after 3.5 to 4 call attempts the proportion of numbers dialled to households which consistently produced an an answering machine call disposition was 16.2 percent. Similar results were obtained in selected large metropolitan areas.

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