Question Block Order Effects in a Telephone Survey

Peter Montague Meyers
Western Michigan University

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QUESTION BLOCK ORDER EFFECTS IN A TELEPHONE SURVEY

by

Peter Montague Meyers

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Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
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Peter Montague Meyers
Question order effects in a repetitive questionnaire was the focus of the study. A dataset was constructed based on results involving seven different organizations where the institutions were rotated into seven different blocked placements to test for order effects. This analysis used the Arts and Culture Survey conducted by the Kercher Center for Social Research at Western Michigan University in 1994.

Comparisons of means were used to determine whether fatigue from question repetitiveness affected respondents when responding to questions with fixed response questions, multiple responses, "don't know" responses, and openended responses. The issue of popularity was also examined to see if it washed out the repetition effect.

Fatigue from repetitive questions did not affect the four types of responses to questions. The issue of popularity was not significant.
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CHAPTER I

INTRODUCTION

Question order effects affect the entire field of survey research. There is a generally accepted belief among survey researchers that question order effects exist, and as a result, many questionnaires are designed with the intention of ordering the questions in an attempt to reduce the possible influence of order effects. This belief in the presence of order effects and the work that is done to construct a questionnaire to minimize these effects are justified by only fragmentary research results.

Schuman and Presser (1981) maintain that: "question-order effects are probably the most frequently cited explanation for an unexpected or unreplicated survey finding, except sampling error" (p. 24).

Schuman and Presser (1981) state that

there are nearly as many reports of either trivial or no effects as there are of important effects. At present, therefore, the frequency of appearance, size, and nature of question order effects in standard surveys of the general population are of considerable uncertainty. There is little doubt that they occur, but whether they are rare or common is unknown, and the forces that produce them are only beginning to be conceptualized" (p. 24).

They continue by stating that

overall, order effects of all kinds seem to us to constitute one of the most important areas of methodological research. They can be very large, are difficult to predict, and are intimately tied up with both substantive research issues and with further work on individual question forms. At this point
research needs to be aimed not merely at producing more exam­
ples, but at understanding why those already obtained occur.
Greater understanding of these fundamental issues is urgently
needed if attitude surveys are to avoid tripping over their
own artifacts. (p. 77)

The significance of this study is twofold. First, it is justi-
ified by the literature's uncertainty of the causes of question
order effects and the field's desire to better identify the circum-
stances in which order effects occur. Second, this study addresses
the general research belief about order effects in survey research.
It may serve as an example that either furthers the justification in
the belief of the importance of order effects or assist the disci-
pline in showing that this belief is unfounded by yet another study.

The research question examines the order effect of repetitive
question blocks for seven different institutions in a Computer As-
sisted Telephone Interviewing (CATI) survey. This thesis will test
the contextual effects connected with question order and the re-
sponse patterns based on the rotation of seven repetitive question
blocks in a CATI survey.

In an applied sense, this thesis is being conducted to answer
the question: Did the placement of the institution in the rotation
make any difference in responses?
CHAPTER II

LITERATURE REVIEW

This chapter will review the relevant literature on question order effects in survey research. First, question order effect is briefly defined. Second, literature pertaining to several major question order effects are described from both the sociological and political science literatures. Third, two question block studies are examined in detail. Finally, the research hypotheses are discussed.

Question Order Effect

A question order effect occurs when a respondent’s responses are influenced by the placement of a question within a survey. The research on order effects examines situations in which people’s responses to one item are influenced by their responses to a another item. Schuman and Presser (1981) explain that since "questions are not asked in isolation, but as part of a continuous flow of items, the context in which any question appears, or its position in a sequence of items, may conceivably influence the answer given" (p. 24). If the order had been different, or if the previous question had not been asked, the conclusion is that the respondents would have responded differently to the later questions (Sigelman, 1981). This general definition appears to be consistently accepted across major works on question order effects (Bradburn, 1983; Payne, 1971;
Schuman & Presser, 1981; Sudman & Bradburn, 1974).

Much of the research has either focused on changing the order of responses for questions within the survey questionnaire design or changing the order of one actual question within the questionnaire itself (Becker, 1954; Brook & Upton, 1974; Payne, 1971; Schuman & Presser).

Despite the frequency of question order being considered as having a potential effect upon survey results, the literature is rather sparse. There were fewer than twenty studies conducted on question order effects over the past fifty years. Most of these studies concentrate on changing the order of a single question within alternating questionnaires (Schuman & Presser, 1981).

Bradburn (1983) suggests that

under some conditions the order of presentation of questions can have important effects on responses, but under other conditions it makes little or no difference. We cannot at present say with any certainty what conditions make question order an important source of response effects. There is only fragmentary evidence. (pp. 302-303)

Sudman and Bradburn (1988) indicate that order effects are most likely to occur when the respondent isn’t very familiar with the subject matter or doesn’t have a strong opinion about it. This increases the importance of the context of how and when the question is asked. If the respondent hasn’t developed a strong opinion about the subject matter of the study, the question may be assisting the respondent to form an opinion. To a respondent who has absolutely no idea what the question is asking, the previous questions create a context in which to give an uninformed response.
Sudman and Bradburn (1974) did not find any major question order effects connected with the placement of questions after other related questions in their work with the National Opinion Research Center (NORC). They worked with a variety of studies at the National Opinion Research Center (NORC) and Survey Research Laboratory (SRL) which concentrated on the examination of a variety of procedures involved with questionnaire construction that will influence responses to surveys (Bradburn & Sudman, 1979). Sudman and Bradburn's work on the NORC data consisted of analyzing the results of dozens of studies to determine what sort of effects could be detected in the various NORC work. They coded each study collectively and acted as if the separate results were all individual respondents (Sudman & Bradburn, 1974). They were looking specifically for response effects, a division of question order effects, and across this broad analysis found relatively no consistent order effects connected with the question's placement in the questionnaire (Bradburn, 1983).

Order Effects Problems

Schuman and Presser (1981) maintain that the problem of question order effects is potentially serious for several reasons. First, the order in which any question is asked may affect the survey results. Second, question order effects are important even if they only shift marginals. Third, the results of any study, where question order effects are detected, may be questionable without
replicating the entire study. Lastly, a major problem with question order effect is the actual design of the instrument. Logically, a questionnaire is constructed with similar questions placed together to form an organized and understandable instrument that can be easily understood by the respondent. But, question order effects are typically the result of similar questions being placed together and having an unintended influence upon each other. Thus, the design of a typical questionnaire prevents the avoidance of question order effects.

Bradburn and Sudman (1988) indicate that question order effects need to be taken seriously because surveys are so often used in preliminary stages of research for political candidates, policy recommendations and marketing new products. Order effects may influence any of these types of studies and bias the results.

Part-Whole and Part-Part Effects

A majority of reported question order effects involve two or more questions that cover similar issues (Schuman & Presser, 1981). In this context, Schuman and Presser distinguish between part-whole combinations and part-part combinations. The part-whole combinations occur when one question is more general and summarizes or implies another. For example, if a respondent replies "yes" to a question about establishing the death penalty for the state of Michigan, this implies a "yes" response to establishing a death penalty for all states. The part-part combinations refer to relations that are
equally specific. For example, if respondents respond "yes" to a question about Americans being allowed to visit Cuba, than they would respond "yes" to Cubans being allowed to visit the United States. The part-part relations are equal in this case.

Consistency and Contrast Effects

Schuman and Presser (1981) further define the two combinations by looking at them as either consistency or contrast effects. Consistency effect refer to the respondent's responses being influenced by earlier responses given in the survey (Bradburn, 1983). Consistency effects make the assumption that the respondent needs to feel consistent with the answers they are giving.

Schuman and Presser (1981) describe an example of consistency effects in some NORC research dealing with American and Communist reporters. In this replication of a 1948 NORC experiment, they asked respondents if the United States should allow Communist reporters to report news in the US. They discovered that respondents were more likely to agree to this after they were asked if American reporters should be allowed to report news from Communist countries. This is an example of part-part consistency effects.

Contrast effects, unlike consistency effects, work in the opposite direction. They lead to a greater disagreement as a result of their order in the questionnaire (Schuman & Presser, 1981). In general, Schuman and Presser had difficulty in replicating many contrast effects in their NORC research. But found limited effects in
an abortion study which alternated two abortion questions, one dealing with abortion in general and the other dealing specifically with abortion for a defective-child. The questionnaire featured two versions where the order of the two questions were reversed. In this telephone survey, they found that the general abortion question received more support when asked before the defective-child item, and substantially less when the order was reversed. This is an example of part-whole contrast effects.

Saliency and Redundancy Effects

A saliency effect refers to an effect in which the order of the presentation of the question affects the context of the next series of questions (Bradburn, 1983). Salience works on a recognition process based upon the respondent realizing that the item is important and this knowledge then affects the questions following this salient item (Sudman & Bradburn, 1974). Schuman and Presser (1981) add that salience effects help create particular responses by making certain responses more attractive with the use of previous questions. It shares many similarities with the consistency effect.

An example of salience effect is found in an article by Gibson, Shapiro, Murphy, and Stanko (1978). They looked at data from the National Crime Survey describing victimization experiences during a 12 month period in 1975. A list of 16 attitude questions were included in half of the surveys and omitted in the other half. The victimization reports given by the subsample who were given the
attitude questions were much more prevalent than those given by the group with the omitted attitude questions (Schuman & Presser, 1983). The explanation of this result is that these attitude questions proved to be salient and thus affected the response to the survey.

Bradburn (1983) explains that a redundancy effect is the opposite of the saliency effect, where the context of later questions has an effect upon the survey result. This effect is typically the result of overlapping general and specific questions. The assumption is that if a questionnaire is not carefully constructed and the same issues are being repeated, in specific and general question formats, a redundancy effect is possible to occur. Bradburn (1983) illustrates this example, by suggesting if some general questions about work or marriage are asked in the beginning of the survey; and are later repeated in a more specific fashion, the respondent may feel as if they are repeating themselves.

General Before Specific

Related to saliency and rapport effects, the assumption that general questions should be placed before specific questions is a common theme throughout the literature (Kornhauser & Sheatsley, 1976). This was based on the assumption that general questions were less susceptible to order effects. Specific questions were assumed to be more salient and thus, specific questions that precede general questions may create an order effect. McFarland (1981) tested this assumption directly in a telephone survey where he alternated the
placement of four general and specific questions and found little difference between the general and specific questions regardless of the order in which they were presented.

Fatigue and Rapport Effects

Fatigue effects occur especially in longer surveys, as a result of the overall position of questions in the questionnaire rather than the relation of one question to another. Questions being answered at the end of a long survey may be under the influence of a fatigued respondent, who has lost interest with the survey (Bradburn, 1983). This is a more recognized order effect because it is seen especially at the end of long questionnaires when the respondent is getting tired of answering the questions. Common sense dictates that fatigue effects may be seen after a respondent has answered enough questions that they begin to tire and not answer as thoroughly (Schuman & Presser, 1981). A general agreement among variety of texts suggests that after 15 minutes a respondent may become fatigued.

Schuman and Presser describe an experiment by Kraut, Wolfson, and Rothenberg (1975) that changes the placement of a Likert scale within a 168 question questionnaire. The number of responses declined as the items fell later in the questionnaire (Schuman & Presser, 1981).

In contrast to fatigue effects, rapport effects happen near the beginning of a survey. They usually occurs as a result of sens-
itive questions being asked too early in a survey (Bradburn, 1983). Rapport deals with the opening of the questionnaire and how the question's relationship is developed at the beginning. This stresses the need to develop a relationship between the interviewer and the respondent. The assumption behind rapport effects is that the respondent becomes more likely to give truthful answers as some rapport is developed with the interviewer (Schuman & Presser, 1981). Sheatsley (1983) suggested that a rapport effect is also seen as a form of question order effect, but only found limited effects in his research.

According to Schuman and Presser (1981), there is only one example of reported rapport effects. Thurmin (1962) conducted a telephone interview where he asked half of the respondents some initial questions about insomnia and the other half about allergies. Thurmin believed that the insomnia questions were more personal than the allergy question and thus, assisted him in gaining rapport with the respondents (Schuman & Presser, 1981). Little actual research has been conducted on either fatigue or rapport effects (Bradburn, 1981).

Primacy and Recency Effects

Along with the previously mentioned effects, two additional response effects have been found in the literature; primacy and recency effects (Krosnick & Alwin, 1987). Primacy effects occur when an item has been placed at the beginning of a list and as a result
its likelihood of selection is increased. Recency effects are those that occur when an item is placed at the end of a list, which also appears to increase its likelihood of being selected. This is especially prevalent in any closed item question, and not an issue with open ended responses for oblivious reasons.

When surveys ask questions of a similar nature, a list of items is commonly used in the instrument to convey the information. If the list is long, the order of the items on the list become an issue. The assumption is that the items at the beginning of the list will be much more closely attended to than the items at the end of the list. It is also noted that the items near the beginning receive more favorable results than those received by the last items. The middle items usually report the least favorable results (Sudman & Bradburn, 1988).

Schuman and Presser (1981) replicated Payne's 1951 study dealing with a split-ballot box experiment for the American Petroleum Institute. Payne had originally discovered both recency and primacy effects in his results. When they replicated his study about the oil industry, they also discovered these same effects in two separate replication attempts. Schuman and Presser (1981) examined primacy and recency effects in a total of 12 NORC experiments. They discovered both "real and moderately large" effects (p. 71). Three of the experiments showed a recency effect and one showed a primacy effect. They were uncertain of the exact causes of these effects.
Direction and Opinionation Effects

Previous literature (McFarland, 1981; Schuman & Presser, 1981; and Sigelman, 1981) also indicates that question order may produce opinionation and direction effects. Opinionation effects influence a respondent's willingness to offer a positive or negative evaluation. The respondent's opinion of the item influences whether or not a positive or negative response will be given. These effects may be long lasting. If the respondent is asked a question in which they have a strong opinion, early in the questionnaire, this may influence the balance of later positive or negative evaluations, which is referred to as a direction effect (Benton & Daly, 1991).

Sigelman (1981) examined opinionation and direction effects in a study where he rotated the placement of a President's popularity question in a questionnaire. The question was asked in two different places within the questionnaire including directly after either positive or negative questions about positive and negative programs, that would affect the opinions and direction of the respondent's feeling towards the president, himself. Question order had no significant effects upon the opinionation or direction of the public's perception of the President's popularity.

Halo Effect

Sharing many similarities with opinionation and direction effects, halo effect is another possible order effect in survey research. Halo effect generally refers to the tendency to see indivi-
duals as possessing all positive characteristics or all negative characteristics based on one single good or bad characteristic (Thorndike, 1920). This definition has been expanded and changed over time. Halo effect may refer to a tendency toward consistency. For example, if a person is attractive, than they are considered to have other positive characteristics as well. Halo effect may also refer to the tendency to see only positive characteristics in a person, issue or organization. This effect may spiral down from this belief to influence decisions related to this person, issue or organization. They may also influence how a respondent will answer positively or negatively to a questionnaire.

There is a fine distinction between opinionation and halo effect based upon currency. The definitions mean approximately the same thing. Opinionation appears to be the more current version of what in the past had been referred to as halo effect. Opinionation effects also include negative evaluations, unlike the original definition of halo’s positive effect.

Knowledge Effects

Respondent’s knowledge may have a significant effect upon survey results. The political science literature focuses on knowledge and name recognition in terms of one candidate versus another candidate. The literature dictates that the lesser known a political figure is, the more likely his or her ratings are to be influenced by previous ratings of a better known or more popular candidate. Some
knowledge effects have been observed in combination with contrast effects when occur with such topics as abortion (Bishop, Oldendick & Tuchfarber, 1985; Schuman & Presser, 1981) or political candidates (Crespi & Morris, 1984). In knowledge effects, the more that people approve or disapprove of an object, issue, or person, the greater the chance there is a effect on the subsequent questions (Alspach & Bishop, 1991).

Alspach and Bishop (1991) indicate that the question order effect is usually the joint result of the awareness of the politician and the popularity of one politician compared to another. If the popularity of the two politicians were the same, they would expect a lesser effect. They might also expect that if more people knew one politician, the people would be more likely to have a well-informed opinion of him and that opinion would not be as influenced by question order. If two politicians were equally known or unknown, and equally popular or unpopular, then they would expect no question order effect.

According to Alspach and Bishop (1991),

order effects may be largely a function of two things: (1) how well known are the two objects that are being compared, and (2) how well liked, popular, or approved are they. Differences on either or both of these dimensions probably generate many of the order effects that have been found. (p. 1246)

Question Order Effects in Blocks

An extensive search through the literature resulted in finding two sources studying question order effect and question blocks.
Bradburn and Mason (1964) worked on a series of studies testing mental health symptoms. In designing the questionnaire, the issue of order was brought up as a potential problem. Since they were asking about different areas of these people’s lives, dealing with satisfaction and dissatisfaction in work and personal situations, they became concerned of the possible effects of the placement of these questions.

Bradburn and Mason (1964) found an absence of literature about order effects, a need to alternate the order in which the questions were asked, and a desire to keep a logical order of the questions. To make matters easier, they rotated entire sequences of questions rather than individual items. Bradburn and Mason created question blocks and rotated them throughout the questionnaires.

Bradburn and Mason (1964) proposed four separate order effects characterized by saliency, redundancy, consistency, and fatigue. These effects have already been discussed.

Bradburn and Mason (1964) split the questionnaire into six separate blocks separated by different areas in the respondent’s life such as health, family, or work. They limited the research to examining four of the six blocks, leaving two as influencing variables. The blocks had the possibility to appear in three different sequenced orders depending upon which questionnaire was used. In actuality, they created three different questionnaires.

However, Bradburn and Mason (1964) were unable to find any
order effects on questions concerning self-reports and self-evaluations on mental health symptoms when question blocks were rotated through the questionnaire.

Clancy and Wachsler (1971)

Clancy and Wachsler (1971) examined the positional (order) effects in a repetitive, shared-cost survey using question blocks. A shared-cost survey is a study in which the questionnaire and costs of research are distributed among more than one party. The surveys make economical sense, and were developed in response to a need to get quality data at a affordable cost. Clancy and Wachsler noticed that shared-cost surveys were particularly popular for monitoring, in which to predict trends in marketing and the political arena.

Clancy and Wachsler (1971) believed that question block rotation was an excellent option to attempt to eliminate possible order effects when dealing with more than one client's wishes in a shared-cost survey. They refer to order effects as positional effects. Clancy and Wachsler isolated that the sequence and timing of questions were the most important considerations for positional effects. The sequence of the question block may effect the next block in terms of saliency of the questions. But since clients examine the sequence of the blocks so carefully, this effect appears to be a rarity. The timing of the block may fall under fatigue or rapport effects. They focused on timing of the block in their study.

Clancy and Wachsler (1971) hypothesized that "respondents are
more likely to be bored or to suffer fatigue near the end of an interview rather than near the beginning" (p. 260). They hypothesized some fatigue effects resulting from six repetitive items that occurred toward the end of the telephone survey. Clancy and Wachsler suggested the possibility of a repetitive answering pattern in the repetitive questions due to the fatigue effect.

They switched the location of a repetitive six item question block into the beginning and end of two alternating questionnaires (Clancy & Wachler, 1971). These two six question blocks were used to test for either a fatigue effect or a rapport effect, depending if they fell at the end or the beginning of the questionnaire.

In their analysis, Clancy and Wachler (1971) calculated the mean number of all six questions in the beginning and end section. No question order effects were discovered in the analysis of results. This stresses, at least, the belief of the importance of repetition in the issue of fatigue for question blocked questionnaires. Clancy and Wachsler believed the repetitive question items would influence the fatigue effect in their study.

Conclusion

An extensive review revealed only two sources, Bradburn and Mason's 1964 study and Clancy and Wachsler's 1971 study, which addressed order effects and the rotation of question blocks. While the effects generally addressed toward question order may be generalized toward question blocks, most of the surveys only changed the
order of one question within a survey. This study deals with one question block that has been changed seven different times under one general survey topic.

The literature both supports and rejects the impact of order effects. There is a general agreement that order effects exist, but when their effects are specifically tested, they only influence results about half of the time. Thus, the need for further research is clearly justified. The literature proposes several different order effects that may be studied.

In this thesis, the issue of fatigue will be examined. This was one of the client’s primary concerns that the respondents would become fatigued and the institutions in the middle and near the end of the questionnaire would get lost in the placement of questions. So, it is a logical deduction to investigate fatigue effects.

In typical studies looking at fatigue effects, the length of the questionnaire, duration of the interviews, and the content of the ending questions are the major concerns. In this study, the primary focus is on the repetitiveness of the questionnaire. This thesis will concentrate on the fatigue from repetition. From this point further, the concept of fatigue, will be examined as fatigue from repetition. It will be referred to as either fatigue from repetition or repetition effect. These repetition effects were examined in concert with the placement of the institution in the rotation of question blocks.

Popularity is the second issue that will be examined. Knowledge effects translate into an issue of popularity. This provides
an opportunity to look into a possible halo effect with the most popular institution in the rotation. From this point further, knowledge will be looked at as popularity effects.

Research Hypotheses

Based on the review of literature, several research hypotheses were formed. First, given the amount of the rotation in question block placement in this survey, it is predicted that the responses to fixed response items will be affected. It is predicted that the percentages of responses for each of the locations will be different.

1. The location of an institution's question block influences the fixed response percentages.

Second, due to the repetitive nature of the question blocks, fatigue due to repetition effects are expected. The repetition effect of the respondents will likely increase as they proceed with the questionnaire. Response to multiple response questions are expected to decrease as the survey proceeds. The respondents will select fewer multiple possibilities as the survey goes on.

2. Fewer multiple responses will given in the last block than in the first block.

It is projected that fatigue by repetition may also affect the frequency that "don't know" responses are given. It is expected that there will be more "don't knows" at the end of the survey than at the beginning.
3. Fewer don't know responses will be given in the first block than in the last block.

A similar fatigue by repetition effect is expected for open end responses. They are expected to decrease as the survey proceeds. The respondent will become fatigued as a result of the repetitious question blocks and the total number of open ended responses will decrease as this repetition fatigue increases.

4. Fewer open ended responses will be given in the last block than in the first block.

As the previous research indicates, popularity seems to influence order effects. In this study, two types of questions dealt with the issue of popularity (i.e., knowledge). They involved visitation experience and name recognition. Visitation experience refers to knowledge that the respondent has gained by actually visiting the institution. Name recognition deals with the respondent's familiarity with the institution and how recognizable the name is in reference to the other institutions.

In this survey, the two forms of knowledge are indistinguishable from each other. In the study, the name recognition of an institution and the visitation experience are combined into a single concept called popularity.

5. Useable responses will be higher for the most popular institution irrespective of its rotation placement.

Useable responses indicate a higher number of multiples, lower percentage of DK's, and higher percentage of giving open ended re-
responses. The final hypothesis, Ho5, involving popularity is based on the halo effect. Wherever the most popular institution appears, its popularity would positively influence the questions in its block.
CHAPTER III
DESIGN AND METHODOLOGY

This study analyzes data collected from the 1994 Arts & Culture Survey of the Battle Creek/Kalamazoo Cultural Coalition performed at the Kercher Center for Social Research at Western Michigan University. This cooperative effort was an attempt to assess the situation for each institution and foster future work for connecting the two communities. The seven organizations surveyed were: (1) The Art Center of Battle Creek, (2) The Binder Park Zoo, (3) The Aviation History Museum, (4) The Kalamazoo Institute of Arts, (5) The Kalamazoo Nature Center, (6) The Kalamazoo Public Museum, and (7) The Kingman Museum of Natural History. The seven institutions became the focus of a summary data set used in this analysis.

The Issue

The issue of how to present the seven different institutions in the survey was a potential problem from the beginning. Each coalition director wanted the opportunity to be the first institution named in the survey. They believed that this was the most advantageous position. Since only one institution could be first in a single survey, KCSR staff initially suggested that the order be randomized so each institution could be first in the survey some of the time.
Randomizing the questions for the seven different institutions might have made the most logical sense, but the KCSR’s software would not permit randomization of the full question blocks. Subsequently, staff from the Kercher Center suggested placing the most widely recognized institution first. This resulted in the directors of the other participating institutions becoming worried that they might get lost in the sequence of questions. The KCSR and the Cultural Coalition finally agreed to rotate the placement of the different organizations through the use of sequenced question blocks.

All organizations desired an opportunity for their block to appear first in the rotation of questions. Therefore, seven different forms of the questionnaire were written. KCSR staff developed a block of nine questions that was used for each of the seven institutions. KCSR staff rotated the order of the seven different question blocks on the interviewing disks. The disks were equally distributed to research assistants each night of the interviewing, thus allowing each block to be first in the rotation of questions, as well as second through seventh depending upon the disk used.

The Kercher Center designed the survey instrument with the assistance of the Coalition and prepared it for computer-assisted telephone interviewing. The questions about the organizations were grouped into seven identical question blocks, allowing each organization to be first, one seventh of the time in the survey. Given the pattern of rotations, each organization’s question block was first in one block, and second, third, fourth, fifth, sixth, and
seventh in other blocks. An interviewer used one of the seven disks each night. Usually, 14 disks were distributed each evening, allowing each institution to hold each of the seven rotation positions on at least two disks each evening.

The interview process took just over two weeks to complete, from May 11 to May 26, 1994. The calls were conducted during the evening hours (5:00-9:00 PM) on weekdays, and during the day on Saturday (10:00 AM-2:00 PM). The data were collected using CI2, a stand-alone, computer assisted telephone interviewing system.

A random sample of households was drawn by the procedure of random-digit dialing. In this procedure, the four-digit suffixes were randomly generated numbers. Businesses and non-working numbers were screened out by the interviewers. The average call took approximately 13 minutes.

The final sample of completed interviews contained 415 responses from Kalamazoo County, 415 from Calhoun County, and 415 from the 9 surrounding counties combined (portions of Allegan, Barry, Berrien, Branch, Cass, Eaton, Jackson, St. Joseph, and Van Buren Counties). Therefore, a total of 1,245 completed interviews were collected to represent the three units with 95% confidence and a precision of +/- 5%.

The questionnaire itself began with 3 to 4 screening questions to determine if the respondent was an adult member of the household and to determine in which county the respondent lived. If they lived in Kalamazoo county they were asked how often they visited Calhoun
county, and if they were from Calhoun county they were asked how often they visited Kalamazoo county. Out county residents were asked about visitation to both Kalamazoo and Calhoun counties.

The respondents were asked, at the beginning of each question block, if they had actually visited the named institution. This first question splits the respondent into two possible branches of either the visitors group or the non visitors group. This split also creates separate subsamples depending upon whether they had visited or had not visited the named institution. If the respondent had been to the named institution, they were considered a visitor. The visitors received two single response questions, two multiple response questions and one open end question. If the respondent had not visited the given institution they were considered to be a non visitor. They would receive one multiple response question, one open end and one single response question. This block and branching of questions was repeated for each of the seven institutions. At the end of the survey, all respondents were asked about taking out of town guests to the various institutions and finally, asked several demographic questions.

Construction of Data Set

A data set was created to study the institution as the unit of analysis. Percentage of responses were used as measures to adjust for the various sizes of subsamples for each institution in each position and visitor and non visitor status. Therefore, percents
are used to adjust for variation in subsample size. The data set consists of data for each of the institutions in each position. A total of 49 data lines were created. This included the seven institutions with seven placement rotations per block.

Within each data line, a subsample was determined by "yes" or "no" responses, which were used accordingly to indicate whether the respondent was a visitor or non visitor. Therefore, there are 98 subsamples. In actuality, there are 98 possible data lines based on visitor or non visitor branching.

The data lines themselves consisted of the following:

1. The placement rotation of each institution per disk, first through seventh.

2. The institution itself. The institutions were numbered as: (1) Art Center of Battle Creek, (2) Binder Park Zoo, (3) Aviation History Museum, (4) Kalamazoo Institute of Art, (5) Kalamazoo Nature Center, (6) Kalamazoo Public Museum, (7) Kingman Museum of Natural History.

3. The institutions overall percentage of visitation. This was based on the percentage of visitors who had actually visited each institution in the last two years cumulated from all seven positions.

4. The results taken from all the questions blocks per institution. For example, for institution 1, variable A1 through A17, and for the institution 2, variable B1 through B17.

Since the institution was the unit of analysis, the percent of
responses was used for the number of cases in each data line. For example, 60% of respondents felt very satisfied when the zoo was in fifth position.

Open ends were collected by printing all the open end responses for each institution in each position from the original survey. All meaningful responses were counted and converted into percentages.

The multiples consisted of running an SPSS program designed to total the number of total responses, "don't knows," and of the subsamples.

The fixed response questions were taken off the SPSS program used to determine the percentage of responses per question.

The data lines were assembled on 3 sheets of fortran paper, and entered into Word Perfect. They were then changed to an ASCII file and uploaded into the Vax system. This became the data set that was the background for the SPSS program to analysis the data.

Independent Variable

To test for order effect, the independent variable of rotation position was used, which indicated where a given institution appeared on each disk. As mentioned above, there were seven disks made up where each institution was rotated through the seven possible questions block positions. The sequence methodology altered the position of the first block, and thus, the actual location of the other six rotated in turn.
For example, if the Art Center for Battle Creek was first, the sequence followed: (1) Art Center of Battle Creek, (2) Binder Park Zoo, (3) Aviation History Museum, (4) Kalamazoo Institute of Arts, (5) Kalamazoo Nature Center, (6) Kalamazoo Public Museum, and (7) Kingman Museum of Natural History. If the Zoo was moved to the first position, the Art Center moved to last position. This sequence was: (1) Binder Park Zoo, (2) Aviation History Museum, (3) Kalamazoo Institute of Arts, (4) Kalamazoo Nature Center, (5) Kalamazoo Public Museum, (6) Kingman Museum Of Natural History, and (7) Art Center of Battle Creek. Thus, the sequence was the same, although the order varied.

Preliminary Analysis of Order

Preliminary analysis revealed that the seven order categories was too small in number of cases (seven in each order) to show any significant order effects. The small samples of seven cases in each of the seven orders consisting of: first place, second place, third place, fourth place, fifth place, sixth place, and seventh place, all made it very difficult to see any trends. The percentages of responses were not linear in either direction. The statistics weren't showing any effect due to having only seven cases in each position.

Combination of Order Categories

To increase the number of cases for each position the seven
positions were collapsed to include 3 grouped order categories. The first and second place were combined into Group Order One. The third, fourth, and fifth place were combined into Group Order Two. The sixth and seventh placement were combined into Group Order Three.

This increased the number of cases from only seven cases per position to fourteen cases for the Group Order One and Group Order Three and 21 cases for Group Order Two. This was done to get larger \( n \)'s for each group order. It was accomplished by using a recode statement on SPSS and creating these three new categories.

The investigation of the influence of the independent variable involved examination of rotation location (first, middle, or last) to see if there were differences in the response data. The investigation involved averaging the percentages of responses to all the questions that were asked in each question block location across all the institutions. This would increase the likelihood of finding order effects. This facilitates an opportunity to examine the location of the question blocks to see if the placement of the block had an effect upon the results.

There were many potential consequences for combining the order into three rather than seven individual orders. In a positive sense, it created a true first, middle, and last place rather than seven places where the beginning, middle, and end were somewhat ambiguous. It was oblivious that the first place was the beginning and the seventh place was the end, but the other five positions fell in the
middle and open to interpretation. With setting up three grouped order categories, it is clear where the separation exists.

A potential negative consequence in having a beginning, middle, and end categories is that some of the detail may be lost, particularity in first and last position, and would make the analysis less precise for the first and last orders. Although, after conducting this primary analysis, little actual detail was lost in the combination of grouped categories.

Dependent Variables

The dependent variables used in this analysis included: the percentage of fixed answer responses, the number of multiple responses, percentage of "don't know" responses, and the percentage of open ended responses. The variables represent the issue of fatigue due to repetitiveness, a repetition effect.

Fixed Response Questions

In this thesis, two of the fixed response questions were examined. The first question deals with a behavior of the respondent and the second asks about the respondent's opinion.

The first question of each block asked all respondents: In the last two years have you or anyone in your household visited [the institution]? Answers could be Yes, No, Don't Know/No response.

Answering "Yes" indicated visitors and the visiting respondents were asked an additional five questions. These respondents
were part of the visitor subsample for that particular institution. Answering "No" indicated non visitors and non visiting respondents were asked three additional questions. These respondents were part of the non visitor sub sample for that particular institution. This thesis will concentrate on the "Yes" fixed response to this question for its analysis.

Another fixed response question that appeared once in each block for visitor respondents in the visitors subsample which asked: How satisfied were you/they with the experience? Choices were: (a) very satisfied, (b) somewhat satisfied, (c) neutral, (d) somewhat dissatisfied, (e) very dissatisfied, or (f) don't know, no response.

This thesis examines the "somewhat satisfied" fixed response in its analysis. All of the possible satisfaction responses had a similar response pattern. The choice to analyze "somewhat satisfied" response was simply an arbitrary choice.

**Multiple Response Questions**

The two multiple response questions addressed separate issues; information sources for visitors, and reasons for not visiting for non-visitor. The first multiple response question asked visitors respondents in the visitor sub sample: From which of the following sources have you heard information about [the institution]? Choices were: (a) radio, (b) television, (c) newspaper, (d) newsletter or brochure, (e) school program or trip, (f) a friend or neighbor (word of mouth), (g) billboards, or (h) don't know/no response.
The interviewers did not read the responses. The respondents could name as many sources as they wished. The total responses given are examined in the analysis.

The second multiple, which only included non visitors respondents from the "non visitor" subsample asked: You indicated that no one in your household has visited [the institution]? Is there any particular reason why you haven't? Choices were: (a) Didn't know about it, (b) Not interested/Too old/no kids, (c) Too expensive/no money, (d) Not conveniently located/too far away, (e) Time required, (f) Subject matter is objectionable, (g) Lack of transportation, (h) Unhappy with Facility, (i) Unhappy with programs, or (j) don't know/no response.

Interviewers did not read responses and the respondents could give as many reasons as they wanted. The total number of responses are examined in the analysis.

Don't Know Responses

The "don't know" responses were a possible response to many of the survey's questions. They do not represent actual questions, but actual responses to questions. Two "don't know" responses were looked at in the analysis.

The two "don't know" questions were selected from a fixed response question and a multiple question. They were both selected arbitrarily.

The first "don't know" is a from a single response question
that asks visitor respondents in the visitors subsample: About how many times has someone in your household visited [the institution]? Choices were: (a) Once or Twice, (b) 3 or more times, or (c) Don’t know/No Response.

Only the percentage of "don’t know" responses will be examined for this fixed item question.

The second "don’t know" response is taken from the second multiple response question. The question asks non visitors from the non visitor subsample: You indicated that no one in your household has visited [the institution] Is there any particular reason why not? Choices were: (a) Didn’t know about it, (b) Not interested/Too old/no kids, (c) Too expensive/no money, (d) Not conveniently located/too far away, (e) Time required, (f) Subject matter is objectionable, (g) Lack of transportation, (h) Unhappy with Facility, (i) Unhappy with programs, or (j) Don’t know/no response.

This is looking at a single response, the percentage of "don’t know" response itself rather than counting the number of multiple responses.

Open Ended Response Questions

Two open ended questions were asked in each question block. The first question asked visitor respondent in the visitors subsample: Based on the experience, what one change would you like to see made at [the institution]? The second open ended question asked non visitor respondents in the non visitor subsample: Can you think of
any one thing that the [the institution] could do to encourage you to visit?

The percentage of respondents actually giving an answer to each of the questions are used in the analysis.

Control Variable

To test for halo effect, popularity was used as a control variable. Does popularity wash out the effect of order? The most popular institution, the zoo, with 57% visitation was compared to the other six institutions. The control variable of popularity compares the possible order effects of the zoo to the possible order effects of the other six institutions. This means looking at the zoo all by itself, where the three grouped orders consist of the zoo’s responses alone. This is compared to the other six institutions, where their three grouped orders consist of the six institution’s percentages of responses.

Statistics

The unit of analysis is the institution in the block. There are seven institutions collapsed into 3 grouped order categories. Analysis used the means of percent answering a given response or question, except that the average number of responses was used for the multiple response questions. Percentages were calculated by looking at the number of answers and dividing it by the N of the subsample determined by the Yes (visitors) or No (non visitors)
response to the first question in each block. The comparison of means is the primary statistic used in the analysis.

Analysis of variance was used to determine the difference of means for the three grouped orders in the study. ANOVA is used to test for the difference between two or more mean scores. ANOVA also works under the assumption that all the means are roughly equal. ANOVA is used to determine the total variance in the dependent variable that can be explained by the independent variable, and how much is not explained. The alpha level for significance is .05.
CHAPTER IV

RESULTS

Five hypotheses were evaluated through comparison of means. The independent variable, placement was used to examine the fatigue from repetition effects in fixed answer, multiple, "don't know," and open ended question responses. The control variable of popularity was also examined to evaluate the presence of a halo effect.

The first concept examined was fatigue from repetition. The first test examined the concept of fatigue from repetition for placement of fixed response questions. It involved the fixed responses to two questions. It is predicted that they will be different across the grouped orders.

Neither the first or second selected fixed response questions were statistically significant when classified by rotation position. Hypothesis 1, the location of an institution’s question block influences the fixed response’s percentage is not supported (see Table 1).

The second test for fatigue from repetition examined the multiple response questions. It was expected that the number of responses given by respondents would decrease as the respondents grew tired of the survey.

The first multiple question did yield a statistically significant result between the numbers of multiple responses as classi-
fied by rotation position. However, it is in the opposite direction than the hypothesis suggested. The data suggest that the number of responses increased as the respondents proceeded with the questionnaire. There were more responses in the last position than in the first or middle positions. This rejects the hypothesis (see Table 2).

Table 1

Comparison of Means: Percentage of Fixed Responses Classified by Group Order

<table>
<thead>
<tr>
<th>Fixed Response</th>
<th>1 First</th>
<th>2 Middle</th>
<th>3 Last</th>
<th>F</th>
<th>SIG.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question #1</td>
<td>22.71%</td>
<td>24.38%</td>
<td>23.92%</td>
<td>.0534</td>
<td>.9481</td>
</tr>
<tr>
<td>Question #2</td>
<td>16.07%</td>
<td>17.19%</td>
<td>17.35%</td>
<td>.1031</td>
<td>.9022</td>
</tr>
</tbody>
</table>

Table 2

Comparison of Means: Number of Multiple Responses Classified by Group Order

<table>
<thead>
<tr>
<th>Visitor/Non-Visitor Multiple</th>
<th>1 First</th>
<th>2 Middle</th>
<th>3 Last</th>
<th>F</th>
<th>SIG.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question #3</td>
<td>1.91</td>
<td>1.89</td>
<td>2.28</td>
<td>5.8683</td>
<td>.0054</td>
</tr>
<tr>
<td>Question #4</td>
<td>1.03</td>
<td>1.04</td>
<td>1.05</td>
<td>1.2422</td>
<td>.2983</td>
</tr>
</tbody>
</table>

The second multiple question was not significantly different when classified by rotation position. The data did reveal a slight
trend. However, it was also opposite the direction of the hypothesis. Non visitors also tended to select more responses as the instrument preceded. Therefore, hypothesis 3, Fewer multiple responses will be given in the last blocks than in the first, was partially rejected (see Table 3).

Table 3
Comparison of Means: Percentage/Number of "Don't Know" Classified by Grouped Order

<table>
<thead>
<tr>
<th>Visitor</th>
<th>1 First</th>
<th>2 Middle</th>
<th>3 Last</th>
<th>F</th>
<th>SIG.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Visitor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DK/NR (Fixed)</td>
<td>Question #5</td>
<td>2.57</td>
<td>1.76</td>
<td>.86</td>
<td>2.20</td>
</tr>
<tr>
<td>DK/NR (Multiple)</td>
<td>Question #6</td>
<td>30.89</td>
<td>35.88</td>
<td>37.54</td>
<td>5.1542</td>
</tr>
</tbody>
</table>

The third test of fatigue from repetition involved the "don't know" responses to one single response question and one multiple question. It is expected that the number of "don't know" responses will increase as the respondents grow tired of the survey.

The first don't know response question was not statistically significant when classified by rotating position. This is a single response question. It has more "don't knows" in the first position than in the middle or last, which was opposite to the hypothesis. The first "don't know" question does not support the "don't know" hypothesis.

The second "don't know" is a multiple response question type.
and was statistically significant when classified by rotation position. The second question does reveal the predicted hypothesis. "Don't knows" did increase with position in the instrument. Therefore, for the second DK, the hypothesis 4, fewer don't know responses were given in the first block than in the last block. The mixed results make the hypothesis not supported. Therefore, one question did support the hypothesis.

The fourth test of fatigue from repetition is for the open ended questions. It was expected that the number of open ended responses would decrease as respondents grew tired of answering questions. The rationale for the hypothesis was that the respondents would be less willing to give open ended responses as the blocks got near the end of the instrument (see Table 4).

Table 4
Comparison of Means: Percentage of Open End Responses Classified by Group Order.

<table>
<thead>
<tr>
<th>Open End Response</th>
<th>1 First</th>
<th>2 Middle</th>
<th>3 Last</th>
<th>F</th>
<th>SIG.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitor Question #7</td>
<td>34.43</td>
<td>34.83</td>
<td>32.65</td>
<td>.1524</td>
<td>.8581</td>
</tr>
<tr>
<td>Non Visitor Question #8</td>
<td>31.17</td>
<td>32.12</td>
<td>32.79</td>
<td>.1651</td>
<td>.3279</td>
</tr>
</tbody>
</table>

The first open end question, which was asked of the visitors, was not statistically different when classified by rotation position. However, slightly fewer responses were given in the last
position as compared to the first or middle positions.

The second open ended question which was asked of non visitors, also showed a slight trend, but it is in the opposite direction than the hypothesis suggested. The comparison of means for the second open end question was not statistically significant. Therefore, hypothesis 2, fewer open ended responses will be given in the last blocks than in the first, was not supported.

The second concept that was examined was the control variable of popularity to identify the presence of a halo effect. The percentages of useable responses for the zoo variables are expected to be higher than the other six institutions grouped percentages. This would dictate that the most popular institution would have higher percentages regardless of location.

Tables 5-7 show the Zoo only responses across all the examined questions and means of the other six institutions. The other is the averaged means of the other six organizations with the responses for the zoo removed. The Zoo stands alone to examine the halo effect of popularity.

The first multiple question, which was asked to visitors, was statistical significant when classified by number of useable responses. The zoo has a higher number of multiple responses, useable responses, than did the other six institutions irrespective of its position. The first multiple response supports the Ho5, that useable responses will be higher for the zoo irrespective if its rotation placement.
The second multiple question, which was asked to non visitors, was not statistically different when classified by the number of useable responses. However, the zoo did have more useable responses in the first and middle placements, and a higher overall mean. The second multiple response does not support Ho5, that useable responses will be higher for the most popular institution irrespective of its rotation placement.

Table 5
Comparison of Means: Zoo Compared to the Six Other Institutions Combined for Number of Multiples Classified by Group Order

| Visitor - Question #3 | | | | | |
|-----------------------|-----------------|---|---|---|
|                       | Zoo | Other | F       | SIG       |
| 1 First               | 2.35 | 1.84 |       |           |
| 2 Middle              | 2.56 | 1.78 |       |           |
| 3 Last                | 2.85 | 2.19 |       |           |
| Mean                  | 2.58 | 1.91 | 28.0347 | .0000     |

| Non Visitor - Question #4 | | | | | |
|---------------------------|-----------------|---|---|---|
|                           | Zoo | Other | F       | SIG       |
| 1 First                   | 1.05 | 1.03 |       |           |
| 2 Middle                  | 1.05 | 1.04 |       |           |
| 3 Last                    | 1.04 | 1.04 |       |           |
| Mean                      | 1.05 | 1.04 | 2.7686 | .1028     |

The first "Don't Know" question was not statistically different when classified by the percentage of useable responses. The zoo's responses were concentrated in the middle or last positions. The other institutions had more responses in the first placement, but less in the middle and last placements. The hypothesis is not
supported.

Table 6
Comparison of Means: Zoo Compared to the Six Other Institutions Combined for Percentage of Don't Knows Classified by Group Order

<table>
<thead>
<tr>
<th>Visitor - Question #5</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoo</td>
<td>Other</td>
<td>F</td>
<td>SIG</td>
</tr>
<tr>
<td>1 First</td>
<td>.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>2 Middle</td>
<td>2.00</td>
<td>1.72</td>
<td></td>
</tr>
<tr>
<td>3 Last</td>
<td>1.50</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>1.29</td>
<td>1.81</td>
<td>.3308</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non Visitor - Question #6</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 First</td>
<td>2 Middle</td>
<td>3 Last</td>
</tr>
<tr>
<td></td>
<td>29.39</td>
<td>35.96</td>
<td>41.31</td>
</tr>
<tr>
<td></td>
<td>31.14</td>
<td>35.87</td>
<td>36.91</td>
</tr>
<tr>
<td></td>
<td>35.61</td>
<td>34.82</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>.0956</td>
<td>.7585</td>
</tr>
</tbody>
</table>

The second "Don't Know" question was not statistically significant when classified by the number of useable responses. However, there were more "don't knows" given in the last block and middle blocks for the zoo only responses. The other institutions had more don't knows in the first block. The second "don't know" response also does not support Hypothesis 5 that more useable responses will be observed for the most popular institution regardless of its position.

The first openend, which was asked to visitors, was not statistically different when classified by percentage of useable responses. The zoo did have more useable responses in the first and
second blocks, but the other institutions had slightly more in the last grouped block. The first open ended question does not support the hypothesis.

Table 7

Comparison of Means: Zoo Compared to the Other Six Institutions Combined for Percentage of Open Ends Classified by Group Order

<table>
<thead>
<tr>
<th>Visitor - Question #7</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoo</td>
<td>Other</td>
<td>F</td>
<td>SIG</td>
</tr>
<tr>
<td>1 First</td>
<td>37.94</td>
<td>33.84</td>
<td>.3250</td>
</tr>
<tr>
<td>2 Middle</td>
<td>38.21</td>
<td>34.27</td>
<td></td>
</tr>
<tr>
<td>3 Last</td>
<td>32.18</td>
<td>32.73</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>36.41</td>
<td>33.71</td>
<td></td>
</tr>
</tbody>
</table>

Non Visitor - Question #8

<table>
<thead>
<tr>
<th>Non Visitor - Question #8</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoo</td>
<td>Other</td>
<td>F</td>
<td>SIG</td>
</tr>
<tr>
<td>1 First</td>
<td>18.86</td>
<td>33.22</td>
<td>16.9313</td>
</tr>
<tr>
<td>2 Middle</td>
<td>24.07</td>
<td>33.46</td>
<td></td>
</tr>
<tr>
<td>3 Last</td>
<td>25.08</td>
<td>34.07</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>22.87</td>
<td>33.56</td>
<td></td>
</tr>
</tbody>
</table>

The second openend, which was asked to non visitors, was statistically significant when classified by percentage of useable responses. The other institutions had a higher percentage of useable responses irrespective of its rotation position. The second question rejects Ho5) that the useable responses will be higher for the most popular institution irrespective of its rotation placement.

Therefore, hypothesis 5, useable responses will be higher for the most popular institution irrespective of its rotation placement is not supported. A majority of the question types did not support
the hypothesis. Only the "don't know" non visitor question supported the hypothesis. In contrast, only the first multiple question with the zoo only responses rejected the hypothesis. Due to the mixed results, this hypothesis is not supported.

Conclusion

Table 8 on the following page illustrates the results to all the different research hypotheses in this thesis.

Table 8

Summary Results for Hypothesis Testing: Two Question Tests for each of the Four Question Types

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Test 1</th>
<th>Test 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 1. The location of an institution's question block influences the fixed response percentages.</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Hypothesis 2. Fewer multiple responses will be given in the last block than in the first block.</td>
<td>S</td>
<td>NS</td>
</tr>
<tr>
<td>Hypothesis 3. Fewer &quot;don't know&quot; responses will be given in the first block than in the last block.</td>
<td>NS</td>
<td>S</td>
</tr>
<tr>
<td>Hypothesis 4. Fewer open ended responses will be given in the last block than in the first block.</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Hypothesis 5. Useable responses will be higher for the most popular institution irrespective of its rotation placement.</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Multiple</td>
<td>S</td>
<td>NS</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Open</td>
<td>NS</td>
<td>S</td>
</tr>
</tbody>
</table>

NS = Not Significant
S = Statistically Significant

Alpha level = .05
No hypothesis was clearly rejected or failed to be rejected with consistent results across both tests. The hypotheses were simply not supported. In the case of the first test of the multiple question, the hypothesis was formally rejected. The second "don't know" test was supported.
CHAPTER V

DISCUSSION AND FUTURE RESEARCH

This thesis was an investigation of order effects in question blocks in a CATI survey. A data set based on results of a community survey involving seven institutions where they were rotated into seven different placements was created and analyzed to test for order effects. The research question set out to answer whether the placement of the institution in the rotation made any difference in the responses.

The major conclusion from the data is that the placement of the question blocks for the seven institutions had little effect on the survey results. There was little significant difference in responses when the order of block placements was compared.

Five research hypotheses were developed. All five of the hypothesis were not supported. Fatigue from repetition did little to significantly effect the differences in percentages for fixed response questions, the number of multiple responses, the percentage of "don't know" response questions, or the percentage of responses for openended responses. The popularity of the zoo did little to control for placement rotation, and revealed no halo effect. No hypothesis was clearly supported or rejected, consistently across both tests of the question type.

There are several possible reasons why the order didn't make
any difference. First, the survey wasn't very long, an average of 13 minutes per interview and as indicted above, fatigue from repetition revealed to not be a very serious issue as first considered. The respondents handled the repetitiveness better than expected. The literature is quite specific about the length of a survey to prevent fatigue, but rather vague in terms of discussing repetitiveness of questions.

Second, the Kercher Center has excellent interviewers who were trained to reduce the order effects by voice and pace instructions. They were instructed to use prompts and other interviewer techniques to keep the respondents interested in the survey. It is possible that the interviewers had a positive effect upon the respondents. The fact that the university was conducting the survey may have had a positive effect and kept people interested in this survey.

Third, the questionnaire asked many questions about respondent behaviors and only a few about opinions. Behaviors are typically easier to respond to than questions about opinion. Most of the literature describes order effects where an actual opinion is requested rather than a behavior. While, in this particular study concentrated on behaviors.

Fourth, and most interesting of all the options, a learning effect could have occurred. The respondents may have became more confident, assertive, and willing to respond to the questions as the survey preceded. The respondents may have become more aware of what the interview wanted in response to the instrument through practice of
answering the repetitive questions.

This learning effect is assisted by the similarity of the visitor and non visitor subsample questions. The questions were so similar that the respondent may have simply learned how to answer the questionnaire.

Discussion

The fundamental question of whether the Kercher Center needed to rotate the placement of all the institutions is relatively clear. It was not necessary. The results yielded no significant reason to justify rotating the institution's question blocks through the instrument. However, this was not known getting into the survey.

But there is a larger issue at stake. In an applied sense, an amount of work was done to satisfy clients' concern. Research is among other things, a business. One of the major precepts behind successful business practice is to please the customer. This is precisely what the Kercher Center did for the Battle Creek/Kalamazoo Cultural Coalition. The client had a legitimate concern and the Kercher Center addressed the concern with question block rotation.

As the literature states, question order effects are very confusing and unpredictable. There are certain questionnaire design issues such as placing general questions before specific questions which assist in reducing order effects. But, even if similar questions were completely separated to try and reduce specified order effects such as salience; this may create a different unexplained
order effect by putting similar questions too far apart and thus, confusing the respondent. In many ways, question order effects are simply something that researchers must be aware of when examining and explaining their research results. They are also something that researchers should be aware of when they are constructing their questionnaires. The hard truth of the matter is that order effects are not predictable, they simply occur. When they are specifically and intentionally tested for, as in this thesis, they do not always influence results. Unfortunately, with the past literature being as varied as it is, order effects must be something that is studied case by case basis.

Recommendations for Future Research

There are a number of recommendations which can be made for future research. First, question order effects are a tremendously important area to do further research. Just because they are elusive and troublesome to uncover doesn’t mean the research community should simply accept that them as part of the process. The research needs to be continued to better the possibilities of reducing future effects and determining a better for predicting them in advance.

More research needs to be conducted into the area of order effects for question blocks. Question blocks present different problems for questionnaire design than do single questions. There is a tremendous shortage of this type of research.

Third, there needs to be more future research on repetition in
terms, of it being a legitimate order effect. A further study testing specially for fatigue from repetition effects is certainly a viable research option.

A majority of the literature concentrated on studying opinions rather than behaviors to identify differences and order effects. Future research in this area should concentrate more on behaviors rather than opinions. There is a shortage of research conducted in this area.

Question order effects will continue to be an issue in questionnaire design. Despite how familiar a researcher is with order effects, there is no apparent solution at this time to removing them from formal research.
BIBLIOGRAPHY


