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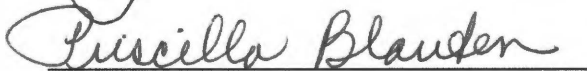
I am submitting herewith a dissertation written by Elizabeth E. Wilson entitled "Measuring Effort to Interview and Track Mothers of Newborns." I have examined the final paper copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Social Work.


Terri Combs-Orme, Major Professor

We have read this dissertation
and recommend its acceptance:







Acceptance for the Council:


Vice Provost and Dean of Graduate
Studies

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Measuring Effort to Interview and Track Mothers of Newborns

A Dissertation

Presented for the

Doctor of Philosophy

Degree

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Elizabeth E. Wilson

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Dedication

I dedicate this project first to Thomas Garner Wilson, my husband, who has the amazing ability to encourage, support and accept me without requiring complete comprehension; second, to my daughter Kaitlynn Elizabeth Wilson, who I hope will reach her future educational dreams; third to my parents, John and Winifred Ansay who said “you can be anything you want to be”; and finally to Drs. Terri Combs-Orme and John Orme who taught me most of what I needed to complete this project.

Abstract

Maintaining a longitudinal sample is methodologically important to the integrity of research conclusions. The amount of effort devoted to retaining samples varies across research studies. The purpose of this study was to determine the relationship between the effort needed to interview and track longitudinal respondents and the respondents' demographic characteristics, their collateral information, and various measures of the respondents' stability. The sample consisted of 246 mothers of newborns who were interviewed twice over 6 to 12 months as a part of the Volunteer Infant Parent Study. By using eight variables and latent class analysis, mothers of newborns were categorized into three mutually exclusive interview and tracking effort (ITE) groups. The three groups consisted of 149 easy-to-interview and track women, 54 difficult-to-track women who required more telephone calls and 43 difficult-to-track women who required more unscheduled home visits. Multinomial logistic regression was used to determine what demographic characteristics, collateral characteristics, and stability measures were associated with each ITE group membership.

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CHAPTER 1: INTRODUCTION

Social work research using longitudinal or repeated measurement designs requires planning for potential methodological problems. One research problem that is often either ignored or handled post-hoc is attrition. "Since attrition cannot be controlled by experimental design, it is perhaps the weakest link in longitudinal research" (Hansen, Collins, Malotte, Johnson, & Fielding, 1985). Attrition is defined as the withdrawal of subjects from a study after they are interviewed at one or multiple data collection points (Aneshensel, Becerra, Fielder, & Schuler, 1989; Ziliak & Kniesner, 1998). When subjects refuse to continue in the study, become ineligible, or cannot be located or contacted, these circumstances lead to potential problems with the study's internal and external validity. If the bias created by attrition is not accounted for properly in the preanalysis of data, it can lead to serious errors or distortions of the substantive results (Polak, 1999).

On the other hand, subject tracking and sample maintenance techniques are often located within the literature on "retention" rather than "attrition." Although there are appropriate methods to test and correct for sample attrition (Wilson & Combs-Orme, unpublished manuscript), the best approach is to prevent these problems by finding and retaining all the original research respondents using tracking techniques that are effective. Hansen, Tobler and Graham (1990) suggest that documentation about the extra care given in data collection and political relationships within the system in which data collection occurs may be predictive of tracking difficulty and attrition. Few researchers

measure any factors related to tracking and retention in order to predetermine the respondents who may pose more tracking difficulty.

Many studies look at various issues related to sample retention. For example, Jones, Zhou, and Yates (2000) used random assignment in an experimental research design to test retention rates after varying the length of the questionnaire and the amount of monetary incentives. Attrition was reduced by 10% in the group that completed a shorter questionnaire and received a monetary incentive. Gilliss et al. (2001) explored the relationship between types of recruitment and attrition among African-American, Caucasian, and Hispanic women. Face-to-face recruitment had the lowest attrition rate compared to broadcast media, printed material, and direct referral. Hudson, Leventhal, Contrada, Leventhal and Brownlee (2000) found that the recruitment location of the sample influences retention rates. Attrition was lower for a clinic sample (16.4%) than for a community recruited sample (27.3%).

When respondents refuse to continue in a research project, they are protected by human subject review protocols, and researchers have few options other than to statistically try to account for or replace the refusing respondents. However, the number of individuals who cannot be located or contacted can be decreased with adequate and appropriate subject tracking and sample maintenance methods. All longitudinal designs are at risk for attrition, and although the current study was a prospective longitudinal panel of mothers parenting their young children, much can be learned from research and intervention follow-up studies using other populations who are difficult to track and reinterview. Indeed, some of the more sophisticated and systematic studies

of attrition behavior have been with populations of substance abusers, the homeless, the mentally ill, women in abusive relationships, and school children.

Most of the tracking literature describes the methods used in studies that had low attrition rates (for examples see Hough, Renker, Tarke, Shields & Glatstein, 1996; Motzer, Moseley & Lewis, 1997; Bootsmiller et al., 1998; Prinz et al., 2001). These articles serially reported what was done to accomplish low attrition rates and often used case examples rather than empirical data. The premise of this literature is that if a research team finds most of its subjects, as demonstrated by a low attrition rate, then logically their methods worked and should be used by other researchers. The majority of this paper reviews the tracking literature for empirically studied tracking techniques and methods, but the next few paragraphs summarize some of the suggestions from non-empirical studies, some of which were used in this dissertation study.

Often these non-empirical articles reported tracking and sample retention strategies directed toward interview staff, respondents, collaterals and agencies (Bootsmiller et al., 1998). While implementing these suggestions may decrease attrition rates, there is little if any empirical evidence to support these suggestions. Some of the more common suggestions included selecting interviewers with appropriate characteristics (race, life experience, sex, and age). Correct training, supervision, and moral support for interviewers can lead to a creative synergy among team members that results in more completed interviews and location of hard-to-find clients (Bootsmiller et al., 1998; Motzer et al., 1997). Other projects mentioned creative incentive and payment packages that increased the number of completed interviews (Bootsmiller et al., 1998). Other administrative functions included the organization of interview schedules, and

maintenance of current databases of old and new addresses and telephone numbers (Motzer et al., 1997).

Respondent-directed suggestions included payment, interview location (i.e. homeless at homeless agencies), release forms, complete and extensive contact information, and tracking logs to note leads and dead ends, frequency and number of mail, telephone, and personal contacts (Sullivan, Rumpitz, Campbell, Eby & Davidson, 1996; Rumpitz, Sullivan, Davidson, & Basta, 1991). Public relation efforts to increase visibility and recognition of the project, these studies suggest, were useful (logo, business cards, newsletters, flyers, sponsors, etc.). Other incentives included gifts for children, childcare, transportation, snacks, appreciation notes, birthday cards, and promotional items such as mugs, pens, calendars (Robles, Flaherty & Day, 1994; Motzer et al., 1994).

Collaterals are contacts, provided by respondents, who can supply helpful information that can lead to locating and interviewing respondents. Collateral-directed suggestions included all the aforementioned suggestions directed toward the respondent. Many research projects paid incentives to collaterals for information. Release forms were vital to enlisting the help of collaterals to provide information about the whereabouts of the respondents.

Agency-directed suggestions included maintaining a relationship with the original recruitment site/s (e.g. hospital, clinic) in the event an "unlocated" respondent entered the facility or leaves new contact information. Developing a "find list" and taking that list to mental health facilities, public health clinics, morgues, prisons, jails, homeless shelters, or other social services that a particular population may access, also provided new contact information. Release forms were vital to collecting information from agencies. For example, in

the case of pediatric samples, a mother signed a release granting access to a child's pediatric records.

While the above-mentioned tracking and sample retention principles are useful, often there is no empirical information about these methods or even a simple numerical description of the tracking techniques. Knowing which tracking techniques and methods are the most effective would be valuable information to researchers who develop longitudinal samples. Although tracking articles that have empirical information about tracking methods are of primary interest, non-empirically evaluated methodologies were reviewed if they were deemed relevant to this research study and this sample.

In addition, there are methodologies that try to detect the existence of attrition bias (Wilson & Combs-Orme, unpublished manuscript). Researchers who conducted these analyses tried to determine if the study's dependent variables and subject characteristics differed among the respondents who attrite out of the sample and those subjects who remain. There is no systematic theory explaining why people leave samples and no empirical evaluation of any theory (Fischer, Dornelas, & Goethe, 2001; Rumptz et al., 1991; Cottler, Compton, Ben-Abdallah, Horne & Claverie, 1996). Often there are no hypotheses about who is likely to leave a sample other than simple speculation. A comprehensive review of characteristics of subjects who attrite is used to develop a typical profile of characteristics and then these characteristics can be empirically evaluated.

After reviewing the literature about empirical tracking methods and the literature that uses attrition bias detection methods, the literature review in chapter two of this paper provides an intersection between these two literatures and to propose a series of research questions that could advance both areas of

study. This study is the first to create a complex multivariate measurement of interview effort and to test hypotheses about a theory describing typical attributes (personal characteristics empirically related to exiting a research sample). Thus, one of the first goals of the literature review is to quantify the concept of "interview effort." Being able to predict interview effort and attrition by personal attributes would be useful to future longitudinal studies. Different tracking techniques could be applied to those who had a personal profile that predicted attrition or interview and tracking problems.

Chapter two of this paper describes the literature that leads to pertinent research questions and specific hypotheses. The third chapter outlines the methodology used in the project and the statistical procedures for each hypothesis. The fourth chapter discusses the statistical results. Chapter five discusses the value and limitations of this project and makes some recommendations based on this study of interview/tracking efforts.

CHAPTER 2: REVIEW OF THE LITERATURE

Introduction to Literature Review

"Interview effort" can be defined as all the activities a researcher engages in to track and interview respondents. Often the term "respondent tracking" is used to represent the whole interview effort process, but in reality tracking is a subset of interview effort. Eleven studies were found that had an emphasis on tracking and interviewing research respondents. The first section of this literature review categorizes how these studies operationalize tracking and interview effort and then analyzes the operationalizations (Table 1, all tables are located in Appendix G).

Good research protocols (Shadish, Cook, & Campbell, 2002) emphasize the need to compare respondents who were retained and interviewed with those who were not reinterviewed to detect attrition bias. While all longitudinal studies should complete these comparisons, few do. The second section of this literature describes the findings from 20 studies that made these comparisons and measured aspects of "interview effort." Because the respondents in these studies who were not reinterviewed or who were difficult to track had similarities in their personal characteristics (Table 2), this section is organized by these characteristics. The common characteristics that emerged were marital status, employment, income, education, race, mental health, and substance abuse. While there are no perfect ways to predict who will require more tracking or who will not be interviewed, developing some understanding about these common personal characteristics and their relationship to retention will aid in the development of retention strategies.

Common throughout the tracking literature is an emphasis on the helpful information collaterals or other sources provided which can lead to locating and interviewing respondents. The third section of this literature review discusses studies that study the use of collaterals. The fact that there are only two available studies about collaterals demonstrates the lack of empirical research about the subject.

An additional theme which has not been formally evaluated in the tracking literature is the relationship between respondents' stability in relationships, employment, and housing, and the tracking/interview effort required to interview respondents. Studies that explore these areas are reviewed in the fourth section of this literature review.

The conclusion of the literature review introduces the research questions and hypotheses as well as their relationship to the literature reviewed in the first four sections.

Studies on Tracking/Interview Effort

Conceptualization and measurement of tracking techniques have been done in several different ways. There are three major ways tracking has been conceptualized and measured: 1) type of tracking method (telephone, in person etc.), 2) source used (respondent, collaterals, other agencies), and 3) time measures related to completing the interview. In the simplest cases, the studies report simple frequencies of the tracking methods, tracking sources, or time periods used to complete the interviews. In the more complex cases, studies use a combination of tracking methods by source or tracking methods by time. These various tracking classification systems are used to imply the concept of "effort" expended by the research team to complete an interview and/or to create ordinal

groups (e.g. easy, not easy to interview). The following paragraphs review findings from articles that use one of these three concepts or a combination of these concepts.

Tracking Method

The major classes of tracking methods are mailing letters, using the telephone, conducting community visits, using public records, and researching respondents with internet resources. There are various ways to categorize efforts into these classes, and different researchers group these methods differently. For example, Cottler et al. (1996) listed specific activities that were categorized into telephone, system, and field methods. The next few paragraphs review findings from four articles that reported tracking methods used to find respondents.

Sometimes researchers are only interested in successfully completed interviews compared to uncompleted interviews. For example, Crider, Willits, and Bealer (1971) looked at a four-category tracking conceptualization of mail, long distance telephone calls, community visits, public records and the percentage of people successfully found by each of the four tracking methods. They concluded that long distance telephone calls are the most effective (tracking 81% of the sample) and visits to respondents' former neighborhoods (78%), schools (73%) and employers (60%) as other effective methods. Fewer than half of the sample was located using the most common tracking approach: mailing letters (48%). The least effective tracking method was using public records such as marriage licenses (19%), real estate records (8%), and wills (4%).

Other times, researchers only reported the average number of contact attempts. Aneshensel et al. interviewed 1,023 Mexican (69%) and Caucasian adolescent girls twice about their fertility-related attitudes and behaviors. In

addition, they studied participation and attrition issues. They simply recorded the average number of attempts to complete the interview, which were 4.9 attempts for respondents and 4.6 for non-respondents. The authors also listed methods used to locate respondents but did not give any empirical data about the use of these location methods. The number of contact attempts was not used as a dependent variable in any analyses.

In a way similar to Aneshensel et al. (1989), who simply added all contact attempts together, two articles used the sum of contact attempts to divide the sample into two groups (Robles et al., 1994; Walton, Ramanathan, & Reischl, 1998). In the first example, Robles et al. (1994) studied the "resistant" respondents who were defined as women with more than four contact efforts, who were not interviewed at a prior data wave, and who had canceled or not shown up for the current data collection. The resistant women ($n = 88$) were compared to the nonresistant sample ($n = 584$) to understand the differences in personal characteristics, including mental health, drug use and social support. The average number of contacts for the interviewed resistant women ($n = 64$) was 7.6 and for the non-interviewed resistant women was 21.0.

In the second example of creating groups from the total number of contact methods used, Walton et al. (1998) divided their sample into groups with low and high "follow-up contact difficulty." Ten contact efforts was the cut-off between high and low effort on "follow-up contact difficulty." Tracking attempts were of three types (telephone, mail, and in-person). They reported the median quartile of respondents requiring five telephone calls, zero letters, and one in-person visit.

While both Robles et al. (1994) and Walton et al. (1998) are interested in tracking difficulty and comparing those who are difficult to interview with those less difficult to interview, their methods of creating groups by using a set of defining criteria (Robles et al., 1994) or a cut point (Walton et al., 1998) were not as effective as using multiple tracking variables to create groups as intended in this dissertation study. Furthermore, the simple addition of all types of effort does not capture the actual amount of work involved in locating respondents. Telephone tracking and community tracking, which requires time-intensive site visits, differ in the effort expended.

Tracking Source

A tracking source can be defined in different ways. In some studies, it is only the information provided by the respondent at the first interview. This is usually the names, addresses and telephone numbers of collaterals (i.e. relatives, friends, employers, neighbors, and other people who will likely know a respondent's address and telephone number). In other studies a source is expanded to other sources found during the tracking and can include landlords, social service agency personnel, employers, new tenants or neighbors at respondent's former address, etc. Studying sources can get complicated, because not every type of source provided by the respondent is used for each respondent and a source can be used repeatedly. In addition, using fresh sources (not provided by the respondent) can become complex because it interacts with the tracking method (i.e. a new address may lead to a letter and/or a visit). Only two articles were found that used the number of tracking sources employed.

Pirie, Thompson, and Mann (1989) reviewed two studies (i.e. Minnesota and Ontario samples) that followed adolescents who participated in smoking prevention intervention. Tracking effort level was conceptualized as the number of unique sources used (1-2, 3-5, 6-10, and more than 10 sources). A unique tracking source was defined as "a unique telephone number, address or unique tracking device such as a reverse directory, mailed letter, or driver's license search (p. 254)." The authors found 46.3% of the Minnesota sample with 1-2 sources, 19.7% with 3-5 sources, 10.4% with 6-10 sources and 16.2% with 10 or more sources. Interviewing the Ontario sample required more sources, with 14.0% of the sample being found with 1-2 sources, 55.6% with 3-5 sources, 15.7% found with 6-10 sources and 5.5% found with more than 10 sources. While this research is unique in its approach and provides valuable information, the decisions about how the number of sources is broken up may change results. Looking only at number of sources used does not consider the actual difference in effort expended by telephone calling and field tracking. There is no attempt to group the sources into categories and no evaluation of how one category of sources may have been more useful than another.

Bale, Arnoldussen and Quittner (1984), in a follow-up study of male VA substance abusers, do evaluate the sources provided by the respondent. Female relatives were by far the most often named sources, and were useful in finding half of the respondents who were not found by using the respondents' original addresses or telephone numbers. While these analyses are useful in providing basic information, they do not provide more specific information that is possible with multivariate investigation. For example, it would be interesting to know more

about the personal characteristics of respondents who did and did not name female relatives.

Ordinal Tracking Groups Created by Method and Source

This section describes studies [or reports] that combined tracking methods and sources. One (Mackenzie, Funderburk, Allen & Stefan, 1987) scored respondents on an ordinal scale representing "location difficulty" and "interview difficulty." Three articles (Sullivan et al., 1996; Rumpitz et al., 1991; Hartsough, Babinski and Lambert, 1996) placed respondents into ordinal groups in an attempt to define tracking effort on a continuum from easy to difficult.

Unlike many tracking studies, Mackenzie et al. (1987) attempted to investigate the status differentiation between "difficult to interview" and "difficult to locate" of 85 alcoholic men at an eight-year post treatment follow-up. The investigators kept detailed logs from which an ordinal rating score was given on "difficulty of location" (0-5 score) and "difficult to interview scale" (0-1 score). Details about the rating are found in the article. The rating does combine methods and source, but does not have an intuitive progression from easy to more difficult efforts. Specific problems in the scoring system include 1) no use of mail attempts and 2) placing community visits before telephone directory assistance. Community visits are more labor intensive than phone calls.

Ordinal ranking of methods intermixed with tracking sources is used by Rumpitz et al. (1991) and Sullivan et al. (1996), who used the same sample of battered women after the 12 month follow-up and after the 24 month follow-up in both studies. Sullivan et al. (1996) divided and compared the sample into those who were found through office efforts (easy to locate) and those who needed more efforts (difficult to locate group). Placement into one of the six categories

was dictated by the category that led to a completed interview (order-telephone calls, alternative contacts, alternative in-person contacts, and finally sending letters).

In another example of rank ordering of tracking efforts, Hartsough et al. (1996) followed a sample of 492 school-aged ADHD children for 13 years. After a five-year research pause between 1987 through 1992 with no formal contact between the project and the respondents, 81.2% of 492 ADHD adults were interviewed. They empirically described the type of "contact effort" used as mail only; mail plus one to three calls, and mail plus four or more calls. The majority of respondents who were interviewed ($n = 400$) were contacted by mail (41.0%); a little over one-third needed mail plus one to three telephone calls; and 22% needed several mailings plus four or more telephone calls. They concluded that 18% of the entire effort was expended in reaching the easiest group within four months ($n = 195$). Almost fifty percent of the entire effort was spent on interviewees who took five or more months to interview ($n = 204$) and finally, 20% of the effort was expended on 45 subjects who were not located. Subjects who were reinterviewed in 1992 were more likely to have parents who consistently participated in the study, had no arrest history and no history of ADHD (control group).

The ordinal categories (used by Rumptz et al. and Sullivan et al.) seem inefficient as only one failed telephone attempt to the actual respondent led to a home visit. An interviewer could immediately try a telephone call to an alternative contact to see if the respondent had moved. It is also interesting that Sullivan et al. did not begin by mailing a letter, a procedure that helps identify those who are no longer at their original addresses. Almost all of the research studies reviewed

in this chapter used letters as a preliminary effort to entice respondents to call the project or to receive forwarding addresses for respondents who had moved. An additional weakness is that telephone calls and home visits are lumped into one category although home visits are more difficult, labor intensive and expensive than telephone calls.

A problem with all three studies, which use ordinal ranking systems, is that "contact effort" does not differentiate what informant was called and what address was used. Mailing the same questionnaire several times to the same address requires less effort than finding and mailing questionnaires to several different newer addresses for respondents and collaterals. The overall problem with these methods is that they are dependent on researchers' qualitative evaluations of what method or source is valued as more difficult than another. Furthermore, none of these three studies used "telephone calls" or "visits to home" variables as continuous variables.

Tracking Time Measurement

Measuring time to complete an interview has also been used to indicate tracking difficulty. Time has also been measured in different ways. Three articles were found that used time measurement as an indicator of tracking effort. In the simplest case, "time to locate" has been reported as an average time between interviews (Aneshensel et al., 1989).

With a slightly different meaning, "time to interview" has also been conceptualized as the time required to complete an interview from first contact to interview completion (Hartsough et al., 1996). Hartsough et al. studied 492 school children in 1972 and again 20 years later. One half of the children were diagnosed with ADHD. Cumulatively, almost one fifth of the respondents were

located and interviewed within the first month, 50% within 7 months, 70% within 18 months, and finally, at the completion of the data collection at 28 months, 81% of the 492 respondents had been interviewed.

Cottler et al. (1996) also used as a primary dependent variable "time to interview" as an indicator of "hard to reach" in an 18 months post- treatment follow-up of 479 drug abusers. "Time to interview" was created as a four-class ordinal group based on length of time in relation to anniversary of follow-up date (i.e. pre and post interview anniversary follow-up date). This grouping was used to compare frequencies of three types of tracking: telephone, system and field. The "telephone tracking" category included telephone calls (placed to family members and friends, telephone directories, directory assistance, and Haines Criss-Cross directory). The "field tracking" category included actual visits to locations, whereas the "system tracking" category referred to telephone calls to systems the client may have participated in or to public records. Respondents who completed the interview within the anniversary period had on average significantly fewer telephone contacts (4.2 attempts vs. 16.6) and fewer system contacts (3.2 attempts vs. 7.1) than respondents who completed the interview post anniversary. There was no significant difference in number of field contacts, which averaged 2.2 for the whole interviewed sample.

Personal Characteristics of Difficult-to-Interview Respondents

Attrition can be a potential problem in all longitudinal research studies. There are several attrition bias detection methods. One common method is to complete a logistic regression with retention status as the dependent variable and demographics and study variables as the independent predictors. A significant independent variable indicates that there is a difference between the

retained and non-interviewed sample regarding that independent variable. While these attrition bias detection methods are suggested, they are not always completed. Often there are no hypotheses about who will leave a sample prior to completing these analyses. There is no systematic theory explaining why people leave samples and no empirical evaluation of any theory.

This section reviews the conclusions made about respondents who are not reinterviewed as a proxy for people who are difficult to interview. People who are difficult to interview include some who will eventually be reinterviewed and some who will not be reinterviewed. Respondents who are difficult to interview, once they are interviewed, are then included with the easy to interview respondents. It is necessary to use a proxy because nothing is known about the personal characteristics of respondents who are difficult to interview other than the Bale et al.'s study (1984) that developed a binary rating scale.

Twenty longitudinal studies that met the following criteria were found and are described in Table 2. Two criteria were determined to be important: 1) The article had to have either an attrition/retention or tracking emphasis and 2) the article had to contain a description of an attrition analysis between follow-up retention status and personal characteristics (demographic) variables. The personal characteristics of interest here are marital status, employment, income, education, race, mental health, and substance abuse.

Marital Status

Marital status is one of the commonly measured research variables used to describe research samples and in statistical procedures. The common marital status categories are married, single, divorced, living with a partner, separated. Of the 20 studies in Table 2, only eleven compared marital status between the

respondents retained and lost. There is agreement across a variety of samples that respondents who are not reinterviewed are more likely to be unmarried (Blumenthal, Sung, Coates, Williams, & Liff, 1995; Fischer et al., 2001; Martinez-Ebers, 1997; van de Berg & Lindeboom, 1998; Walton et al., 1998), living alone (Bale et al., 1984; Cohen et al., 1993; Mackenzie et al., 1987), or single heads of households (Martinez-Ebers, 1997). There is some, but less evidence that recently divorced respondents (Fitzgerald, Gottschalk, & Mofitt, 1998A, 1998B) are less likely to be reinterviewed. In some research situations, especially with smaller samples, the "single" and "divorced" categories are collapsed into one category or the "divorced" and "separated" categories are combined. Finally only three of the studies found no difference between marital status and retention status.

Employment

Employment as a construct can be measured several different ways. Usually it is measured as employed vs. not employed (binary) or measured as full-time, part-time or non-employed. Some studies evaluate job status (van de Berg & Lindeboom, 1998) or job type for those who are employed (e.g. trade, service, or white-collar versus blue-collar). Six of the 20 studies found that employment status had no relationship to retention status. In five out of the six studies that found no relationship between employment and retention status, two sample considerations may explain the lack of a relationship between employment and retention status. First, more than 50% of the respondents in four of the six studies were unemployed (Fischer et al., 2001; Katz et al., 2001; Robles et al.; 1994). These are high unemployment rates and may indicate an unusual sample phenomenon that influenced the attrition rate. Second, two studies had almost

equal numbers of respondents and non-respondents (Juntunen, Hwalek, & Neale, 1999; Fischer et al., 2001). Findings from studies with high attrition rates are viewed with less confidence (Acock, 1997).

Five of the 20 studies found that unemployed respondents were more likely not to be reinterviewed. Cottler et al. (1996) specifically found that unemployed respondents were twice as likely to be in the group of respondents who required a longer period of time to track and find. Unlike the majority of findings, Bale et al. (1984) found that substance abusers who were employed, homeowners, and now sober persons were less likely to complete interviews. Bale et al. (1984) suggests that respondents who are doing well after substance abuse treatment may avoid interviewers for a variety of reasons, including prevention of "a painful reminder of unpleasant memories" (p. 900) and a stressful situation. Martinez-Ebers (1997) found that full-time employed female heads of household were more likely not to complete the interview.

There are several ways to speculate about the effect that respondents' employment status has on tracking efforts. Employed respondents are likely to have less free time for completing surveys. Employment absorbs time and makes juggling family responsibilities difficult, especially for women. Contacting employed women using their home telephone numbers is also difficult. The rigidity of work schedules makes completing a research interview more challenging and may require multiple contacts for scheduling due to a series of "no-shows" or cancellations. On the other hand, women who have ability, talent, and commitment to maintain long-term jobs may be more likely to have the time management skills needed to make and keep appointments, including research

appointments. Consequently, the most pertinent flaw in many of the studies reviewed is the failure to test interactions between employment and education or employment and marital status, and the failure to see if education might have a curvilinear relationship with attrition. The differences among subgroups created by marital status and employment, such as married employed, married unemployed, and single unemployed, warrant exploration.

Education

Of the 20 studies reviewed, the conclusions about the effect of education were split. Six studies found non-respondents to have less education than respondents and six studies found no educational difference between respondents and non-respondents. Several of the studies that did not find educational differences used samples with high percentages of high school dropouts (Katz et al., 2001; Juntunen et al., 1999; Martinez-Ebers, 1997). Of particular interest are the educational subgroup comparisons completed by Agosti, Nunes and Stewart (1991) to determine if there were differences in retention status among the subgroups. In regards to education, Agosti et al. (1991) determined that intravenous and freebase substance users who completed treatment had high levels of education and that minority completers also had higher levels of education than minority dropouts did. There were no differences in educational attainment between white completers and dropouts. This careful examination of subgroup differences was not completed in the remaining 20 studies reviewed (Table 2).

Income

Poverty has been documented to affect family and child outcomes. Negative outcomes have been seen in poor families and their children regarding

physical health, mental health, academic and school performance (Seccombe, 2000). Simple income is almost universally measured in research studies and used as an indicator of socioeconomic status. Ten out of 20 studies compared income differences between retained and non-retained respondents. Five of the 20 studies found no income differences between respondents and non-respondents, while five studies found that there were income differences between respondents. Some of the studies used other economic indicators such as owning a car and public assistance eligibility (Sullivan et al., 1996; Robles et al., 1994) as additional economic measures.

The mixture of findings regarding income may be explained by an interesting finding reported in Fitzgerald et al.'s (1998A) work with the Panel Study of Income Dynamics (PSID), a panel which has been in effect since 1969 and which reports 50% accumulative attrition. Attrition occurs at higher rates in PSID groups with lower socioeconomic status, particularly those with unstable earnings. In regards to income, those who leave are more likely to be on welfare. However, Fitzgerald et al. (1998a, 1998b) found that high-income families were more likely to attrite than middle-income families. This suggests that both families with higher and lower income might be more likely to leave a sample. If families from both high and low income are more likely to leave a sample, a test of curvilinear relationships between attrition and income, which requires quadratic adjustment in regression analyses, would be used. While Fitzgerald et al. did examine the curvilinear property of income, none of the other studies in Table 2 did.

Race

Eleven of the 20 studies report findings regarding race and retention status. Seven out of the 11 found that minorities were less likely to complete the study. Four of the studies found no racial differences and three of studies had homogenous African-American samples (Blumenthal et al., 1995 and Katz et al., 2001) as well as a Dutch sample (van de berg & Lindenboom, 1998).

The PSID attrition rates among Caucasians, African-Americans, and "other" racial groups are vastly different (Fitzgerald, 1998a, 1998b). The "other" category dropped 20% in the first year and by 1989 only approximately 30% remained. Initially Caucasian and African-Americans had similar attrition rates; however, by 1975 increasing numbers of African-Americans left the sample, resulting in 59% of the original number of Caucasians and 49% of the original number of African-Americans remaining in the sample by 1989. As a consequence of these attrition rates, the PSID has continued to draw minority respondents as replacements. Fitzgerald et al. (1998a, 1998b) do not discuss possible explanations of this attrition trend in relation to race and ethnicity. Although Gilliss et al. (2001) propose that African Americans are hesitant to participate and remain in longitudinal research because of past ethical abuses such as the Tuskegee syphilis study, it is likely that the respondent's race in and of itself does not explain respondents leaving a sample. Economic, social, and occupational barriers for USA's minority groups can explain minority attrition. For example, the PSID "other" ethnic category contains greater numbers of newer immigrant groups who move often and don't have property ownership at the same level as that of Caucasians and African Americans.

Mental Health and Substance Abuse

Studying psychiatric and/or substance abusing populations has many challenges. One of the problems is tracking and interviewing respondents who have mental health and/or substance abuse problems. In fact, there is a developed literature on tracking techniques (Cottler et al., 1996; Bootsmiller et al., 1998) for these populations. It is likely that almost all samples will have respondents who have mental health problems and/or substance abuse problems as documented by the following population estimates from of the 2001 Household Survey (National Household Survey on Drug Abuse, 2001). There were an estimated 14.8 million adults age 18 or older with severe mental illness as categorized by the DSM IV. "Severe" is defined by several symptoms of the diagnosis and marked impairment in social or occupational functioning (APA, 1994). The percentage of females with severe mental illness was higher than the percentage of males (8.8 vs. 5.6 percent). Overall, the Household Survey found that 15.9 million Americans age 12 and older used an illicit drug in the month immediately prior to the survey interview. As an indicator of alcohol problems, a 2001 statistic showed more than 1 in 10 Americans or 25.1 million persons reported driving under the influence of alcohol at least once in the 12 months prior to the interview.

Logically, the combined effects of substance abuse and SMI would increase needed tracking efforts. Criteria for substance abuse include the failure to fulfill various roles, legal problems related to substance use, and social and interpersonal problems (APA, 1994). These same problems also make respondents difficult to track and interview. The relationship between drug use and SMI seems to be stronger than the relationship between alcohol use and

SMI. The Household Survey found adults who used illicit drugs were twice as likely to have SMI as adults who did not use an illicit drug. For this reason, greater interview and tracking effort may be found with illicit drug users who also have SMI.

Given the prevalence rates of substance abuse and mental health problems, it is likely that any longitudinal sample will have respondents who have these problems and that they will be more difficult to interview. Of the 20 studies reviewed, only five of the studies compared mental health status among those who completed the study with those who did not. Four out of five of the studies found that non-respondents in their samples were more likely to have more severe mental health impairment and hospitalizations (Fischer et al., 2001); Attention Deficit Disorder (Hartsough et al., 1996), and higher levels of depression.

Seven out of the 20 studies compared various indicators of substance abuse between respondents and non-respondents. Five out of seven of the studies found that respondents who used substances (Cohen et al., 1993; Fischer et al., 2001; Snow, Tebes, & Arthur, 1992), had relapsed (Walton et al., 1998) or were more severely impaired by substance abuse problems and had previous treatment (Bale et al., 1984) were more likely to be non-respondents.

Respondents' Collaterals

Collaterals can be extremely important in finding respondents who cannot be located. Respondents in research studies are often asked to provide the names, numbers and addresses for collaterals who can help locate the respondent if the respondent moves. Collaterals can be relatives, friends, employers, neighbors, and other people who will likely know a respondent's

address and telephone number. Five studies (Bale et al., 1984; Dilonardo, Kendrick, & Vivaldi, 1993; Senturia et al., 1998; Juntunen et al., 1999; Howard & Beckwith, 1996) are discussed in this section; however, only three actually quantify or test the relationship between the respondent or collateral, the type of collateral information, the usefulness of collaterals, or the quality and completeness of collateral contact information.

In a review of methodological problems common in research samples of substance abusing women, Howard and Beckwith (1996) noted that a respondent's participation in a research study could be affected by difficult interpersonal relationships. Other studies in this review agree (Dilonardo et al., 1993; MacKenzie et al., 1987) that relationships with other people can be indicators of tracking difficulty. Unstable, discordant and violent relationships can lead to hiding from family members, past boyfriends or husbands. This can result in respondents frequently moving, obtaining unlisted telephone numbers, and collaterals who are suspicious and refuse to give information about respondents.

Bale, Arnoldussen and Quittner (1984) studied the relationships and usefulness of contacts. They found that in locating male alcoholics, the relationship most often listed was "mother" and this relationship was the most useful in finding unlocateable respondents. Specifically, Bale et al. found that half the men in the sample gave their mothers as collaterals and 28% of these mothers were useful in tracing the respondents. Relatives were useful in finding 52% of the male respondents. In a non-empirical observation, Dilonardo et al. (1993) concur with Bale et al. that mothers, girlfriends, siblings or other relatives are useful collaterals while tracking and interviewing psychiatric patients over a two-year period.

Overall, the literature seems to suggest that female (Howard & Beckwith, 1996; Dilonardo et al., 1993; Bale et al., 1984) collaterals provide more information and are more useful in finding respondents than male collaterals. However, there is little empirical literature, other than Bale et al.'s investigation of the usefulness of collateral contacts based on relationship type (i.e. mother, father, etc.) or sex of the respondent or the collateral.

In addition, there is some evidence of a relationship between retention status and number of collaterals provided. While studying African-American and Hispanic families with young asthmatic children, Senturia et al. (1998) found that families who stayed in the sample had more contact names, less family stress and more social support than those not interviewed at follow-up. The findings from this study, taken with Howard and Beckwith's comments, highlight that respondents with positive collateral relationships may be easier to interview.

While it seems like an obvious statement, collecting complete respondent location information at the beginning of the study is vital to reducing tracking effort (Desmond, Maddux, Johnson, & Confer, 1995). Respondents who do not provide adequate recontact information for themselves or for their collaterals are likely to be more difficult to interview. (Desmond et al., 1995; Pirie et al., 1989). Juntunen et al. (1999) studied a bicultural high-risk Hispanic sample. These authors found that respondents not reinterviewed had provided inadequate recontact information. Similarly, Bale et al. (1984) found a relationship between the quality and completeness of the recontact information and retention. Evaluation staff involved in intervention trials often experience difficulty tracking respondents because program staff fails to get the necessary information (Hudson et al., 2000; Juntunen et al., 1999).

Respondents' Measures of Personal Stability

Aneshensel and her colleagues (1989) created a respondent "stability index" and studied it in conjunction with retention status. Aneshensel, et al. (1989) used a sample of 1,023 Mexican-American and non-Hispanic Caucasian female adolescents in a longitudinal study regarding sexual behavior. A stability index with scores from zero to three was created by adding three items: not always living with both parents, parents' unmarried, and moved since age six. Having several instability indicators was associated with a reduced probability of being reinterviewed. One of the weaknesses of this study is the binary measurement of subject moves (i.e. moving one time since age six is qualitatively different from moving every year since age six).

Aneshensel et al. (1989) tried to quantify social stability by using a set of three indicators. Respondent stability seemed have a strong relationship to sample loss. This initial work with the concept of respondent stability raises some interesting questions. Can stability be broken into categories such as relationships (significant other and extended family), housing, and employment? Do these categories, as an aggregate, have an influence on interview effort, or is one category more predictive than other categories? None of the studies in the tracking literature measured respondents' overall stability using the contact information from multiple interviews. It is likely that stable respondents who have the same jobs, partners, addresses, telephone numbers, and collaterals at multiple interviews are easier to locate and interview.

The literature reviewed in the following section is organized by telephone and address stability, relationship stability, and employment stability. It is important to realize that the concept of "employment stability" is similar to and

informed by the demographic discussion of employment. Likewise, the concept of "relationship stability" is similar to and informed by the demographic discussion on marital status and the discussion on collaterals.

Telephone and Address Stability

Katz et al. (2001) found that over 50% of people lost to attrition also had alternative contacts whose telephones were out of service. This finding could imply that respondents gave bad information or that respondents had moved or had their telephones disconnected. However, during the course of a longitudinal study, accurate contact information can change for a variety of reasons. The reason for the change or whether the initial recontact information was incorrect may never be known. The researcher may only know that the number is out of service. Sullivan and his colleagues (1996) were the only researchers who noted the number of respondents with telephone numbers out of service (43% by the final interview). Most of the tracking studies did not report the number of respondents with telephone numbers out of service or the respondent's number of residential moves.

A great deal of retention attention has been directed towards maintaining samples of homeless individuals due to the transient nature of this population. Tracking and maintaining contact with those who are homeless is a serious problem in homelessness research. As could be expected, a residentially stable respondent (homeowner or long-term renter) is easier to track by telephone or letter. Type of housing and number of housing arrangements play an important role in sample retention. Respondents who move frequently, live in rental property (Fitzgerald et al., 1998A), have a history of homelessness or have used

shelters are likely to require more interview and tracking effort (Cohen et al. 1993).

Mackenzie et al. (1987) considered the influence of residential adjustment and retention. "Residential adjustment" includes number of residences, types of residences, longest residence, and area of residence. Respondents who had ever lived outside the geographic study area, had frequent moves, and those who had lived in public (i.e. rooming houses, institutions, etc.) vs. private residences were more difficult to find and interview. Mackenzie et al. (1987) measured "difficult to find" and "difficult to interview" as separate measures and found that residential adjustment had a strong effect, but a different relationship to each variable. "Residential adjustment" was correlated positively with difficult to interview and negatively with difficulty of location. Thus the people with residential stability were the easiest to find, but frequently did not want to be interviewed.

Aneshensel et al. (1989) found that respondents who had residential stability versus mobility were more likely to be reinterviewed. In Aneshensel et al.'s study, respondent stability as a single variable explained more of the variance of the retention status than any other study variable.

Cohen et al. (1993) followed 163 homeless participants who were measured on community functioning, residential instability, shelter use, hospital days, and CMH contacts, and discovered that respondents who used fewer services, lived alone, lived in multiple counties, and had substance abuse problems were harder to retain. These authors introduce the concept of "passive refusers" (those who never actually refused, but never agreed) and compared "passive refusers" to those who outright refuse to continue in a study. Perhaps

these passive refusers are the ones who pose more tracking difficulty because they are attempting to elude research interviews.

Relationship Stability

As seen in the demographic discussion of marital status and retention, married individuals seem to be the easiest to interview. Respondents who live alone, are unmarried, single, or divorced are less likely to be reinterviewed (Mackenzie et al., 1987, Bale et al., 1984, Walton et al., 1998, Blumenthal et al., 1995). People with poor global social functioning (fewer friends and social experiences) (Mackenzie et al., 1987) and lower social support from relatives (Robles et al., 1994; Dilonardo et al., 1993) also are less likely to be interviewed. While these point-in-time indicators of relationships provide information, what has not been measured is how changes in relationships from one data collection to the next may predict the level of interview effort required to complete the interview.

Employment Stability

Crider et al. (1971) successfully tracked 60% in their sample using employer information during 1957. However, employment has changed over the last several decades and has essentially been restructured in ways that impede employment stability. Companies are hiring temporary or regular part-time workers with no benefits and often there is little job stability for lower-paying jobs (Collins & Yeskel, 2000). No studies were found that looked at stability of employment from one data collection period to the next. Other factors regarding employment that may influence stability are type of job, occupation status assigned to the job, and the benefits package. Few studies gather the necessary information to understand the relationships between employment and retention.

Van de Berg and Lindeboom's study (1998) about employment duration and panel attrition measured occupational level of job complexity. They found that attrition was related to employment in jobs with lower occupational levels and short employment periods (i.e. changing jobs more frequently).

The literature reviewed about measurement of interview and tracking effort and respondents' characteristics, collaterals and personal stability suggests several research questions and hypotheses. The following section specifies the questions and hypotheses while providing a succinct justification for each.

Research Questions and Hypotheses and Their Relationship to the Literature (Table 6)

Research Question One: Interview/Tracking Effort

What are the psychometric properties of the interview/tracking effort variable?

In the literature reviewed above, there are no adequate models for measuring "interview effort." None of the studies reviewed used one continuous measure to combine various interview/tracking efforts into one variable or used more than two or three variables to create interview/tracking effort groups. For this study, groups measuring interview/tracking efforts (ITE) are created from several different aspects of the interview/tracking process.

For the purpose of this discussion, people who attrite out of a sample are assumed to have extensive tracking completed before they are determined to be unreachable. Excluding the cases that attrite would truncate the higher range of interview effort score. Several of the studies reviewed did not include tracking efforts for those not interviewed (Cottler et al., 1996, 1987) or were unclear about whether those not interviewed were included. Tracking efforts for all individuals from the original sample are included in this study and this provides a more

accurate understanding of ITE because often the non-interviewed respondents require the most effort.

Research Question Two: Demographics and Mental Health

What demographic and mental health variables predict the interview/tracking effort score for mothers of newborns?

Few studies have quantitatively described extensive tracking efforts with female samples and none with mothers of newborns. In light of this gap, the empirical rigor and evaluation of tracking efforts in this present study may be useful to researchers who are specifically interested in samples of mothers of newborns. As stated in the introduction, the reviewed attrition literature suggested that attrition in a variety of samples is related to marital status, employment, income, education, race, mental health, and substance abuse. Research question two asks what demographic variables predict interview/tracking effort scores. Five specific hypotheses related to demographic findings are developed based on the attrition literature reviewed above, and the pertinent findings are summarized in the next five paragraphs.

Both married and single mothers have been identified as having higher attrition rates (Martinez-Ebers, 1997). Being unmarried is commonly found to be related to attrition (Van de Berg & Lindeboom, 1998; Fischer et al., 2001; Fitzgerald et al., 1998). Likewise, unemployment episodes and short work episodes or unstable work history have been found to be predictors of attrition (Van de Berg & Lindeboom, 1998; Blumenthal et al., 1995). However, the literature is lacking in attempts to empirically evaluate whether employment is differentially related to tracking difficulty based on marital status.

Hypothesis 2a: Marital Status and Employment. *There is an interaction between marital status and employment. Specifically employed married and single mothers and unemployed single mothers are more difficult to interview. Unemployed married women are the easiest to interview.*

Some researchers found that income is not related to attrition (Martinez-Ebers, 1997; Ellickson, Bianca, & Schoeff, 1988; Aneshensel et al., 1989). However, while analyzing the PSID, Fitzgerald et al. (1998a; 1998b) found that both high and low income families left the sample. This suggested the possibility of a curvilinear relationship for income. Other researchers reported that less educated individuals were at higher risk of leaving samples (Sullivan et al., 1996; Polak, 1999; Fitzgerald et al., 1998; Aneshensel et al., 1998). However, income and education are highly correlated. Likewise, an interaction between income and education might exist. No literature was found that tested these possible curvilinear or interaction relationships of income and education with attrition or tracking difficulty.

Hypothesis 2b: Education. *Women who have higher levels of education are easier to interview.*

Hypothesis 2c: Income. *Poor women are more difficult to interview than wealthy women.*

Commonly, minorities are more likely to leave samples (Fitzgerald, et al., 1998a; 1998b; Aneshensel et al., 1989 Agosti et al., 1996; Sullivan et al., 1996). While African-Americans have been thought to be skeptical of research (Grinnell & Unrau, 2005), it is likely that both poor and the wealthy African-American mothers are more difficult to interview. No studies have tested a potential interaction between race and income.

Hypothesis 2d: Race and Income. *Both poor and wealthy African-American women require more interview/tracking efforts than Caucasian women. The negative relationship between income and interview/tracking effort is weaker for African-American women.*

As seen from the tracking work completed within substance abuse, mentally ill, and homeless populations, more effort is needed when working with these populations. In fact, several studies (Walton et al., 1998; Howard & Beckwith, 1996; Cohen et al., 1993; Juntunen et al., 1999; Fischer et al., 2001) found that those who had relapsed or were currently using were more likely to be lost. Dilonardo et al. (1993) concluded that persons with both mental health diagnoses and active substance abuse were at highest risk for attrition. Certainly, these behaviors in samples of women might influence interview difficulty. Sullivan et al. (1996) and Robles et al. (1994), both using samples of women, found a relationship between higher levels of depression and difficulty in locating respondents. Few studies have examined whether women who have substance abuse and/or mental health problems require more interview/tracking effort.

Hypothesis 2e: Mental Health and Substance Abuse. *Women who have mental problems and those who have substance abuse problems are more difficult to interview. Women who have both substance abuse and mental health problems are the most difficult to interview.*

These demographic variables are analyzed for simple relationships (without control variables) with interview difficulty. Often the only information available about research respondents is demographics. Certainly there are unmeasured variables and control variables that would explain more variance in interview/tracking difficulty, the primary dependent variable for this study.

However, what is of interest is the use of demographics to determine the respondents to target for more intense tracking. Thus the individual effect or interaction of each of marital status with employment, income, income and education, race, race and income, homelessness, substance abuse, and mental health are tested first and then with the entire set of demographic variables.

Research Question Three: Positive Relationships and Collaterals

Are respondents who have positive relationships with their collaterals easier to interview/track and does this differ by race? Are there differences in interview/tracking efforts for respondents based on the type of collateral listed? Does inadequate recontact information influence tracking difficulty?

Collaterals can be extremely important in finding respondents who cannot be located. Respondents in research studies are often asked to provide the names, numbers and addresses for collaterals who can help locate the respondent if respondents move. Few studies actually quantify or test the influence of quality of collateral information, the type of collateral information, or the usefulness of collaterals. This current study examines these aspects of collaterals individually and within a regression model. And, this study provides additional information about collateral relationships using a female sample. Moreover, this study explores the relationship between tracking difficulty and other aspects of the mother-respondent relationship, such as the respondent's perception of their bond with her primary caregiver and the respondent's perceptions of the quality of their relationship with their mother, father, and siblings.

The quality and completeness of collateral information limits effective tracking (Juntunen et al., 1999). This study had interviewers at the hospital who

consistently did not get two collateral contacts. (In the Volunteer Infant Parent Study sample, 38.2% of respondents had one or no collaterals listed.) Although this methodological problem is a flaw, it also allows for a sufficient respondent sample of incomplete tracking information for a test of hypothesis 3d.

Hypothesis 3a. *Respondents who listed mothers or grandmothers are easier to interview.*

Hypothesis 3b. *Respondents with positive relationships with family, friends, and their spouses are easier to interview.*

Hypothesis 3c. *Respondents who report positive bonding with their primary caregivers are easier to interview. Specifically, respondents with higher scores on the PBI's "care" subscale have lower interview/tracking effort scores and respondents with lower scores on the PBI's "overprotection" subscale have lower interview/tracking effort scores.*

Hypothesis 3d. *Respondents with fewer collaterals listed in the recruitment interview (time 1) are more difficult to interview.*

Research Question Four: Stability

What influence do stability indicators have on efforts to interview? Is there one stability indicator that is more important in predicting efforts to interview?

Several studies indicated that respondent stability issues are a factor in successfully tracking and interviewing respondents (Aneshensel et al., 1989). The literature reviewed above demonstrated a relationship with employment stability. Respondents who have jobs, have low job turn-over, and have stable earnings (Fitzgerald et al., 1998a, 1998b, van de Berg & Lindeboom, 1998) are less likely to attrite. Similarly, married people are often easier to find (Martinez-Ebers, 1997; van de Berg & Lindeboom, 1998; Dilonardo et al., 1993; Mackenzie

et al., 1987) and those with unstable marriages are more likely to attrite (Fitzgerald et al., 1998a, 1998b).

Although the prior section and research question three examine issues about collaterals, the stability of the relationship among the respondents and their listed collaterals is examined within this research question. Howard and Beckwith (1996) suggested that women with interpersonal difficulty are difficult to retain in research studies. No studies were found that examined stability issues around the collateral-respondent relationships. Also, none looked at the relationship between respondents who consistently used the same collaterals and respondents who changed collaterals.

Logically people who move more often or have unstable migration histories (Fitzgerald et al., 1998a, 1998b; Mackenzie et al., 1987) are more difficult to interview. Housing type has also been demonstrated to have a relationship to attrition. Specifically, respondents who own or who are buying houses are more likely to remain in a sample.

This study is the first to examine a variety of stability indicators and classify these stability indicators into a comprehensive system of stability that includes employment stability, relationship stability, collateral stability, and residential stability. This study evaluates a comprehensive system of stability to determine if one type of stability is more germane to interview/tracking effort or if these stability indicators are cumulative.

Hypothesis 4a. *Women who have employment stability are easier to interview. Women who have the same jobs at time one and time two have lower interview/tracking effort scores.*

Hypothesis 4b. *Women who have relationship stability are easier to interview.*

Women who report the same collaterals at time one and time two are easier to interview.

Hypothesis 5c. *Women with stable collaterals are easier to interview.*

Hypothesis 4d. *Women who have moved more than two times before or after delivery are more difficult to interview.*

Hypothesis 4e. *Women who own homes are easier to interview than women who live in other housing types.*

Hypothesis 4f. *Women with more instability (employment, marital, collateral, shelter experience, residential) are more difficult to interview.*

CHAPTER 3: RESEARCH METHODS

Design

This study is part of a larger longitudinal prospective panel study of mothers and their newborn infants titled the “Volunteer Infant Parent Study” (VIPS; Combs-Orme, Cain & Wilson, 2004; Cain & Combs-Orme, 2005; Combs-Orme & Cain, 2006; Page, Combs-Orme & Cain, under review). This larger study was primarily interested in various aspects of parenting practices used with infants. This sub-study uses some of the self-report survey data collected by trained interviewers at two points in time and quantitative data from content analyses of tracking logs maintained for each respondent.

Human Subjects Review

The University of Tennessee Institutional Review Board (IRB 4033-B) approved the VIPS project. Several steps were taken to protect the rights of the subjects who participated in this project. First, at recruitment, the project and informed consent were explained to potential subjects. Second, the respondents signed and received copies of the informed consent (Appendix A), in which they agreed to participate in the recruitment and follow-up interviews conducted in their homes when the children were approximately six to twelve months old. Respondents were told of their right to withdraw from the study and that all information provided would be confidential.

The following procedures were followed to insure that respondent information and answers to research questions were confidential. First, subjects were assigned identification numbers that were used with subject data entered into computer files. Thus respondents' names were never entered into the computer files that contained responses to research questions. Second,

identification numbers and identifying subject information (names, telephone numbers, address, and collateral information) needed to complete the follow-up interview were kept in a separate, locked location.

Sampling

Recruitment Interview

The Volunteer Infant-Parent Study recruited 246 new mothers who had given birth in the Mother-Baby Unit at The University of Tennessee Medical Center in Knoxville, Tennessee from February 1, 1999, to November 2, 1999. Information is given below about the sampling procedures, the mother-baby unit, and the medical center.

The sample of 246 mothers and their infants was drawn between February and November of 1999 from a mother-baby unit that delivers 3,200 babies annually. On average, the discharge of vaginally delivered babies was within 24 hours, and 48 hours for cesarean section delivered babies. Most of the sample women were interviewed in their private hospital rooms within 12 to 36 hours after delivery. Despite an ongoing relationship between the research team and this hospital, probability sampling from enumeration of delivering patients was not possible. Thus, one of the four rotating interviewers was on the unit for a total of about 20 hours a week (sometimes including weekends) during the 10-month data collection period.

The following procedures were used to recruit mothers. No efforts were made to interview mothers with any particular risk characteristics, although mothers who were too ill, psychotic or intellectually limited to give informed consent and mothers whose babies died or who were to be adopted were not interviewed. In addition, because the larger study required a sample with a

sufficient proportion of African-Americans to allow race-related differences in parenting and because Knoxville and Knox County has only an 8% (2000, U.S. Census Bureau) African-American population, African-American mothers were over-sampled. This was accomplished by approaching all African-American mothers on the unit first and recruiting Caucasian mothers in the remaining time that interviewers were present. UTMC provides the regional high-risk perinatal program for high-risk pregnant women from the surrounding mountainous counties. Therefore, although UTMC is located in an urban location, the population of delivering women includes women from several surrounding East Tennessee counties, which are rural and Appalachian in culture. Thus to aid in over-sampling African-American women, African-American women who lived within an hour's drive were also interviewed. Recruitment of Caucasian mothers was limited to Knox County and surrounding counties within a half-hour drive from the hospital. As a result of these techniques, 42% of the sample is African-American ($n = 103$).

Interviewers approached the mothers in their rooms to explain the nature and purpose of the research project and the informed consent process. There were a few refusals to participate; most related to lack of time due to early discharge, mothers' being sleepy or in pain, or the presence of visitors in mothers' rooms. The thirty-minute interviews were conducted in private and free refreshments in the hospital cafeteria were offered as an inducement for visitors to leave the mothers' rooms. After the interview, women were given a \$10.00 Wal-Mart gift certificate and VIPS refrigerator magnets reminding respondents to call the VIPS project if they moved.

Tracking Procedures

Several different procedures were used to locate the research sample at follow-up. At the recruitment interview, respondents provided current addresses, telephone numbers, type of housing (house, apartment complex, apartment in a house, or mobile home), length of time at the current address, names under which telephone numbers were listed, email addresses, plans for moving, and employment information for self and partner. The interviewers asked for the names, addresses, telephone numbers, and relationships of two contact persons, and in the event the respondent had no telephone, the name and number of person who could relay messages.

Six-Month Follow-Up Interview

At the time of follow-up, extensive logs (Appendix B) on tracking activities were completed by the interviewers and other project staff. Approximately three letters were sent: the first, a thank-you letter for participating in the project; the second, a three-month contact letter; and then a letter four weeks before the scheduled six-month follow-up. "Return address requested" was stamped on the envelope so that forwarding information, if available, would be provided. Interviewers called respondents to arrange the follow-up interviews. If the telephone number was incorrect, the information from the hospital locating and tracking information form was used. Collaterals, employment sources, etc. were contacted. In addition, priority letters to respondents and letters to collaterals requesting additional information could be sent. If there was continued difficulty in contacting the respondent, computer-tracking resources were used (e.g. "reverse look up" directories that assist in finding names and phone numbers for respondent and collateral addresses). VIPS had a research assistant who

developed relationships with public housing managers and the local utility board. Often respondents would move to a different, often larger, unit in the same Department of Housing and Urban Development complex (i.e. public housing) or to a different public housing complex in a different part of the city. Community tracking included visits to respondents' addresses and to collaterals if telephone numbers were no longer accurate.

Data Collection

The following data were collected for the larger VIPS study at the recruitment (hospital) and follow-up interviews. Not all the measures described below are used in the current study. During the recruitment interview, demographic data, transience and homelessness, the Adult Adolescent Parenting Inventory (AAPI; Bavolek & Keene, 1999), the Neonatal Perception Inventory (NPI; Palisin, 1981), the Parental Bonding Inventory (PBI; Parker, Tupling & Brown, 1979), and the Maternal Concerns Scale (MCS; Combs-Orme, Martin, Fox & Favor, 2000; Combs-Orme et al., 2004) were collected (see Appendix C for the recruitment interview). In addition, tracking logs were coded for tracking statistics (see Appendix D for the Tracking Coding Form).

At the follow-up interview, demographic data, the Life Events Inventory (LEI; Cochrane & Robertson, 1973), Family Resource Scale (FRS; Dunst & Leet, 1987), Parenting Stress Index-Short Form (PSI-SF; Abidin, 1995), Infant-Toddler Home Observation for Measurement of the Environment (IT- HOME; Caldwell & Bradley, 1984), Michigan Infant Behavior Survey (MIBS; McDonough, 1995), Young Adult Self Report (YASR; Achenbach, 1997) were collected. A complete copy of the six-month interview is located in Appendix E.

Measurement

The primary dependent variable in this study is the total score of a constructed scale titled "Interview/Tracking Effort." This scale consists of the eight questions, four dichotomous and four count (see Table 3). The responses to these questions were coded from the tracking logs maintained for each respondent. One interviewer (the author of this study) reviewed all the tracking logs using the code form contained in Appendix D. VIPS project personnel had frequent and regular team meetings. During these meetings, the person responsible for coding the tracking logs trained interviewers about tracking record maintenance and resolved any questions regarding tracking logs.

The following variables and values each contributed one point to the summative scale: telephone at recruitment interview (none); telephone at six-month interview (none); respondent had the same phone at both interviews (no); and respondents had the same address at both interviews (no, different addresses). Respondents who had the same address and the same telephone number at both interviews received zero points for the four items. The following four continuous variables contributed the number of points corresponding to the count for that variable: total number of telephone calls, total number of no-shows for interview appointments, number of collaterals contacted, and number of unscheduled visits (e.g. a respondent who had 10 telephone calls would be given 10 points). Thus, respondents with higher scores required more interview efforts. All eight of these variables are listed in Table 3, Appendix G.

Demographic and Mental Health Data

The demographic data used in this study include the following: marital status at the recruitment and the follow-up interviews, age, race, employment

status at both interviews, education, income, and indicators of problems with mental health and substance abuse (Table 4).

Marital Status. Marital status was coded using the following categories during the recruitment interview: 1) married and living with husband, 2) married but not living with husband, 3) divorced not living with a partner, 4) unmarried and living with a partner, and 5) unmarried, and not living with a partner. During the six-month interview a sixth marital status category was added 6) divorced and living with a partner.

Race. Race had two categories African-American ($n = 103$, 41.9%) and Caucasian ($n = 143$, 58.1%).

Age. Age ranged from 14.17 to 41.95 ($M = 23.97$, $SD = 6.01$). Age was calculated using the dates of the interview and the mother's birth.

Employment. Employment had three categories (part-time, full-time, and not employed) at the recruitment interview, but was expanded to eight categories at the six-month interview to also capture respondents who were students (1) part-time job, not in school; 2) part-time job, in school; 3) part-time job, school next term; 4) full-time job, not in school; 5) full-time job, in school; 6) no job, no school; 7) no job, in school; 8) no job, school next term).

Education. Education was used in most analyses as a continuous variable. However, the original education categories coded on the VIPS recruitment interview were collapsed into the following six categories in order to describe the sample: less than high school education ($n = 46$), high school graduate ($n = 50$), GED completion ($n = 17$), vocational education for one to three years ($n = 30$), some college for one to three years ($n = 38$), and four or more years of college ($n = 32$).

Income. Annual family income was coded at both interviews into 10 ordinal categories ranging from the first category of under \$5,000 to \$75,000 and over. This income classification was devised from the U.S. Census. In some analyses income was used as a continuous measure.

Mental Health and Substance Abuse Problems. Mental health and substance abuse problems were measured using the Young Adult Self-Report (YASR, Achenbach, 1997).

YASR was designed to identify syndromes or problem patterns that are likely to occur together in young adults. There are nine problem subscales titled anxious/depressed, withdrawn, somatic complaints, thought problems, attention problems, intrusive, aggressive behavior, delinquent behavior, and other problems. Two of the subscales (anxious/depressed and withdrawn) are totaled into an internalizing scale; three of the subscales (intrusive, aggressive behavior, delinquent behavior) are totaled into an externalizing scale; the internalizing score, externalizing score, and the other four problem scales (somatic complaints, thought problems, attention problems, and other problems) are totaled into a total problem score. In addition, there are five adaptive functioning scales (friends, education, jobs, families, and spouse) that can be combined into a mean adaptive score. In addition, there is a subscale measuring substance use. All these subscales scores for the VIPS sample can be converted to T-scores that can be compared to a normative sample's dispersion of T-score. These comparisons determine if a score falls into a clinical range. Achenbach (1997) reported one-week test-retest reliability of .84 for the YASR problem subscales, .82 for the YASR mean adaptive scale, and .92 for mean substance

use subscale. Published mean long-term stability (for intervals averaging 39 months) was .58.

For this study, the nine problem scales, the substance abuse scale, and the total problem scale were used to examine hypothesis 2e.

Positive Relationships and Collaterals

Collateral Relationship. The relationship with each collateral provided by the respondent was recorded on the interview form. Collateral contact forms were coded into the following categories: no collateral listed, respondent refused to give collateral information, unknown relationship, Respondent's (R's) mother, R's father, R's grandmother, R's grandfather, friend/neighbor, R's or partner's work, R's sister, R's brother, R's in-laws or anyone related to R's partner. These categories are empirically and logically collapsed in order to have sufficient sample sizes for group comparisons.

Quality of Relationship. The YASR's adaptive scales, which measure relationships with a respondent's friends, family and spouse, were used to evaluate research question four. The items from the "friend" subscale asked about the number of friends and amount of contact with friends (items YY1-YY4). The items from the "family" subscale evaluated the respondent's relationship with other family members as worse, average or better than average (YY21-23). The "spouse/partner" subscale measured a variety of relationship issues (YY25-YY31). A higher score represented a better quality of relationship.

Quality of Parental Bond. The Parental Bonding Instrument (PBI; Parker et al., 1979) was used at the recruitment interview (Appendix C). The PBI is a 25-item instrument that measures the respondent's perceptions of her primary caregiver on two dimensions of caring and overprotection. Participants were

asked to rate their primary caregivers on 25 items using a four-point Likert scale from “very like” (1) to “very unlike” (4).

The care subscale has 12 items allowing for a maximum score of 36. Higher scores are more desirable on the care subscale and indicate greater care or affection and warmth, and lower scores indicated indifference and neglect. The overprotection subscale has 13 items allowing for a maximum score of 39. Higher scores are less desirable and indicate greater overprotection, intrusiveness, control, and prevention of independent behavior.

The overall measure and the subscales (care and overprotection) have shown acceptable test-retest (.76 and .63 respectively) and split-half (.88 and .74 respectively) reliability (Parker et al., 1979). Published inter-rater reliability was .85 for the care subscale, .69 for the protection subscale (Parker et al., 1979). Published concurrent validity was determined by comparing raters' scores to interview scale scores and was above .75 for the care subscale, and .45 for the overprotection subscale (Parker et al., 1979).

Number of Collaterals. Respondents were given one point for each collateral listed at the time of the recruitment interview.

Stability

Respondents' stability were measured in the following dimensions: employment, relationship, and residential.

Employment Stability. A respondent's place of employment at the recruitment interview was compared with the respondent's place of employment at the six-month interview and the following five categories were created.

- | | |
|---|-------------------------------------|
| 0 | different jobs at time 1 and time 2 |
| 1 | same job at time 1 and time 2 |
| 2 | no job at time 1 and time 2 |

- 3 no job at time 1 and a job at time 2
- 4 job at time 1 and no job at time 2

Employment stability was created from collapsing categories 0, 3 and 4 into an unstable employment category. The final employment stability variable had the following three categories.

- 0 Unstable employment
- 1 Same jobs both interviews
- 2 Unemployed both interviews.

Relationship Stability. Marital status at recruitment and follow-up interviews was compared and a binary variable created, with a score of one for those with changes.

Collateral Stability. Collateral stability was measured using a three-category variable: 1) telephone numbers and/or addresses were used and collateral was available; 2) telephone was disconnected or letter was returned; and 3) collateral stability unknown because no collateral contact was attempted or needed.

Number of Places Lived. The number of moves was collected at the recruitment and follow-up interviews. At the recruitment, respondents were asked the number of places lived in the year prior to the recruitment interview. At the six-month interview, respondents were asked the number of places they lived in during the time period between recruitment and the six-month interview.

Homeless or Shelter Experience. Respondents who indicated that they had been homeless or had lived in shelters were coded as “1” in a binary variable.

Total Stability Factors. This summative index is coded higher for problems in stability areas. The following six stability variables and values contributed one point to this index: employment (changed employment situation); relationship (had a different relationship situation); collateral changes (collateral was unstable); number of places lived at recruitment (more than one location); number of places lived at six-month interview (more than one location); and shelter/homelessness experience (had lived in a shelter or experienced homelessness).

Housing Type. Housing type was coded during the follow-up interview. Housing was coded as single family home ($n = 111$); mobile home ($n = 27$); apartment housing, private ($n = 18$); apartment, public ($n = 50$); and apartment, not sure ($n = 20$).

CHAPTER 4: RESULTS

Introduction

The theory, logic and research questions used to develop models for testing research questions are of utmost importance. Initially, the literature review and resultant research questions in this dissertation study led to an analytic model exploring a continuous measurement tool that summed eight interview and tracking effort (ITE) variables (see Table 3 for a complete description of the eight items). Linear regression of tracking and interview effort was planned with a host of demographic and independent variables. However, as a whole, the eight-item scale did not result in sufficient reliability (coefficient alpha = .45; standardized coefficient alpha = .66). One possible reason that this set of items doesn't have internal consistency reliability is that the latent variable underlying these items is qualitative, not quantitative. While linear regression is appropriate in situations when quantitative latent variables are suspected, latent class analysis can examine qualitative latent variables. The research questions are still important; however, the analytic approach was changed to latent class cluster analysis.

There is much to recommend latent class cluster analysis for analyzing these research questions. Much of the tracking interview literature uses various arbitrary methods to create ordinal groups of respondents on a continuum of easy to difficult to track and interview (e.g. groups created by time to track or by tracking methods). In contrast, latent class analyses use a set of indicators, rather than one or two variables, to identify groups of individuals who are homogenous with regard to the indicator variables. In addition LCA allows empirical exploration to determine if qualitatively distinct groups exist and, if so, to determine the nature of these groups. This approach is called a person-

centered approach. In this dissertation, tracking and interview effort groups are determined and serve as the dependent variable in a series of multinomial logistic regressions answering the research questions.

This chapter has three major sections. First, specific data analysis issues, such as missing data, reliability of measures and attrition analyses, are outlined. The second section presents the results from the latent class analyses using the tracking interview effort indicators. Within this second section the descriptive results for the entire sample are contrasted with descriptive results of the three latent classes. The last major section describes the results of the multinomial logistic regression and answers research questions two, three and four. Woven throughout the sections are specific details about latent class cluster analysis and multinomial logistic regression.

Preanalysis Data Issues

Missing Data

While a brief summary of missing data is presented here, a more expansive discussion of decisions made regarding missing data is discussed in Appendix F. Often there were proxy variables that were substituted for missing data in a survey. For example, the interviewers were asked to observe the respondent's type of housing (i.e. single family, apartment, etc.) at follow-up. Since respondents had been asked about housing type at recruitment, if this variable was not provided at follow-up and if the respondent still lived at the same address, the recruitment variable was used at follow-up.

Eight items were used to determine latent class group membership, the main dependent variable used in most analyses. The eight items were coded from the six-month (6M) tracking logs (Appendix B) using the code form

(Appendix D). Seven out of eight variables had no missing data. The one variable with missing data, telephone at 6M interview, was unavailable for 11 cases. Data for these 11 cases were imputed using Latent Gold (Statistical Innovations, 2003), the statistical package used to calculate latent classes.

There were no missing data for race, age, marital status, education and employment. Income had missing data for four respondents at recruitment and eight respondents at the six-month interview. For the two respondents who never provided an income level, income was imputed using expectation-maximization (Acock, 1997) with age, education, employment, income, and marital status used in the imputation. Known income level from one of the interviews was substituted for the unknown income level for the other interview when available ($n = 6$).

Two standardized measurement tools were used in these analyses: the Parental Bonding Inventory (PBI; Parker et al., 1979) and Young Adult Self Report (YASR; Achenbach, 1997). The PBI was entirely missing for two of the 246 respondents (0.8%). Two other respondents had missing data for one or two PBI items. EM was used to impute the missing values for only the latter two respondents using the remaining items on the PBI.

The YASR was completed at the second interview. No imputation was used for the women ($n = 33$) who had missing YASR questions. Nineteen of the 33 women dropped out of the sample at the second data collection and the other 14 women did not complete the YASR for the following reasons: abbreviated telephone interviews ($n = 11$), refused to finish the interview, or someone other than the mother completed the survey.

Reliability

Coefficient alpha was completed for the measures used in this study (Table 7). As discussed earlier, the alpha for the eight interview/tracking effort items was poor. Most of the scales had excellent reliability (.79 to .93) with the exception of the Family, Friends, and Spouse subscales of YASR (.04 to .48).

Attrition Analyses

Often, binary logistic regression is used to identify relationships between participation in a study and a set of independent variables. Binary logistic regression tests an overall model, using a chi-square test and a significance test. In addition, the Odds Ratio (OR) is calculated for each independent variable in the model, which quantifies the strength and direction of a relationship between the independent and dependent variables when controlling for other variables in the model (Agresti, 1996). The OR for categorical independent variables is made up of the odds of the categories as compared to a reference category. An OR value of 1 indicates that the odds of being in each category of the categorical independent variable are the same for each level of the independent variable. This also means that there are no relationships between any of the independent variable categories and the dependent variable. Models containing more than one independent variable partition the total variance so that the relative importance of each independent variable can be compared.

Respondents who completed both interviews ($n = 227$) were compared to respondents who did not complete the six-month interview ($n = 19$) to determine if there were differences in the odds of participation between the two groups on demographic characteristics and independent variables collected at recruitment. Binary logistic regression was used with six-month interview participation as the

dependent variable, coded as yes (1) and no (0). Dummy coding was used with the categorical independent variables. The reference group for the independent variable is noted below when there was a relationship between participation and a categorical independent variable. The likelihood of participation in the second interview did not differ by marital status ($\chi^2(3) = 0.70, p = .87$), employment status ($\chi^2(2) = 0.90, p = .63$), income ($\chi^2(1) = 0.05, p = .82$), race ($\chi^2(1) = 0.22, p = .64$), education ($\chi^2(1) = 0.48, p = .49$), age ($\chi^2(1) = 1.01, p = .31$), or by the entire set of demographic variables ($\chi^2(10) = 3.39, p = .97$).

Regarding the independent variables used in hypotheses to evaluate social support and collaterals (research question three), the only significant variable affecting the likelihood of participation was the overprotection subscale of the PBI ($\chi^2(1) = 4.16, p = .04, OR = 0.94$). The odds of participating in the sample were lower for those with higher PBI overprotection scores. The mean PBI overprotection score for respondents ($n = 227$) was 16.09 ($SD = 7.57$) and the mean PBI overprotection score for non-respondents ($n = 19$) was 19.89 ($SD = 8.05$).

Two of the eight variables (collateral stability and number of places lived for the previous year at the recruitment interview) used to study the effect of respondents' stability influenced the likelihood of participation in the follow-up interview. To review, "collateral stability" is a three-category variable with the subsequent categories and codes: stable collaterals (0), unstable collaterals (1), and unknown collateral stability (2). For this attrition analysis, stable collaterals were selected as the reference group and dummy coding was used. Respondents with unstable collaterals had lower odds of remaining in the sample than respondents with stable collaterals ($\chi^2(2) = 16.25, p = .00, OR = 0.20, p =$

.00). Respondents who moved more frequently also had lower odds for remaining in the sample ($\chi^2(1) = 5.43, p = .020, OR = .67, p = .01$). Participants in both interviews ($n = 227$) had lived an average of 1.71 places ($SD = .96$), while the non-respondents ($n = 19$) had lived an average of 2.44 places ($SD = 2.09$).

Attrition analyses were also completed with the dependent variable (interview-tracking effort group assignment). This three value dependent variable was computed using LCA, and discussions related to LCA and this variable are located later in this chapter. Dummy coding was used with group one (the easiest- to-track women) as the reference group. Participation was highly related to the interview-tracking effort (last variable in Table 12). Women who were easy-to-track finished the six-month interview, while more of the difficult-to-track women did not complete the interview. Group one had only 1.3% attrition; group two, 18.5%; and group three, 16.3%. Group two respondents were less likely to complete the second interview than group one ($\chi^2(2) = 22.64, p = .00, OR = 0.06, p = .00$). Similarly, but to a slightly lesser degree, respondents in group three were also less likely to participate in the second interview than group one ($\chi^2(2) = 22.64, p = .00, OR = 0.07, p = .00$).

Latent Class Analysis

The purpose of this dissertation is first to determine whether different subtypes of women exist in regards to the amount of effort it takes to track and interview them. The next step will be to explore the qualitative and quantitative characteristics of the subtypes and whether the subtypes are related in a theoretically predictable manner to external variables.

The first step uses latent class models, one type of finite mixture models, to create groups with similar responses or patterns of observed variables in a

multidimensional space (Bartko & Eccles, 2003). This can also be considered a person-oriented approach, which has been defined as creation of groups containing “individuals who are similar to each other and different from individuals in other categories” (p. 883, Muthen & Muthen, 2000). A latent class model is useful if the sample consists of different subtypes, and if it is not known beforehand which participant belongs to which of the subtypes. The subtypes may differ qualitatively (e.g., a respondent had the same phone at both interviews) or quantitatively (e.g., the number of telephone calls to a respondent needed to complete the interview). The latent variable in the latent class model is categorical, and the number of categories (i.e., number of latent classes) represents the number of different clusters of participants in a sample.

Latent Gold (Statistical Innovations, 2003) was the statistical program used to complete the latent class cluster analyses. Latent Gold uses the likelihood approach of expectation-maximization (EM) estimation method to iteratively determine the clusters or groups. One of the three strengths of this analytic model is that it doesn't require the assumptions of linear relationships, a normal distribution, and homogeneity of the data. Second, probability estimation is used to classify persons into clusters based on estimated probabilities of membership into each cluster. Thus in a model that has specified three groups or clusters, each person has an estimated probability of membership in each of the three groups. The third strength is that observed indicator variables can be ordinal, nominal, count or continuous variables (Statistical Innovations, 2003).

A simple latent cluster class model has two major components: indicators and classes (or groups). Making substantive changes to both these components and comparing the results lead to meaningful and interpretable models. In

addition, the model needs to be computed several times because the EM iteration estimation procedure uses random seed starting values. Different starting values can change results over successive computations of the same model. Unstable data can lead to a local optima problem, which is a convergence on a local solution rather than the “true (global) maximum of the likelihood function” (p. 65, Hagenaars & McCutcheon, 2002). After the data fit to the model are found to be stable, the same random seed value can be used to replicate the results.

Latent class models serve to cluster participants. In other words, the latent categorical variable is used to model heterogeneity. In the classic form of the latent class model, observed variables within each latent class are assumed to be independent. Although in variations of the classic model this assumption is relaxed, no specific structure for the covariances of observed variables is specified (Lubke & Muthen, 2005, p. 22).

The basic idea behind traditional latent class (LC) models is that responses to variables come from K distinct mutually exclusive and exhaustive populations called latent classes. Respondents in a given latent class are homogeneous with respect to model parameters that characterize their responses.

As mentioned above, the local independence assumption is the basic assumption of the standard LC model. Lack of fit of a LC model is caused by violation of this assumption. The usual way to proceed is to increase the number of classes until a model with an acceptable fit is obtained. An alternative model fitting strategy is to relax the local independence assumption by allowing for

associations between indicators, as well as direct effects of covariates on the indicators (LG Technical Guide, 2005, pp. 22-23).

The most general latent class cluster model is the model used for mixed mode data. This model is used when one has y variables of different scale types. The structure that serves as the starting point is (again) the local independence structure that is also used for categorical and continuous variables. For each indicator, the user has to specify whether it is nominal, ordinal, continuous, or a count. (LG Technical Guide, 2005, pp. 25-26).

Latent classes are unobservable (latent) subgroups or segments. Cases within the same latent class are homogeneous on certain criteria, while cases in different latent classes are dissimilar from each other in certain important ways. Formally, latent classes are represented by K distinct categories of a nominal latent variable X . Since the latent variable is categorical, LC modeling differs from the more traditional latent variable approaches such as factor analysis, structural equation models, and random-effects regression models that are based on continuous latent variables (LG User's Guide, 2005, p. 6).

Models are evaluated by using fit indices, which are "evaluations of how well the expected cell counts under the model replicate the originally observed cell counts" (p. 66, Hagenaars & McCutcheon, 2002). Several fit indices and statistics need to be compared simultaneously to determine which model best fits the data. The most commonly used are the likelihood ratio chi square (L^2), Akaike information criteria (AIC), and Bayesian information criteria (BIC). Models with more classes and indicators usually have a better fit. However, an overriding

principle in fitting data is parsimony. Interpreting models with excessive numbers of classes and indicators can be complex.

The fit indices are divided into two groups, those that evaluate the overall model (L^2 , AIC, BIC) and those that evaluate the classification of the cases into the classes (classification error, entropy R^2 , and R^2). A brief review of the fit indices follows (Hagenaars & McCutcheon, 2002).

The likelihood ratio (L^2) compares the expected to the observed cell counts, creates a probability of acceptance test (p-value) and is useful for comparing similar models that differ in the number of classes indicated. The L^2 can only be used to compare models with the same number of indicators.

Akaike Information Criteria (AIC) corrects L^2 for number of estimated parameters. Bayesian Information Criteria (BIC) corrects L^2 for number of estimated parameters and sample size. Both are used for comparing models with different numbers of indicators. Smaller AIC and BIC values are desired.

Three other statistical indicators also are used to evaluate a model fit. The first, classification error, is the "proportion of cases that are expected to be misclassified" (p. 62, Latent Gold, 2003). Values close to zero are desired. The second indicator, entropy R^2 , and the third, R-squared (R^2), both evaluate the model's success in predicting class memberships. Values close to one are desired.

Consideration and comparison of the aforementioned statistical indicators determined which LC model was used for creating the primary dependent variable: interview/tracking effort group assignment.

Research Question One: What are the Psychometric Properties of the Interview/Tracking Effort Variable?

LC Models with various numbers of clusters or groups were specified and compared using the fit indices. The results of comparing four LC models are displayed in Table 9.

In addition to changes in number of clusters in these models, direct effects between variables with large bivariate residuals were also included with each model. When a latent class cluster model is fitted, there are bivariate residuals between each pair of nominal variables. The absence of significant residuals is another indication that the model fits the data well. The four nominal variables that had bivariate residuals are listed in Table 10. Bivariate residuals larger than 3.84 need to be corrected by estimating the direct effect between the two variables (p. 78, Latent Gold, 2003). The direct effects between the two pairs of indicators with high bivariate residuals (Table 10, 6.28 and 5.78) were included. This inclusion aided in a more accurate classification of cases into clusters and improved model fit.

Latent class model C (Table 9) was selected over the other models because it had the highest R^2 value and only a marginally higher classification error. The three classes statistically differed on all of the eight indicators (Table 11).

Comparison of Interview/Tracking Classes and Latent Class Indicators

There were clear differences in tracking activities among the three groups regarding all eight tracking indicators. Table 11 compares the means, standard deviations, or frequencies and percentages for the three groups. Figure 1 also

illustrates the differences in the three groups of women regarding in relation to the tracking indicators (All figures are located in Appendix G.).

The largest group ($n = 149$) was the easiest to track and had the highest percentage of women who had telephones at recruitment, telephones at follow-up, the same telephone number at both interviews and no moves since giving birth. The easiest group as a whole had few unscheduled visits ($M = 0.01$ visits, $SD = 1.38$; Mode = 0, range 0 to 1) and “no-shows” for scheduled appointments at their homes ($M = 0.09$ no shows, $SD = 0.29$; mode = 0, range = 0 to 1). They also had fewer collateral contacts ($M = 0.66$ collateral contacts, $SD = 0.80$; mode = 0; range = 0 to 3).

Group two ($n = 54$) and group three ($n = 43$) both required more tracking efforts, but in different areas. Both groups two and three exceeded the easiest group in the percentage of women who had moved. Both were equal in having different telephone numbers at the recruitment and six-month interviews. The real difference between tracking groups two and three translated into more telephone calls for group two and more unscheduled visits for group three. For group two, collaterals often were contacted and provided telephone numbers for respondents or confirmed that the recruitment telephone numbers were correct or incorrect. Almost two-thirds of group three had no telephone at recruitment. The percentage of women in group three with no telephone increased to almost three-fourths at the six-month interview. Group three required the least number of calls of the three groups, but had the largest mean for the number of unscheduled visits. Group three didn’t have telephones so unscheduled visits were required more often.

Correlations among the indicator variables are shown in Table 8. Number of unscheduled visits (variable 1 in Table 8), collateral contacts (variable 4), and same phone (variable 8) were intercorrelated with all eight variables. All significant relationships were correlated in a positive direction. While 22 of the possible correlations were significant, only one correlation was greater than .45. These results indicated that all of the indicators provided significant information for measuring interview/tracking effort.

Multinomial Logistic Regression

Multinomial Logistic Regression (MLR) is used with nominal dependent variables and nominal, ordinal, or continuous independent variables. The ITE group assignment was considered a nominal dependent variable because, although one group required less interview/tracking effort, the difficult-to track groups were not ordered or ranked into more or less effort. MLR is an extension of logistical regression and uses an iterative maximum likelihood estimate (MLE) to calculate effects of independent variables on ITE group assignment (SPSS, 2004). When specifying the MLR model, a reference category within the dependent variable is selected. In this case, all the contrasts were made to the easy-to-track group. In addition for categorical independent variables all the contrasts were made to the hypothesized category (e.g. ITE group membership for married women were compared to ITE group membership of other marital categories). Categorical independent variables were coded so the desired reference group had the highest numeric code. For all analyses SPSS's MLR module was set to automatically dummy code the highest numeric value of a categorical independent variable (i.e. race, marital status) as the reference group. The Odds Ratio, an important statistic for interpreting the MLR results, is

defined by division of the odds of being in group one (easy-to-track) by the odds of being in another ITE group given the single or combination of independent variables. The Wald statistic tests whether an independent variable has no (zero) effect on the odds of assignment to the two groups in the contrast (Long, 1997). Hypotheses associated with research questions two through four were tested using MLR.

Henceforth the three IET groups or classes will be referred to as the easy-to-track group (group one), more telephone calls group (group two) and the more unscheduled home visits group (group three).

Research Question Two: What Demographic and Mental Health Variables
Predict Interview/Tracking Effort Group Membership?

Research question two contains several specific predictions about the individual effects of the demographic variables on interview/tracking effort. A series of multinomial logistic regressions were completed regressing interview/tracking effort (three classes) with all six demographic variables individually (marital status-5 categories, employment-3 categories, income, age, education, and race-2 categories). At times marital status and employment were recoded to four categories and two categories respectively for the following reasons. There were few women in the divorced and separated categories, and theoretically these women's relational status was close and thus were combined (i.e. some type of disruption in the marriage relationship). Later in the dissertation, the women's job stability was studied. Combining part-time and full-time working women into one group created a larger group for noting changes in employment.

The results of these individual analyses for research question two are located in Table 14. The results in the text are organized around the related hypotheses. Tables 12 and 13 also provide descriptive information about the variables used to address question two.

Hypothesis 2a: Marital Status and Employment

There is an interaction between marital status and employment. Specifically, employed married and single mothers and unemployed single mothers are more difficult to interview. Unemployed married women are the easiest to interview.

Main Effects of Marital Status and Employment. Interview/tracking effort group assignment was the dependent variable in the multinomial logistic regression. The two-category employment variable was used. Women who worked either full-time or part-time were coded “1” and unemployed mothers were coded “2.” As hypothesized unemployed mothers were the reference group. For marital status a four-category variable was used and the reference group was “married” women coded “4.” The other three marital status categories were respectively “divorced or separated,” “unmarried living with a partner,” and “unmarried living alone.”

There was a relationship between marital status and interview/ tracking effort group assignment ($\chi^2 [6] = 18.49$, $N = 246$, $p = .005$). Interview/tracking effort group assignment was the dependent variable and was regressed on a four-category marital status variable. Women who were separated, living with non-married partners, or living alone were more difficult to track and required more telephone calls. Separated mothers were 4.7 times more likely to be in the group requiring more telephone calls than married women (Wald [1] = 5.89, $p = .02$, $OR = 4.74$). This relationship was also true to a lesser degree for mothers

living with unmarried partners (Wald [1] = 4.75, $p = .03$, OR = 2.59) and mothers living alone (Wald [1] = 5.38, $p = .02$, OR = 2.52).

The group requiring more home visits (group three) differed from the easiest-to-track group in only one of the marital categories. Mothers living alone were 4.0 times more likely to be in the difficult-to-track group requiring more home visits than married women (Wald [1] = 9.99, $p = .00$, OR = 4.02).

Married women in this sample required fewer interview and tracking efforts. Almost half of the women in group one were married, compared to one quarter in group two (22.2%) and group three (20.9%). Figure 2 illustrates the marital status differences in the three interview/tracking effort groups.

There was also a relationship between employment and interview/tracking effort group assignment (χ^2 [2] = 9.19, $N = 246$, $p = .01$). This relationship was only found between the difficult-to-track group requiring more home visits and the easiest-to-track group. Interview/tracking effort group assignment was regressed on a two-category employment status variable. It was 3.5 times more likely for unemployed women to be in the difficult-to-track group requiring more home visits (group three) than in the easiest-to-track group (Wald [1] = 6.42, $p = .01$, OR = .28). The difficult-to-track group requiring more home visits did have the largest percentage of unemployment (88.4%) of the three groups. Figure 3 illustrates the employment status differences of the three interview/tracking effort groups.

Interaction Effects of Marital Status and Employment. For these analyses, the main interest was to determine whether marital status and employment interacted on the odds of class membership. The reference group for testing the

interaction was unemployed married women, who were predicted to be the easiest to interview.

A custom model was defined in the multinomial logistic regression procedure. Interview/tracking effort was regressed on the employment (2 categories) and marital status (4 categories) interaction. The overall model examining the interaction between the two variables was significant ($\chi^2 [14] = 29.19$, $N = 246$, $p = .01$). In comparing the difficult-to-track group requiring more telephone calls to the easy-to-track group, one significant interaction was found. Employed separated/divorced women were 16 times more likely to be in the more telephone calls group than unemployed married women were (Wald [1] = 5.18, $p = .02$, $OR = 16.29$). In comparing the group requiring more home visits with the easiest-to-track group, one significant interaction was also found. For mothers who were both unemployed and living alone, the odds of being in group three versus group one were almost three times higher than for unemployed married women (Wald [1] = 4.83, $p = .03$, $OR = 2.88$).

Thus there was evidence to support an interaction between marital status and unemployment in predicting interview/tracking effort group assignment. More unemployed married women were assigned to the easiest-to-track group (25.5%) and more single unemployed women were assigned to the difficult-to-track group requiring more home visits (46.5%). Divorced or separated women made up 11.2% in the difficult-to-track group requiring more telephone calls, while divorced or separated women made up only 4.7% in the easiest-to-track group. When combining the two difficult groups, nine divorced or separated women represented 13.4% of the 67 women assigned to the more difficult tracking

groups (groups two and three). Table 15 is a frequency table of the marital status and employment interaction, and Figure 4 shows the ITE group differences.

Hypothesis 2b: Education

Women who have higher levels of education are easier to interview.

A multinomial logistic regression model regressing ITE group assignment on a continuous education variable found a statistically significant relationship between education and ITE group assignment ($\chi^2 [2] = 15.15$, $N = 246$, $p = .00$). Educational level had no relationship with interview/tracking difficulty when comparing group membership between the easiest-to-track group and the more telephone calls group. However, the higher the educational level of the respondent, the smaller the odds of being in more unscheduled home visits group as compared to the easiest to track group (Wald $[1] = 11.65$, $p = .00$, $OR = .83$). Mothers in groups one and two were more educated than women in the difficult-to-track group requiring more home visits. Figure 5 shows the mean educational differences of the three groups.

Hypothesis 2c: Income

Poor women are more difficult to interview than wealthy women.

Overall there was a statistically significant relationship between income and tracking/interview effort ($\chi^2 [2] = 21.28$, $N = 246$, $p = .00$), with poorer women being more likely to require more tracking effort. The higher the income, the smaller the odds were of being in the class requiring more telephone calls (Wald $[1] = 4.57$, $p = .03$, $OR = .86$) as opposed to the easiest-to-interview group. To a greater degree, the higher the income, the smaller the odds of being in the more home visits group as opposed to the easy-to-interview group (Wald $[1] = 16.03$, p

= .00, OR = .70) (see also Figure 6). The relationship of income and interview/tracking effort was further examined in the next analyses.

Hypothesis 2d: Race and Income

Both poor and wealthy African-American women require more interview/tracking efforts than Caucasian women. The negative relationship between income and interview/tracking effort is weaker for African-American women.

Main Effects of Race and Income. For these analyses the primary interest was to determine if an interaction existed between race and income regarding the odds of being classed into the easiest-to-track group versus the two more difficult-to-track groups (groups two or three). A main effect was found for income as summarized above. A main effect was also found for race (χ^2 [2] = 8.62, N = 246, p = .01). There were no differences between the odds of being assigned to the easiest-to-track class (group one) and more telephone calls group (group two) for African-American women. However, it was 2.77 times more likely for an African-American woman to be a member of the more home visits group (group three) than in the easiest-to-track group (Wald [1] = 8.20, p = .00, OR = 2.77). Figure 7 shows the difference in racial profiles of the three interview/tracking effort groups.

Interaction Effects of Race and Income. To test interaction between race and income, a custom model was defined in the multinomial regression procedure. Interview/tracking effort was regressed on race (African-American and Caucasian) and income (continuous) as well as the interaction. The overall model produced significant results (χ^2 [4] = 22.74, N = 246, p = .00). For white women, the larger the income, the smaller were the odds of being in group two

(Wald [1] = 4.56, $p = .03$, $OR = .86$) or in group three (Wald [1] = 16.03, $p = .00$, $OR = .68$) than of being in the easiest-to-track group (group one).

Figures 6 and 7 represent the main effects of income and race with class membership while Figure 8 illustrates the interaction of income and race with class membership. For all three interview/tracking effort classes white women were wealthier than African American women. The direction of the relationship was the same for all three classes. However the mean slopes were parallel for classes one and two. An orderly interaction was represented in the degree change in the slope for white women from classes one and three (p. 511, Pedhazur & Schmelkin, 1991).

There was no statistical evidence to support a relationship between income and ease of tracking and interviewing African American women. However such a relationship did exist for white women with regard to membership in either the easy-to-track group or the unscheduled-visits-required group.

Hypothesis 2e: Mental Health and Substance Abuse

Women who have mental problems and those who have substance abuse problems are more difficult to interview. Women who have both substance abuse and mental health problems are the most difficult to interview.

There was no statistical evidence to support this hypothesis after regressing interview/tracking effort on the nine YASR mental health subscales (anxiety/depression, withdrawal, somaticism, thought disorder, attention, intrusion, aggression, delinquency, and other problems). The overall model was not statistically significant (X^2 [18] = 15.35, $n = 213$, $p = .07$) and there were no statistically significant relationships between any of the nine subscales and interview/tracking effort group membership (see section 10 of Table 14). In

addition, there were no statistical relationships between the Internalizing, Externalizing, or the Total Problems composite scores (see section 11 of Table 14) and tracking groups. The interview/tracking effort variable was also regressed on the number of days of drinking and the number of days using drugs. Neither of these substance abuse indicators had a relationship with the interview/tracking effort in this sample (see sections 12 and 13 of Table 14).

Multinomial Logistic Model Containing All Demographic Variables

Finally, a multinomial logistic regression regressing interview/tracking effort was completed with all the demographic variables (marital status-5 categories; employment-3; income, age, education, race-2). The overall model was significant, but none of the individual variables were significant. These results are located in Table 14, section 9. Multicollinearity was examined and found not to be a problem. All the tolerance levels were over .20 and within an acceptable range, with most over .50.

Research Question Three: Social Support and Collaterals

Hypothesis 3a

Respondents who list a mother or grandmother are easier to interview.

A multinomial logistic regression was used to regress interview/tracking effort groups on a binominal variable to differentiate between the 137 women who listed a mother or a grandmother as collaterals at recruitment and those who did not. The overall model was not significant ($\chi^2 [2] = 3.05$, $N = 246$, $p = .22$) and thus there were no differences in the odds of group assignment between the easiest-to-track women who listed their mothers or grandmothers as collaterals and the women in groups two and three (Table 17).

Hypothesis 3b

Respondents with positive relationships with family, friends, and their spouses are easier to interview.

These hypotheses were tested using the three YASR subscales evaluating relationships with family, friends, and spouse. The results from multinomial logistic regressions regressing ITE group assignment with the three subscales were not significant (Table 17). Low coefficient alpha estimates for the family (.47), friends (.25), and spouse (.03) YASR subscales contributed to the lack of support for hypothesis 3b.

Hypothesis 3c

Respondents with positive bonding with their primary caregivers are easier to interview. Specifically respondents with higher scores on the PBI's "care" subscale have lower interview/tracking effort scores and respondents with lower scores on the PBI's "overprotection" subscale have lower interview/tracking effort scores.

The Parental Bonding Instrument measures two aspects of parenting, "care" and "overprotection." The overall multinomial logistical model specifying ITE class assignment with the PBI "overprotection" subscale was not significant. However there was a significant difference between the groups regarding the "care" subscale $\chi^2 [2] = 6.31, n = 244, p = .04$). The easiest-to-track group's "care" scores averaged 30.32 (out of a possible 36), while women in groups two and three scored 27.14 and 28.70, respectively ($F (2, 241) = 3.34, p = .04$, Table 16). There were no significant differences in the odds of women being assigned to the easiest-to-track group versus the group which required more unscheduled home visits. However, when comparing the easiest-to-interview women with the

difficult-to-track women in group two, the higher their “care” scores were, the lower the odds were of being assigned to group two (Wald [1] = 6.08, $p = .01$, $OR = 0.95$).

Hypothesis 3d

Respondents with fewer collaterals listed in the recruitment interview (time 1) are more difficult to interview.

The results of a multinomial logistic regression model testing ITE group assignment with the number of collaterals listed at the recruitment interview was significant ($\chi^2 [2] = 7.17$, $N = 246$, $p = .03$). Specifically, the more collaterals named at recruitment, the higher the odds were of being assigned to the more telephone calls group (Wald [1] = 6.02, $p = .01$, $OR = 1.77$). ITE group two averaged 1.93 collaterals and groups one and three averaged 1.64 and 1.60 collaterals ($F (2, 243) = 3.59$, $p = .03$). The hypothesis was not supported. The difficult-to-track women who required more telephone calls (group two, mean number of collaterals = 1.93) gave more collaterals than the easy-to-track women (group one, mean number of collaterals = 1.64).

Research Question Four: Stability

Hypothesis 4a

Women who have employment stability (same job at time 1 and time 2) are easier to interview.

The employment stability variable created to test this hypothesis compared women who were always unemployed (reference group, $n = 112$) to first, women who continued in the same jobs ($n = 32$); and second, to a group of women who had either different jobs at the two interviews or were employed at only one of the two interviews ($n = 82$) (see Table 18). The first two groups were

considered stable, while the latter group was deemed to be “unstable” in employment. The overall multinomial logistic model regressing ITE on employment stability was significant ($\chi^2[4] = 13.22$, $n = 226$, $p = .01$). The reference group was women who were always unemployed. There were no differences between “stable” women (those who had the same jobs and those who were always unemployed) in the odds being assigned to a group (group two: Wald [1] = 2.46, $p = .12$, OR = 2.16 and group three: Wald [1] = 3.51, $p = .06$, OR = 0.14). There was a difference in tracking difficulty between “always unemployed” women and women with “unstable” employment. Specifically, the odds of being assigned to the more telephone calls group (group two) over the easiest-to-track group were 2.22 times higher for women with unstable employment than those always unemployed (Wald [1] = 3.51, $p = .04$, OR = 2.22). The percentage of “always unemployed” women did vary for the three ITE groups (49.7% to 25.9% to 55.8%). Figure 10 illustrates this difference in ITE groups.

Hypothesis 4b

Women who have marital stability are easier to interview.

Approximately one-fourth ($n = 53$, or 21.2%) of the sample indicated a change in marital status from recruitment to the six-month interview. However, these mothers were spread almost equally across the three ITE groups. Consequently, it appeared that marital stability had no effect on tracking difficulty. ($\chi^2[2] = 1.28$, $n = 227$, $p = .53$). The similarity of the three ITE groups with regard to marital stability is shown in Figure 11.

Hypothesis 4c

Women who have listed stable collaterals are easier to interview.

A three-level variable (unstable, stable, and unknown) indicating collateral stability was created for each respondent. An “unstable” collateral was determined if a respondent has at least one collateral whose telephone was disconnected or who had a wrong telephone number. A “stable” collateral was determined if a telephone call was completed to one or all of the collaterals. An “unknown” was coded if there was no reason to contact a collateral because contact was easily established with the respondent. Figure 12 shows the three categories across the ITE groups.

A multinomial logistic regression model regressing ITE groups on collateral stability shows there was a relationship between collateral stability and ITE group assignment ($\chi^2 [4] = 56.07, n = 244, p = .00$). The reference group was the easy-to-track group with “unknown” collaterals. The Pseudo R-Square value of .21 indicated that this particular variable explained more variance in the ITE groups than any other variable used in this study. The three categories contained within this variable were interesting because there was no need to contact collaterals for respondents who were easy to complete. These collaterals represented something different than the collaterals who were stable and those who were not stable (Table 18 shows frequency distributions).

When the easiest-to-track group’s unknown respondents were the reference group, all the odds of group assignment were significant. Clearly the easiest-to-track respondents had the highest percentage of “unknown” respondents, 52.3% for group one compared to 9.3% for group two and 16.3% for group three. Figure 12 illustrates the nature of these relationships.

Comparisons of Unstable with Unknown Collaterals. The odds of being in the more telephone calls group (group two), compared to being in the easiest-to-track group were almost 20 times higher for women with unstable collaterals than for women with unknown collaterals (Wald [1] = 23.81, $p = .00$, OR = 19.85). This was also true of the odds of being in more unscheduled home visits group (group three) as compared to easiest-to-track group (Wald [1] = 25.10, $p = .00$, OR = 16.81).

Comparisons of Stable with Unknown Collaterals. The odds of being assigned to the more telephone calls group over the easiest-to-track group were 9.25 higher for women with stable collaterals than those with unknown collaterals (Wald [1] = 19.17, $p = .00$, OR = 9.25). This was also true to a lesser degree when comparing the more unscheduled home visits group (group three) with the easiest-to-track group. The odds of being assigned to group three over the easiest-to-track group were 3.59 times higher for women with stable collaterals than those with unknown collaterals (Wald [1] = 7.25, $p = .01$, OR = 3.59).

Hypothesis 4d

Women who have moved more than two times before or after delivery are more difficult to interview.

This hypothesis was tested with three multinomial logistic models regressing ITE groups on three individual variables: 1) number of places lived in the year prior to the recruitment interview, 2) number of places lived in between recruitment and the six-month interview, and 3) shelter or homeless experiences at any interview. The models testing the number of places lived at the six-month interview ($\chi^2 [2] = 13.61$, $n = 221$, $p = .00$) and shelter or homeless experiences ($\chi^2 [2] = 8.17$, $n = 226$, $p = .02$) were significant. Mothers who lived in more

places had greater odds of being placed in the more telephone calls group (group two) over the easiest-to-track group (Wald [1] = 11.78, $p = .00$, OR = 2.35). Figure 13 diagrams the means of these two variables across ITE Groups.

Mothers who had an experience of homelessness or living in a shelter were 3.88 times more likely to be a member of the group requiring more telephone calls (group two) than mothers in the easiest-to-track group (Wald [1] = 8.41, $p = .00$, OR = 3.88).

Hypothesis 4e

Women who own homes are easier to interview than women who live in other housing types.

This hypothesis was tested with the housing type variable (single family, private apartment, public apartment, unsure apartment, or mobile home). The reference group was the easiest-to-track women who live in single family homes. The overall model regressing ITE groups on housing type was significant (χ^2 [8] = 16.66, $df = 226$, $p = .03$). Mothers who lived in public housing as opposed to single family homes had 5.83 times higher odds of being assigned to the more home visits group (Wald [1] = 13.77, $p = .00$, OR = 5.83). This finding is depicted in Figure 14.

Hypothesis 4f

Women with more instability indicators (employment, marital, collateral, shelter experience, residential) are more difficult to interview.

Interview/tracking effort group assignment was regressed on the number of instability factors (see Table 5 for description), using multinomial logistic regression. The overall model was significant (χ^2 [2] = 14.82, $N = 246$, $p = .00$). The more instability factors a respondent had, the greater were the odds of her

being assigned to group two over the easiest-to-track group (Wald [1] = 13.84, p = .00, OR = 1.69, Table 19). This was not true when comparing group three to the easiest-to-track group. The average number of instability factors was 1.44 for group one and 2.17 and 1.60 respectively for groups two and three. Figure 15 represents the distribution of stability sums across ITE groups and Figure 16 shows mean differences across the ITE groups.

CHAPTER 5: DISCUSSION

Maintaining a high proportion of respondents is fundamental to building evidence that a longitudinal research study's conclusions are accurate. Two crucial tools in maintaining a sample are the tracking and locating of respondents. The Volunteer Infant Parent Study (VIPS) devoted extra care and consideration to tracking and locating respondents and consequently interviewed 93% of the recruitment sample six to 12 months later. The effort needed to track, locate and interview respondents in the VIPS longitudinal study was used to place women into interview/tracking effort (ITE) groups. Three distinct groups of women emerged in the types of tracking and amount of tracking effort needed. This chapter reviews the important findings regarding the ITE groups, discusses the strengths and weaknesses of the study, proposes some future research ideas, and concludes with some research and policy suggestions.

Important Findings

General Differences Among Respondents

Past studies examining tracking have used simple categories for types of tracking (phone, mail and in-person) (Cottler et al., 1996; Crider et al., 1971; Rumptz et al., 1991), sources of helpful information (Pirie et al., 1989; Bale et al., 1984) and/or measurement of time to locate respondent (Aneshensel et al., 1989; Hartsough et al., 1996). This current study differed from previous studies in that it combined eight variables to measure aspects of tracking and interview effort. The statistical method used to create three ITE groups was latent class analysis (LCA), which is the best available method for clustering similar respondents into subgroups. The three groups created by latent class analyses can be characterized as one large easy-to-interview and track group and two

smaller, more difficult groups. This study then examined the women who made up the easy-to-track group and compared them to the women in the two different difficult-to-track interview groups, using multinomial logistical regression. There were clear differences among these groups regarding the effort needed to track and interview the women.

Overall it was encouraging that out of the 246 women in this sample the majority (60%) were relatively easy to track and interview. The easy-to-track women required an average of only four phone calls and generally kept scheduled interview appointments. For most of the easy-to-track women, it was not necessary for study personnel to contact collateral sources (M collateral contacts = .66) or make unscheduled home visits (M unscheduled visits = .01). This ease in interviewing was remarkable considering that one-third of the easy-to-track group had moved since their hospital interviews. This fact provided evidence that the act of moving by itself did not make women difficult to track and interview.

The remaining women ($n = 97$) did pose greater challenges and required more effort to locate and interview. The latent class analysis divided the more difficult to track and interview women into two groups. These two difficult groups differed in two primary ways. One difficult-to-track group averaged 13.0 telephone calls while the second difficult group (group three) averaged only 3.5 telephone calls. Just over seventy percent (71.1%) of the third group didn't have telephones at the time of the six-month interview. As a consequence of lower levels of telephone service, the third group had a lower telephone call average than the easy-to-track group (3.5 vs. 4.2 calls). The third group required on the average two unscheduled home visits to complete the interview. The ITE groups

were referred to as the easy-to-track (group one), more telephone calls group (group two), and the more unscheduled home visits group (group three).

The distinction between the latter two more difficult groups is important because telephone calls are less expensive and require less time and manpower than home visits. So in some regards, if the groups were rank ordered, group two might be considered an “easier” group to track and interview than the more home visits group (group three). Nevertheless, in studies with higher attrition rates (VIPS had 7%) women from these two difficult groups would have been dropped from the study because they required extensive interview/tracking efforts.

However, at some point the question must be posed: “how many telephone calls are too many calls and how many too few?” There are diminishing returns with calls as respondents and collaterals may have negative emotional and behavioral responses to repeated telephone calls. Some behaviors noted in this research study include ignoring telephone messages and screening telephone calls by using caller id. At some point the research team may have been better off visiting the respondents’ homes to explore and make personal connections with respondents and/or collaterals. In other situations there is no obvious explanation for women avoiding the second interview. In one instance, an interviewer called the respondent repeatedly with no response. A second interviewer made an unscheduled visit and completed the interview. The respondent asked the second interviewer to say “hi” to the first interviewer who had put extensive telephone effort into contacting the woman.

The eight interview/tracking indicators used to create the three ITE groups were all significantly different among the three ITE groups (Table 11). The two more difficult groups had more changes in address (group one, 34.9%; group

two, 70.4%; and group three, 53.5%), needed more collateral contacts (group one, $\underline{M}$ = 0.66; group two, $\underline{M}$ = 2.78; and group three, $\underline{M}$ = 2.19), and more frequently changed telephone numbers (group one, 38.9%; group two, 83.3%; and group three, 83.0%) or had no telephones at the second interview (group one, 6.7%; group two, 16.7%, and group three, 71.1%).

In order to further understand the differences among the groups, a series of hypotheses were tested about the respondents' personal demographics, collaterals named at the interview, and stability.

Personal Characteristics of Difficult-To-Track Women

At the beginning of this study, five predictions were made about the types of women who were expected to be more difficult to track. Three out of the five were found to be related to interview effort. First, in combination, marital status and employment status are useful characteristics in making guesses about the potential level of tracking difficulty research subjects may pose. As seen in the attrition literature reviewed earlier and also in this study, unemployed married women were the easiest to interview. Two unique groups of women, separated/divorced employed women and single unemployed women, when contrasted to unemployed married women, posed significant difficulty in completing interviews.

Difficulty in Interviewing and Tracking Separated/Divorced Employed Women. Separated/divorced employed women required more telephone tracking and were more concentrated in ITE group two. The literature review found that there was some evidence supporting the fact that newly divorced people (Fitzgerald et al., 1998a, 1998b) and women with difficult interpersonal relationships (Howard & Beckwith; 1996) were more likely to attrite. Likewise,

Martinez-Ebers (1997) show that full-time employed female heads of household were difficult to interview. The findings from this study confirmed this, but also emphasized a strong relationship between being employed and being separated or divorced. This study found that employed divorced/separated women were 16.3 times more likely than unemployed married women to be in the difficult-to-track group requiring more telephone calls than in the easiest-to-track group

In 2003, the United States' annual divorce rate was reported to be half the annual marriage rate (CDC, 2004). Separated and divorced women will participate in future research studies and as a consequence of their divorces, women will often have significant household changes, such as changes in location, telephone number, job status, and available spare time. Consequently, most researchers will need to consider, evaluate, and anticipate the separated/divorced women in their samples and the unique interview and tracking effort they may require.

Difficulty in Interviewing and Tracking Single Unemployed Women. The second unique group that was difficult to track was single unemployed women. Unmarried (Blumenthal et al., 1995; Fischer et al., 2001; Martinez-Ebers, 1997; van de Berg & Lindeboom, 1998; Walton et al., 1998) and living alone respondents (Bale et al., 1984; Cohen et al., 1993; Mackenzie et al., 1987) as a group have been identified as more likely to attrite. In the current study's sample, the percentage of unemployment was similar for the easy-to-track women (49.7%) and for the women in group three (55.8%), but being unemployed functioned differently for the women in the third group. This difficult-to-track group required repeated home visits—made in an attempt to catch a woman at home or to gather more information. Unscheduled home visits are labor-intensive, but

home visits are required to keep single unemployed women in the research sample. Often, unemployed single women live in substandard housing in potentially dangerous neighborhoods. They are poor and don't have telephone service. Researchers may feel disinclined to allocate the effort needed to retain these women, and middle-class university-related interviewers may be less motivated to visit these neighborhoods for a variety of reasons. However, research studies without information gained from these women will not provide accurate findings. Social work research in particular must be concerned with retaining single, unemployed mothers, because social work practitioners are especially likely to work with these high-risk populations.

The differences between the easiest-to-track group and the group requiring more home visits were strong and spread across many variables. The women in the third tracking group were unemployed and single, less educated, poorer, and more likely to be African American.

Analysis of Minority Status. The prediction about wealthier African American mothers being easier to track was not supported. However, while examining the potential interaction between race and income in this sample, wealthier Caucasian women were more likely to be easier to interview (Figure 8). When race was examined alone, it was discovered that African American women make up a larger proportion of the third tracking group (60.5%) than the easiest-to-track group (35.6%). The large minority proportion seen in the two difficult-to-track groups echoed the PSID (Fitzgerald 1998a, 1998b) examination that discovered different attrition rates among racial groups. In this study's findings about minority groups and attrition, findings of Fitzgerald et al.'s studies were confirmed. Minorities have higher attrition rates because they require more

challenging tracking and interview efforts (home visits) and have lower incomes (resulting in their not having telephones).

In a study of 60 African Americans, Freimuth et al. (2001) discovered that lack of research knowledge, its purposes and procedures, along with distrust of white doctors and research, led to reduced minority research participation. Researchers have described minorities as “hard to reach” or “difficult.” This study uses these words to characterize groups, but tries to explain the broader context in which minorities communities live (Freimuth et al., 2001). The variety of differences between the easy-to-track women and the women requiring more home visits—race, poverty, educational quality, and unemployment—are actually intertwined. Educational quality is linked to community income levels. As Freimuth et al. concludes, accurate knowledge about research, its purposes and procedures is delivered via quality education in high schools and colleges. College attendance and high school completion are lower for minority groups.

African Americans’ distrust of research has historical roots in medical experimentation with African Americans during slavery, human radiation experiments conducted by the US government, birth control studies on women of color and the Brooklyn Jewish Chronic Disease Hospital and Willbrook Hospital cases (Freimuth et al., 2001), and the Tuskegee Syphilis Study of Untreated Syphilis in the Negro Male, 1932-1972 (see final report of the President’s Advisory Committee for a discussion of abuses of human subjects). While others point to the “distrust” factor, Robertson (1994) finds that little is known about the mechanics of how mistrust affects participation. While the ethical violations found in the above research have been corrected with strict procedures to protect research participants, popular media outlets in the forms of movies,

documentaries, and plays continue to expose past injustices toward African Americans.

While women who were unemployed and single, less educated, poorer, and African American were harder to track, some other characteristics were ruled out as indicators that could predict interview/tracking difficulty. Specifically, mental health and substance abuse differences didn't exist among the three tracking groups.

Mental Health and Substance Abuse Issues. The Young Adult Self Report (YASR; Achenbach, 1997) was used to determine mental health and substance abuse problems. Two of the main ideas measured in the YASR are internalizing and externalizing groups of syndromes. Mental health problems considered to be internalizing are anxiety, depression, and withdrawal. The externalizing group of syndromes include outward behaviors of intrusion, aggressiveness, and delinquency. There have been established differences between people who have primarily internalizing problems versus people who have primarily externalizing problems. The YASR has a history of demonstrated validity and reliability in identifying young adult mental health problems. However, in this sample few women were identified with clinical mental health problems. Certainly a major flaw of the current study is that the measurement of substance abuse was limited to three narrow items in the YASR. No direct questions were asked about the respondent's mental health or substance abuse, current or past treatment. Often a simple question asking about mental health treatment can identify people with past mental health problems.

Social Support Differences Between ITE Groups

Importance of Collaterals. In the literature, there has been limited examination of the nature and relationship among social support and collaterals and interview/tracking effort. Collateral information has been considered important in interviewing and locating respondents who move or change phone numbers because collaterals were contacted to get information about respondents' new telephone numbers and addresses. Choosing people as collaterals is a personal process. Theoretically, respondents choose people they are socially connected to, whom they may trust or to whom they are related. Generally these people can be relied on to provide social support during times of personal need. However, people have different levels of social support and commitment from collaterals. In some situations a substance abuser may have little to no social support from her friends or family members because of her behavior and instability. For example, suppose a substance abuser participates in a research study and lists someone as a collateral with whom she has limited contact. This collateral would not be useful to the research team as they are trying to contact the respondent who had gone missing. This example illustrates just one of the infinite situations involving ineffective collaterals.

Analysis of Collateral Types. Some basic ideas about collaterals were explored in this study. First, the listing of a mother or grandmother as a collateral did not make a woman easier to track as suggested by Bale et al. (1984) and Dilonardo et al. (1993). Second, in this study, then lack of acceptable reliability estimates for the YASR relationship subscales render an inability to adequately understand the relationship between interview/tracking effort and the quality of the respondents' relationships with their families, friends and spouses. There

also was little evidence to indicate that there was a relationship between the tracking effort and respondents' bonding to their primary care-takers as indicated by the dimensions of control and overprotection measured by the Parental Bonding Instrument (PBI). However, the women did differ in respect to their PBI bonding dimension which measured care, involvement, affection, cooperation and sensitivity (Parker et al., 1979). The easy-to-track women rated their mothers (or primary care taker) as more caring than did the women who required more telephone calls.

Significance of Number of Collaterals. Women who reported more collateral contacts were more likely to be in the difficult-to-track group requiring more phone calls, but not in the group requiring more home visits. This finding might indicate that some women knew they needed to provide more collaterals because they knew they would be more difficult to interview. Another possibility is that the research interviewers assessed and asked unstable respondents to provide more collateral contacts. Respondents were asked several questions at the first interview which were related to housing stability. As a consequence, women who indicated they had moved several times in the last year, sometimes had no place of their "own" to sleep and/or had lived in shelters were asked for more collaterals. Perhaps women should be allowed to self identify their own vulnerability and instability.

Stability Differences Between ITE Groups

Definition of Stability. The idea of stability is used in several different disciplines. The Oxford English Dictionary (Simpson & Weiner, Eds.; 1989) was the source for the following discussion of the concepts, analogies, and paraphrased definitions for the terms "stability" and "stable." Stability in physics

means resistance to change, immunity from destruction or essential change. In regards to color, it means permanence and resistance to other chemicals which may influence the color. In electronics, unstable systems will not be effective in maintaining variables at the desired value. In navigation and sailing, stability is the ship's ability to hold steady and return to natural position of equilibrium after external forces act on her. In mechanics "stability of position" means safety against displacement by turning, and safety against displacement by sliding is called "stability of friction." When stability is applied to a person it is regarding a person's character and disposition of standing fast, fixity of resolution or purpose, settled in character, not fickle, changeable or frivolous, trustworthy, sound in counsel and judgment.

Stability as a concept has had no application within the social work literature, although there has been some investigation within the Systems Theory's concept of "equilibrium" and "steady state" (Zastrow & Kirst-Ashman, 2004). However, stability does have application to parenting and the family unit. The idea of stable families conveys the idea that even when any external forces such as job changes or relationship changes occurs the family returns to equilibrium and continues to function. External forces are sometimes unknown or arbitrary, but in other instances external forces result from parental actions and choices. Another family application of the "stability" concept relates to the differences between families who don't have situations arise in which they experience external forces and families who repeatedly and frequently experience external forces. Families who experience more pervasive external forces will experience more instability. The theoretical development by the author of this dissertation suggests the commonsensical idea that families who are

stable across time and across situations may produce family members who are more functional.

Scope of Stability in the Study. Although stability is a potentially very fruitful topic, this dissertation did not measure “stability” itself. Rather, some of the external forces or factors which can influence or contribute to stability and equilibrium were measured to see if they related to the tracking effort needed to interview families. The items which were thought to measure and influence personal stability were employment, relationships with partners and with collaterals, housing, housing type and a sum of all of these factors. Women who were more stable and had fewer changes in the prior areas were predicted to be easier to interview and track. Five out of the six predictions made about stability and the effort need to track women were supported. One finding regarding women’s relationship stability did provide an interesting, but unexpected finding.

Employment Stability. Employment stability does predict tracking difficulty. Women who were always unemployed and women who remained employed at the same jobs were easier to interview and track. These women can be considered stable. Women who were always unemployed and home caring for their babies comprised roughly half of the easy-to-track women (group one, 49.7%) and slightly over half the women who needed more home visits (group three, 55.8%). Women who were older tended to be employed at the same jobs across time. Women who had unstable job situations in the months after their babies were born were more difficult to interview and track and specifically needed more telephone contacts (11.8 calls). Meanwhile women who had stable employment situations (i.e. no job at either interviews or the same job at both) required the same number of telephone calls (1.7 calls) as each other. These

were considerably fewer than the average six telephone calls needed for the entire sample of women.

Relationship Stability. Relationship stability did not play a role in the difficulty experienced in tracking women. Interestingly, one-fourth of the entire sample did have changes in their marital status situation between the two interviews. This change of marital status was equally distributed across the three interview/tracking effort (ITE) groups. This seemed contrary to the demographic differences found among the groups with regard to marital status. Perhaps this could be explained by women prior to the birth of their babies making the choice to separate/divorce and remain single. It is important to add that women may not have been the ones to make the choice to end the relationship with their babies' fathers. They may have had male partners who were unstable, and the male partners may have chosen to end the relationship. The birth of a child is a momentous occasion in general, and the women who chose or experienced the loss of a partner prior to the birth of their babies could be considered more unstable than women who made relationship changes six to eight months after the birth. For example, in studying a sample's parenting behaviors, the literature shows that marital status and satisfaction are related to quality of parenting. Special care to retain respondents who might experience break-ups should be considered.

Collateral Stability. One of the more significant findings in this study was the effect that the women's collateral stability had on determining the interview/tracking effort. To review, the "unknown" collaterals were never contacted because they were not needed to locate and interview respondents. "Stable" collaterals were contacted and had the same phone numbers and/or

addresses as reported by the respondents at the hospital interview. “Unstable” collaterals were those who had disconnected telephones or inaccurate addresses. The easy-to-track respondents had 7.4% “unstable” respondents, in contrast to the ITE groups two and three who had 25.9% and 37.2% “unstable” respondents, respectively. People tend to associate with other people in similar life circumstances as their own. People usually develop social networks with people who are in similar employment, educational, economic, or relationship situations, and who share religious commitments and beliefs. It is likely that unstable respondents will have unstable collaterals.

Housing Stability. Women in group two (difficult with more telephone calls) had more housing instability, which included more transient housing experiences, homelessness and shelter experiences. Meanwhile, women who required more home visits (group three) were more likely to live in public housing apartment complexes. Thus the current study concurred with past studies that indicated the importance of a respondent’s type of housing (Fitzgerald et al., 1998a, 1998b), number of housing arrangements (Mackenzie et al., 1987; Aneshensel et al., 1989), and homelessness (Cohen et al., 1993) to sample retention and the effort needed to interview and track respondents.

Stability Index. Following the logic behind Aneshensel and her colleagues (1989), a respondent “stability index” was created and studied with interview and tracking effort group assignment. Six items were summed together and the scores ranged from 0 to 5 (see Figures 15 and 16). The sum of instability factors did differ between the easy-to-track mothers ($\underline{M}$ sum of instability factors = 1.44) and the difficult-to-track group requiring more telephone calls ($\underline{M}$ = 2.17). There were no differences between the sum of stability factors for the easy-to-track

women and the women requiring more home visits. These results indicated that personal stability as measured in this study was similar for easy-to-track women and women who required more home visits.

Impact of Factors on Interview/Tracking Effort. While the study focused on tracking effort and its implications for longitudinal research, the results also offer a different way of measuring family stability. It seemed that the women in the two difficult-to-track groups differed in that one (more telephone calls group) had greater instability in employment, collaterals, housing, and intimate relationships and the other did not. While the group requiring more telephone calls did have more collaterals, their average caring bond, as measured by PBI, was lower than the easy-to-track group. While both difficult-to-track groups were economically poorer than the easy-to-track women, the women who required more home visits posed tracking problems directly traceable to their poverty and the broader effects of inadequate economic resources. There also seemed to be evidence that this economic instability was pervasive and shared by the family members and friends respondents listed as collaterals. Almost one-third (37.7%) of group three's collaterals were unstable as demonstrated by changes of address and disconnected telephone numbers.

Current Study Strengths

Selection of Sample

One of the strengths of this study addressing the effort expended to track and interview women was that it used a sample of normal mothers giving birth to newborns. The sample was drawn from the population of women giving birth at a University-affiliated, publicly-funded hospital in a southeastern city. Few studies examined tracking issues with mothers of newborns.

A high priority was given to selecting African American respondents. This adequate representation of African Americans allowed for fair comparisons in respect to race. Respondents were not identified nor selected for any other reason other than race. As a result there was variability on demographics (race, income, age, marital status) that allowed for examination of demographic differences (Katz et al., 2001).

Another strength was that the follow-up was non-clinical. The team did not measure outcomes after a treatment or intervention. Tracking and interviewing respondents post treatment may result in unmeasured behaviors that influence respondents' interest and desire to complete additional research interviews. For example, relapsed respondents after rehabilitation may be unwilling to complete interviews.

In addition, the VIP sample retention at follow-up was high (93%). Comparisons of respondents to non-respondents found little evidence to support differences between the two groups. In addition to low attrition, missing data were limited and care was given to finding proxy variables within the data set when possible (Appendix F). EM was used when appropriate. EM is a superior method for missing data (Acock, 1997).

Careful consideration was given to maintaining the sample size and integrity for all the analyses. Other studies often drop those who were not found or interviewed. This study was able to use respondents who didn't complete the six-month interview. The 19 women who were not interviewed twice had the necessary variables and could be added into the LC analysis. A model which explores interview and tracking difficulty must include the women who attrited out of the sample.

Statistical Methods Utilized

Past studies that examined tracking have used simple categories for the type of tracking (phone, mail and in-person), the sources of helpful information, and/or measurement of time it took to locate the respondent. This study differed because instead of using only one to three variables to group respondents, eight variables were used together to measure aspects of tracking and interview effort. The latent class analysis used in this study clustered women who were alike in respect to the effort needed to track and interview them. This multivariate LC method of creating similar groups of women in the context of the efforts needed to interview and track them in a longitudinal study has not been used before. Tracking effort can be different from interview effort. Some women may be difficult to track, but they may be willing to be interviewed once they are located. The reverse situation could also exist: women who are easy to track may not wish to be interviewed. The finer nuances of differences among tracking and interview efforts have not been explored in this dissertation. The strength of the LC method was that a mixture of both tracking and interview difficulty was included in the ITE group assignment.

Current Study Limitations and Weaknesses

Use of Proxy in Literature Review

No previous research has addressed the question of whether difficulty in interviewing and tracking survey respondents in longitudinal research is related to characteristics such as race, age, etc. Therefore attrition analyses comparing the demographics of women who attrited out of the sample were used as proxy for women who are difficult to track. Hypotheses were developed from studies which looked at attrition analyses. The findings from this study were compared to

those studies. However, the characteristics of women who are difficult to track but who ultimately complete an interview are likely different from women who attrite and are not reinterviewed.

Effectiveness of Measurement

This study was not designed to examine tracking and interview effort. As a consequence two vulnerabilities are noted in the effectiveness of measurement. The first flaw is related to the differences in interviewers tracking performances. The second flaw, discussed in the last two paragraphs in this section, is regarding the post-hoc conceptualization of respondents and collaterals stability.

Five different interviewers completed the tracking logs during data collection (Appendix B). These logs were used to create many of this study's variables. At times, interviewers did not give priority to recording tracking efforts. As a consequence, the logs often contained incomplete information regarding telephone numbers dialed and incomplete dates. Coding the variables from the tracking logs was an ongoing process, which involved questioning interviewers about incomplete information. While this clarification effort improved the quality of the data, there was only one coder and thus no coding reliability test was possible.

There were some differences among the five interviewers regarding tracking styles. A complete analysis of the differences is beyond the scope of this dissertation, but a brief exploration discovered that during the six-month tracking process, two of the interviewers were far more likely to attempt unscheduled home visits. One interviewer at the hospital routinely did not collect information regarding second collaterals.

Other interviewer characteristics may have played a role in the interview/tracking effort. Identified characteristics include “being energetic, enjoying contact with a wide range of people, starting informal relationships easily, budgeting time well, trying to achieve accuracy and order with large amounts of detail, ability to persist despite frustrations” (Cohen et al., 1993). Furthermore the issue of tracking effort differences among the interviewers in this study would require exploration of mixed-race and same-race interviewer/respondent because 42% of the sample was African American and there were Caucasian and African American interviewers.

Finally, most of the variables used in these data have not been explored by other researchers and were created for this project. This lack of guidance from prior research is most keenly seen in the “stability” conceptualization. Measurement could be improved perhaps by simply asking the respondent to assess her own stability. More information could be collected about the relationship between respondents and their collaterals. The conceptualization and accuracy of the collaterals’ stability variable could have been improved if every collateral had been contacted, but this expense was not justified, given the purpose and resource needs of the larger study. The collateral stability variable would have been a two-level variable measuring “stable and unstable,” rather than a three-level variable measuring “unknown, stable, and unstable.”

The overall purpose of this study was to discover information about groups of people who are more difficult to track. While instability made women in group two more difficult to interview, what is not known from this study is the function or purpose for this instability. Women move because they have more children than their home can house. Women change jobs to accommodate new

babies for a variety reasons some of which include fewer work hours, less responsibility and stress, and to improve access to quality childcare. Thus, women may have been unstable for good reasons. Certainly a flaw in this study was the failure to evaluate women's reasons.

Mental Health and Substance Abuse Measurement

Contrary to the literature, there was no evidence to support that mental health or substance abuse problems influenced the interview/tracking effort. Two reasons may explain this finding. First, the YASR identified only a few women with these problems. The YASR focuses on internalizing and externalizing. A better measurement plan would have asked the women to indicate if they ever had mental health treatment. Also, using three single items, the YASR does only a limited measurement of substance abuse.

Limitations in Generalizability

There are several limitations to the generalizability of the findings from this study. This sample was not a probability sample. The hospital from which the sample was selected is publicly funded and may draw a larger proportion of poor women due to its history of treating the poor. Also, because women were interviewed in private, the interviewers may have selected women who had less social support and were more socially isolated (i.e. had fewer visitors). Finally, the reasons for nonparticipation for the few women who refused to participate were unknown. In fact, there is little information about the women who didn't participate, and as a consequence no comparisons can be made between participants and refusers. These comparisons often bolster a claim to the representativeness of a sample.

Suggested Future Research

Comparison of Difficulties in Tracking and Interviewing

Overall it was considered a strength to include aspects of tracking difficulty and interview difficulty together in the LC model; however, it would also be worthwhile to explore the differences between these two concepts. Personal instability as a concept is extremely interesting and may be a fruitful direction for future research. In this study the concept of personal stability was measured across multiple aspects of a person's life: employment, marital relationship, collateral relationships, housing, and use of shelters. However, each of these stability aspects was measured in a simple, limited manner and at times was devised post hoc.

An example of a simple limited construction of stability indicator is employment stability, which was measured by a three-level variable (stable job, changed jobs, never employed). Further research might compare interview/tracking effort by the type of job, occupational status assigned the job, and the presence or level of benefits provided by the job as observed by van de Berg and Lindenboom's study of employment and attrition (1998).

Use of Different Statistical Models

Additional research focusing on these data might explore statistical models that would rank respondents into ordinal ITE groups rather than nominal ITE groups. This would allow for exploration of the distances between the tracking groups and determine which of the two difficult-to-track groups is more difficult.

Examination of Parenting Styles with Interview/Tracking Effort

This dissertation examined the differences among groups of women regarding the effort it took to interview and track them in longitudinal study. The VIPS project as a whole examined a variety of parenting and infant variables that were not examined in this study. Further effort could explore the relationships among interview/tracking effort, personal stability and parenting, and these five other scales: AAPI, NPI, HOME, PSI, and LEI. The Adult-Adolescent Parenting inventory (AAPI; Bavolek & Keene, 1999) measures child-rearing attitudes of parents regarding inappropriate expectations of children, parental lack of empathy, strong belief in the use of corporal punishment, reversing parent-child role responsibilities, oppressing children's power and independence. The Neonatal Perception Inventory (NPI, Palisin, 1981) measures mothers' perceptions of their infants' daily care. Another instrument, the HOME (Caldwell & Bradley, 1984), used in the study to measure the condition and minimal quality of the home environment, might function differently for the ITE groups. Parenting stress levels (Parental Stress Inventory, PSI, Abidin, 1995) and the number of stressful life events (Life Events Inventory, LEI, Cochrane & Robertson, 1973) also might differ among the three ITE groups.

Some initial questions that could guide this further research effort would include:

- 1) Are there differences in parental attitude (inappropriate expectations, use of corporal punishment) among women in different ITE classes (AAPI)?
- 2) Do mothers in the easiest-to-track group have different parental perceptions of their infants' daily care needs (NPI)?

- 3) Do mothers who demonstrate more personal stability have lower Structure, Surveillance and Sustenance scores on the HOME inventory? Do mothers in different ITE groups support and promote socio-emotional function of their infants differently?
- 4) Do mothers in different ITE groups experience parental stress (PSI) and life stress (LEI) differently?

Examination of Infant Experiences and Interview/Tracking Effort

Finally, the VIPS project piloted a new questionnaire called the Infant Experiences Survey (Combs-Orme et. al., 2003). The Infant Experiences Survey scrutinized and observed the experiences of infants regarding their daily schedules for sleeping, eating and bathing; exposure levels to different foods and stimulating activities; and basic parental understanding of emergency health care. An analysis of the differences among the three ITE groups regarding the experiences of infants might demonstrate the different environments and experiences of infants with unstable parents.

Examination of Respondents' Motivation

This study didn't measure some important aspects regarding participation in a research study. The greatest influence on a respondent's participation in a research study may have to do more with internal motivation rather than demographics and personal stability. The subject must be willing to participate, and this was not measured.

Finally, while it is interesting to know the relationships among interview and tracking effort and a respondent's demographics and personal stability, this is primarily a methodological issue of maintaining a research sample. In terms of social work intervention and prevention activities it would be more interesting to

know how treatment attrition is related to infant and family outcomes. The important issue for practice is that better longitudinal samples would provide more valid information for evidence-based practice. Those we lose are those we need the most.

Practice and Policy Implications

What is clear from this study is that several items can help researchers interview and track respondents. The following suggestions are for research practice.

Utilization of Attrition Risk Survey

All respondents who enter a study should be given a thorough set of attrition risk questions to predetermine respondents with potential problems for tracking and interviewing (i.e. attrition risk). This interview/tracking effort risk assessment could be the basis for a long-term study of the accuracy and value of predicting interview/tracking difficulty and attrition.

The first section of the attrition assessment would evaluate the respondent's demographics. The results from this current study indicate that women who are married and unemployed and white are the lowest risk. Women with the following demographics need to be considered as higher risks: divorced or separated from their partners; single and unemployed; high school drop-outs; incomes less than \$10,000 a year; and childbirth before the age of 22. Such an assessment might also attempt to ascertain the strength of the partner/spousal relationship to determine divorce or separation potential.

The next section of an attrition assessment would inquire about the respondent's telephone history, housing history, and employment stability. Some possible questions are suggested.

- 1) Telephone history: How many different phone numbers have you (the respondent) had in the last two years? Has your telephone service ever been discontinued? What is your telephone number? How long have you had this number? Is there a relative, friend or neighbor who will give you a message?
- 2) Housing history: What type of housing do you live in? How long have you lived there? Do you have any plans to move? Would you like to move if the opportunity arose? How many different places have you lived in during the past year? Was there ever a time when you had nowhere of your own to sleep? Have you ever had to use a shelter of some kind (domestic violence or homelessness)?
- 3) Employment stability: How many different jobs have you had over the past two years? Do you plan to stay at your current job?

The final section of the interview/tracking effort assessment would evaluate the quality of the collaterals given by the respondent. It is important to identify collaterals who have unstable telephone and housing histories and treat respondents with unstable collaterals as high risk in need of more interview/tracking effort. Some of the prior mentioned respondent-directed questions should be asked about collaterals.

- 1) Collateral housing stability: How long has _____ (collateral's name) lived at this address? Does he/she plan on moving? Is this address a house, apartment, etc.?
- 2) Collateral telephone stability: You have _____ (collateral's name) phone number memorized. How long do you think _____ (collateral's name) has had this number?

Prevention of research attrition must be implemented with respondents who have higher risk in a proactive, dedicated, and deliberate manner. Normal tracking and sample maintenance activities need to be practiced with the respondents who have lower attrition risk. Discussing the attrition prevention literature is beyond the scope of this dissertation, and the reader is referred to the bibliography for attrition prevention suggestions. Attrition prevention does pose additional methodological problems because some respondents will receive additional tracking activity. In experimental designs, having some respondents receive different tracking activities could interfere with intervention fidelity and thus change respondents' outcomes. However, an argument can be made that some respondents do receive different levels of tracking after the fact. Predetermining who gets additional tracking is preemptive rather than post hoc.

Require High Retention in Professional Activities

Other policy suggestions relate to professional journal editors to only publish studies with acceptable retention rates (no less than 85%). After all, findings from studies with high sample attrition are suspect and an external target would ensure that importance and considerable effort are dedicated to sample maintenance. Adequate funding for interview and tracking effort is extremely important. Federal funding agencies examine attrition rates of funded longitudinal studies, but greater compliance to retention level must be linked to continued funding of longitudinal research.

The level of sample contact implied in this section requires time and expense and may not be feasible. As a result of these proposed policy suggestions, less research may be funded and published, but research quality will improve with higher retention rates.

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APPENDICES

Appendix A: Volunteer Infant Parent Study Informed Consent Form

We are asking you to be part of a study being done by Dr. Terri Combs-Orme of the University of Tennessee to learn what helps Tennessee babies develop into strong, healthy children and what kinds of **parenting practices** Tennessee families use while their children are growing up.

Being part of this study will involve an interview today of about 15 minutes to tell us some things about you and your feelings. Some of the questions are about private and personal matters, such as your health and how you care for your children. **We also will ask you some questions to allow us to call you later so we can interview you again in your home when your baby is about 6 months old.**

Protections for you. We hope you will be part of this study, but you do not have to. If you do, what you tell us will be kept strictly confidential and stored on a computer without your name and only a study number, where no one but the researchers can see it. No member of your family or anyone at this hospital will know your answers to our questions. If you want to participate but do not want to answer some of the questions, you may skip those questions. If you want to, you may drop out of the study later, too.

We hope you will decide to help us with our study, but if you decide not to, it won't affect the services you get from this hospital or the State of Tennessee, and we will collect no information about you. If you agree to participate and change your mind later, you may call the telephone number on the bottom of this form and the information about you will be removed from our files and destroyed.

Risks and advantages. The only benefit to you is the chance to express your opinions and to help us learn things that could help children and lead to better services for Tennessee families. Because we recognize that being part of this study will take your time, you will receive a \$10 gift certificate for completing our short interview today,

The research director's name and telephone number are listed below. If you have questions or concerns, you may call her.

Your signature below says that you want to answer our interview questions today. Thank you for helping us with this important study.

Parent

Date

Co-signature (if parent is
under age 18)

Research Director:
Terri Combs-Orme, Ph.D.
(423) 974-3704

Interviewer

Appendix B: Locating Log VIPS Follow-Up Interview

Respondent ID	Name
---------------	------

Recruitment interview date	Projected date of followup
----------------------------	----------------------------

IMPORTANT: Mark all tracking activities and outcomes below. There will be no article if we do not get accurate data on all efforts & the outcomes of those efforts.

Dates & outcomes of all telephone calls and letters: code no answer (NA), answering machine (AM), left message & name person (LM with _____), wrong number (WN), type of letter sent (LS to _____), and returned letter (RL). In the fifth column, note any feelings you have about untruthful information given by phone or impressions that the person you speak with is reluctant, nervous, etc. **ANYTHING!** Attach a continuation sheet if you run out of space. Clearly indicate refusals, reasons for refusals and actions taken.

[illegible]

Appendix C: Hospital Interview

Not for distribution

Volunteer Infant Parent Study (VIPS)

University of Tennessee

Dr. Terri Combs-Orme,
Principal Investigator



Volunteer Infant Parent Study (VIPS)

Date _____
Interviewer initials _____

ID _____

1. Race/ethnicity (observed; DO NOT ASK)

- 1 White/Caucasian
- 2 Black/African-American
- 3 Other (Specify _____)

First we'd like to know a little about your baby.

2. Is your baby a (circle one:) girl or boy? What is his/her first name? _____
3. How much did your baby weigh? _____ lbs. _____ oz.

Next we would like to know a little about you.

4. What is your date of birth? _____ / _____ / _____
MM MM DO DO YY YY

5. Are you currently (PLEASE STOP ME WHEN YOU HEAR YOUR MARITAL STATUS):

- 1 Married and living with husband
- 2 Married but not living with husband
- 3 Divorced, not living with a partner
- 4 Unmarried, but living with a partner
- 5 Unmarried, not living with a partner

6. Who will live in the household with you and your baby? (Check all who apply):

Biological father of baby	
Sibling of baby (Circle brother or sister) age	
Sibling of baby (Circle brother or sister) age	
Sibling of baby (Circle brother or sister) age	
Sibling of baby (Circle brother or sister) age	
Step-father of baby (mother's unmarried paramour)	
Grandparent (Circle grandmother or grandfather)	
Mother's: (Circle brother or sister)	
Mother's: (Circle brother or sister)	
Father's: (Circle brother or sister)	
Father's: (Circle brother or sister)	
Other relative (specify)	
Other relative (specify)	
Other unrelated (specify)	
Other unrelated (specify)	

7. What is the highest grade in school that you have completed? (Circle the appropriate code below):

Elementary: 1 2 3 4 5 6 7 8 High school: 9 10 11 12 GED: 13 (passed and passed) Vocational Training (Beyond high school): 14. <1 year 15. 1 year 16. 2 years 17. 3+ years

College: 18. 1 year 19. 2 years 20. 3 years 21. 4 years 22. 5+ years
--

Check if currently enrolled _____

8. Are you employed part-time, full-time, or not at all now?

- ☐ Part-time (Ask 8A)
☐ Full-time (Ask 8A)
☐ Not employed

8A. What is your job? _____

9. In the past year, how many children of yours or other children for whom you had responsibility were living with you? _____ children.

9A. Please tell me the ages of those children: _____

10. During the last year, how many different places have you lived, including houses and apartments of your own, homes of friends and relatives with whom you've stayed, shelters, or other places? _____ places

11. Was there a time in the last year when you had nowhere of your own to sleep?

- 1 = No
 2 = Yes

12. Was there a time in the last year when you stayed in a shelter of some kind?

- 1 = No (Go to Q. 11)
 2 = Yes

13. What kind of a shelter was that? _____

13A. How many nights did you stay there? _____ nights

14. Next, from this sheet would you please tell me your family's total yearly income? Just tell me the letter, please. [Answer card #1]

- | | |
|-------------------------|-------------------------|
| A = Under \$5,000 | G = \$35,000 - \$49,999 |
| B = \$5,000 - \$9,999 | H = \$50,000 - \$59,999 |
| C = \$10,000 - \$14,999 | I = \$60,000 - \$74,999 |
| D = \$15,000 - \$19,999 | J = \$75,000 and over |
| E = \$20,000 - \$24,999 | |
| F = \$25,000 - \$34,999 | |

At one time or another, many mothers are concerned about some of the things involved in raising their children. I'm sure you've thought about various ways that having this baby will change your life.

MC1. For the next few months, what kinds of things concern you about _____ and taking care of him/her?

MC2. What do you think your major jobs as _____'s mom will be in the next few months? [If she doesn't understand, probe with: "During a baby's first 6 months of life, what do you think are the most important things the mother does to take care of the baby's needs?"]

MC3. Can you tell me about any concerns you have about your own parenting skills or abilities?

MC4. Do you have any concerns about the specific kinds of things newborns do, such as their sleeping patterns, crying, or feeding?

MC5. What about _____'s health? Any concerns?

MC6. How about _____'s health care?

BB1. For the last question in this section, I would like to know what you know about the "Baby Your Baby" program. Have you ever heard of "Baby Your Baby?"

- ___ 1 = No
___ 2 = Yes (Ask MC6A and MC6B)

BB2. Can you tell me where or how you have heard of this program?

- ___ Brochure from (specify): _____
___ Friend or relative told me
___ TV commercial
___ Other (specify): _____

BB3. Please tell me in your own words what you know about the "Baby Your Baby" program. (Write below or on back.)

Now let me mention some concerns other mothers have told us about. For the following, please tell me, yes or no, whether this is a concern to you.

Concern	No=0 (Go to next)	Yes. If Yes, Ask: On a scale from 1 to 10, where 1 is not much and 10 is a very great deal, how much does this concern you?
MC6. That you will have enough food to feed your baby	0	1 2 3 4 5 6 7 8 9 10
MC7. That your kids and you will always have a place to live	0	1 2 3 4 5 6 7 8 9 10
MC8. That you will be able to keep your kids safe	0	1 2 3 4 5 6 7 8 9 10
MC9. That you can find someone to take care of your baby when you need it	0	1 2 3 4 5 6 7 8 9 10
MC10. That your baby's father will provide for his/her needs	0	1 2 3 4 5 6 7 8 9 10
MC11. That your kids might be taken away from you	0	1 2 3 4 5 6 7 8 9 10
MC12. That your kids tie you down too much	0	1 2 3 4 5 6 7 8 9 10
MC13. That you can get to the doctor when your child is sick	0	1 2 3 4 5 6 7 8 9 10
MC14. That you won't be able to control your child	0	1 2 3 4 5 6 7 8 9 10
MC15. That you could be so tired that you would physically hurt your baby sometime	0	1 2 3 4 5 6 7 8 9 10
MC16. That your child would be so bad that you could physically hurt him/her	0	1 2 3 4 5 6 7 8 9 10
MC17. That your baby's father would physically hurt him/her	0	1 2 3 4 5 6 7 8 9 10
MC18. That your baby's father might neglect him/her	0	1 2 3 4 5 6 7 8 9 10
MC19. That someone might report you for abuse or neglect to the police or other authorities	0	1 2 3 4 5 6 7 8 9 10
MC20. That you will be able to buy medicine when your baby is sick	0	1 2 3 4 5 6 7 8 9 10
MC21. That you might not give your child as much attention as he/she needs	0	1 2 3 4 5 6 7 8 9 10
MC22. That you will take good enough care of your baby	0	1 2 3 4 5 6 7 8 9 10
MC23. That you might abuse your baby		
MC24. That you might neglect your baby.		
MC25. That someone else who is caring for him/her might abuse your baby	0	1 2 3 4 5 6 7 8 9 10
MC26. That someone else who is caring for him/her might neglect your baby	0	1 2 3 4 5 6 7 8 9 10

Neonatal Perception Inventory

Average Baby

You probably have some ideas of what most little babies are like. From the answers on this card, please tell me which answer you think best describes the average baby. [Answer card #2]

NP1. How much crying do you think the average baby does?

A great deal a good bit moderate amount very little none

NP2. How much trouble do you think the average baby has in feeding?

A great deal a good bit moderate amount very little none

NP3. How much spitting up or vomiting do you think the average baby does?

A great deal a good bit moderate amount very little none

NP4. How much difficulty do you think the average baby has in sleeping?

A great deal a good bit moderate amount very little none

NP5. How much difficulty does the average baby have with bowel movements?

A great deal a good bit moderate amount very little none

NP6. How much trouble do you think the average baby has in settling down to a predictable pattern of eating and sleeping?

A great deal a good bit moderate amount very little none

Your Baby

While it is not possible to know for certain what your baby will be like, you probably have some idea of what your baby will be like. Please tell me which answer you think best describes what your baby will be like.

NP7. How much crying do you think your baby will do?

A great deal a good bit moderate amount very little none

NP8. How much trouble do you think your baby will have feeding?

A great deal a good bit moderate amount very little none

NP9. How much spitting up or vomiting do you think your baby will do?

A great deal a good bit moderate amount very little none

NP10. How much difficulty do you think your baby will have sleeping?

A great deal	a good bit	moderate amount	very little	none
--------------	------------	-----------------	-------------	------

NP11. How much difficulty do you expect your baby to have with bowel movements?

A great deal	a good bit	moderate amount	very little	none
--------------	------------	-----------------	-------------	------

NP12. How much trouble do you think that your baby will have settling down to a predictable pattern of eating and sleeping?

A great deal	a good bit	moderate amount	very little	none
--------------	------------	-----------------	-------------	------

Now I will read you 40 statements about parenting and raising children. You decide the degree to which you agree or disagree with each statement, using the responses on this card. [Answer card #3]

As you answer, please respond to the statements truthfully. There is no advantage in giving an untrue response because you think it is the right thing to say. There really is no right or wrong answer—only your opinion. Also, please respond to the statements as quickly as you can. Give the first natural response that comes to mind. If there is anything you don't understand, or if you hear a word you don't know while responding to a statement, ask me for help.

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1. Children should keep their feelings to themselves.	SA	A	U	D	SD
2. Children should do what they're told to do, when they're told to do it. It's that simple.	SA	A	U	D	SD
3. Parents should be able to confide in their children.	SA	A	U	D	SD
4. Children need to be allowed freedom to explore their world in safety.	SA	A	U	D	SD
5. Spanking teaches children right from wrong.	SA	A	U	D	SD
6. The sooner children learn to feed and dress themselves and use the toilet, the better off they will be as adults.	SA	A	U	D	SD
7. Children who are one year old should be able to stay away from things that could harm them.	SA	A	U	D	SD
8. Children should be potty trained when they are ready and not before.	SA	A	U	D	SD
9. A certain amount of fear is necessary for children to respect their parents.	SA	A	U	D	SD
10. Good children always obey their parents.	SA	A	U	D	SD
11. Children should know what their parents need without being told.	SA	A	U	D	SD
12. Children should be taught to obey their parents at all times.	SA	A	U	D	SD
13. Children should be aware of ways to comfort their parents after a hard day's work.	SA	A	U	D	SD
14. Parents who nurture themselves make better parents.	SA	A	U	D	SD
15. It's OK to spank as a last resort.	SA	A	U	D	SD
16. "Because I said so!" is the only reason parents need to give.	SA	A	U	D	SD
17. Parents need to push their children to do better.	SA	A	U	D	SD
18. Time-out is an effective way to discipline children.	SA	A	U	D	SD
19. Children have a responsibility to please their parents.	SA	A	U	D	SD
20. There is nothing worse than a strong-willed two-year old.	SA	A	U	D	SD
21. Children learn respect through strict discipline.	SA	A	U	D	SD

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
22. Children who feel secure often grow up expecting too much.	SA	A	U	D	SD
23. Sometimes spanking is the only thing that will work.	SA	A	U	D	SD
24. Children can learn good discipline without being spanked.	SA	A	U	D	SD
25. A good spanking lets children know parents mean business.	SA	A	U	D	SD
26. Spanking teaches children it's alright to hit others.	SA	A	U	D	SD
27. Children should be responsible for the well-being of their parents.	SA	A	U	D	SD
28. Strict discipline is the best way to raise children.	SA	A	U	D	SD
29. Children should be their parents' best friend.	SA	A	U	D	SD
30. Children who receive praise will think too much of themselves.	SA	A	U	D	SD
31. Children need discipline, not spanking.	SA	A	U	D	SD
32. Hitting a child out of love is different than hitting a child out of anger.	SA	A	U	D	SD
33. In father's absence, the son needs to become the man of the house.	SA	A	U	D	SD
34. Strong-willed children must be taught to mind their parents.	SA	A	U	D	SD
35. A good child will comfort both parents after they have argued.	SA	A	U	D	SD
36. Parents who encourage their children to talk to them only end up listening to complaints.	SA	A	U	D	SD
37. A good spanking never hurt anyone.	SA	A	U	D	SD
38. Babies need to learn how to be considerate of the needs of their mother.	SA	A	U	D	SD
39. Letting a child sleep in the parent's bed every now and then is a bad idea.	SA	A	U	D	SD
40. A good child sleeps through the night.	SA	A	U	D	SD

The next questions list various attitudes and behaviors of parents. As you remember your mother or father from your first 16 years, would you tell me, using the answers on this card, which one describes the parent who cared for you most. Was that your mother?
 Parent: _____ [Answer card #4]

	Very unlike	Like	Mod. like	Mod. unlike
PB1. Spoke to me with a warm and friendly voice				
PB2. Did not help me as much as I needed				
PB3. Let me do those things I liked doing				
PB4. Seemed emotionally cold to me				
PB5. Appeared to understand my problems and worries				
PB6. Was affectionate to me				
PB7. Liked me to make my own decisions				
PB8. Did not want me to grow up				
PB9. Tried to control everything I did				
PB10. Invaded my privacy				
PB11. Enjoyed talking things over with me				
PB12. Frequently smiled at me				
PB13. Tended to baby me				
PB14. Did not seem to understand what I needed or wanted				
B15. Let me decide things for myself				
PB16. Made me feel I wasn't wanted				
PB17. Could make me feel better when I was upset				
PB18. Did not talk with me very much				
PB19. Tried to make me dependent on her				
PB20. Felt I could not look after myself unless she was around				
PB21. Gave me as much freedom as I wanted				
PB22. Let me go out as often as I wanted				
PB23. Was overprotective of me				
PB24. Did not praise me				
PB25. Let me dress in any way I pleased				

VIPS Locating and Tracking Information

Date of interview: _____ Interviewer initials _____ ID _____

Mother's name: _____ DOB: _____

Husband/partner's name _____

Could I have your maiden name, or any other name you sometimes use?

_____ Baby's first and last name: _____

The next questions help us locate you so we can make an appointment to come to your home and interview you again when your baby is about 6 months old. This information will be kept in a separate, locked cabinet away from the answers you have given.

☐ Mother has lived in a shelter in the last year
☐ Baby is premature

Current address and telephone: _____
 () _____

Is that a _____ house Name of subdivision _____

_____ apartment complex (name of complex _____)

_____ apartment in a house _____ mobile home (name of park _____)

**DO NOT ACCEPT A POST OFFICE BOX OR A SHELTER AS AN ADDRESS.
 ASK FOR ADDRESS WHERE MOTHER IS GOING AT DISCHARGE.**

How long have you lived at this address? _____

Name under which the telephone is listed & relationship: _____

If no telephone: May I have the name and telephone number for a person who can give you a message? _____

Some people have e-mail on their computers & like to communicate that way. Do you do that? Email address: _____

GO TO NEXT PAGE

GO TO NEXT PAGE

Respondent ID _____

Name, Address and telephone number of two people who always know how to get in touch with you: (Include relationship.) These people do not have to live in Knoxville.

1. _____ 2. _____

Phone _____ Phone _____

Relationship: _____ Relationship: _____

Do you think you might move anytime in the next year? ____ Yes ____ No

If Yes: Where do you think you might move?

Place of employment, address & phone:

Husband/partner's place of employment, address & phone:

Email address: _____

The next 3 items are optional, but sometimes they help us locate people who move and forget to call us. May I have your--

Driver License State & number (optional): _____ Car tag # _____

Social Security Number _____

Personal detail

Appendix D: Coding VIPS Six-Month Follow-Up Interview

Respondent ID _____ Name _____

Recruitment interview day _____ 6-Month interview day _____

*1. Respondent had phone at time of recruitment Y N

*2. Respondent had phone at time of 6-Month interview (Y answer 2a) Y N

*2a. Respondent had same phone number at 1st and 6-M interview Y N

*3. Respondent resides at same address at 6-Month interview Y N

4. Number of collaterals named at recruitment 0 1 2 3

*5. Total number of phone calls to complete interview (all calls) _____

*6. Number of no-shows _____

*7. Number of cancellations _____

8. Number of calls respondent initiated to VIPS project _____

9. Total number of letters sent (including resent letters) _____

9a. Number of priority mail letters _____

*9b. Number of returned letters _____

*10. Total number of resources used to locate respondent _____

Check resources used

10a. First collateral _____

10b. Second collateral _____

10c. WWW _____

10d. KUB _____

10e. Apartment manager _____

10f. Other (specify _____) _____

10g. Other (specify _____) _____

*11. Total number of drive bys _____

Indicate number of each types of drive by

11a. Attempted visit without appointment _____

11b. Scheduled appointment _____

11c. Completed interview without an appointment _____

11d. Collateral drive by _____

12. Total time (in minutes) to complete _____

*indicates items used in latent class analysis

Appendix E: Six-Month Follow-up Interview

Revised 9/15/99

ID _____

Interviewer Initials _____

Date of Interview ____/____/____

Community _____

Neighborhood

O1. Interviewer observation: How pleasant and aesthetically pleasing is the respondent's neighborhood (0 = unpleasant, 10 = very pleasant) Rating: _____

O2. Interviewer observation: How well kept are the exteriors of the structures in the immediate vicinity of the respondent's home? (0 = very poorly kept, 10 = very well kept) Rating: _____

Outside of dwelling:

O3. Type of housing:

- 1 = single family home
- 2 = duplex, private
- 3 = duplex, public
- 4 = duplex, not sure private or public
- 5 = apartment housing, private
- 6 = apartment, public
- 7 = apartment, not sure

O4. Interviewer observation: Rate the general structural conditions of the respondent's home on a scale from 0 to 10 (0 = very poor condition, 10 = well maintained.) Rating: _____

O5. Trash or debris visible (not in covered cans)	No	Yes
O6. Sharp or dangerous objects, e.g. pointed objects, hammers, saws, hedge-trimmers	No	Yes
O7. Dangerous objects, e.g. pointed objects, hammers, saws, hedge-trimmers	No	Yes
O8. Child's toys (tricycle, swings, etc.)	No	Yes
O9. Child's toys (tricycle, swings, etc.)	No	Yes
O10. Adults "loitering" on street or in front of residence	No	Yes
O11. Adults "loitering" on street or in front of residence	No	Yes

Introduction

First, let me thank you again for helping us with the study. Ours will be the first study like this about babies' experiences, and we greatly appreciate your taking your valuable time for us.

Let me remind you that the purpose of the study is to document how babies and toddlers live in their homes and communities and what kinds of experiences they have. There are no right or wrong answers to our questions—only what is true for your baby. Everything that you say to me today is completely confidential.

Do you have any questions?

Demographic Changes in FamilyTime begun _____
ID _____

First we have a few questions about your family circumstances.

D1. Right now, who is living in the household with you and your baby? (Check all who apply in 1st column.)

	NOW	ANY	DAYS
Brother of baby (Circle brother or sister) age _____			
Sister of baby (Circle brother or sister) age _____			
Sibling of baby (Circle brother or sister) age _____			
Sibling of baby (Circle brother or sister) age _____			
Step-father of baby (mother's unmarried partner)			
Step-mother of baby (father's unmarried partner)			
Mother's: (Circle brother or sister)			
Father's: (Circle brother or sister)			
Other relative (specify) _____			
Other unrelated (specify) _____			
Other unmarried (specify) _____			

D2. Have any other people lived here for part of the time in the last 6 months, for as long as a month?

Check if name _____ if answer is YES:

Who is that (relationship, not name—mark all who apply in 2nd column above)?

D3. FOR EACH PERSON NAMED IN D2: How many days were they living with you [Write # of days in 3rd column]

D4. So are you currently married (to male named above), or not?

- 1 Married and living with husband
- 2 Married but not living with husband
- 3 Divorced, not living with a partner
- 4 Unmarried, but living with a partner
- 5 Unmarried, not living with a partner
- 6 Divorced, living with a partner

D3. Are you employed part-time or full-time, going to school, or none of these now? [Check one.]

- | | |
|--|--|
| ☐ Part-time job, not in school | ☐ Full-time job, school next term |
| ☐ Part-time job, in school | ☐ No job, no school |
| ☐ Part-time job, school next term | ☐ No job, in school now |
| ☐ Full-time job, not in school | ☐ No job, school next term |
| ☐ Full-time job & in school | |

ASK IF MOTHER HAS JOB:

D4. What is your job? _____

D5. Have you changed jobs, or had any major job changes, such as different hours or responsibilities in the last 6 months?

Circle one: No

Yes (Ask D6)

D6. On the whole, would you describe those changes as positive or negative?

Circle one: Positive Negative Mixed Can't say
(Volunteered only)

ASK IF ATTENDING OR ABOUT TO ENROLL IN SCHOOL:

D7. What kind of school are you attending (planning to attend)? _____

ASK IF SATISFIED:

D8. Are you generally satisfied with your job and school situation, or would you rather be [working/not working, in school/not in school]?

Circle one: A. Generally satisfied

B. Would prefer a different arrangement

D9. During the last 6 months, how many different places have you and your baby lived, including houses and apartments of your own, homes of friends and relatives with whom you've stayed, shelters, or other places? _____ places

D10. Was there a time in the last 6 months when you had nowhere of your own to sleep? No
Circle one: Yes

D11. Was there a time in the last 6 months when you stayed in a shelter of some kind?

Circle one:

No

Yes

D12. What kind of a shelter was that?

D13. How many nights did you stay there? _____ nights

14. Was there a time in the last 6 months when your baby stayed with friends or family or somewhere without you because you were staying somewhere that wasn't safe for him/her? *Circle one: No Yes*

D15. Do you have health insurance for your baby?

Circle one:

No

Yes

How do you get health care for him/her?
Verbatim:

D17. Is that TennCare or another kind of insurance?

☐ TennCare

☐ Other

☐ Doesn't know (Provider: _____)

D18. In the last 6 months, have you had any problems with it, such as getting your card or getting in to see a doctor or another kind of provider? *Circle one: No Yes*

D19. Have you received any benefits from Families First in the last 6 months?

Circle one:

No

Yes

D20. In the last 6 months, have you had any problems with your Families First benefits, such as your check being late?

Circle one:

No

Yes

D21. Do you rent or own your home?

Circle one:

Rent

Own

D22. How much is your monthly rent? _____

D23. Next, from this sheet would you please tell me your family's total yearly income? Please include all sources, including child support and the money contributed by other people who live in your household. Just tell me the letter, please. [Answer card #1]

A = Under \$5,000

B = \$5,000 - \$9,999

C = \$10,000 - \$14,999

D = \$15,000 - \$19,999

E = \$20,000 - \$24,999

F = \$25,000 - \$34,999

G = \$35,000 - \$49,999

H = \$50,000 - \$59,999

I = \$60,000 - \$74,999

J = \$75,000 and over

Relationship with Father

There are 3 sections below, based on whether the baby's father is living with the mother and whether she is still in contact with a nonresidential father. Unless mother volunteers otherwise, assume a co-residential partner/husband is baby's father. If mother lives with a partner who is not the father and is also in contact with the father, complete both Sections A and B.

Check here if mother volunteers that husband or partner is not father & ask Section A below:

F1. Do you and your baby have contact with the baby's birth father?

Circle one:

No

Yes (Also ask Section C about this person)

When is the last time you spoke with him? _____

F2. Does your husband/partner act as a father to _____? (Probe: Does he help take care of and support him/her, for example?)

Circle one:

No

Yes

F3. In a typical week, how many hours that your baby is awake is your baby's father home with you and your baby? _____ HOURS

F4. In a typical week, how many total hours is your baby's father home alone with _____ and responsible for his/her care? _____ HOURS

In a typical week, how many times does your baby's father:

	TIMES
F5. Feed the baby a meal or bottle?	
F6. Bathe the baby?	
F7. Change the baby's diaper?	
F8. Dress the baby in clothes/socks/shoes?	
F9. Take the baby somewhere alone, such as the park or library?	
F10. Read a book to him/her?	
F11. Play a game with him/her?	
F12. Sing a song to him/her?	

On a typical week-end day or day that he is home all day, how many times does the baby's father:

	TIMES
F13. Hold him/her?	
F14. Kiss him/her?	
F15. Hug him/her?	
F16. Talk to him/her?	
F17. Tell the baby "I love you"?	

F18. Do you still have contact with the baby's father?

Circle one:

No:

Yes: Ask the following questions

F19. When is the last time you saw or talked to him?

Ask F20 below & then go to next section

F20. What kind of custody arrangement do you have with the baby's father, for example visitations rights? [Circle correct answer below]

No legal arrangements (never been to court)

Mother has legal custody, no visitation arrangements for father

Mother has legal custody, father has visitation rights

Joint legal custody

Other ()

	TIMES
F21. In a typical month, how many nights does the baby spend with his father?	
F22. In a typical month, how many times does the father come to take the baby at your house?	
F23. In a typical month, how many times does the father take the baby places?	
F24. In a month, how many times does the baby's father take him to see how the baby is doing?	

F25. How much child support do you usually get from the father in a month? _____

F26. How much did the court award per month? _____

Ask this section if mother lives with adult male, including boyfriend (not baby's father), adult relative, or other.

F27. You mentioned that [your father/other adult male] lives with you. In a typical week, how many hours that your baby is awake is he home with you and your baby? _____ HOURS

F28. In a typical week, how many total hours is he home alone with _____ and responsible for his/her care? _____ HOURS

In a typical week, how many times does [this person]:

	TIMES
F29. Feed the baby a meal or bottle?	
F30. Bathe the baby?	
F31. Change the baby's diaper?	
F32. Dress the baby in clothes that are new?	
F33. Take the baby somewhere alone, such as the park or library?	
F34. Read a book to him/her?	
F35. Play a game with him/her?	
F36. Sing a song to him/her?	

On a typical week-end day or day that he is home all day, how many times does he:

	TIMES
F37. Hold _____?	
F38. Kiss him/her?	
F39. Hug him/her?	
F40. Talk to him/her?	
F41. Tell the baby "I love you"?	

Infant Experiences Survey®

Now I'd like to ask you some questions about your baby's experience. I know that you may not be with your baby all the time so you may not know for sure about some of the things that have happened when you weren't there, but please just answer to the best of your knowledge.

First, please tell me 3 things about BABY.

N1. _____

N2. _____

N3. _____

Okay, now let's talk about a typical day for you and BABY. Were you and your baby together most of the day yesterday? (If not go back one day until you have a day that the child was with the mother most of the day. Day was _____)

We're interested in the regular routine that your baby has, so as you answer my questions, feel free to let me know if any of your answers are very different from the usual situation, and why.

N1. What time did BABY get up? _____ Does your baby get up at about the same time every morning?

Circle one: No
Yes [Note any comments or explanation below]

N2. When did he/she take a nap? _____ Does your baby have a usual nap-time?

Circle one: No
Yes [Note any comments or explanation below]

N3. When BABY went down to sleep for his/her nap and at night, was it on his/her back or stomach? Do you usually put him/her on his/her back or on his/her stomach? (Code below for both)

_____ Back both _____ Stomach both, on doctor's instructions [volunteered]
_____ Stomach both
_____ Varies/one yesterday, one usual

N4. What time did he/she go to bed at night? _____ Does your baby have a regular time to go to bed at night?

Circle one: No
Yes [Note any comments or explanation below]

N5. Yesterday, did he/she eat at his regular times to eat? (Paraphrase verbatim comments below)

Circle one:
_____ Has regular meal times
_____ Does not have regular meal times

You may not remember all of these, but please just answer as best you can. Please tell me approximately when you introduced your baby to the following foods:

	Months	Not Yet
N6. Cereal with a spoon		
N7. Juice		
N8. Vegetables & fruits		
N9. Meats		

Have you offered your baby the following things:

	No	Yes
N10. Soft drinks		
N11. Tea		
N12. Coffee		
N13. Candy		

What are _____'s favorite foods?

N14. Did _____ ever breast-feed?

Circle one:

No

Yes

N15. How old was he/she when he/she stopped breast-feeding? _____ months
_____ Still is

N16. Does _____ take a bottle?

Circle one:

No

Yes

N17. Babies love to make messes, like splashing water all over the place during their baths. What kind of messy games does BABY enjoy, such as finger-painting or mud-pies, or even playing with his/her food? Verbatim:

N18. Did he have a bath yesterday at the usual time for his/her bath?

Circle one:

No

Yes

N19. How does your baby bathe, in the sink or a baby tub, or in the big bath tub?
[Circle response below]

Sink

Big bath tub

Baby tub

Varies

How many times did someone check _____'s diaper yesterday, to see if it needed changing?

Check one below. Do not answer both:

N20. _____ times OR N21. every _____ hours

N22. How many times did you let your baby know you love him/her yesterday, and how did you do that?
 _____ times or _____ check unable to answer this question
 (Note: if necessary, probe with "Can you estimate?")

Ways (verbatim; list all):

N23. _____

N25. _____

N27. _____

We're interested in how many times people talk to your baby. Yesterday, did your baby:

N28. Have a story read to him/her by someone? Circle one: No Yes

N29. Did he/she have a song sung to him/her by someone? Circle one: No Yes

I'd like to talk about the things your child plays with for a moment. These can include favorite toys, things in your kitchen like spoons or cups, even things like boxes or tools. What 3 things are his/her favorites?

N30. Toy 1 _____

N31. Toy 2 _____

N32. Toy 3 _____

N33. Most of us wish we had all the money in the world to buy for our children, but sometimes we feel that we can't buy things that would really help them grow and learn. Are there toys or other things you would like to get for BABY but feel that you can't afford?

Circle one: No
 Yes

What are those things?

N34. _____
 N35. _____
 N36. _____

I'm interested in how you teach your baby new things, like new words or how to crawl. Mothers do this in many different ways. Can you tell me what you do?
 _____ Could not answer after probe. (Go to example, N40)

N37. _____

N38. _____

N39. _____

Let's talk about an example. Say, sitting up. What kinds of things did you do to encourage BABY to sit up on his/her own?

N40. _____

N41. _____

N42. _____

N43. Did your child go anywhere in a car yesterday? Circle one: No Yes

Does he/she like to go places in the car?

N44. The last time s/he went somewhere in a car, was his/her car seat facing the front or the back of the car? Check one below:

- ☐ Front
☐ Back
☐ Wasn't in a car seat

N45. Does he/she like the car seat?

Circle one: No Yes

N46. [Since he/she doesn't like it,] do you ever give him a break from sitting in the car seat when he/she's in the car? Circle one: No Yes

N47. Did your baby go outside to play or for a walk yesterday?

Circle one: No Yes
 No with "too cold" or "raining" or "sick" volunteered

I'm interested in how often your baby goes outside to play or for a walk when he or she is not sick and things are pretty normal.

N49. How often when the weather is cold? _____ times _____ No cold since birth

Yes

Pertinent verbatim comments:

N52. Which shots has your baby gotten?
 Check immunizations volunteered:

- ☐ Volunteers "all of them"
☐ DTP (diphtheria, tetanus & pertussis)
☐ Polio
☐ Hepatitis B
☐ Hib (Haemophilus, influenza type b)

N53. [Skip if volunteered above:] Is he/she "up to date"? Circle one: ☐ No
☐ Yes

Please tell me about any chronic illnesses or medical problems your baby has.

N54. Condition 1 _____

N55. Condition 2 _____

N56. Condition 3 _____

N57. Has your baby's doctor or nurse ever said that your baby is too small or doesn't weigh enough for his/her age? Circle one: ☐ No
☐ Yes

When was _____ at the doctor last? [Complete either N58 or N59]

N58. Date: ____/____/____ OR N59. _____ weeks ago
 Mo Da Yr

How much did he/she weigh then? N60. _____ pounds N61. _____ ounces

N63.

N64.

N65.

N66.

N68.

N69.

N70.

N71.

N72. Does anyone in your home smoke? Circle one: ☐ No
☐ Yes

N73. How often is your baby in the same room anywhere, not just at home, with cigarette smoke or in a car with someone smoking? Check one: ☐ All the time/frequently
☐ Sometimes/occasionally
☐ Never

N74. _____ Check if question caused discomfort to Respondent

N76. Does your child go to day care or a regular babysitter? (Explain individual circumstances mentioned below) Circle one: No Yes

N76. How many days per week? _____

N77. How many hours per week is he/she there? _____ hours/week

N78. Do you ever get to go out in the evenings with your baby? Circle one: No Yes

Circle one: No Yes

N79. Who stays with BABY when you go out? Do you have just one or two folks who do that for you? Circle one: No Yes

Part of what we are very interested in is what kinds of places babies go in their communities. Remember—there are no right or wrong answers here, just a true picture of your baby's experiences. In a typical week, how many times does your baby go:

	TIMES
N80. To the homes of friends and relatives	
N81. To the grocery store	
N82. To church or worship services	
N83. To the mall or a department store	
N84. To restaurants	
N85. To the street	
N86. To the park or playground	

Please tell me about how many times your baby goes to any other places that I didn't list. (If name one above, put in table above.)

N87. _____

N88. _____

N89. _____

N90. So in a typical week, about how many times does your child get out of the house, either to one of the places I mentioned or somewhere else? _____ times

N91. Has your baby ever spent the night with a friend or relative of yours without you there?

Circle one: No Yes

N92. Was that always a family member? Circle one: No Yes

N93. What is the longest number of days that your child stayed over with someone else when you weren't with him or her? _____ days

[Verbatim explanation about circumstances or close personal friend:]

Because we are interested in your baby's life and experiences, I would like to see where he/she sleeps, eats, plays, and bathes, if you don't mind.

Cleanliness issues:

N94. More than 1-2 dirty dishes in sink/on kitchen counter	No	Yes	Marginal
N95. Dirty dishes on other surfaces	No	Yes	Marginal
N96. Dirty (used) ash trays	No	Yes	
N97. Pickles on top of furniture	No	Yes	Marginal
N98. Insects visible	No	Yes	Marginal
N99. Pet droppings	No	Yes	Marginal
N100. Pet smell (dirty litter, etc.)	No	Yes	Marginal
Comfort and aesthetics:			
N102. At least 2 pictures on wall	No	Yes	
N103. At least one family picture visible	No	Yes	
N104. At least one picture of baby visible (upside out)	No	Yes	
N105. Open, unscreened windows	No	Yes	
N106. TV set or entertainment center	No	Yes	
Resources in Home			
N107. Adult TV watching video	No	Yes	
N108. Stereo, cassette player, record player	No	Yes	
N109. Piano or other instrument	No	Yes	
N110. High chair (or attachment to table)	No	Yes	
N111. Stroller	No	Yes	
N112. Crib	No	Yes	
N113. Play pen	No	Yes	
N114. Baby walker	No	Yes	
N115. Baby swing (on frame or attached to doorway)	No	Yes	
N116. Baby seat or carrier (not car seat)	No	Yes	
Child's sleeping arrangements:			
N117. Child has own room (even if other child shares)	No	Yes	
N118. Child sleeps in another adult's room	No	Yes	
N119. Child sleeps in other adult's room	No	Yes	
N120. Child sleeps in common area (not in car seat)	No	Yes	

____ Refused tour ____ Tour Incomplete

As you are touring the house:

N121. Do you have a first aid kit?

Circle one: No
Yes

N122. Do you have any syrup of Ipecac on hand? You know, that stuff you buy and keep to make them throw up if they swallow something poisonous?

Circle one: No
Yes
Doesn't recognize term

N123. Do you know CPR?

Circle one: No
Yes

N124. Do you know what you would do if the baby chokes on something?

Circle one: No
Yes
"Slap on back"

N125. Do you have a fire extinguisher?

Circle one: No
Yes

N126. Do you own any guns?

Circle one: No
Yes

N127. Are all guns kept in a locked location?

Circle one: No
Yes

N128. Are they stored loaded or unloaded?

Circle one: Loaded
Unloaded
Various

N128. Is the ammunition stored in a separate, locked location?

Circle one: No
Yes

If you don't mind, I have 4 questions that we are asking to help us prepare for another possible study about the kinds of services health care providers give during pregnancy and infancy. They are not related to our parenting study, and you may skip them if you like, but we would really appreciate your help.

N129. Did you receive any counseling about HIV or AIDS during your pregnancy from a physician or any other health care provider?

Circle one: No
Yes

N130. Were you offered HIV testing at any time during your pregnancy or within four weeks after delivering your baby?

Circle one: ☐ No
☐ Yes

N131. Did you receive HIV testing during the time you were pregnant or within four weeks after delivering your baby?

Circle one: ☐ No
☐ Yes

N132. At any time since _____ was born, has a doctor or other health care provider suggested testing him/her for AIDS or HIV?

Circle one: ☐ No
☐ Yes

Life Events Inventory

This section covers some of the things that happen to families. Please tell me whether any of the following events have happened to you in the last 6 months: [Circle a response on each line!]

L1. Did you buy a house?	No	Yes
L2. Did you go deep in debt?	No	Yes
L3. Did your income go way down, or way up in the last 6 months?	No	Yes
L4. Did you get arrested in the last 6 months?	No	Yes
L5. Did someone close to you get arrested in the last 6 months?	No	Yes
L6. Did you have problems with your neighbors?	No	Yes
L7. (If L6=Yes) Was any physical force used?	No	Yes
L8. Did you get involved in a physical fight in the last 6 months?	No	Yes
L9. Did anyone close to you get involved in a physical fight in the last 6 months?		
L10. Were you the victim of a crime in the last 6 months?	No	Yes
L11. Was anyone close to you the victim of a crime in the last 6 months?	No	Yes
L12. Did you attempt suicide?	No	Yes
L13. Did someone close to you attempt suicide?	No	Yes
L14. Did a close friend or member of your immediate family die?	No	Yes
L15. In the last 6 months, have you had problems with any handicaps or chronic health problems?	No	Yes
A. What?		
L16. In the last 6 months, have you been seriously ill?	No	Yes
A. What was wrong?		
B. Were you hospitalized?		
L17. Was a friend or immediately family member seriously ill?	No	Yes
A. Who? [Relationship]		
B. Was he/she hospitalized?		
L18. Did your husband or boyfriend or someone else who lives in your household get drunk or take drugs frequently in the last 6 months?	No	Yes
L19. Did you become pregnant in the last 6 months?	No	Yes
[IF L19 = yes] L20. Did you have an abortion or miscarriage?	No	Yes
[IF L19 = yes] L21. Has it been a difficult pregnancy? (That is, have you/did you felt bad or have problems?)	No	Yes
L22. In the last 6 months, has a husband or boyfriend or your kid, shoved or thrown something at you?	No	Yes

L23. Have you ever been afraid that a husband/boyfriend of yours would hurt you?	No	Yes
L24. In the last 6 months, have you been ordered or told not to visit a husband/boyfriend?		
L25. Have you gotten back together with a husband or boyfriend after breaking up in the last 6 months?	No	Yes
L26. If not married and living with someone, have you had any custody or visitation problems?		

Family Resource Scale

The next few questions are designed to assess whether or not you and your family have adequate resources (time, money, energy, and so on) to meet the needs of the. For each item, please tell me the which response best describes how well the needs have been met on a consistent basis in your family in the last 6 months. Please use this card to tell me the best answer for each one.

Answer
Card
#2

To what extent are the following resources adequate for your family:	Does not apply	Not at all adequate	Seldom adequate	Sometimes adequate	Usually adequate	Almost always adequate
F1. Food for 2 meals a day	NA	1	2	3	4	5
F2. House or apartment	NA	1	2	3	4	5
F3. Money to buy necessities	NA	1	2	3	4	5
F4. Enough clothes for your family	NA	1	2	3	4	5
F5. Heat for your house or apartment	NA	1	2	3	4	5
F6. Indoor plumbing/water	NA	1	2	3	4	5
F7. A car	NA	1	2	3	4	5
F8. Good job for yourself or spouse	NA	1	2	3	4	5
F9. Medical care for you or family	NA	1	2	3	4	5
F10. Public assistance (SSI, AFDC, Medicaid, etc.)	NA	1	2	3	4	5
F11. Dependable transportation (car or provided by family)	NA	1	2	3	4	5
F12. Time to get enough sleep/rest	NA	1	2	3	4	5
F13. Enough money for your house or apartment	NA	1	2	3	4	5
F14. Time to be by self	NA	1	2	3	4	5
F15. Time to be with spouse	NA	1	2	3	4	5
F16. Time to be with children	NA	1	2	3	4	5
F17. Time to be with spouse or close friend	NA	1	2	3	4	5

F18. Telephone or access to a phone	NA	1	2	3	4	5
F20. Child care/day care for your child(ren)	NA	1	2	3	4	5
F22. Dental care for your family	NA	1	2	3	4	5
F24. Time to socialize	NA	1	2	3	4	5
F26. Toys for your child(ren)	NA	1	2	3	4	5
F28. Money for family entertainment	NA	1	2	3	4	5
F30. Travel/Vacation	NA	1	2	3	4	5

Families and individuals have different religious practices, and some families are not religious at all.

- Circle one:
- 1 More than once/week
 - 2 Once a week
 - 3 A few times a month
 - 4 A few times a year
 - 5 Once a year or less
 - 6 Never

Answer card #3

- Circle one:
- 1 More than once/week
 - 2 Once a week
 - 3 A few times a month
 - 4 A few times a year
 - 5 Once a year or less
 - 6 Never

For the following statements, please tell me whether they are definitely true of you, tend to be true, tend not to be true, or are definitely not true.

- Circle one:
- 1 Definitely true of me
 - 2 Tends to be true
 - 3 Unsure
 - 4 Tends not to be true
 - 5 Definitely not true

Answer card #4

- Circle one:
- 1 Definitely true of me
 - 2 Tends to be true
 - 3 Unsure
 - 4 Tends not to be true
 - 5 Definitely not true

- Circle one:
- 1 Definitely true of me
 - 2 Tends to be true
 - 3 Unsure
 - 4 Tends not to be true
 - 5 Definitely not true

Michigan Infant Behavior Survey

Now I'd like to ask a few more questions about your baby and his/her daily routine.

	Hrs.	Mins.
How much sleep during naptimes?		
How much during the night?	M3.	M4.
What is the longest period your baby sleeps at one time?	M5.	M6.
Now we'd like to know how much your baby cried on a typical day during the last week.		
How much did he/she cry in the daytime (add up hours)?	M7.	
How much during the night?	M9.	M10.
What is the longest period your baby cried at one time?	M11.	M12.

M13. Is your child difficult to feed, for example spitting up, sucking problems, or refusal to eat?

Circle one: No
Yes
Sometimes

You told me your baby slept about (hours/minutes) during the day and (hours/minutes) during the night.

M14. Do you think this is too little, too much, or about the right amount?

Circle one: About right
Too little
Too much

M15. Do you think your baby sleeps more or less than other babies of the same age?

Circle one: About the same
My baby sleeps more
My baby sleeps less

M16. Does your baby ever wake up crying?

Circle one: No
Yes

You told me your baby cries about (hours/minutes) during the day and (hours/minutes) during the night.

M17. Do you think your baby cries too much, too little, or about the right amount?

Circle one: About right
Too little
Too much

Circle one: About the same
My baby cries more
My baby cries less

M19: Does the amount of crying your baby does affect the time or energy you have for other household tasks or for working?

Circle one: No
Yes

Circle one: About right
Too little
Too much

Circle one: About the same
My baby eats more
My baby eats less

Circle one: No
Yes

[Read & circle response:] Very good
Good
Fair
Some problems
Many problems

Circle one: No
Yes

Circle one: No
Yes

M26. What do you do when your baby misbehaves?

Verbatim:

M27. In the last week, have you spanked _____ for misbehaving? Circle one: *No*
Yes

In the following questions we would like to know the answer that best describes your feelings about some statements. While you may not find that any of the answers exactly state your feelings, please choose the one that comes closest to describing how you feel. Your first reaction to each statement should be your answer. (Circle one response on each line.)

Please select your best answer for each one from this card.
[ANSWER CARD #5]

	1	2	3	4	5
	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
P1. I often have the feeling that I cannot handle things very well.					
P2. I find myself giving up more of my life to meet my children's needs than I ever expected.	1	2	3	4	5
P3. I feel trapped by my responsibilities as a parent.	1	2	3	4	5
P4. Since having this child, I have been unable to do new and different things.	1	2	3	4	5
P5. Since having this child, I feel that I am almost never able to do things that I like to do.	1	2	3	4	5
P6. I am unhappy with the last purchase of clothing I made for myself.	1	2	3	4	5
P7. There are quite a few things that bother me about my life.	1	2	3	4	5
P8. Having a child has caused more problems than I expected in my relationship with my spouse (male/female friend).	1	2	3	4	5
P10. When I go to a party I usually expect not to enjoy myself.	1	2	3	4	5
P11. I am not as interested in people as I used to be.	1	2	3	4	5
P12. I don't enjoy things as I used to.	1	2	3	4	5
P13. My child rarely does things for me that make me feel good.	1	2	3	4	5
P14. Most times I feel that my child does not like me and does not want to be close to me.	1	2	3	4	5
P16. When I do things for my child I get the feeling that my efforts are not appreciated very much.	1	2	3	4	5
P18. My child doesn't seem to learn as quickly as most children.	1	2	3	4	5

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	1	2	3	4	5
	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
P19. My child doesn't seem to smile as much as most children.	1	2	3	4	5
P20. My child is not able to do as much as I expected.	1	2	3	4	5
P21. It takes a long time and it is very hard for my child to get used to new things.	1	2	3	4	5
P22. I feel that I am:					
		1. not very good at being a parent,			
		2. a person who has some trouble being a parent,			
ANSWER		3. an average parent,	1	2	3
CARD #6		4. a better than average parent,	4	5	
		5. a very good parent.			
Return to Answer Card #5					
P23. I expected to have closer and warmer feelings for my child than I do and that bothers me.	1	2	3	4	5
P24. Sometimes my child does things that bother me just to be mean.	1	2	3	4	5
P25. My child seems to cry or fuss more often than most children.	1	2	3	4	5
P26. My child generally wakes up in a bad mood.	1	2	3	4	5
P27. I feel that my child is very moody and easily upset.	1	2	3	4	5
P28. My child does a few things which bother me a great deal.	1	2	3	4	5
P29. My child reacts very strongly when something happens that my child doesn't like.	1	2	3	4	5
P30. My child gets upset easily over the smallest thing.	1	2	3	4	5
P31. My child's sleeping or eating schedule is so strict that I have to follow it.	1	2	3	4	5
P32. I have found that getting my child to do something or stop doing something is:					
		1. much harder than I expected,			
		2. somewhat harder than I expected,			
ANSWER		3. about as hard as I expected,	1	2	3
CARD #7		4. somewhat easier than I expected,	4	5	
		5. much easier than I expected.			

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Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
P33. Think carefully and count the number of things which your child does that bother you. For example, dangles, refuses to start, overreacts, cries, interrupts, fights, whines, etc. Please tell me the number which includes the number of things you counted. Is it: <i>(Read.)</i>				
1= 10+	2= 8-9	3= 6-7	4= 4-5	5= 1-3
Return to Answer Card #5				
P34. There are some things my child does that really bother me a lot.				
1	2	3	4	5
P35. My child turned out to be more of a problem than I had expected.				
1	2	3	4	5
P36. My child makes more demands on me than most children.				
1	2	3	4	5

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Young Adult Self Report (Revised)®

The next questions tell us a little bit about you. I am going to read the questions, but you might want to look on this form to be sure you understand the questions.

YY1. About how many close friends do you have? (Do not include family members.) Is it:

[Read and check one:] ☐ None ☐ 1 ☐ 2 or 3 ☐ 4 or more

YY2. About how many times a month do you have contact with any of your close friends? (including in-person contacts, phone, letters, e-mail)

[Read and check one:] ☐ Less than 1 ☐ 1 or 2 ☐ 3 or more

YY3. How well do you get along with your close friends?

[Read and check one:] ☐ Not well ☐ Average ☐ Very well

YY4. About how many times a month do you invite any people to your home?

[Read and check one:] ☐ Less than 1 ☐ 1 or 2 ☐ 3 or more

If currently enrolled in school, go directly to Y6 below.

YY5. At any time in the past 6 months, did you attend school, college, or any other educational or training program?

Check one: ☐ No - please skip to Section III. Job.

☐ Yes - what kind of school or program?

→ YY6. What degree or diploma are you seeking? Major? _____

YY7. When do you expect to receive your degree or diploma? _____

→ For the following statements, please tell me whether each is not true, somewhat or sometimes true, or very true or often true for you:

Circle one for each statement: Answer card #8

YY9. I achieve what I am capable of

0 1 2

YY10. I am satisfied with my education situation

0 1 2

YY11. I am satisfied with my education situation

0 1 2

YY12. I am satisfied with my education situation

III. Job

If currently employed, go directly to Y14, below.

YY13. At any time in the past 6 months, did you have any paid jobs (including military service)?

- ☐ No -- please skip to Section IV. Family.
☐ Yes -- please describe your job(s)

For the following statements, please tell me whether each is not true, somewhat or sometimes true, or very true or often true for you:

Circle one for each statement: Answer card #8

0 = Not true at all 1 = Somewhat or sometimes true 2 = Very true or often true

YY14. I work well with others.

YY15. I have trouble getting along with bosses

0 1 2

YY17. I have trouble finishing my work

0 1 2

YY18. I am

YY19. I do things that may cause me to lose my job

0 1 2

YY20. I stay away from my

IV. Family

Compared with others as worse, average, or better, how well do you (Check response below):

	Worse	Average	Better	No Contact	
YY21. Get along with your brothers and sisters?					☐ I have no brothers or sisters
YY22. Get along with your mother?					☐ Mother is deceased
YY23. Get along with your father?					☐ Father is deceased

V. Spouse or Partner

If living with spouse or partner, go directly to Y25 on next page.

If not currently living with spouse or partner, ask Y24:

YY24. At any time in the past 6 months, did you live with a spouse or with a partner?

☐ No- please skip to Section VI.

☐ Yes (Answer Y25 - Y31)

For the following statements, please tell me whether each is not true, somewhat or sometimes true, or very true or often true for you:

Circle one for each statement: ANSWER CARD #8

YY25. I get along well with my spouse or partner 0 1 2

YY26. My spouse or partner and I have trouble sharing responsibilities 0 1 2

YY27. I feel satisfied with my spouse or partner 0 1 2

YY28. My spouse or partner and I enjoy similar activities 0 1 2

YY29. My spouse or partner and I disagree about living arrangements, such as where we live 0 1 2

YY31. I like my spouse's or partner's friends 0 1 2

VI. I will read a list of items that describe people. For each item, please tell me 0, 1, or 2 to describe yourself over the past 6 months. I am going to read the questions, but you might want to look on this form to be sure you understand the questions.

Circle one for each statement:

Y1. I act too young for my age 0 1 2

Y2. I make good use of my time 0 1 2

Y3. I argue a lot 0 1 2

Y4. I am too serious 0 1 2

Y5. I act like the opposite sex 0 1 2

Y6. I use drugs (other than alcohol) for nonmedical purposes 0 1 2

Y7. I brag 0 1 2

Y8. I have trouble concentrating or paying attention 0 1 2

Y9. I can't get my mind off certain thoughts 0 1 2

Y10. I am a trouble maker 0 1 2

Y11. I am too dependent on others 0 1 2

Y12. I am too dependent on others 0 1 2

Y13. I feel confused or in a fog 0 1 2

Y15. I am pretty honest	0	1	2
Y17. I daydream a lot	0	1	2
Y19. I try to get a lot of attention	0	1	2
Y21. I destroy things belonging to others	0	1	2
Y22. I worry about my future	0	1	2
Y23. I break rules at school, work, or elsewhere	0	1	2
Y24. I don't get along with others	0	1	2
Y25. I don't get along with other people	0	1	2
Y26. I don't feel guilty after doing something I shouldn't	0	1	2
Y27. I am jealous of others	0	1	2
Y28. I get along badly with my family	0	1	2
Y29. I am afraid of certain animals, situations, or places	0	1	2
Y30. My relations with the opposite sex are poor	0	1	2
Y31. I am afraid I might think or do something bad	0	1	2
Y32. I feel that I have to be perfect	0	1	2
Y33. I feel that no one loves me	0	1	2
Y34. I feel that I am not good enough	0	1	2
Y35. I feel worthless or inferior	0	1	2
Y36. I accidentally get hurt a lot	0	1	2
Y37. I get in many fights	0	1	2
Y38. I get teased a lot	0	1	2
Y39. I hang around with others who get in trouble	0	1	2
Y40. I hear sounds or voices that other people think aren't there	0	1	2
Y41. I am impulsive or act without thinking	0	1	2
Y42. I would rather be alone than with others	0	1	2
Y43. I lie or cheat	0	1	2
Y44. I bite my fingernails	0	1	2
Y45. I am nervous or tense	0	1	2
Y46. Parts of my body twitch or make nervous movements	0	1	2
Y47. I lack self-confidence	0	1	2
Y48. I am not liked by others	0	1	2

Y49. I can do certain things better than other people	0	1	2
Y50. I am too fearful or anxious	0	1	2
Y51. I feel dizzy or lightheaded	0	1	2
Y52. I feel too guilty	0	1	2
Y53. I eat too much	0	1	2
Y54. I feel overfed	0	1	2
Y55. I am overweight	0	1	2
Y56. Physical problems without known medical cause	0	1	2
Y56a. Aches or pains (not stomach or headaches)	0	1	2
Y56b. Headaches	0	1	2
Y56c. Nausea, feel sick	0	1	2
Y56d. Problems with eyes (not if corrected by glasses)	0	1	2
Y56e. Rashes or other skin problems	0	1	2
Y56f. Stomachaches	0	1	2
Y56g. Vomiting, throwing up	0	1	2
Y56h. Heart pounding or racing	0	1	2
Y56i. Numbness or tingling in body parts	0	1	2
Y57. I physically attack people	0	1	2
Y58. I pick my skin or other parts of my body	0	1	2
Y59. I fail to finish things I should do	0	1	2
Y60. There is very little that I enjoy	0	1	2
Y61. My school work or job performance is poor	0	1	2
Y62. I am poorly coordinated or clumsy	0	1	2
Y63. I worry	0	1	2
Y64. I would rather be with younger people than with people of my own age	0	1	2
Y65. I refuse to talk	0	1	2
Y66. I repeat certain acts over and over	0	1	2
Y67. I refuse to eat	0	1	2
Y68. I scream or yell a lot	0	1	2
Y69. I refuse to go to school or work	0	1	2
Y70. I see things that other people think aren't there	0	1	2
Y71. I am too bossy or bossed	0	1	2
Y72. I set fires	0	1	2
Y73. I refuse to go to school or work	0	1	2
Y74. I show off or clown	0	1	2

Y75. I am shy or timid	0	1	2
Y76. My behavior is irresponsible	0	1	2
Y77. I sleep more than most other people during day and/or night	0	1	2
Y78. I have trouble making decisions	0	1	2
Y79. I have a speech problem	0	1	2
Y80. I stand up for my rights	0	1	2
Y81. I worry about my job or school work	0	1	2
Y82. I steal	0	1	2
Y83. I store up too many things I don't need	0	1	2
Y84. I do things other people think are strange	0	1	2
Y85. I have thoughts that other people would think are strange	0	1	2
Y86. I am stubborn, sullen, or irritable	0	1	2
Y87. My moods or feelings change suddenly	0	1	2
Y88. I enjoy being with other people	0	1	2
Y89. I am suspicious	0	1	2
Y90. I drink too much alcohol or get drunk	0	1	2
Y91. I think about killing myself	0	1	2
Y92. I do things that may cause me trouble with the law	0	1	2
Y93. I talk too much	0	1	2
Y94. I tease others a lot	0	1	2
Y95. I have a hot temper	0	1	2
Y96. I think about sex too much	0	1	2
Y97. I threaten to hurt people	0	1	2
Y98. I like to help others	0	1	2
Y99. I am	0	1	2
Y100. I have trouble sleeping	0	1	2
Y101. I have a good imagination	0	1	2
Y102. I don't have much energy	0	1	2
Y103. I am unhappy, sad, or depressed	0	1	2
Y104. I am louder than others	0	1	2
Y105. I like to make others laugh	0	1	2
Y106. I try to be fair to others	0	1	2
Y107. I feel that I can't succeed	0	1	2
Y108. I like to take life easy	0	1	2
Y109. I like to try new things	0	1	2

Y110. I wish I were of the opposite sex 0 1 2

Y111. I keep from getting involved with others 0 1 2

Y112. I worry a lot 0 1 2

Y113. I am too concerned about how I look 0 1 2

Y114. I fail to pay my debts or meet other financial responsibilities 0 1 2

Y115. I have nightmares 0 1 2

Y116. I worry about my relations with the opposite sex 0 1 2

Y148. In the past 6 months, about how many times were you drinking too much?
 Once per day

Y149. In the past 6 months, on how many days were you drunk? _____ days

Y150. In the past 6 months, on how many days did you use any of the following (marijuana, glue, cocaine, and any other drugs)? _____ days

HOME Inventory for Families of Infants and Toddlers®

Place a plus (+) or minus (-) in the box alongside each item if the behavior is observed during the visit or if the parent reports that the conditions or events are characteristic of the home environment. Enter the subtotals and the total on the record sheet.

I. Responsivity

H1.	Parent spontaneously vocalized to child at least twice.	
H2.	Parent responded verbally to child at least twice during visit.	
H3.	Parent tells child name of object or person during visit.	
H4.	Parent responds to child's vocalizations.	
H5.	Parent initiates verbal interchanges with visitor.	
H6.	Parent communicates with child.	
H7.	Parent permits child to engage in "messy" play.	
H8.	Parent initiates play with child.	
H9.	Parent's voice conveys positive feelings toward child.	
H10.	Parent expresses affection toward child.	
H11.	Parent responds positively to praise of child offered by visitor.	

II. Acceptance

H12.	Parent does not shout at child.	
H13.	Parent does not express overt hostility with or toward child.	
H14.	Parent neither slaps nor spansks child during visit.	
H15.	No more than one instance of harsh discipline during visit.	
H16.	Parent does not scold or criticize child during visit.	
H17.	Parent does not use physical punishment during visit.	
H18.	At least ten books are present and visible.	
H19.	Family has a play area.	

III. Organization

H20.	Child care, if used, is provided by one of three regular substitutes.	
H21.	Parent is employed.	
H22.	Child gets out of house at least four times a week.	
H23.	Child has a special place for toys and treasures.	
H24.	Child has a special place for toys and treasures.	
H25.	Child has a special place for toys and treasures.	

IV. Learning materials

H26.	Muscle activity toys or equipment.	
H27.	Push or pull toy.	
H28.	Stroller or walker, kiddie car, scooter, or tricycle.	
H29.	Several play toys for child to play with during day.	
H30.	Cuddly toy or role playing toy.	
H31.	Manipulation toys (blocks, beads, and string, marbles, etc.).	
H32.	Simple eye-hand coordination toys.	
H33.	Complex eye-hand coordination toys.	
H34.	Toys for literature and music.	

V. Involvement

H35.	Parent keeps child in visual range, looks at often.	
H36.	Parent stays together with child during play.	
H37.	Parent consciously encourages developmental advance.	
H38.	Parent intervenes in play.	
H39.	Parent structures child's play periods.	
H40.	Parent provides toys that child has not yet explored new play.	

VI. Variety

H41.	Family provides varied stimulation.	
H42.	Parent read stories to child at least 3 times weekly.	
H43.	Child sees at least 3 different people during week.	
H44.	Family visits relatives or receives visits once a month or so.	
H45.	Child has 3 or more play environments.	

Be sure to complete the following page before doing another interview!!!

Final evaluation of the interview:

I1. Index child was: Circle one:

Present all during interview
 Present for more than 1/2 of interview
 Present for less than 1/2 of interview
 Not present for any of interview

I2. While there, index child was: Circle one:

Awake all during interview
 Awake for more than 1/2 of interview
 Awake for less than 1/2 of interview
 Not awake for any of interview

I3. Other adults were: (Circle one):

Not in the home
 In the home but not in interview (passing through briefly OK)
 In the home and present some for "hovering" nearby
 Near or in the room through most of the interview

I4. Were any other children in the home during your interview?	No	Yes
I5. Were any other adults in the home during the interview?	No	Yes
I6. Did you ever have the feeling that the R was being evasive or less than truthful?	No	Yes
I7. Were there any interruptions of more than a few seconds, such as phone calls, attending to children, or conversations with others?	No	Yes
I8. Any unusual circumstances (describe below)	No	Yes
I9. Did R offer you a drink or snack?	No	Yes

O10. Respondent lives on what floor of dwelling? Floor _____

O11. How many stories inside Respondent's home? _____

Time ended _____

VIPS 6-Month Locating and Tracking Information

Date of 6-month interview: _____ Interviewer initials _____ ID _____

Mom's name: _____ Husband/partner's name _____

Subdivision name _____ Apt complex name _____

Email address: _____ Car tag # _____

Place of employment, address & phone (Circle: self or partner)

Do you think you might move anytime in the next year? _____ Yes _____ No

If Yes: Where do you think you might move? _____

If new address since recruitment interview:

Current address and telephone: _____

{ } _____

_____ house _____ apartment complex _____ apartment in house _____ mobile home

Time at this address _____

Name under which the telephone is listed & relationship _____

If no telephone:

Name and telephone number for a person who can give you a message: _____

If was hard to find for any reason:

Name, address and telephone number of closest relative or friend, in case we have trouble finding you. These people do not have to live in Knoxville.

1. _____ 2. _____

Phone _____ Phone _____

Relationship: _____ Relationship: _____

Appendix F: Missing Variable Data

Indicators of Latent Classes

Eight items were used to determine latent class group membership, the main dependent variable used in most analyses. The eight items were coded from the Six-Month Tracking Logs (Appendix B) using the code form (Appendix D). Seven out of eight variables had no missing data. The one variable with missing data, phone at six-month interview, was unavailable for 11 cases. Data for these 11 cases was imputed using Latent Gold (Statistical Innovations, 2000), the statistical package used to calculate latent classes.

Demographics

There was no missing data for race, age, marital status, education, and employment.

Hospital and Six-Month Income. At the hospital interview four respondents either didn't know or refused to give their income level. During the six-month interview eight respondents either didn't know or refused to give their income level. Only two of these respondents did not have income at either interview. Respondents who had given an income level at one of the two interviews had the same income value assigned to them for the other interview. For the two respondents who never provided an income level, income was imputed using EM with age, education, employment, income, and marital status. The imputed value was rounded to a whole number.

Collateral Variables

The following variables were coded from collateral information located on both the Hospital and Six-Month Locating and Tracking form (Appendix B):

1. Number of collaterals listed at the hospital
2. Type of collateral relationship for the maximum of three collaterals at both interviews
3. Sex of collateral for the maximum of three collaterals at both interviews
4. Any changes in the persons listed as collaterals (collateral change)
5. Known phone and address changes of any of the collaterals (collateral stability)

During the time lapse between the six-month interview and the coding of collateral variables, 21 of the Six-Month Locating and Tracking Information forms were lost. In addition, for one case, both the Hospital Locating and Tracking and the Six-Month Locating and Tracking Information forms were lost. See Table A1 for detailed information related to this problem.

No collateral variables could be coded for the case (521) with all locating and tracking information lost. Coding collateral changes from the hospital interview and the six-month interview was complex for the 21 cases with missing forms. Fortunately, a short telephone interview, containing five substantive questions and location information, was conducted in the Fall 2000 and Spring 2001 (Wave 3). The telephone interviewers maintained a separate log of all telephone efforts to locate and interview respondents. Information from the Six-Month Locating Log, the hospital locating and tracking form, and the new information available from completed Wave 3 telephone interviews was used to completely code collateral changes and collateral stability for 13 of the 21 cases

and to partially code for eight out of the 21 cases. For example, if an attempt to contact a respondent's collateral was recorded at the Wave 3 telephone interview then collateral stability could be coded. At times the interviewers failed to completely fill out collateral information at the six-month interview. In these situations it was assumed that the collaterals were the same at the hospital and six-month interview.

Table F1. Coding Collaterals for Cases with Missing Forms

Id Number	Collateral coding sources
521 *	Unable to code
330	used telephone interview logs to code
335	used telephone interview logs for partial completion
337	used telephone interview logs to code
338	used telephone interview logs to code
340	used telephone interview logs to code
344	used telephone interview logs for partial completion
345	collaterals where listed in the log
346	used telephone interview logs to code
347	used telephone interview logs to code
348	used telephone interview logs for partial completion
352	used telephone interview logs for partial completion
355	used telephone interview logs to code
359	used telephone interview logs to code
370	used telephone interview logs to code
374	used telephone interview logs for partial completion
462	used telephone interview logs to code
465	used telephone interview logs to code
475	used telephone interview logs for partial completion
479	used telephone interview logs for partial completion
485	used telephone interview logs to code
556	used telephone interview logs for partial completion

*Respondent missing both hospital and six-month "Locating and Tracking Information" Form

Stability Variables

Housing Type. Two variables were collected regarding the respondents' types of housing at the second interview. The respondents were asked at the end of the interview, while collecting tracking and locating information, their type of

housing; and the interviewer observed and recorded the housing types prior to beginning the interviews.

The observational variable had more values and tried to differentiate between private and public housing for duplexes and apartments. These two variables were compared and used to fill missing values. For example, respondent values were used in the case of the 18 telephone interviews, when there was no opportunity for the interviewer to observe the housing type. An additional problem was that early copies of the interview forms didn't allow for the interviewer to indicate a mobile home. Thus an additional 12 mobile home residences were differentiated from single-family dwellings using the respondents' responses to second variable: housing type. In the few cases that there were discrepancies between the respondent's response and the interviewer's observation, the respondent's response was used. An exception to this rule was used for respondents who had "duplex" coded. There were nine duplexes indicated by respondents and eight duplexes indicated by the interviewers. There was agreement in only four of the cases. Thus due to the small group size, duplexes were recoded as apartments and the private, public or unsure specification was retained.

Length of Time at Address (Hospital). There were nine cases with missing data at the hospital for the length of time a respondent had lived at their address. The following rule was used. The number of places lived in the last year (hospital) was divided by 12 months and that length of time was substituted. For example, two months was imputed for respondent 282 who indicated living six different places over the last year during the hospital interview).

Length of Time at Address (Six-Month). This item was missing for 26 cases. The addresses for both interviews and the number of places lived in the last six months was available for these 26 cases. These two variables were used to calculate length of time at address. If the respondent had the same address at both interviews, address length from the first interview was added to the time between the two interviews. When the respondent did not have the same address at both interviews, the number of moves in the last year, recorded at the six-month interview was divided by six months and that length of time was substituted. For example, if a woman had lived two places in the last six months she was given three months at current address. Similarly, if the woman had lived in one place in the last six months, six months were added to her hospital response to length of time at current address.

Places lived in the last 6 months (Six-Month). The number of places respondent had lived in the last six months was missing for six cases. Respondents who at different addresses at each interview were given a “two” to indicate having lived at two addresses and respondents who were at the same address for both interviews were given a “one.”

Employment stability. The employment stability variable has the following categories: 1) different jobs, 2) same job, 3) no job at both interviews, 4) no job at hospital, job at second interview and 5) job at the hospital, but no job at the second interview. The following variables were used to determine employment stability:

1. Employment status at the hospital (part-time, full-time, unemployed)
2. Employment status at the six-month interview (recoded into above values)

3. Name and address of employer on the locating form at the hospital interview
4. Name and address of employer on the locating form at the six-month interview

Comparison of these four variables and coding of employment stability was possible for 226 of the 227 cases.

Scale Data

Parental Bonding Inventory (PBI). Two respondents did not complete the PBI at the hospital interview. Two other respondents had missing data for one and two items. EM was used to impute values for the latter two respondents using the 25 items on the PBI.

Young Adult Self Report (YASR). Of the 14 people with missing data on the YASR, 11 had completed abbreviated telephone interviews, one refused and another interview was completed by the baby's grandmother. Only one case had missing data on the somatic subscale. No attempt was made to impute this data.

Appendix G: Tables

Table 1. Empirical Tracking Studies

Authors/Year	Sample size	Retention Rate	Sample	Original Study Purpose	Interview Effort	Groups	Tracking Methods (Empirical)	Other Measures
Aneshensel et al. (1989)	1,023	85.4	Adolescent girls (69% Mexican or Mexican American)	Fertility related attitudes and behaviors	Average number of contacts	None	No empirical detail	Average time to interview
Bale et al. (1984)	107	93.5	Veteran substance abusers	Outcome assessment post inpatient substance abuse treatment	Time to complete (continuous)	None	% Useful of Collaterals Institutional sources	Discriminant function analysis rank ordering study variables to time to locate
Cottler et al. (1996)	479	96.6	Drug users	HIV prevention	Time to complete (ordinal)	Time to complete used to create group	Phone System Field	-contacts by time -tracking methods by time -predictors of 2 time groups
Crider et al. (1971)	320	96.9	Sophomores from 67 Pennsylvania counties	Long term study of adult outcomes		Tracking methods used to create groups	Mail Telephone Community visits Public records	% found by each tracking method
Hartsough et al. (1996)	492	81.0	Community sample	Long-term follow up of ADHD sample (non ADHD control group)	Time to complete (effort expended) and Type of contact (ordinal)	Tracking methods used to create groups	Mail Mail, 1-3 calls Mail, 4 or more calls	Tracking effort by time and interview completion Tracking Efforts with the highest return

Table 1. Continued

Authors/Year	Sample size	Retention Rate	Sample	Original Study Purpose	Interview Effort	Groups	Tracking Methods (Empirical)	Other Measures
MacKenszie et al. 1987	85	93.0	Male alcoholics	Outcome assessment of post treatment behavior	Ordinal scale developed from tracking methods	None	0 Located at address 1 Information from neighbors 2 Contact collaterals 3 Combination 4 Combination plus telephone directory 5 Other sources	Predictors of location difficulty
Pirie et al. 1989	7124 662	92.6 90.7	Minn. Jr. high students Ontario Jr. high students	Smoking prevention Smoking prevention	Sum of sources used	Ordinal groups created by number of sources used	None	None
Robles et al. 1994	88	79.6	Subset of resistant female subjects from larger sample	Effects of prenatal substance use	Sum of contacts	Tracking methods used to create groups	None	-contacts by completion status -comparisons between resistant (88) non resistant (585)
Rumptz et al. (1991) Sullivan et al. (1996)	139 141	94.0 at 12 month 97.0 at 24 month	Female survivors of spousal abuse	Outcome assessments post shelter	Ordinal scale developed from tracking methods	Easy and difficult to locate grouped by those requiring only office based strategies	Ordinal Groups -Phone 1x -House 1x -Letter sent -collateral phone -Collateral visit -Collateral letter	Comparisons between easy and difficult to locate and study variables
Walton et al. 1998	96	97.0	Substance abusers	Outcome assessment of relapse prevention program	Sum of contacts	Low and high contact groups	None	-comparisons of contact difficulty with reuse and other study variables

Table 2. Personal Characteristics of Research Respondents not Reinterviewed at Follow-Up in Studies with Attrition, Retention or Tracking Emphasis

Authors/ topic	Sample	Marital Status	Employment	Income	Education	Race	Mental Health	Substance Abuse
Agosti et al. (1996) Attrition	Cocaine users in intervention study		No difference		Intravenous using and African American dropouts had lower education	African American or Hispanic		
Aneshensel et al. (1989) Panel participation	Adolescent females survey of sexual behavior	Adolescents with single or unmarried parents	No difference	No difference	Low parental education	Mexican American		
Bale et al. (1984) Tracking	Male veteran substance users post treatment	Living alone	employed					Previous treatment and longer treatment Moderate drinking
Blumenthal et al. (1995) Recruitment and Retention	African American women in Cancer Prevention Intervention	Single	unemployed	Lower income	Less Education	Sample 100% African American		
Cohen et al. (1993) Tracking	Homeless	Not married and living alone				No difference		Substance abuse problems
*Cottler et al. (1996) Retention	Drug using and HIV prevention Intervention		unemployed		No difference	No difference	No difference	
Fischer et al. (2001) Attrition	Psychiatric Patients	Not married	No difference	Lower income		Minorities	Severe psychiatric impairment and more hospitalization	Substance abuse

Table 2. Continued

Authors/ topic	Sample	Marital Status	Employment	Income	Education	Race	Mental Health	Substance Abuse
Fitzgerald et al. A (1998) Attrition	Michigan Panel Study of Income Dynamics (PSID)	Not married, recently divorced	Unemployed	Lower earnings and unstable earnings	Lower education	Minorities		
Fitzgerald et al. B (1998) Attrition	Michigan Panel Study of Income Dynamics (PSID)	divorced/separated	unemployed	Less family income	Less educated families	Minorities ("other race" higher than African American)		
Hartsough et al. (1996) Tracking	ADHD/control group long term outcome research						More likely to have ADHD than be in control group	
Juntenen et al. (1999) Tracking	HIV high risk substance abuse users	No difference	No difference	No difference	No difference	No difference		No difference
Katz et al. (2001) Retention	African American low income mothers in a parenting intervention	No difference	No difference	No difference (Medicaid enrollment)	No difference	99% of sample African American		
Mackenzie et al. (1987) Retention	Alcoholic men post inpatient treatment N=85	Not married and living alone						
Martinez-Ebers (1997) Retention	Low income Parents of alternative school children	Single heads of households	FT employed	No difference	No difference	Non white		

Table 2. Continued

Authors/ topic	Sample	Marital Status	Employment	Income	Education	Race	Mental Health	Substance Abuse
*Robles et al. (1994) Retention	Pregnant women participating in prenatal clinic N=829	No difference	No difference	No difference	No difference	No difference	Higher levels of depression Higher numbers of life events. Less social support	No difference
Rumptz et al. (1991) Tracking	Battered women post shelter intervention N=133			Less likely to have access to cars	Less education	Non white	Higher levels of depression More psychological and physical abuse	
Sullivan et al. (1996) Retention								
Snow et al. (1992) Attrition	Adolescent substance abuse prevention study N=1,117				Student sample			Substance use (tobacco, alcohol, marijuana and hard drugs)
van de Berg & Lindeboom (1998) Attrition	Netherlands labor panel survey	Not married	More un-employment episodes, shorter employment spells, lower job skills		No difference	Dutch sample		
*Walton et al. (1998) Tracking	Substance abusing men post tx.	Not married						Substance reuse

In this table a notation of "no difference" implies that a statistical evaluation was completed and there were no differences between those interviewed and those not interviewed. A blank space indicates there was no information or no statistical evaluation about this personal characteristic.

Table 3. Indicator Variables for Interview and Tracking Effort (ITE) Classes

Item	Coding
Respondent had a phone at recruitment interview	0 yes 1 no
Respondent had a phone at the 6 month interview	0 yes 1 no
Respondent had the same phone at both interviews	0 yes same phone 1 no different phone numbers
Respondent had the same address at both interviews	0 yes same address 1 no different addresses
Total calls between project and respondent	Count variable ranging from 0 to 26 calls
Number of no shows for interview appointments	Count variable ranging from 0 to 3 no shows
Number of collaterals contacted to locate and interview respondent	Count variable ranging from 0 to 9 collaterals
Number of unscheduled visits to respondents or collaterals homes to get information or complete the interview	Count variable ranging from 0 to 9 unscheduled visits

Table 4. Demographic Variables

Variable	Coding
Marital status (5 category)	Married and living with husband* Married but not living with husband Divorced, not living with a partner Unmarried, and living with a partner Unmarried, not living with a partner
Marital status (4 category)	Separated or divorced, not living with a partner Unmarried, and living with a partner Unmarried, not living with a partner Married and living with husband*
Employment (3 category)	Unemployed* Part-time Full-time
Employment (2 category)	Working part-time or full-time Unemployed*
Education	Continuous variable ranging from 8 grade to 5 + years of college
Age	Continuous variable ranging from 14 to 42
Income	(In some analyses income is used a continuous measure.) < 5,000 5,000 – 9,999 10,000 – 14,999 15,000 – 19,999 20,000 – 24,999 25,000 – 34,999 35,000 – 49,999 > 50,000
Race	African-American Caucasian
YASR Scales	Anxiety/depression Withdrawal Somaticism Thought Attention Intrusion Aggressive Delinquent

Table 4. Continued

Variable	Coding
	Other problems
	Internalizing
	Externalizing
	Total problems
	Days drunk (count variable)
	Day using substances (count variable)
*Reference group	

Table 5. Independent Variables

Variable	Coding
Mother/grandmother collateral	0 No mother or grandmother listed 1 Mother or grandmother listed as collateral*
YASR Family	Mean of 3 items
YASR Friends	Sum of 4 items ranging from 0 to 9
YASR Spouse	Sum of 7 items ranging from -5 to 8
PBI Care	Sum of 12 items ranging from 0 to 36
PBI Overprotection	Sum of 213 items ranging from 0 to 38
Number of collaterals	Count ranging from 0 to 3
Employment stability	0 Unstable employment 1 Same jobs 2 Unemployed both interviews*
Marital status stability	0 No change in partner status 1 Partner status changed from recruitment to 6M *
Collateral stability	0 Phone or address used and collateral was available 1 Phone disconnected or letter returned 2 Unknown*
Places lived in last year (recruitment)	Count ranging from 0 to 9
Places lived in last 6M	Count variable ranging from 0 to 6
Homeless or shelter experience	0 No homelessness or shelter experience 1 experienced homelessness or lived in shelter at recruitment or 6M interview
Housing type	5 Apartment, private 6 Apartment, public 7 Apartment, not sure 8 Mobile home 10 Single family home*
Sum of instability factors	Count ranging from 0 to 6

*Reference group

Table 6. Research Questions, Hypotheses and Measurement

Research Question	Hypotheses	Measurement
<u>Research question one:</u> <u>Interview/Tracking</u> <u>Effort</u> What are the psychometric properties of the interview/tracking effort variable?		Interview/Tracking Effort Scale (ITES) 1) Did the respondent have a telephone at the recruitment interview? 2) Did the respondent have a telephone at the six-month interview? 3) Did the respondent have the same telephone at the recruitment and six-month interviews? 4) Did the respondent have the same address at telephone interviews? 5) How many telephone calls were made to complete the interview? This variable includes all telephone attempts made by interviewers to respondents and their collaterals. This also includes calls that the respondent initiated to the project. 6) How many times did the respondent fail to keep a scheduled interview appointment? 7) How many collaterals contacts were made while trying to establish contact with respondent? This variable is a count of all attempts and may include multiple attempts to 1 or more collaterals 8) How many "in person" attempts were made to contact respondent or their collaterals? This variable includes attempts made to find respondents by talking to apartment managers or collaterals (family, friends, neighbors, employers) supplied during the recruitment interview.
<u>Research question two:</u> <u>Demographics and</u> <u>Mental Health</u> What demographic and mental health variables predict interview/tracking effort class assignment?	<u>Hypothesis 2a: Marital status and employment.</u> There is an interaction between marital status and employment. Specifically employed married and single mothers and unemployed single mothers are more difficult to interview. Unemployed married women are the easiest to interview.	ITES Marital status Employment status

Table 6. Continued

Research Question	Hypotheses	Measurement
<u>Research question three: Social support and collaterals.</u> Are respondents who have positive relationships with their collaterals easier to interview and track and does this differ by race? Are there differences in interview/tracking efforts for respondents based on type of collateral listed? Does inadequate recontact information influence tracking difficulty?	<u>Hypothesis 2b: Education.</u> Women who have higher levels of education are easier to interview.	ITES Educational Status
	<u>Hypothesis 2c: Income.</u> Poor women are more difficult to interview than wealthy women.	ITES Income
	<u>Hypotheses 2d: Race and income.</u> Both poor and wealthy African-American women require more interview/tracking efforts than Caucasian women. The negative relationship between income and interview/tracking effort is weaker for African-American women.	ITES Race Income
	<u>Hypothesis 2e: Mental health and substance abuse.</u> Women who have mental health problems and those who have substance abuse problems are more difficult to interview. Women who have both substance abuse and mental health problems are the most difficult to interview.	ITES YASR
	<u>Hypothesis 3a.</u> Respondents who list a mother or grandmother are easier to interview.	ITES Collateral relationship at time 1
	<u>Hypothesis 3b.</u> Respondents with positive relationships with family, friends, and their spouse are easier to interview.	ITES YASR

Table 6. Continued

Research Question	Hypotheses	Measurement
<u>Research question four: Stability.</u> What influence do stability indicators have on efforts to interview? Is there one stability indicator that is more important in predicting efforts to interview?	<u>Hypothesis 3c.</u> Respondents with positive bonding with their primary caregiver are easier to interview. Specifically respondents with higher scores on the PBI's "care" subscale have lower interview/tracking effort scores and respondents with lower scores on the PBI's "overprotection" subscale have lower interview/tracking effort scores.	ITES PBI
	<u>Hypothesis 3d.</u> Respondents with fewer collaterals listed in the recruitment interview (time 1) are more difficult to interview.	ITES # of collaterals
	<u>Hypothesis 4a.</u> Women who have employment stability are easier to interview.	ITES Employment stability calculated from recruitment and follow-up interviews
	<u>Hypothesis 4b.</u> Women who have relationship stability are easier to interview. Women who report the same collaterals at time 1 and time 2 are easier to interview.	ITES Relationship stability calculated from recruitment and follow-up interviews
	<u>Hypothesis 4c.</u> Women who have listed stable collaterals are easier to interview	ITES Collateral stability calculated from recruitment and follow-up interviews
	<u>Hypothesis 4d.</u> Women who have moved more than two times before or after delivery are more difficult to interview.	ITES Number of moves at recruitment Number of moves at follow-up
	<u>Hypothesis 4e.</u> Women who own homes are easier to interview than women who live in other housing types.	ITES Housing type at time 2
	<u>Hypothesis 4f.</u> Women with more instability indicators (employment, marital, collateral, shelter experience, residential) are more difficult to interview.	ITES Addition of instability indicators

Table 7. Measure Reliability

Scale	Standardized Alpha	Total Items (Item Number or Description)
ITES	.658	8 (Table 3)
YASR		
Total problems	.932	125 (YA1-YA116)
Internalizing	.879	24 (anxious-depressed and withdrawn subscales)
Externalizing	.823	28 (intrusive, aggressive behavior, and delinquent behavior subscales)
Family	.470	4 (YY1-YY4)
Friends	.258	3 (YY21-YY23)
Spouse	.035	7 (YY25-YY31)
PBI		
Care	.873	12
Overprotection	.792	13

Table 8. Correlations Among Latent Class Indicator Variables

Indicator variable	1	2	3	4	5	6	7	8
1. Unscheduled visit								
2. No show total	.28 **							
3. call total	.13*	.37**						
4. collateral contacts	.38**	.15*	.43**					
5. phone at recruitment +	.22**	-.08	-.10	.27**				
6. phone at 6M+	.43**	-.06	-.05	.30**	.25**			
7. same addresses+	.23**	.10	.28**	.42**	.05	.21**		
8. same phone+	.39**	.13*	.20**	.57**	.36**	.43**	.60**	

* statistical significant at p = .05 level

** statistical significant at p = .01 level

+ Spearman's rho

Table 9. Fit Indices for Latent Class Model with Interview/Tracking Effort Indicators

Model	Indicators	Clusters	BIC (LL)	BIC (L ²)	L ²	Classification Error	Entropy R ²	R ²	Class N's
A	8	1	4356.39	-1583367.3	1975.48	.00	1.0	1.0	246
B	8	2	3937.95	-1583785.8	1507.48	.05	.79	.82	170, 76
C*	8	3	3820.84	-1583902.8	1346.34	.067	.82	.83	149, 54, 43
D	8	4	3790.87	-1583932.8	1261.32	.111	.78	.77	90, 69, 47, 40

*Model C is the final model used to classify respondents into three interview/tracking effort classes.

Table 10. Significant Bivariate Residuals in Model C Prior to Estimation

	Same phone	Same address	Phone at recruitment	Phone at 6M
Same phone		6.28	2.67	3.15
Same address			5.78	0.40
Phone at recruitment				0.85
Phone at 6M				

Table 11. ANOVA and X^2 Comparisons between Interview/Tracking Classes and Interview/Tracking Effort Indicators

		Interview/Tracking Effort Classes			Comparing 3 Classes	
		1 n= 149	2 n = 54	3 n=43		
Indicator Variable		N % or M(SD)	N % or M(SD)	N % or M(SD)	F	X^2 p
1. Unscheduled visit		.01 (1.38)	1.06 (1.60)	2.12 (1.98)	65.33	.00
2. No show total		.09 (.29)	.63 (.94)	.09 (.37)	22.66	.00
3. Call total		4.19 (2.45)	13.09 (4.50)	3.49 (2.17)	194.95	.00
4. Collateral contacts		.66 (.80)	2.78 (1.76)	2.19 (1.47)	73.01	.00
5. Phone at recruitment	no	11 7.5%	10 18.5%	16 37.2%		23.88 .00
6. Phone at 6M	no	10 6.7%	8 16.7%	27 71.1%		81.20 .00
7. Same addresses	no	52 34.9%	38 70.4%	23 53.5%		21.28 .00
8. Same phone	no	58 38.9%	45 83.3%	40 83.0%		58.18 .00

Table 12. Demographic Characteristics of the Recruitment Sample, the Six-Month Sample and the Three Interview/Tracking Effort Classes

			Interview/Tracking Effort Classes		
	Sample N = 246	6M Sample n = 227	1 n = 149	2 n = 54	3 n = 43
Characteristic	N % or M(SD)	N % or M(SD)	N % or M(SD)	N % or M(SD)	N % or M(SD)
Marital Status					
Married	87 35.4%	87 38.3%	66 44.3%	12 22.2%	9 20.9%
Separated	10 4.1%	9 4.0%	6 4.0%	3 5.6%	1 2.3%
Divorced, living alone	6 2.4%	3 1.3%	1 .7%	3 5.6%	2 4.7%
Divorced, living with partner		2 .9%			
Living with partner	58 23.6%	49 21.6%	34 22.8%	16 29.6%	8 18.6%
Living alone	85 34.6%	77 33.9%	42 28.2%	20 37.0%	23 53.5%
Employment					
Unemployed	174 70.7%	128 56.4%	101 67.8%	35 64.8%	38 88.4%
Part-time	25 10.2%	37 16.3%	17 11.4%	5 9.3%	3 7.0%
Full-time	47 19.1%	62 27.3%	31 20.8%	14 25.9%	2 4.7%
Income	3.71 (2.42)	3.84 (1.50)	4.20 (2.47)	3.37 (2.40)	2.42 (1.58)
< 5,000	71 28.9%	60 26.4%	32 21.5%	19 35.2%	20 46.5%
5,000 - 9,999	27 11.0%	31 13.7%	16 10.7%	7 13.0%	4 9.3%
10,000 - 14,999	33 13.4%	26 11.5%	20 13.4%	6 11.1%	7 16.3%
15,000 - 19,999	23 9.3%	15 6.6%	13 8.7%	4 7.4%	6 14.0%
20,000 - 24,999	20 8.1%	24 10.6%	11 7.4%	4 7.4%	5 11.6%
25,000 - 34,999	29 11.8%	28 12.3%	22 14.8%	6 11.1%	1 2.3%
35,000 - 49,999	22 8.9%	19 9.4%	17 11.4%	5 9.3%	0
> 50,000	21 8.5%	24 10.6%	18 12.1%	3 5.6%	0

Table 12. Continued

			Interview/Tracking Effort Classes		
	Sample N = 246	6M Sample n = 227	1 n = 149	2 n = 54	3 n = 43
Characteristic	N % or M(SD)	N % or M(SD)	N % or M(SD)	N % or M(SD)	N % or M(SD)
Race					
Caucasian	143 48.0%		96 64.4%	30 55.6%	17 39.5%
African American	103 41.9%		53 35.6%	24 44.4%	26 60.5%
Education					
< 11 grade	78 31.7%		39 26.2%	17 31.5%	22 51.2%
GED	17 6.9%		8 5.4%	6 11.1%	10 23.3%
High School	50 20.3%		31 20.8%	9 16.7%	3 7.0%
Vocational	31 12.6%		17 11.4%	9 16.7%	5 11.6%
<4 yrs. College	38 15.4%		27 18.1%	10 18.5%	1 2.3%
≥4 yrs. College	32 13.0%		27 18.1%	3 5.6%	2 4.7%
	14.0 (4.1)		14.7 (4.4)	13.7 (3.5)	12.1 (3.0)
Age					
14-18	50 20.3%		28 18.8%	10 18.5%	12 27.9%
19-23	94 38.4%		50 33.6%	22 40.7%	22 51.2%
24-28	53 21.5%		35 23.5%	12 22.2%	6 14.0%
28-34	30 12.2%		24 16.1%	4 7.4%	2 4.7%
35-42	19 7.7%		12 8.1%	6 11.1%	6 11.1%
	24.0 (6.0)		24.6 (6.2)	24.0 (6.3)	21.8 (4.5)
Completed Interview	246	227	147 (98.7)	44 (81.5)	36 (83.7)

Table 13. YASR Subscales

		Interview/Tracking Effort Classes		
	Sample n= 214*	1 n=139	2 n =39	3 n=36
YASR Subscales	M(SD)	M(SD)	M(SD)	M(SD)
Anxiety/ Depression	8.0 (6.0)	7.8 (5.9)	9.1 (6.5)	7.3 (5.7)
Withdrawal	2.9 (2.2)	2.83 (2.2)	2.8 (2.0)	3.2 (2.5)
Somaticism	4.64 (3.5)	4.6 (3.7)	4.6 (3.1)	4.8 (3.4)
Thought disorder	.54 (.96)	.54 (1.0)	.59 (.85)	.50 (.81)
Attention	2.6 (2.0)	2.6 (2.0)	2.7 (2.0)	2.6 (1.9)
Intrusion	2.5 (2.1)	2.4 (2.1)	3.0 (2.3)	2.1 (1.9)
Aggression	4.2 (.24)	4.0 (3.4)	5.0 (3.8)	4.3 (3.8)
Delinquency	.8 (1.2)	.82 (1.3)	.97 (1.4)	.58 (.90)
Other problems	15.2 (7.5)	15.0 (7.4)	16.4 (7.4)	15.3 (8.0)
Raw internalizing	10.9 (7.4)	10.6 (7.4)	11.9 (7.5)	10.5 (7.4)
Raw externalizing	7.5 (5.6)	7.3 (5.6)	8.9 (6.2)	6.9 (5.0)
Total Problems	41.5 (22.9)	40.7 (22.9)	45.1 (22.7)	40.6 (23.5)
Days Drinking	.5 (1.5)	.49 (1.3)	.68 (1.7)	.58 (1.7)
Days Drug Using	2.9 (19.1)	3.6 (22.3)	.28 (1.6)	3.1 (16.0)

* Four teen of the 227respondents did not complete the YASR at the 6M interview.

Table 14. Effects of Multinomial Logistic Regression of Interview/Tracking Effort on Demographic Variables

Variable	χ^2	p	Pseudo R^2	Interview/ Tracking Effort Classes					
				Class 2*			Class 3*		
				Exp (B)	Wald	p	Exp (B)	Wald	p
1. Marital Status (4 categories)	18.49	.01	.07						
Married**									
Separated/ Divorced				4.71	5.89	.01	3.14	2.18	.14
Living with partner				2.59	4.75	.03	1.72	1.06	.30
Living alone				2.52	5.38	.02	4.02	9.99	.00
2. Employment (2 categories)	9.19	.01	.04						
Unemployed**									
Part-time/Full-time				1.14	1.58	.69	0.28	6.42	.01
3. Hypothesis 2a: Employment and marital status interaction	29.19	.01	.11						
Employed and separated/ divorced				16.29	5.18	.02	.00		
Unemployed and Separated /divorced				2.71	1.49	.22	2.38	1.15	.28
Employed and living with partner				16.29	3.20	.07	0.48	0.44	.51
Unemployed and living with partner				2.26	2.14	.14	1.38	0.32	.57
Employed and living alone				3.02	2.54	.11	1.58	0.35	.55
Unemployed and living alone				2.47	3.06	.08	2.88	4.83	.03
Working and married				0.97	0.00	.96	0.17	2.65	.10
Unemployed and married**									
4. Hypothesis 2b: Education	15.15	.00	.06	0.94	2.35	.12	0.83	11.65	.00

Table 14. Continued

Variable	χ^2	p	Pseudo R ²	Interview/ Tracking Effort Classes					
				Class 2*			Class 3*		
				Exp (B)	Wald	p	Exp (B)	Wald	p
5. Hypothesis 2c: Income	21.28	.00	.08		4.57	.03	0.70	16.03	.00
6. Race	8.62	.01	.03						
Caucasian**									
African-American				1.45	1.32	.25	2.77	8.20	.00
7. Hypothesis 2d: Race and Income Interaction	22.74	.00	.09						
African-American and income				0.88	1.40	.24	0.78	3.77	.05
Caucasian and income				0.86	4.56	.03	0.68	16.03	.00
8. Age	8.37	.01	.03	0.98	0.40	.53	0.91	7.14	.01
9. All Demographics	43.02	.00	.16						
Marital Status									
Married**									
Separated				2.12	0.82	.37	0.38	0.82	.37
Divorced				10.35	3.19	.07	10.29	2.71	.10
Living with partner				1.98	1.78	.18	0.64	0.52	.47
Living alone				1.97	1.45	.23	1.03	0.00	.96
Employment									
Unemployed**									
Part-time				1.04	0.00	.94	0.56	0.72	.40
Full-time				1.93	1.82	.18	0.42	1.01	.32
Race									
Caucasian**									
African-American				1.00	0.00	.99	1.68	1.30	.26
Age				1.00	0.00	.97	0.98	0.28	.60
Grade				0.96	0.36	.55	0.91	1.85	.17
Income				0.93	0.57	.45	0.82	3.30	.07

Table 14. Continued

Variable	χ^2	p	Pseudo R ²	Interview/ Tracking Effort Classes					
				Class 2*			Class 3*		
				Exp (B)	Wald	p	Exp (B)	Wald	p
10. Hypothesis 2e: Mental Health and Substances Abuse	15.35	.64	.07						
Anxiety				1.04	0.79	.37	0.93	1.89	.17
Depression									
Withdrawal				0.87	1.38	.24	1.14	1.23	.27
Somaticism				0.93	1.13	.29	1.00	0.00	.97
Thought disorder				0.98	0.01	.92	0.91	0.16	.67
Attention				0.86	1.30	.25	1.08	0.26	.61
Intrusion				1.08	0.56	.45	0.90	0.88	.35
Aggression				1.10	1.30	.25	1.07	0.53	.45
Delinquency				1.04	0.05	.82	0.68	2.60	.11
Other problems				1.03	0.33	.57	1.04	0.57	.45
11. YASR scales	4.23	.64	.02						
Raw				1.04	0.32	.57	0.97	0.26	.61
internalizing									
Raw				1.09	1.82	.18	0.95	0.55	.46
externalizing									
Total Problems				0.98	0.54	.46	1.02	0.46	.50
12. Days Drinking	0.54	.76	.00	1.09	0.53	.47	1.05	0.14	.71
13. Days Drug Using	2.00	.37	.01	0.95	0.39	.53	1.00	0.02	.90

*Class 2 and 3 are compared to class 1.

** Reference group for that variable

+Pseudo R² used is Cox and Snell

Table 15. Frequency Comparisons of Marital Status and Employment by Interview/Tracking Effort Groups

	Class 1		Class 2		Class 3		Total
	Working N (%) within class)	Unemployed	Working	unemployed	Working	unemploy ed	
Married	28(18.8)	38(25.5)	5(9.3)	7(13.0)	1(2.3)	8(18.6)	
Divorced/ separated	1(0.7)	6 (4.0)	3(5.6)	3(5.6)	0	3(7.0)	
Living with partner	10(6.7)	24(16.1)	6(11.1)	10 (18.5)	1(2.3)	7(16.3)	
Living alone	9(6.0)	33(22.1)	5(9.3)	15(27.8)	3(7.0)	20(46.5)	
Total	48(32.2)	101(67.8)	19(35.2)	35(64.8)	5 (11.6)	38(88.4)	246

Table 16. ANOVA and X^2 Comparisons between Interview/Tracking Effort Classes and Collateral Variables for Research Question Three

	Sample (n=246)	Interview/Tracking Effort Classes					
		1 n= 149	2 n = 54	3 n=43	Comparing 3 Classes		
	N % or M(SD)	N % or M(SD)	N % or M(SD)	N % or M(SD)	F (df)	X^2 (df)	p
Mother or Grandmother collateral	137 55.7%	85 57.0%	33 61.1%	19 44.2%		3.1 (2)	.22
YASR relationship Family(mean)	n=217 1.34 (1.34)	n=141 1.40 (.47)	n=42 1.24 (.50)	n=34 1.25 (.49)	2.59 (2, 214)		.07
Friends	n=220 6.53 (2.0)	n=142 6.54 (2.11)	n=42 6.67 (1.98)	n=36 6.36 (1.66)	0.22 (2, 217)		.80
Spouse	n=160 4.15 (3.57)	n=113 4.35 (2.96)	n=27 3.41 (3.41)	n=20 4.00 (2.86)	1.98 (2, 157)		.34
PBI** Care	29.34 (7.98)	n=148 30.32 (7.19)	n=53 27.14 (9.91)	n=43 28.70 (7.47)	3.34 (2, 241)		.04
Overprotection	16.39 (7.66)	n=148 15.96 (7.85)	n=53 17.02 (8.19)	n=43 17.07 (6.24)	0.58 (2, 241)		.56
Number of Collaterals	1.70 (.72)	1.64 (.72)	1.93 (.67)	1.60 (.72)	3.59 (2, 243)		.03
None	8 3.3%	5 3.4%	0	3 7.0%			
One	87 35.4%	59 39.6%	14 25.9%	14 32.6%			
Two	122 49.6%	69 46.3%	30 55.6%	23 53.5%			
Three	29 11.8%	16 10.7%	10 18.5%	3 7.0%			

*28 (11.4%) missing **2 (.8%) missing

Table 17. Effects of Multinomial Logistic Regression of Interview/Tracking Effort with Research Question Three Variables

Variable	χ^2	p	Pseudo R^2	Interview/ Tracking Effort Classes					
				Class 2*			Class 3*		
				Exp (B)	Wald	p	Exp (B)	Wald	p
Hypothesis 3a									
No mother or grandmother collateral*	3.05	.22	.01	0.84	0.27	.60	2.20	1.68	.14
Hypothesis 3b									
YASR Relationship									
Family(mean)	5.16	.08	.02	0.50	3.57	.06	0.52	2.62	.11
Friends	0.48	.80	.00	1.04	0.14	.71	0.96	0.21	.64
Spouse n=160	2.12	.35	.01	0.91	2.11	.15	0.96	0.24	.62
Hypothesis 3c									
PBI									
Care	6.31	.04	.03	0.95	6.08	.01	0.97	1.58	.21
Overprotection	1.15	.56	.00	1.02	0.75	.39	1.02	0.70	.40
Hypothesis 3d									
Number of collaterals	7.17	.03	.03	1.77	6.02	.01	0.92	0.11	.75

*reference group are women who listed a grandmother as a collateral

**optimal parenting is the reference group

Table 18. ANOVA and X^2 Comparisons between Interview/Tracking Effort Classes and Stability Variables

Variable	Sample (n= 246) N % or M(SD)	Interview/Tracking Effort Classes			Comparing 3 Classes		
		1 n= 149 N % or M(SD)	2 n = 54 N % or M(SD)	3 n=43 N % or M(SD)	F (df)	X^2 (df)	p
Employ. Stability*					1.79 (2, 242)	11.65 (4)	.02
Same job	32 13%	22 14.8%	9 16.7%	1 2.3%			
Different jobs, no job 1, job 2 or job 1 and no job 2	82 33.3%	50 33.6%	21 38.9%	11 25.6%			
Always unemployed	112 45.5%	74 49.7%	14 25.9%	24 55.8%			
Marital stability**						1.32 (2)	.52
Change in marital status	53 21.5%	33 22.1%	13 24.1%	7 16.3%			
Collateral stability						52.94 (4)	.00
Stable	113 45.9%	59 39.6%	35 64.8%	19 44.2%			
Unstable	41 16.7%	11 7.4%	14 25.9%	16 37.2%			
Unknown	90 36.6%	78 52.3	5 9.3%	7 16.3%			
Housing Stability							
Number of places lived at recruitment	1.76 (1.09)	1.67 (0.91)	2 (1.21)	1.79 (1.46)			.17
Number of places lived at 6M	1.4 (.71)	1.31 (.61)	1.81 (.97)	1.38 (.60)	8.34 (2, 218)		.00
Homeless/Shelter Experience	27 11.0%	11 7.4%	11 20.4%	5 13.2%		9.20 (2)	.01
Housing Type						17.51 (8)	.02
Single family	111 45.1%	82 55.0%	20 37.0%	9 20.9%			
Apartment, private	18 7.3%	11 7.4%	3 5.6%	4 9.3%			
Apartment, public	50 20.3%	25 16.8%	9 16.7%	16 37.2%			
Apartment, not sure	20 8.1%	11 7.4%	5 9.3%	4 9.3%			
Mobile home	27 11.0%	18 12.1%	6 11.1%	3 7.0%			

Table 18. Continued

		Interview/Tracking Effort Classes					
	Sample (n= 246)	1 n= 149	2 n = 54	3 n=43	Comparing 3 Classes		
Variable	N % or M(SD)	N % or M(SD)	N % or M(SD)	N % or M(SD)	F (df)	χ^2 (df)	p
							.001
Sum of Instability	1.63	1.44	2.17	1.60	7.83		
Factors (6 items)	(1.18)	(1.12)	(1.34)	(.98)	(2, 243)		

*8.1% (20 cases) had missing data for this variable

**7.7% (19cases) had missing data for this variable

Table 19. Effects of Multinomial Logistic Regression of Interview/Tracking Effort with Research Question Four Variables

				Interview/ Tracking Effort Classes					
				Class 2*			Class 3*		
Variable	χ^2 (df)	p	Pseudo R ² +	Exp (B)	Wald	p	Exp (B)	Wald	p
Hypothesis 4a	13.22	.01	.06						
Employment stability	(4)								
Always									
Unemployed									
Same job				2.16	2.46	.12	0.14	3.51	.06
Different jobs; no job1 job2; job 1 and no job 2				2.22	3.51	.04	0.68	0.91	.34
Hypothesis 4b	1.28	.53	.01						
Relationship stability	(2)								
No change in relationship				0.69	0.93	.34	1.20	0.15	.70
Change in relationship									
Hypothesis 4c	56.07	.00	.20						
Collateral stability	(4)								
Stable				9.25	19.17	.00	3.59	7.25	.01
Unstable				19.85	23.81	.00	16.81	25.10	.00
Unknown*									
Hypothesis 4d									
Housing stability									
Number of places lived at recruitment	3.34	.19	.01	1.29	3.34	.07	1.12	0.48	.49
	(2)								
Number of places lived at 6M	13.61	.00	.06	2.35	11.78	.00	1.21	0.36	.55
	(2)								
Homeless/ Shelter Experience	8.17	.02	.04	3.88	8.41	.00	1.82	1.09	.30
	(2)								
Hypothesis 4e	16.66	.03	.07						
Housing Type	(8)								
Single family									
Apartment, private				1.12	0.03	.87	3.31	3.09	.08
Apartment, public				1.48	0.71	.40	5.83	13.77	.00
Apartment, not sure				1.86	1.10	.30	3.31	3.09	.08
Mobile home				1.37	0.34	.56	1.52	0.34	.56

Table 19. Continued

				Interview/ Tracking Effort Classes					
				Class 2*			Class 3*		
Variable	χ^2 (df)	p	Pseudo R ² +	Exp (B)	Wald	p	Exp (B)	Wald	p
Hypothesis 4f									
Sum of Instability Factors (6 items)	14.82 (2)	.00	.06	1.69	13.84	.00	1.13	0.69	.41

Appendix H: Figures

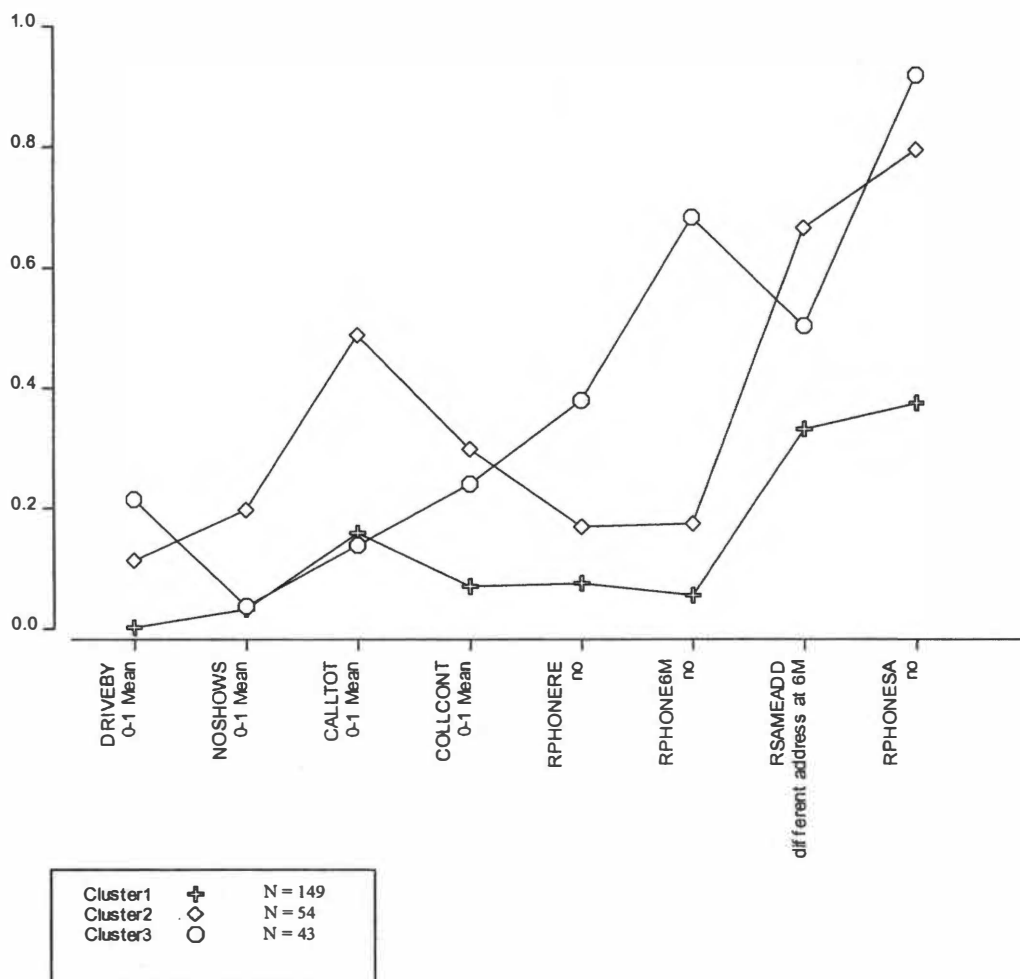


Figure 1. Comparison of Conditional Membership Probabilities for the Three Tracking Groups on Tracking Indicator Variables (Model C)

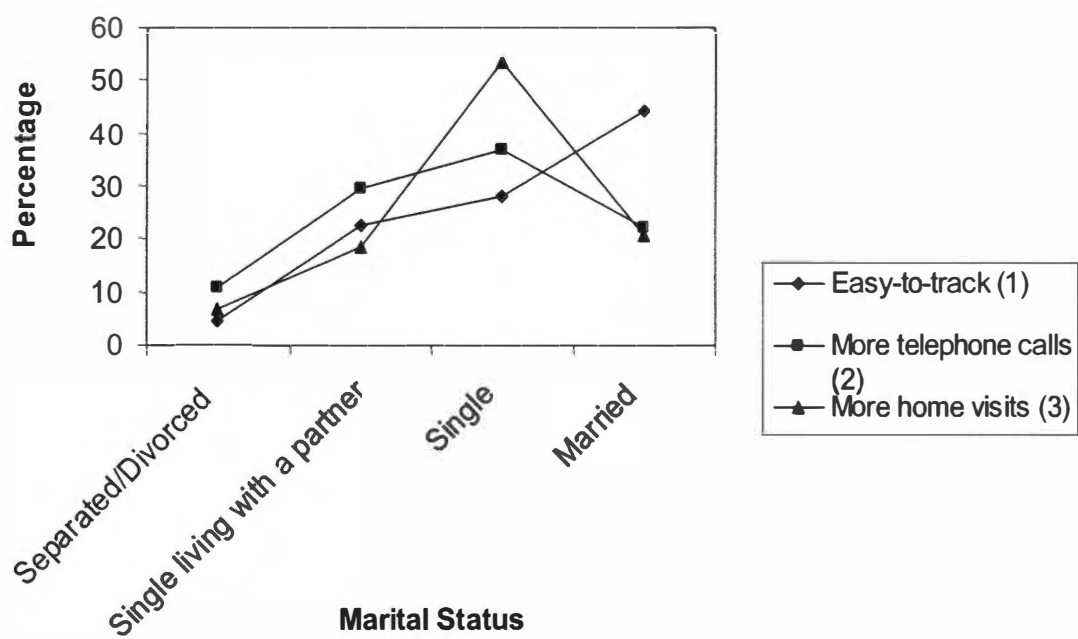


Figure 2. Percentage Comparisons of Mothers' Marital Status by Interview/Tracking Effort Groups

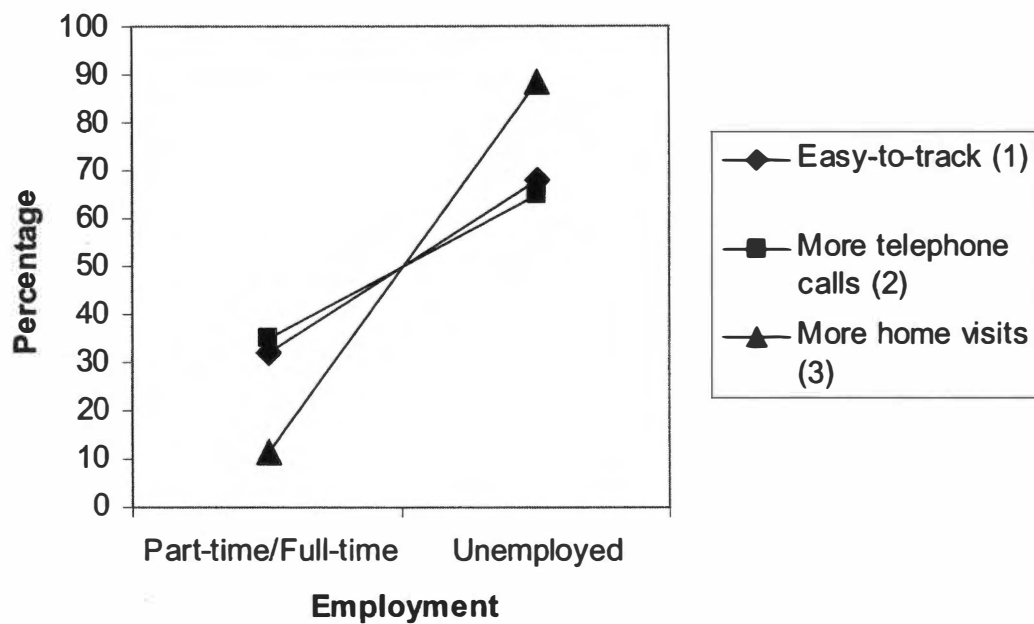


Figure 3. Comparison of the Percentage of Employed and Unemployed Mothers by Interview/Tracking Effort Groups

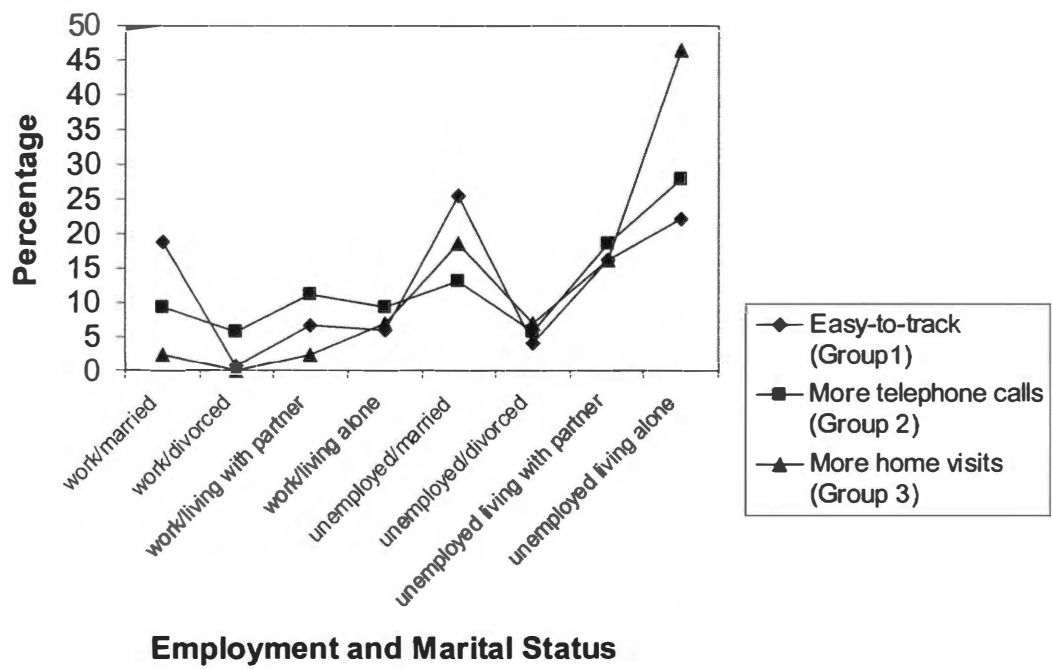


Figure 4. Comparison of Mothers' Marital Status and Employment by Interview/Tracking Effort Groups

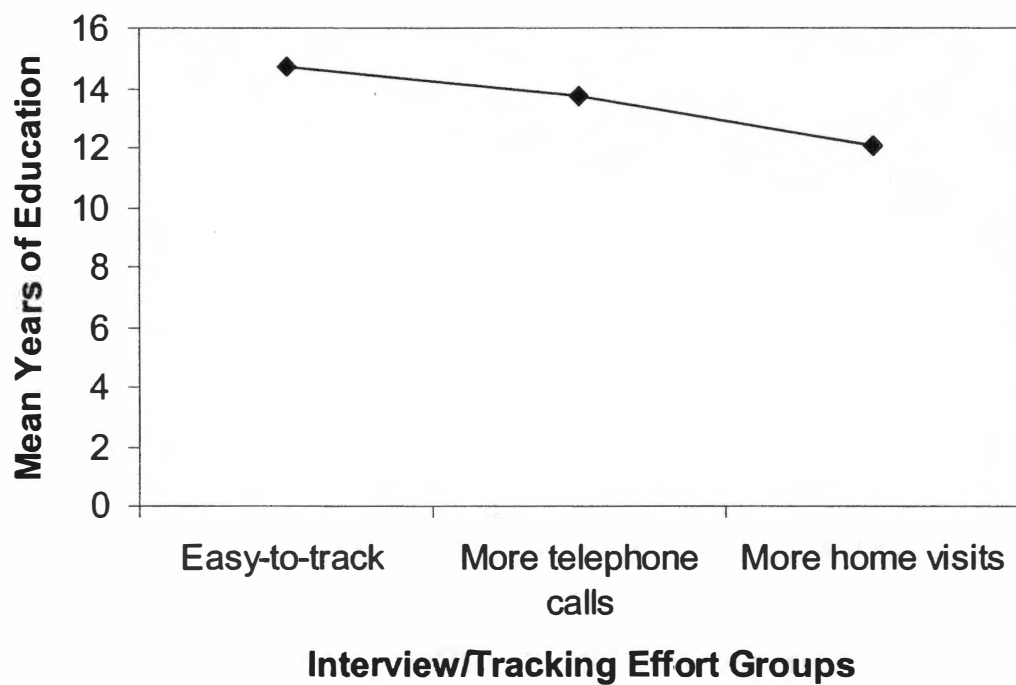


Figure 5. Comparisons of Mothers' Mean Years of Education by Interview/Tracking Effort Groups

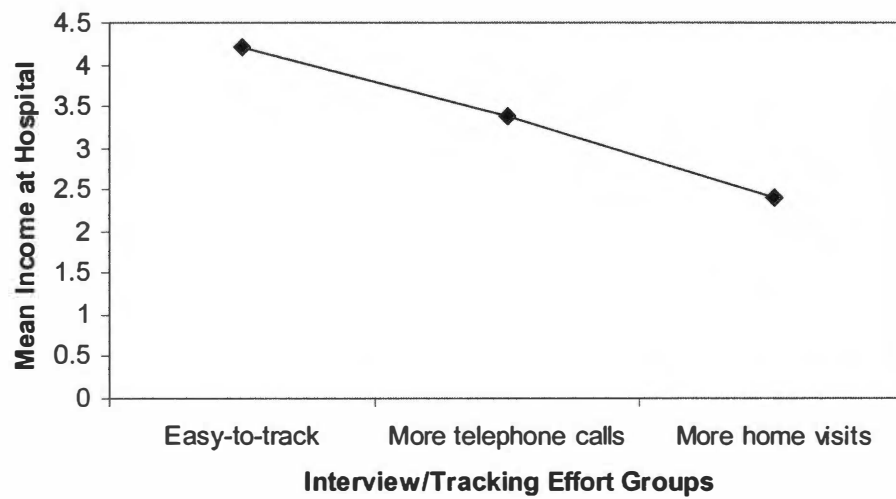


Figure 6. Comparisons of Mothers' Mean Household Income by Interview/Tracking Effort Groups

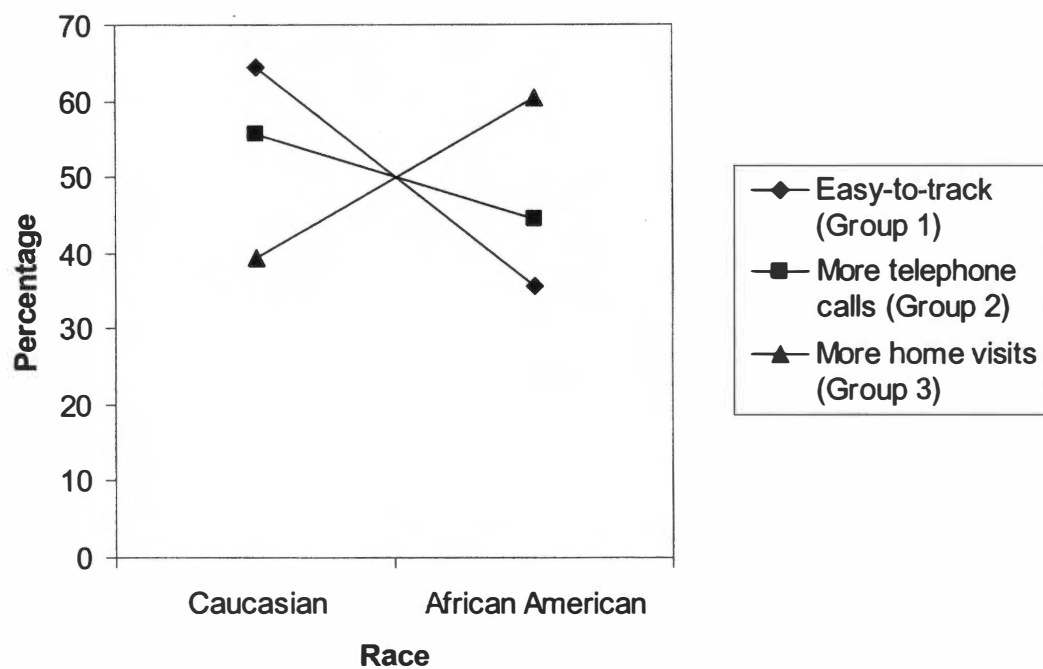


Figure 7. Percentage Comparisons of Mothers' Observed Race by Interview/Tracking Effort Groups

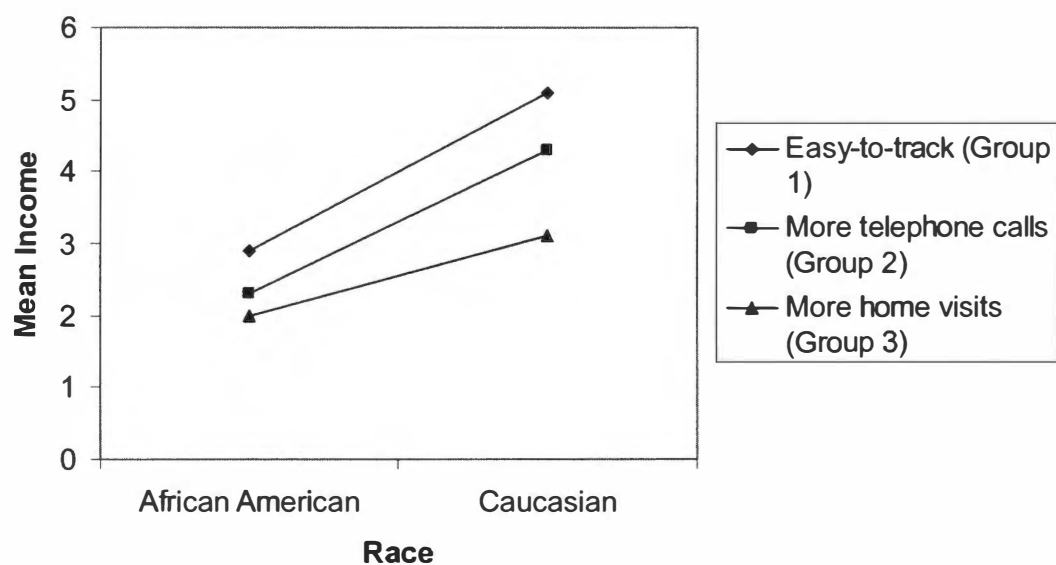


Figure 8. Comparison of Mean Income for African-American and Caucasian Mothers by Interview/Tracking Effort Groups

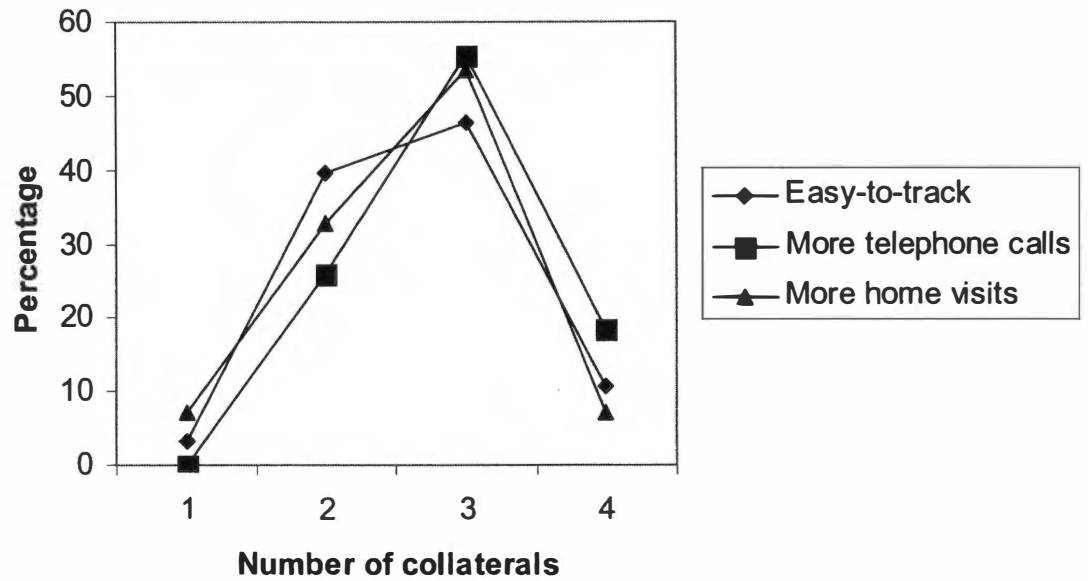


Figure 9. Percentage Comparisons of Number of Collaterals with Interview/Tracking Effort Groups



Figure 10. Percentage Comparisons of Employment Stability with Interview/Tracking Effort Groups

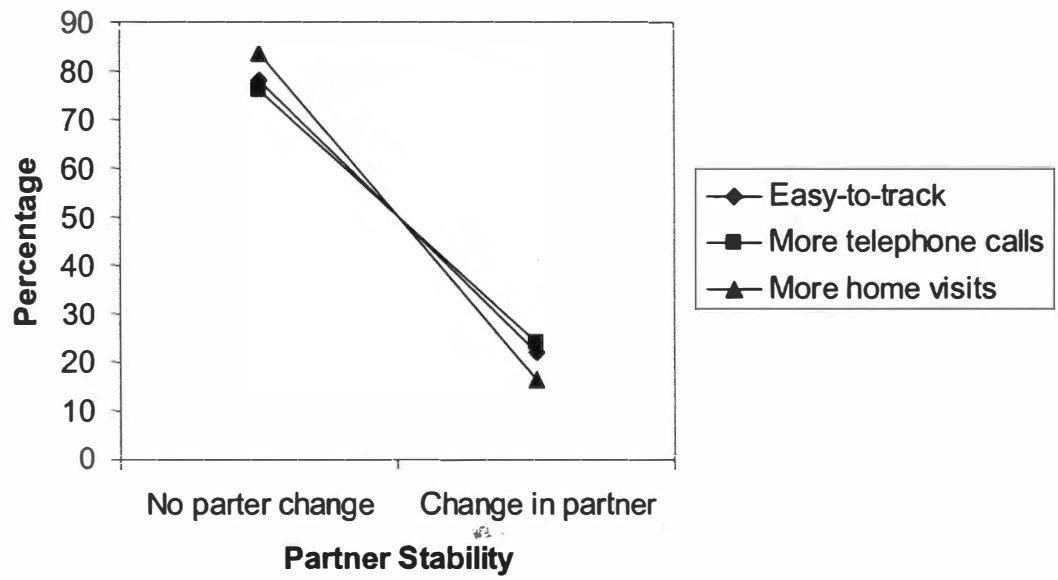


Figure 11. Percentage Comparisons of Partner Stability by Interview/Tracking Effort Groups

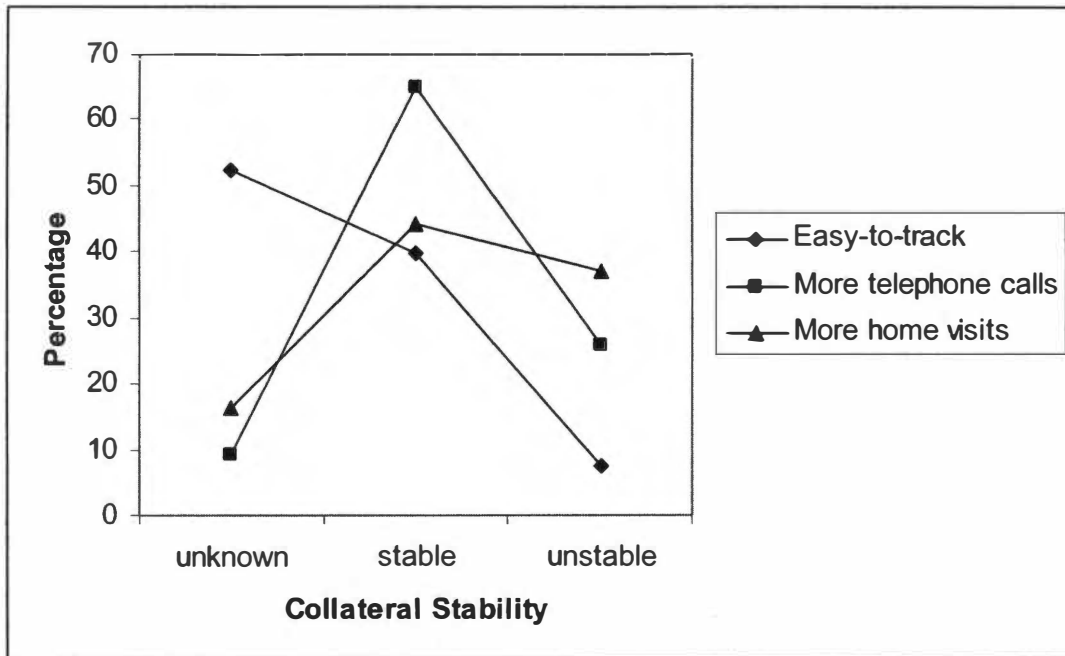


Figure 12. Percentage Comparisons of Collateral Stability by Interview/Tracking Effort Groups

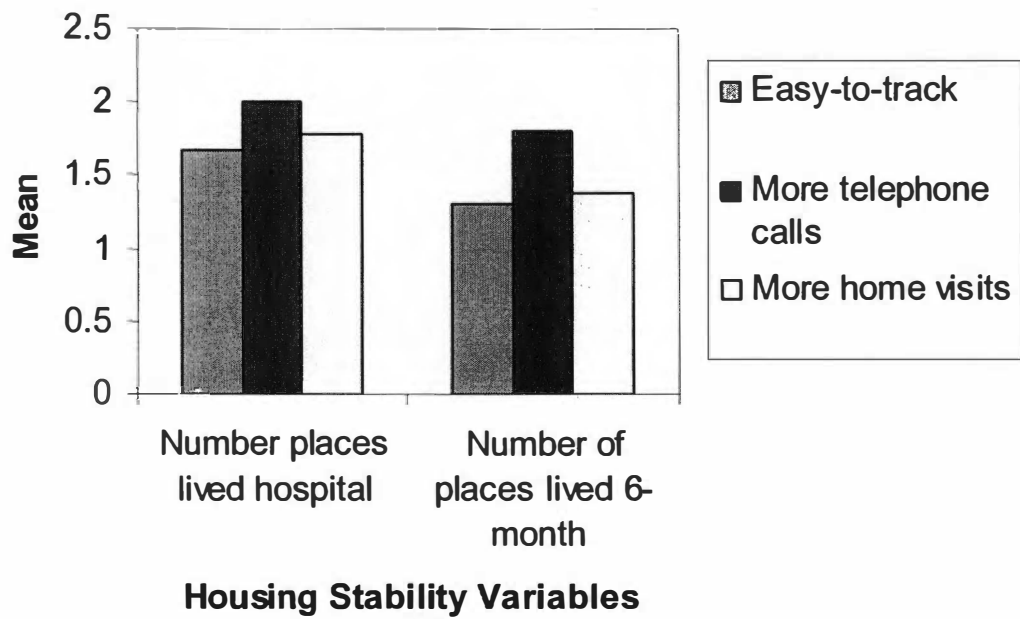


Figure 13. Mean Comparisons of Housing Stability Variables by Interview/Tracking Effort Groups

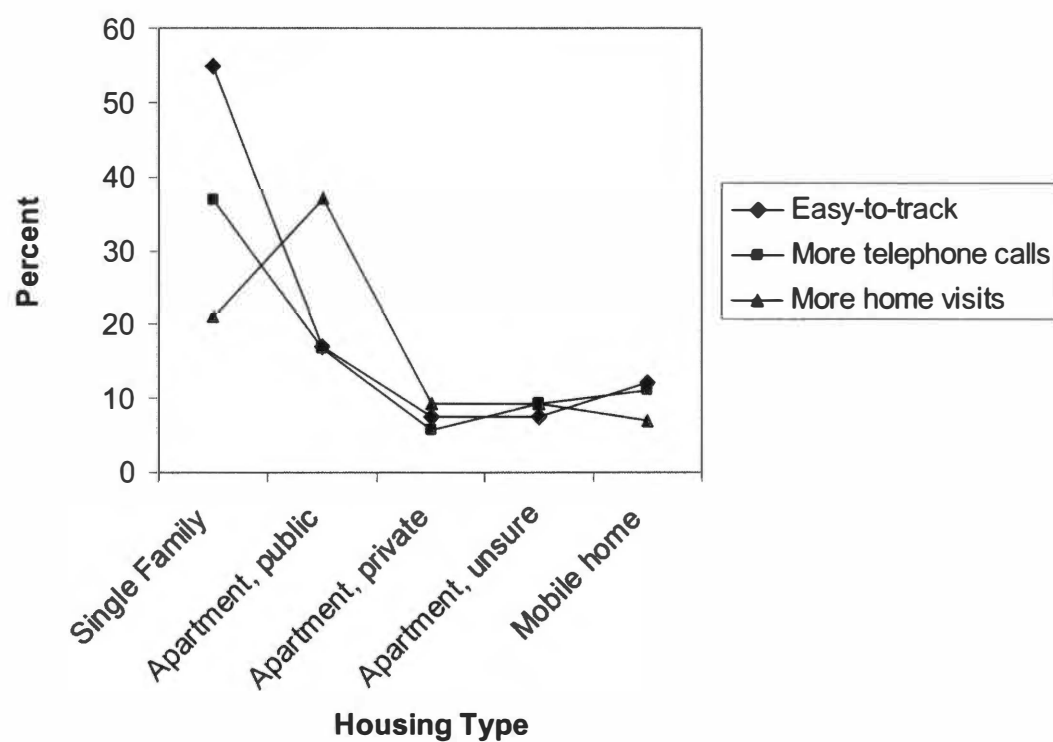
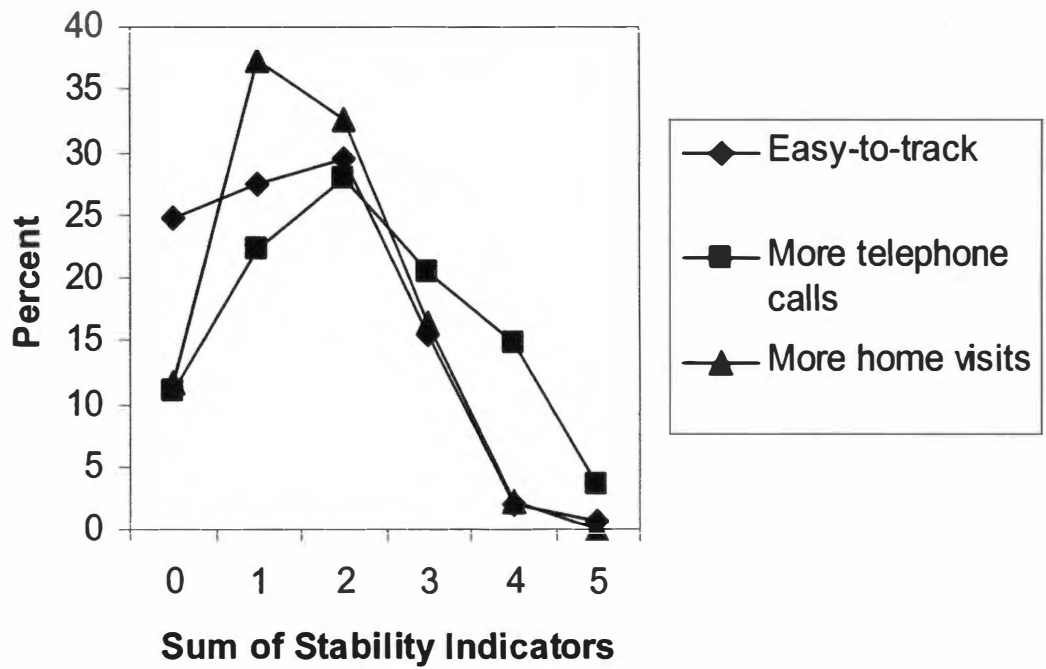


Figure 14. Percentage Comparisons of Housing Type by Interview/Tracking Effort Groups



*Higher scores indicate greater instability

Figure 15. Percentage Comparisons of Sum of Instability Indicators by Interview/Tracking Effort Groups

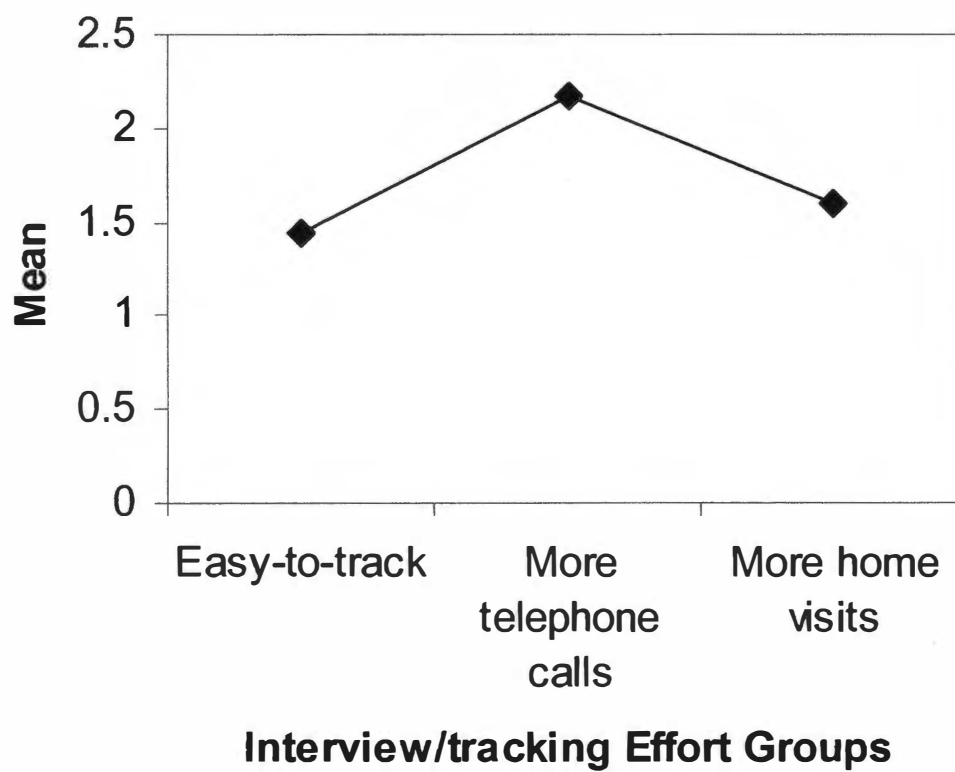


Figure 16. Comparisons of Mean Number of Instability Factors by Interview/Tracking Effort Groups

VITA

As an adolescent Elizabeth E. Wilson realized that compassion, non-judgmental attitudes, social justice, and interest in individual's stories were qualities worth pursuing in her life and propagating in others. Realizing that these goals and values could be learned in the social work profession and in an understanding of the Bible and God, she earned both a BSW and BS in Bible degree at Philadelphia Biblical University in 1992, a MSW at the University of Wisconsin-Milwaukee in 1995, and a Ph.D. with a major in Social Work from the University of Tennessee-Knoxville in 2006. She was licensed as a Clinical Social Worker (LCSW) in 1998.

While at the University of Tennessee (UTK), Dr. Wilson co-authored four articles, coordinated the John A Harford Geriatric Curriculum Enrichment Program and worked as a statistical consultant for the Center for Undergraduate Excellence and for a Brian A. Settlement research study that explored ways to improve services to and outcomes for minority children in the custody of the Tennessee Department of Children. While at UTK Dr. Wilson discovered a love for statistics and research methods. She is an assistant professor at Philadelphia Biblical University, an institution that has been committed to quality social work education for forty years. She teaches undergraduate courses in research, cultural and human diversity, social work organizations, and social work practice. She currently is developing an interdisciplinary gerontology course for social workers, counselors, ministers, and other church professionals.

Dr. Wilson lives in the greater Philadelphia area with her husband Tom and four-year old daughter.