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Identifying predictors of survey mode preference

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Abstract

To increase the likelihood of response, many survey organizations attempt to provide sample members with a mode they are thought to prefer. Mode assignment is typically based on conventional wisdom or results from mode choice studies that presented only limited options. In this paper we draw heavily on research and theory from the mode effects and the survey participation literatures to develop a framework for understanding what characteristics should predict mode preferences. We then test these characteristics using data from two different surveys. We find that measures of familiarity with and access to a mode are the strongest predictors of mode preference and measures of safety concerns, physical abilities, and normative concerns are unexpectedly weak predictors. Our findings suggest that variables that may exist on sample frames can be used to inform the assignment of “preferred” modes to sample members.

Keywords: Mode preference, Mixed-mode, Web survey, Mail survey, Telephone survey

1. Introduction

The public is increasingly choosing not to respond to surveys (Curtin et al., 2005; de Leeuw and de Heer, 2002). In the face of this challenge, some survey organizations are trying to increase response rates by providing sample members with the mode they prefer. Giving respondents their preferred mode is thought to generate goodwill and positive attitudes toward the survey (Dillman et al., 2009; Dillman and Tarnai, 1988; Groves and Kahn, 1979; Schaefer and Dillman, 1998; Shih and Fan, 2007). One recent study lent some support to this belief, finding that respondents who prefer the internet or the telephone mode are more likely to respond to internet and phone surveys than those who do not prefer these modes (Olson et al., 2012). However, most survey researchers do not have a measure of sample members’ mode preferences prior to conducting their surveys, making assignment of a ‘preferred mode’ difficult. Instead, survey organizations draw on conventional wisdom about which demographic groups prefer particular modes (e.g., young people will prefer web), sometimes using studies that look at which groups choose which mode when offered a choice between two modes as guidance (e.g., Denniston et al., 2000; Dillman et al., 1994; Dillman et al., 2009; Diment and Garrett-Jones, 2007; Shih and Fan, 2007).

Surveyors who want to cater to sample members’ mode preferences need empirical evidence about what modes different types of sample members are likely to prefer. The objective of this paper is to provide that evidence by answering the question, “What respondent characteristics predict mode preferences?” We draw heavily on research and theory from the mode effects and survey participation literatures to develop a framework for understanding what characteristics should predict mode preferences. We then test these characteristics using data from two different surveys.

2. Background

Several researchers have pointed out that different survey modes vary in the features that affect how respondents proceed through the stages of the response process (de Leeuw, 1992; de Leeuw, 2005; Schwarz et al., 1991). We developed a four-category classification system in which each category represents a factor that would impact one's ability and comfort using a particular survey mode. Mode features are classified by whether they affect each of these factors, which include (1) familiarity with and access to the equipment needed to provide a response, (2) physical and cognitive requirements of completing the survey, (3) normative concerns that may be invoked in any given mode and (4) personal safety concerns that may arise in a mode. We hypothesize that respondents will prefer modes that they have at their disposal and that have features that minimize the physical and cognitive burden of responding as well as normative and personal safety concerns.

2.1. Mode features related to the logistics of responding

2.1.1. Familiarity with and access to media

Respondents are expected to prefer survey modes that use familiar and comfortable technologies. Familiarity with and access to the technologies underlying survey modes vary across demographic groups. For example, internet penetration rates are higher in suburban and urban areas than rural areas (Rainie, 2010). In addition, young people, those with high household incomes, and those with higher educational attainment are more likely to use computers (Couper and Rowe, 1996) and the internet (Pew Internet and American Life Project, 2013a; Rainie, 2010). Moreover, whereas women spend more time than men processing email (U.S. Bureau of Labor Statistics, 2010), men spend more time in a wide variety of other internet activities (Pew Internet and American Life Project, 2013b). Thus, we expect those from urban areas, the young, those with high incomes and education, and men to be more likely than their counterparts to prefer the internet over other modes.

Cell phone ownership also varies over demographic groups. Nonwhites, the highly educated, parents, those from suburban and urban areas, and Internet users report higher ownership and usage of cell phones than their counterparts (Lenhart, 2010). Our data do not allow us to test firm hypotheses about persons who prefer a cell phone survey, but we do expect those groups who are more likely to live in cell-phone only households, such as young people, those with lower income, those renting their home or living with unrelated roommates, men, Hispanics, and non-Hispanic black adults (Blumberg and Luke, 2013) to be less likely than their counterparts to prefer landline telephone surveys.

2.1.2. External distractions

Some people may prefer survey modes that minimize distractions that may make responding less comfortable and more difficult. Schwarz et al. (1991) argued that external distractions may be less likely in interviewer-administered surveys because they are governed by general rules of politeness (e.g., interruptions are considered rude). As such, we might expect sample members who are likely to be interrupted (i.e., those with children, spouses, and employment) to prefer interviewer-administered modes. On the other hand, if being interrupted is unavoidable, we might expect sample members to prefer self-administered modes because these modes permit inattention and/or multitasking. These competing hypotheses will be tested in this paper.

2.2. Mode features related to the physical and cognitive demands of responding

2.2.1. Visual versus aural presentation

Any factor that affects respondents' ability to process visual or aural communication should also affect their preferences for a visual or aural survey mode. For example, we expect those with hearing loss to prefer a visual mode as it has been shown that hearing loss leads to difficulties with everyday conversational tasks, including talking on the telephone (Dalton et al., 2003). Similarly, we expect those with vision loss to prefer an aural mode. Other age-related physical impairments like shaky or arthritic hands may also make it difficult for respondents to meet the physical demands of completing a survey by certain modes (e.g., writing by hand or operating a mouse and keyboard) thus impacting mode preference.

2.2.2. Presence versus absence of interviewers: cognitive demands

Whether or not an interviewer is present also differs across survey modes (Schwarz et al., 1991; de Leeuw, 1992) and therefore may affect mode preferences. For example, interviewers read the survey questions, enter responses, provide clarification, and answer respondent inquiries (Fowler and Mangione, 1990; Tourangeau et al., 2000), all of which may be desirable for those with low literacy, low levels of education, or cognitive limitations. Yet, self-administered modes may also reduce cognitive demands in other ways by allowing respondents to set the pace, giving them more control over question order (de Leeuw, 1992), and imposing fewer demands on working memory (Tourangeau et al., 2000). In sum, we anticipate that the relationship between the cognitive demands of a mode and mode preference is complex. For example, we expect those with low literacy to prefer interviewer-administered modes and those with poor working memory to prefer self-administered modes.

2.3. Mode features related to respondents' normative concerns

2.3.1. Presence versus absence of interviewers: self-presentation effects

Interviewers can invoke concerns about self-presentation during a survey interview (Aquilino, 1994; Tourangeau and Smith, 1996). Compared to face-to-face surveys, telephone, web and especially mail surveys afford respondents more personal space and increased feelings of anonymity, thus presenting fewer self-presentation problems (de Leeuw, 1992; Tourangeau and Smith, 1996). As such, we expect respondents who are strongly concerned with their self-presentation to prefer self-administered survey modes over interviewer-administered modes. This includes respondents who engage in sensitive behaviors (Tourangeau and Smith, 1996). It also includes respondents who are depressed, lonely, or have low self-esteem; previous research has shown that these individuals tend to perceive online communication as safer than in-person communication because they can more easily control their presentation of self (Caplan, 2003; McKenna et al., 2002; Segrin, 2000).

2.4. Mode features related to respondents' personal safety concerns

2.4.1. Legitimacy of the survey request

Another characteristic that differs across survey modes is the ability to convey sincerity of purpose or legitimacy (de Leeuw, 1992). Respondents are likely to prefer modes that allow them to more easily differentiate between legitimate and illegitimate survey requests (e.g., sales calls, fundraising, phishing, and attempts at spreading computer viruses can all be disguised as surveys). The authority or legitimacy of the request can be communicated through advance letters in face-to-face, mail and some web surveys, or by an interviewer's identification badge or through study materials left with the sampled household in face-to-face surveys (Dillman, 1978; Groves and Couper, 1998). In contrast, in many telephone surveys, calls come without notice and interviewers have few ways to demonstrate their legitimacy (Groves, 1990). As such, we expect those who are likely to be concerned with the legitimacy of the survey request, such as those who are concerned with crime and those who strongly dislike sales calls, to prefer modes other than telephone.

2.4.2. Privacy and perceived confidentiality

Survey modes also differ in their ability to maintain privacy and perceived confidentiality. The presence of interviewers in face-to-face and telephone surveys reduces the privacy of responses compared to self-administered surveys. However, the interviewer can also make sure the interview takes place in private, increasing privacy vis-à-vis other household members (Schwarz et al., 1991). Thus, whether respondents prefer an interviewer or self-administered mode for privacy reasons may depend on who they want to keep their answers from, which is likely dependent upon the topic of the questions asked.

Sample members may also be concerned about the confidentiality and security of their data after the survey is completed. These concerns are often heightened for electronic data. As such, we expect those who are concerned about crime, online scams, and especially identity theft to prefer modes other than the Internet.

In sum, we expect variables that are related to familiarity and access to media, external distractions, the physical and cognitive demands of responding, respondents' normative concerns, and respondents' personal safety concerns to influence sample members' mode preferences. We now evaluate whether proxies for these constructs predict mode preference.

3. Data and methods

The data for this paper come from two sources. The first is the Lewiston-Clarkston Quality of Life Survey (LCQOL), conducted in 2007 in the adjacent cities of Lewiston, Idaho and Clarkston, Washington. This survey was conducted by both mail and web, and the question order, layouts and the overall visual design were as similar as possible across modes, as were the recruitment materials. The survey included questions about community satisfaction, issues facing the community, cell phone and internet use, mode preference, and demographic characteristics. A random selection of 2800 residential addresses from the United States Postal Service's Delivery Sequence File (DSF) in the Lewiston-Clarkston area was randomly assigned to one of six experimental treatment groups that varied by mode (web, mail) and/or implementation procedures¹; two treatments are excluded due to suspected delivery problems. Our analyses focus on the four remaining treatment groups ($n = 1800$). The adult with the most recent birthday from each household was asked to complete the questionnaire, and 1041 responded for a response rate of 57.8% (AAPOR RR2, AAPOR, 2011). Sixty respondents did not answer the mode preference question, leaving 981 respondents with data on the dependent variable. In this paper, we combine the four treatment groups but include a variable for response mode in regression models.

The second source of data is the 2008 Nebraska Annual Social Indicators Survey (NASIS), conducted by telephone between February and August 2008 by the Bureau of Sociological Research at the University of Nebraska-Lincoln. The NASIS used a random digit dial sample of 4,743 listed landline telephone numbers, with 1811 completed interviews (AAPOR RR3 = 38%). Of these, 81 respondents did not answer the mode preference questions, reducing the analytic data set to 1730 respondents. The NASIS is an annual omnibus survey, with content ranging from demographic information, perceptions of crime, fishing activity, satisfaction with roads in the state, economics, health and mental health, technology use, sex offender registry use, religious activity, and mode preference.

1. More information can be found in Millar et al. (2009) or Smyth et al. (2010).

3.1. *Dependent variable: mode preference*

Both the LCQOL and the NASIS included a question about a respondent's preferred mode with slightly different response options. The question wording in the LCQOL is:

If you could choose how to answer surveys like this, which one of the following ways of answering would you prefer?

Filling out a paper questionnaire sent by mail

Filling out a questionnaire on the Internet

Answering questions over the telephone

In the NASIS, the mode preference question asked:

If you received a request to do another survey like this one, which of the following types would you be most likely to agree to participate in?

An in-person interview at your home

An interview on your home phone

An interview on your cell phone

A paper survey sent by mail

Or a survey on the internet?

Very few people in the LCQOL reported a telephone preference ($n = 12$) and have been dropped from the analysis. In the NASIS, the interviewer-administered modes of in-person interview, home phone interview, and cell phone interview have been combined to an overall "interviewer-administered mode" category as few respondents selected in-person interview or cell phone interview.

3.2. *Available proxy variables*

The LCQOL and the NASIS collected proxies for many, although not all, of the relevant concepts discussed above. Sex, age, income, race, internet access and cell phone access were all measured in both surveys and are included in our models as proxies for media familiarity and access. Marital status, presence of children at home, and employment status are also available in both surveys and are included in the models as proxies for external distractions. Unfortunately, we do not have separate measures of cognitive ability, literacy, and working memory so, consistent with previous research (Couper and Rowe, 1996; Kirsch et al., 1993; Krosnick and Alwin, 1987); we include education as a general proxy for cognitive abilities. Descriptive statistics for these variables in both surveys are shown in Table 1.

In addition to the ten variables that are available in both surveys, we utilize several variables that are unique to either the LCQOL or NASIS. In the LCQOL, we include additional variables that proxy for media familiarity and access, including being a heavy internet user, having internet at home, having a landline, completing a large number of mail, web and phone surveys per year, needing help using the web, and choosing the web to do tasks rather than some other way. In the NASIS, we include having poor computer ability, and living in the country or city as opposed to living on a farm as proxies for media familiarity and access. We also include additional proxies for cognitive and physical abilities, including having poor hearing and poor health as well as a proxy for potential normative concerns—having a high number of depressive symptoms, as measured using the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). We examine safety concerns using the proxies of having a fear of computer viruses and fear of online scams in the LCQOL, and always or often fearing identity theft and crime in general in the NASIS.

We use logistic regression and multinomial logistic regression models to predict mode preference. We begin with logistic regression models that predict web versus mail preference with variables that are common across surveys. This allows us to compare the results for consistency and robustness of findings across the two surveys. We then look at each survey individually, extending the models to include variables that are unique to one or the other survey. In these analyses, we trade our ability to draw direct comparisons across the two surveys for the ability to examine additional predictors of mode preference. In the NASIS, we also examine multinomial logistic regression models that compare mail and web preference to preference for interviewer-administered surveys; there were too few persons reporting preference for these surveys in the LCQOL to include these cases in the LCQOL models (dropping those who preferred telephone reduced our LCQOL analytic sample to 969).

In the LCQOL and the NASIS, IVEWARE (Raghunathan et al., 2001) was used to impute item missing data five times. All analyses are conducted using the `mi` estimate command in STATA. Weights accounting for unequal probabilities of selection, coverage, and unit nonresponse are used for all of the NASIS analyses. Weights are not available in the LCQOL.

4. Findings

We start by looking at overall reports of mode preference in the two surveys. The majority of respondents to the LCQOL, which was conducted by mail and web, preferred mail surveys (64.1%) while the majority of respondents to

the NASIS, a telephone survey, preferred interviewer-administered surveys (53.7%). This is consistent with previous research that finds that mode preference reports are impacted by the mode in which the preference question is administered (Groves and Kahn, 1979). Since there were two possible completion modes in the LCQOL, we control for mode of completion in multivariate models for this survey (29% completed via web).

The results of logistic and multinomial logistic regression models predicting mode preference are shown in Table 2 for the LCQOL data set and Table 3 for the NASIS data set. In both tables Model 1 reports odds ratios predicting preference for internet versus mail surveys using the common predictors identified above. The results in these models are quite similar. Both indicate that as age increases, the odds of preferring the internet relative to mail is decreased (LCQOL OR = 0.97, $t = -3.79$, $p < .0001$; NASIS OR = 0.98, $t = -2.65$, $p < .008$). Additionally, those who use the internet are much more likely to prefer internet over mail modes compared to those who do not use the internet (LCQOL OR = 10.55, $t = 2.47$, $p < .014$; NASIS OR = 30.39, $t = 4.04$, $p < .0001$). Both of these findings are consistent with the hypothesis that people’s mode preferences are affected by their familiarity and access to the needed media. However, other indicators of familiarity and access such as gender, income, race and having a cell phone are not significant predictors of mode preference.

Only one of the variables serving as a proxy for external distractions has a significant effect on mode preferences. Employed persons are more likely than the unemployed to prefer the internet relative to the mail mode. However, this effect only reaches significance in the NASIS model (LCQOL OR = 1.20, $t = 0.67$, $p < .505$; NASIS OR = 1.96, $t = 2.38$, $p < .017$). Contrary to our expectations, whether respondents were married or had children was not associated with their mode preference.

Table 1. Descriptive statistics, adjusted for multiple imputation.

	LCQOL		NASIS	
	Mean (%)	SE (%)	Mean (%)	SE (%)
<i>Mode preference</i>				
Interviewer admin	1.2	0.3	53.7	1.2
Mail	64.1	1.5	25.7	1.1
Web	34.7	1.5	20.6	0.9
<i>Media familiarity/access</i>				
Female	59.9	1.6	50.8	1.6
Mean Age (years)	54.69	0.16	46.34	0.63
<i>Income</i>				
<\$25,000	23.1	1.4	12.9	1.6
\$25 K-\$49,999	33.4	1.6	29.2	1.6
\$50 K-\$74,999	22.5	1.4	24.6	1.4
\$75,000+	20.9	1.3	33.3	1.6
Non-white	7.6	0.9	6.9	1.0
Uses internet	83.7	1.2	90.1	0.8
Has cell phone	75.9	1.4	89.0	1.0
Heavy internet user	70.0	1.5	-	-
Have internet at home	77.3	1.3	-	-
Have landline telephone	79.4	1.3	-	-
<i>High # of surveys/year</i>				
Mail	44.1	1.6	-	-
Web	18.5	1.5	-	-
Phone	27.2	1.5	-	-
Need help with web	4.5	0.7	-	-
Choose web to do task	64.7	2.2	-	-
Poor computer ability	-	-	15.4	0.9
<i>Urbanicity</i>				
City	-	-	80.4	1.2
Country	-	-	8.3	0.9
Farm	-	-	11.3	1.0
<i>External distractions</i>				
Married	60.8	1.6	69.8	1.7
Kids at home	30.7	1.7	47.0	1.6
Employed	52.9	1.7	77.7	1.2
<i>Cognitive and physical abilities</i>				
<i>Education</i>				
<High school	27.3	1.4	26.5	1.4
Some college	46.2	1.6	33.6	1.6
≥4 yr degree	26.4	1.4	39.9	1.5
Poor hearing	-	-	5.0	0.7
Poor health	-	-	14.8	1.1
Depression	-	-	26.3	1.5
<i>Safety concerns</i>				
Fear of computer viruses	51.2	1.8	-	-
Fear of online scams	45.8	1.8	-	-
Fear of identity theft	-	-	32.4	1.4
Fear of crime	-	-	3.4	2.8

Finally, both models indicate that education is significantly associated with mode preferences. Compared to those with a high school education or less, respondents with a four-year college degree or higher are more likely to prefer the internet relative to the mail mode (LCQOL OR = 1.94, $t = 2.18$, $p < .030$; NASIS OR = 2.44, $t = 3.15$, $p < 0.002$). The findings are similar for those with some college versus those with high school or less but only reach marginal significance (LCQOL OR = 1.58, $t = 1.68$, $p < .093$; NASIS OR = 1.76, $t = 1.85$, $p < .065$).

Model 2 in Table 3 shows the results of a multinomial logistic regression predicting mode preference in the NASIS. Here we include respondents with preferences for internet, mail, and interviewer-administered modes, with preference for an interviewer-administered mode as the reference category. The table reports relative risk ratios (RRR) which are exponentiated multinomial logistic regression coefficients. The results show that the same variables that predicted preference for internet over mail also predict preference for internet over phone (i.e., age, using the internet, being employed, and having higher education). With respect to the comparison between mail and phone preference, they show that women are more likely than men to prefer the mail relative to phone mode (Mail RRR = 1.52, $t = 2.70$, $p < .007$) and that older adults and those who use the internet are less likely to prefer mail relative to interviewer-administered modes (Age RRR = 0.98, $t = -2.41$, $p < .016$; Uses Internet RRR = 0.64, $t = -2.02$, $p < .044$).

In summary, these findings show that there is a fair amount of consistency in predictors of mode preference across the two surveys, even though these surveys were conducted in different areas of the United States, with quite different sample frames, and with different modes of contact and response. This is reassuring. They also indicate that cognitive ability (i.e., education) and having access to the appropriate technology are strong predictors of mode preference, especially internet preference. These findings show that several demographic variables do significantly predict mode preferences. If these demographic variables are available on survey sample frames, surveyors may be able to utilize them to make more informed mode assignment decisions. Yet each of the surveys also offers its own unique variables that might also predict mode preferences. As such, we now look at the surveys separately.

Table 2. Odds ratios from logistic regression predicting mode preference in the LCQOL data set, adjusted for multiple imputation.

Preference	Model 1 common variables Internet OR (base = mail)	Model 2 common and unique variables Internet OR (base = mail)	Model 3 common and unique variables (internet users only) Internet OR (base = mail)
<i>Media familiarity/access</i>			
Female	0.71	0.74	0.69
Age	0.97***	0.98*	0.98*
Income (25-49 K)	0.75	0.62	0.77
Income (50-74 K)	0.96	0.84	1.04
Income (75+K)	1.05	0.91	1.11
Nonwhite	0.74	0.67	0.66
Uses internet	10.55*	1.71	—
Has cell phone	1.35	1.11	0.99
Heavy internet user		3.65***	2.07
Has Internet at Home	2.64*	2.15	
Has a Landline	0.60	0.64	
>Mean # mail svys/yr	0.63	0.64	
>Mean # web svys/yr	2.67***	2.35**	
>Mean # phone svys/yr	1.02	1.05	
Needs help using web		1.53	
Use web versus other way		6.68***	
<i>External distractions</i>			
Married	1.27	1.36	1.55
Has children	0.91	0.97	0.87
Employed	1.20	1.31	1.06
<i>Cognitive abilities</i>			
Edu (some college)	1.58	1.38	1.53
Edu (college degree)	1.94*	1.58	1.63
<i>Safety concerns</i>			
High fear of comp. Viruses		0.64	
High fear of online scams		1.14	
<i>Control</i>			
Mode of completion (web)	57.55***	62.16***	84.43***
Constant	0.05*	0.04**	0.04***
Observations	969	969	810

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

4.1. Lewiston-Clarkston quality of life survey

Models 2 and 3 in Table 2 bring variables that are unique to the LCQOL dataset into the logistic regression models. In Model 2, the effect of age remains unchanged; however, the effect of using the internet is no longer significant. Instead, we see that the more nuanced familiarity and access variables of being a heavy internet user, having internet at home, and completing above the mean number of web surveys per year all significantly and substantially increase the likelihood of preferring the internet mode (heavy internet user OR = 3.65, $t = 3.47$, $p = .001$; home internet OR = 2.64, $t = 2.09$, $p < .037$; web surveys/yr OR = 2.67, $t = 3.75$, $p < .0001$). In other words, having access to and the ability to use the internet greatly increases the chances that one prefers the internet mode. We also see that the measure of cognitive ability (i.e., education) that was significant in Model 1 is no longer significant in Model 2. Model 3 subsets the LCQOL dataset to only respondents who use the internet. This model shows, rather unexpectedly, that those who have higher levels of fear of computer viruses or online scams are just as likely to prefer the internet mode as those with lower levels of these fears. Thus, these personal safety concerns seem unrelated to mode preference.

Across all three LCQOL models in Table 2, the control variable for mode of completion is a highly significant and powerful predictor of mode preference. Consistent with previous research (Groves and Kahn, 1979), those who completed the LCQOL on the web are much more likely to state a preference for the web mode rather than the mail mode. However, it is notable that other variables remain significant predictors of mode preference despite this very strong effect of mode of completion.

4.2. Nebraska annual social indicators survey

In Model 3 in Table 3 we add the variables that are unique to the NASIS data set and predict internet versus mail preference. We see that the effects of age, internet use, and education are largely unchanged from Model 1. Of the newly added variables, only having poor computer ability is significantly associated with mode preference—persons with poor

Table 3. Odds ratios and relative risk ratios from logistic and multinomial logistic regression models predicting mode preference in the NASIS data set, adjusted for multiple imputation.

Preference	Model 1 ^a (base = mail)	Model 2 ^b (base = phone)		Model 3 ^a (base = mail)	Model 4 ^b (base = phone)	
	Internet	Internet	Mail	Internet	Internet	Mail
<i>Media familiarity/access</i>						
Female	0.77	1.18	1.52**	0.73	1.14	1.48*
Age	0.98**	0.96***	0.98*	0.98*	0.97***	0.98*
Income (25-49 K)	0.95	1.04	0.99	0.80	1.02	1.00
Income (50-74 K)	1.27	0.98	0.76	1.01	0.94	0.77
Income (75+K)	2.31	1.47	0.68	1.71	1.38	0.71
Nonwhite	0.77	0.99	1.36	0.80	1.08	1.33
Uses internet	30.39***	16.64***	0.64*	26.66***	10.60**	0.65
Has cell phone	1.11	1.12	1.01	0.94	1.02	1.00
Poor computer ability				0.11***	0.13***	1.10
Lives in country				2.22	1.89	0.86
Lives in city				1.72	1.50	0.93
<i>External distractions</i>						
Married	0.72	0.95	1.26	0.77	0.94	1.24
Has children	1.26	1.04	0.81	1.30	1.09	0.80
Employed	1.96*	1.84*	0.90	1.78	1.70	0.87
<i>Cog./Phys. abilities</i>						
Education (some college)	1.76	2.06*	1.00	1.59	2.03*	0.98
Education (college degree)	2.44**	2.48***	0.92	1.99*	2.27**	0.93
Poor hearing				0.57	0.42	1.13
Poor health				1.14	1.06	0.78
<i>Normative concerns</i>						
CESD > 8				0.88	0.98	1.20
<i>Safety concerns</i>						
Often fear identity theft				0.73	1.12	1.40*
Often fear crime				0.58	0.52	0.80
Constant	0.03***	0.04***	1.62	0.04**	0.04**	1.57
Observations	801	1,730	1,730	801	1,730	1,730

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

a. Logistic regression.

b. Multinomial logistic regression.

computer abilities are much less likely to prefer web surveys than mail surveys ($OR = 0.11, t = -4.08, p < .0001$). Urbanicity, poor hearing, poor health, a high CESD score, and fear of identity theft or crime are not significantly associated with web or mail preferences.

Results in Model 4, the multinomial logistic regression predicting internet or mail preference compared to preference for interviewer-administered surveys, are largely unchanged from Model 2. While those with poor computer abilities are less likely to prefer the internet relative to an interviewer-administered mode ($RRR = 0.13, t = -4.24, p < .0001$), none of the other added variables (poor hearing, poor health, a high CESD score, fear of identity theft, or fear of crime) significantly predict an internet preference.

The results for a mail preference are also quite similar before and after the unique variables are added with the exception that the previously significant effect of being an internet user is no longer significant. None of the added measures capturing hearing, health, depression or fear of crime are significant predictors of a mail preference relative to an interviewer-administered preference, but we do find that those who often fear identity theft are more likely to prefer mail than an interviewer-administered mode ($RRR = 1.40, t = 2.12, p = .034$).

4.3. Summary

Variables related to media familiarity and access were the primary predictors across both surveys. This is also where we had the widest assortment of covariates available. As a proxy for cognitive and physical abilities, education level also predicts mode preference in both surveys. Both of these findings were expected.

However, our findings have also identified a wide range of theoretically motivated variables that are *not* associated with mode preferences. Surprisingly, there is only weak evidence that safety concerns are related to mode preference (only in the NASIS), and no evidence that external distractions or normative concerns are associated with mode preference once accounting for a fuller range of covariates. That is, individuals do not appear to select a mode because it is the simplest to complete with multiple competing demands (e.g., job, children). Additionally, respondents are not selecting modes because they are concerned about self-presentation issues. Nor are they selecting modes because they are concerned about scams or identity theft – this may be already accounted for in whether the respondent has internet access at all. Also surprising is that persons who are hard of hearing are not more likely to prefer a self-administered mode to an interviewer-administered mode. Given the theoretical expectations about the relevance of these concepts, the consistent lack of association found across the two surveys for these constructs is just as important as the consistent significant results for media familiarity and access.

5. Discussion and conclusions

This paper starts with the observation that many surveyors believe that one possible way to increase response rates is to cater to sample members' mode preferences, and some research has suggested that this strategy can be beneficial in certain circumstances (Olson et al., 2012). However, aside from conventional wisdom, survey researchers have very little information to use in trying to determine what a sample member's mode preference might be, especially the first time a sample member is surveyed. Thus, the purpose of this paper was to develop reasoned predictions about what factors should be related to mode preference and then to empirically evaluate these predictions.

Our empirical findings suggest that, aside from mode of completion in the LCQOL, being familiar with and having access to the required media are the strongest predictors of mode preference. Findings from both data sets show that, consistent with conventional wisdom, the young really do prefer the web mode, as do those who use the internet. Findings from the LCQOL suggest that the more nuanced access and familiarity variables of being a heavy internet user, having internet access at home and completing many web surveys in a year are even more predictive of an internet preference than simply being an internet user. Other significant predictors of an internet preference are being highly educated (i.e., cognitive ability) and employed, both variables related to one's ability to use the internet. The findings also reveal that older individuals are more likely to prefer interviewer-administered modes over the self-administered modes of mail and web. Moreover, in the NASIS, women tended to prefer mail over interviewer-administered modes.

Surprisingly, our measures of safety concerns were not strong predictors of mode preference. Being afraid of computer viruses or online scams was not a predictor of mode preference, and being afraid of identity theft decreased preference for interviewer-administered modes, but not web surveys. We thought that fear of identity theft would drive respondents away from an internet preference and toward modes where the survey request could be more easily legitimated by interviewers. In hindsight, however, this finding might reflect that telephone survey calls often come out of the blue, are quite scripted, and happen very quickly, leaving respondents few opportunities to politely request information they can use to verify the source of the call.

None of the measures of physical ability and normative concerns were significant predictors of mode preference. We suspect that we did not have the right proxies. Additional research should examine a wider array of these measures, especially those related to normative concerns.

One positive implication of our findings is that some sample frames will contain information related to media familiarity and access such as age, allowing surveyors to make informed decisions about what mode to assign to sample

members. This is especially likely to be true in more specialized populations such as students, employees, and members of an organization. In other cases, such as in address-based samples of the general public, no such information is available, but we may be able to use geographic information on the frame (e.g., zip codes in the Delivery Sequence File) to append relevant zip-code level information from the Census such as the age distribution of residents.

Of course, this paper is not without its limits. Our confidence in the findings is increased because we were able to replicate our analyses on two very different data sets. Yet we recognize that we are identifying significant predictors of mode preference for people who are already survey respondents. Whether or not these same predictors are effective for people who did not respond to either of these surveys is still an open question, and unfortunately one that is unlikely to be answered by survey research alone. Additionally, the category of 'interviewer-administered mode' reflects primarily landline telephone surveys. Given cost constraints, face-to-face interviews are usually not an option provided to respondents in mixed mode surveys, whereas telephone, web and mail are often combined. Finally, it is possible that some of our proxies reflect more than one underlying reason for preferring a specific mode. For example, we categorized employment as an external distraction because it takes people's time away from home where telephone calls and postal mail are generally processed. However, it is also possible that people access certain technologies like the internet and cell phones through their employment, making it an access and familiarity issue (with a competing directional relationship with mode preference). However, this limitation should not take away from the more practical finding that there are consistent systematic differences in mode preference for different subgroups. This consistency suggests that mode preference is not simply derived from an on-the-spot evaluation of the mode in which the respondent is interviewed. In spite of the strong effect of mode of completion, other factors can be useful for helping surveyors decide which mode to offer and tailor survey designs to their respondents.

This is the first empirical investigation of predictors of mode preference. We have replicated our findings about the importance of media familiarity and access across two very different studies. Yet each study had weak proxies for the other constructs of interest, and we could not fully evaluate the role of completion mode on reported mode preference. The ideal study would randomly assign individuals to one of the four main modes – in person, telephone, mail and web – and assess both mode preference and multiple indicators of media familiarity and access, cognitive and physical abilities, safety and normative concerns, and external distractions to fully test the theoretical model proposed here. Additionally, cognitive interviews on how people actually think about and answer mode preference questions would be useful. As a first empirical study of its kind, this research shows the importance of this kind of future research to fully understand mode preference and its implications for survey research.

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