"A Comparison of the Accuracy of the Last Birthday versus the Next Birthday Methods for Random Selection of Household Respondents"

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Introduction

A primary component of legitimate telephone research is the accurate random selection of respondents. One of the most commonly used random selection methods is the Last Birthday method (also known as the Most Recent Birthday method). This respondent selection method is done at the initial contact during a telephone interview and is based on the informant accurately acknowledging which person in the household had a birthday last (or most recently). A variation of this method is the lesser-used "Next Birthday method". The Next Birthday method is identical to the Last Birthday method, except the informant is asked to accurately identify the person in the household who will have the next birthday. Both are quick, easy and generally considered relatively non-invasive selection methods. In addition, both assume that the informant is aware of the birth dates of the other adult members of the household.

Although there have been papers presented and published concerning the validity and reliability of various respondent selection methods, none have compared these two methods. Several papers have concluded these random selection methods are valid and effective (Oldendick et al. 1988; O'Rourke & Blair 1993; Salmon & Nichols 1993) although one examining the Last Birthday method suggests that the validity decreases significantly as the number of eligible household members increases (Lind, Johnson & Gwiasda 1997).

It is our experience that interviewers prefer the Next Birthday method to the Last Birthday method and have provided antidotal evidence that Next Birthday method easier for informants to understand. This research is an attempt to determine whether the Last Birthday and Next Birthday methods are comparable in terms of the informant being able to accurately identify a respondent based their knowledge of the birth dates of the other adults living within the household.

Methods

To compare the validity of Last Birthday versus the Next Birthday respondent selection methods, we randomly assigned sample equally to one or the other method as part of a statewide random digit dial telephone survey in South Carolina in January of 2000. The topic of the survey was opinions on growth and development in South Carolina. A total of 1000 interviews were completed, 500 using the Last Birthday selection method and 500 using the Next Birthday selection method. At the end of the survey, respondents were asked to report the total number of adults (18 or older) living in the household, the birth date of the respondent, and the birth dates of the other adults in the household. This information was used to determine whether or not the correct adult was nominated as the respondent by the initial contact.

Results

Of the 1000 interviews completed, 511 had two to three adults living in the household. Of these 511 households, 248 of the respondents were selected using the Last Birthday method and 263 using the Next Birthday method. When a household was screened using the Last Birthday method, a fifth of the time the incorrect adult was nominated by the initial informant as the respondent (19.8%). The informant was even more likely to nominate the wrong respondent when the Next Birthday method was applied (26.6%) (Table 1).

Table 1.
Percentage of 2 to 3 Adult Households where the Incorrect Adult was Nominated as theRespondent

	(N)	Incorrect R	X^2
			3.36
Last Birthday	248	19.8%	
Next Birthday	263	26.6%	

** p < .05 *** p <.001

Next we examined whether or not the initial informant was more likely to incorrectly nominate him or her self or another adult as the respondent. When an incorrect respondent was nominated in households where the Last Birthday method was used for selection, 30.3% of the time the informant incorrectly nominated him or her self as the respondent, and 69.7% of the incorrect nominations resulted in the informant incorrectly nominating another adult in the household (Table 2). When an incorrect nomination occurred in households where the Next Birthday method was applied, 38.9% of the informants incorrectly nominated him or her self, and 61.1% incorrectly nominated another adult.

Table 2.
Type of Incorrect Nomination 2 to 3 Adult Households

	LBM	NBM	X^2
			3.16
Inf nominated self as R	30.3%	38.9%	
Inf nominated other adult as R	69.7	61.1	

** p < .05 *** p <.001

We also examined the demographics of the respondent with whether or not he or she was incorrectly nominated by the initial informant. Only level of education was a significant factor, such that respondents with a college education were more than twice as likely to be correctly nominated than respondents with a high school diploma or less (Table 3a, 3b).

Table 3a.
Incorrect Nomination – Demographics in 2 or 3 Adult Household: Last Birthday Method

	(N)	Incorrect R	X^2
Sex	248		0.77
Male		21.7%	
Female		17.3	
Race	247		0.04
White		19.9	
Black		19.4	
Age	231		1.70
< 40		16.7	
> 40		23.6	
Education	248		3.98**
HS or less		21.9	
Some College		7.9	
Income	227		1.36
< $35,000		21.6	
> $35,000		15.2	

** p < .05 *** p <.001

Table 3b.
Incorrect Nomination – Demographics in 2 or 3 Adult Household: Next Birthday Method

	(N)	Incorrect R	X^2
Sex	263		0.08
Male		18.8%	
Female		20.2	
Race	262		1.52
White		17.3	
Black		24.2	
Age	240		0.53
< 40		20.7	
> 40		17.1	
Education	263		0.09
HS or less		19.2	
Some College		21.7	
Income	240		0.81
< $35,000		18.2	
> $35,000		19.8	

** p < .05 *** p <.001

Finally, we calculated the number of months a respondent's birth date was from the interview date (i.e. counted back from the interview date for the those screened using the Last Birthday method and forward for those screened using the Next birthday method) to determine an absolute value of time between the interview date and the birth date of the respondent. We were then able to determine if amount of time between the interview date and the selected respondent's birth date had any influence on the initial informant's ability to nominate the correct respondent. When the respondent's birthday was with in two months of the interview date, the initial informant never nominated the incorrect respondent using the Last Birthday method (Table 4a), but 5.7% of the incorrect nominations using the Next Birthday method occurred when a respondent's birth date was within this time frame (Table 4b). When a respondent's birthday was three to four months from the interview date, 8.2% of the Last Birthday and 8.8% of the Next Birthday incorrect nominations occurred. The frequency of incorrect nominations continued to rise as the number of months between the interview date and the respondent's birth date increased, such that when a respondent's birth date was five to six months from the interview date, 20.4% of the incorrect nominations in the Last Birthday households occurred, 16.1% in the Next Birthday households; seven to eight months, 28.6% in Last Birthday and 18.7% in Next Birthday; and finally nine to twelve months, 42.9% in Last Birthday and 50.8% of the incorrect nominations occurred Next Birthday.

Table 4a.
Incorrect Nomination – Effect of Time:
Last Birthday Method

# of Months	(N)	Incorrect R	X^2
	248		53.59***
1 to 2 mths		0.0%	
3 to 4 mths		8.2	
5 to 6 mths		20.4	
7 to 8 mths		28.6	
9 to 12 mths		42.9	

** p < .01 *** p <.001

Table 4b.
Incorrect Nomination – Effect of Time:
Next Birthday Method

# of Months	(N)	Incorrect R	X^2
	263		10.89*
1 to 2 mths		5.7%	
3 to 4 mths		8.8	
5 to 6 mths		16.1	
7 to 8 mths		18.7	
9 to 12 mths		50.8	

* p < .05 *** p <.001

Conclusions and Summary

Prior research examining the reliability and validity of the Last Birthday method had found that as the number of adults in the household increased, the ability of an informant to correctly nominate a respondent decreased, and in a two to three person household, 7.3% of the time the incorrect respondent was nominated in an Illinois statewide survey (Lind, Johnson, & Gwiasda 1997). In this study, we found that the initial informant incorrectly nominated a fifth of the respondents when screened using the Last birthday method, and a fourth when the Next Birthday method was used. In general when an incorrect nomination was made, informants were less likely to have nominated themselves than another adult in the household, and this was true for both methods. The respondent's level of education was also a significant factor in whether or not the correct respondent was nominated, such that respondents with some college were significantly less likely to be incorrectly nominated than those with a high school education or less when using the Last Birthday Method. On average, South Carolinian's are much less likely to enroll in college than residents of Illinois, and this may explain some of the difference in the number of incorrect nominations between the two studies (U.S. Department of Commerce 2000). Finally, as one might expect, there was a significant correlation between the number of months a respondent's birthday was from the interview date and whether or not he or she was correctly nominated, although this was less of a problem among households screened using the Last Birthday method compared to those screened using the Next Birthday method. We suspect this may be due to the cognitive ability to remember past events as opposed to having to project to future events (for example, a recent birthday party may trigger a memory better than a birth date in the not so near future). It is our experience that interviewers believe that the Next Birthday method is easier for informants to understand, but this research suggests that the Last Birthday method may actually be applied correctly more often by informants than the Next Birthday method.

References

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