THE PROBLEM OF OMISSIONS AND TELESCOPING ERROR: NEW EVIDENCE FROM A STUDY OF UNEMPLOYMENT

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Introduction

This paper examines two types of response error, omission rates and misdating of events, for reports of unemployment. In contrast to most validation studies in which the design restricted the analyst to examining only rates of omissions, the design of the current study provides an unbiased means to address both rates of omissions and over-reports, as well as examining the respondent's ability to accurately date the event. The study supports the findings of previous research that indicates the overwhelming effect of errors of omissions, however the present study indicates that errors of misdating may not be limited to forward telescoping, but may also contribute to net under-reporting.

Previous Research

The literature documenting response error is abundant (e.g. Cannell, et at., 1965; Neter and Waksberg, 1965; Sudman and Bradburn, 1973). The findings from these studies suggest the following about response error:

(1)   rates of omission increase as a function of the length of recall period;

(2)   errors in the perception of time tend in the direction that the event is remembered as having occurred more recently than it actually did; and

(3)   factors other than time such as the salience or social desirability of the event, affect both the rates of omissions (or overreports) and accuracy of dating the event.

More recent work, which has attempted to integrate the fields of survey research, specifically response error, and cognitive psychology, has suggested that failure to report an event may be more a function of the number of related events stored in long term memory rather than a function of time. However, parallel theories suggesting why a respondent may err in the perception of the date of an event have not been proposed.

The purpose of the present study is to reexamine several of the hypotheses related to response error. Is there evidence to support the "interference" theory of forgetting? Is the failure to report an event both a function of length of recall period and the number of similar events stored in long-term memory? How important are factors such as salience in determining a respondent's failure to report an event? Similarly, do factors such as length of recall and salience affect a respondent's ability to accurately place an event in time?

Research Design

The data presented in this paper are part of a larger study to assess the quality of data obtained in the Panel Study of Income Dynamics (Duncan and Mathiowetz, 1984). Respondents were selected from the personnel records of a manufacturing company with several thousand employees. The hourly work force for this company is completely unionized and none of the workers, hourly or salary, work part time. The company work force is somewhat older (with more job tenure) than would be true of a national sample of workers, due to both recent layoffs and few new hires. Only employees current employed at the date the sample was

selected were eligible for the interview, resulting in few respondents with relatively recent spells of unemployment (within the last month). To offset the relatively older population of workers, younger and more recently hired emloyees were sampled at a higher rate than employees with long tenure. Interviews were conducted by telephone in June and July, 1983, from the Survey Research Center at the University of Michigan. The overall response rate for the study was 78.3%.

Methods

Respondents were asked to recall months in which unemployment occurred for a thirty month period from January, 1981 to June/July, 1983.[1] Detailed employee records covering the same reference period permitted precise measurement of the validity of the reports. Matching

of unemployment spells reported by the respondent and those recorded in the company record was done by hand. All reports were retained in the data base regardless of whether only a record report or respondent report was available. Since respondents were only requested to provide the month and year of the unemployment, spells less than one month in duration were considered accurately reported if the respondent reported any unemployment in that month . For example, if the respondent had reported being unemployed in January, 1982 and the company record indicates two separate unemployment spells, one during the first week of the month and the second spell falling in the third week of the month, the data indicate two separate spells, both reported accurately. Because

of the limitations of the questionnaire, the analysis of response errors underestimates both omissions and the degree of misdating of events. However, the questionnaire design should not affect the overall pattern of the findings.

The analysis presented in this paper is restricted to males who were self reporters (N=387).[2] However, since the goal of the analysis is to examine the types of events that are omitted or are subject to misdating, the tables and figures used throughout the paper are based on the total number of unemployment spells (N=492). As noted above, this sample represents the union of the interview reports and company records. Because some respondents have multiple unemployment spells, the data are subject to nonindependence among the observations.

Research Findings

Table 1 presents the percentage of unreported unemployment spells classified by the duration of the spell and length of the recall period. The characteristics of the unemployment spell (duration and length recall period) are based on the company records. The two-way classification shows support for both the memory decay hypothesis and the saliency hypothesis with respect to forgetting. Going across the columns (within any of the rows) the general trend indicates that the rate of omissions increases as a function of the length of the recall period. Using

duration of unemployment as a proxy measure of salience (assuming a longer unemployment spell has a

more dramatic effect on an individual's life than a shorter spell), we see that more salient events are less likely to be forgotten. Although some of the individual cells are based on small N's (less than 10 cases), the trends are consistent throughout the table.

Does the data also present support for interference theory? Table 2 presents the percentage of unreported unemployment spells by the number of unemployment spells the respondent experienced. Although not a linear function, the proportion of unreported events increases sharply when the respondent has experienced more than two unemployment spells within the past thirty months, indicating support for the interference theory of forgetting.

There was little evidence of overreporting on the part of the respondents. Only six of the unemployment spells reported by the respondent were unconfirmed by the company records.

Table 3 presents the classification of misdating errors (telescoping) for those unemployment spells for which there was both a respondent report and a company record. Since an unemployment spell has both a beginning and ending date, we can look at the accuracy of each. Although in the majority of cases the respondent was unable to give a specific date (e.g. responded with an answer such as "sometime in the fall of 1982"), there is evidence that respondents shift the date of the event both toward the interview date and away from the date of the interview.

Tables 4 and 5 examine the relationship between the direction of misdating, the length of recall period and the duration of unem-

ployment spell. Due to the relatively small total number of cases (256) length of recall is only classified into two categories (less than one year; more than one year) and duration of unemployment spell is similarly restricted to two categories (two weeks or less; three or more weeks). For dating both the start and end of unemployment spells, the rate of misdating is significantly reduced the longer the spell.

Conclusions

The research presented in this paper provides support for several theories concerning respondent's failure to recall events and raises questions concerning the degree and direction of dating events. In examining rates of omissions, both a memory decay theory and an interference theory found support. As with previous research, the role of salience in predicting respondent's failure to report an event was seen to be important. However, in contrast to most research which suggests that telescoping results in overreporting (e.g. stating that an event occured more recently than it did), the dating of unemployment spells was equally as likely to be telescoped backward as well as forward.

The reasons for response error are still not well understood and further research is needed. This paper provides simply one more slice of research to aid in the goal to measure and reduce non-sampling errors.

Footnotes

[1] Months of Unemployment were reported in the interview in response to the following questions: "Were there any periods since the beginning of the year before last, January, 1981 when you were unemployed and looking for work or temporarily laid off for a week or more?" What month(s) and year(s) (was that/were those)?" "Any other such periods."

[2] The design of the Panel Study of Income Dynamics requires the interviewer to conduct the interview with the male "head of household". Interview data for female employees were most often collected by proxy report, thereby confounding sex and proxy effects. To avoid this confounding, only reports by male, self reporters are used.

References

Cannell, C. F., G. Fisher, and T. Bakker, "Reporting Hospitalizations in the Health Interview Survey". Health Statistics, Series 2, Number 6. U.S. Public Health Service, Washington, D.C., 1965.

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Neter, J. and J. Waksberg, Response Errors in Collection of Expenditure Data By Household Interviews: An Experimental Study. U.S. Department of COmmerce, Washington, D.C., 1965.

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Table 1. Percent of unemployment spells unreported by length of recall period and duration of unemployment spell[1]

| Duration of unemployment | Length of recall period | | | | |
	<8 months	9-12 months	13-18 months	19+ months	Total
1 week	53% (17)	66% (58)	76% (97)	81% (75)	74% (247)
2 weeks	58% (12)	64% (45)	66% (21)	71% (42)	67% (120)
3-4 weeks	46% (13)	50% (10)	60% (5)	60% (5)	52% (33)
5 or more weeks	40% (5)	41% (56)	63% (8)	61% (18)	47% (87)
Total	51% (47)	56% (169)	73% (131)	75% (140)	--

[1] Numbers in parentheses are the denominators for the cell percentages. Since some respondents have multiple unemployment spells, the observations are not independent.

Table 2. Percent of unemployment spells unreported by number of spells respondent experienced in 30 months

Total number of unemployment spells	Percent unreported
1	47.8%
2	52.4
3	68.5
4	66.7
5	76.7
6	67.8
7	71.4
8 or more	66.7

Table 3. Classification of misdating errors for beginning and
          ending dates of unemployment

    Type of dating error   Percent of spells[1]

Start of unemployment spell:

No telescoping	24%
Forward telescoping[2]	6%
Backward telescoping[2]	6%
Unable to give specific date	64%

End of unemployment spell:

No telescoping	18%
Forward telescoping[2]	15%
Backward telescoping[2]	11%
Unable to give specific date	56%

[1] Includes only those cases where respondent reports an unem-
ployment spell, N=256.

[2] Forward telescoping defined as those cases in which respondent's
date is more recent (closer to interview date) than record date.
Backward telescoping refers to respondent's report of event as
occurring earlier than record.

Table 4. Classification of misdating errors for beginning dates
          of unemployment by length of recall and duration of
          unemployment spell

Spell duration and type of error	Length of recall period	
	<1 year	>1 year
1-2 weeks unemployment:		
No telescoping	20%	17%
Forward telescoping[1]	6%	5%
Backward telescoping[1]	4%	11%
No specific dates	70%	67%
N	49	64
3+ weeks unemployment:		
No telescoping	63%	66%
Forward telescoping[1]	13%	22%
Backward telescoping[1]	7%	12%
No specific dates	17%	0%
N	54	9

[1] Forward telescoping defined as those cases in which respondent's
date is more recent than record date. Backward telescoping
refers to respondent's report of event as occurring earlier than
record.

Table 5. Classification of misdating errors for ending dates of
         unemployment by length of recall and duration of unem-
         ployment spell

Spell duration and type of error	Length of recall period	
	<1 year	>1 year
1-2 weeks unemployment:		
No telescoping	14%	13%
Forward telescoping[1]	6%	11%
Backward telescoping[1]	10%	8%
No specific dates	70%	68%
N	49	64
3+ weeks unemployment:		
No telescoping	50%	33%
Forward telescoping[1]	9%	0%
Backward telescoping[1]	24%	67%
No specific dates	17%	0%
N	54	9

[1]Forward telescoping defined as those cases in which respondent's
date is more recent than record date. Backward telescoping
refers to respondent's report of event as occurring earlier than
record.