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## Retrospective Reporting of First Employment in the Life Courses of U.S. Women

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## Retrospective Reporting of First Employment in the Life Courses of U.S. Women\*

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## **Abstract**

We investigate the accuracy of young women's retrospective reporting on their first substantial employment in three major, nationally-representative United States surveys, examining hypotheses that longer recall duration, employment histories with lower salience and higher complexity, and an absence of "anchoring" biographical details will adversely affect reporting accuracy. We compare retrospective reports to benchmark panel survey estimates for the same cohorts. We find that sociodemographic groups—notably non-Hispanic White women and women with college-educated mothers—whose early employment histories at these ages are in aggregate more complex (multiple jobs) and lower in salience (more part-time jobs), underreport the occurrence of their early first job or employment, and misreport their first job or employment as occurring at an older age. We also find that retrospective reports are skewed towards overreporting longer, and therefore more salient, later jobs over shorter, earlier jobs. Finally, we find that women with "anchoring" early family-formation events, especially births, report more accurately on their first substantial employment. Overall, however, our results indicate that retrospective questions capture these summary indicators of first substantial employment reasonably accurately. Moreover, this accuracy is especially high for groups of women who are more likely to experience labor-market disadvantage, and women with early births.

## **Introduction**

Sociologists and social demographers have devoted considerable attention to the accuracy of reporting on first-experienced events in domains including births, cohabitation and marriage, and sexual activity (Kahn et al 1988; Peters 1988; Lauritsen and Swicegood 1997; Wu et al 2001; Joyner et al 2012). The accuracy of data on these topics is critically important to life course research, for which timing and sequencing of events are central concepts, and the occurrence of key events signals transition into different life stages (Shanahan 2000). We are unaware of any previous efforts to evaluate the accuracy of questions on first significant employment or job experience, despite its importance in the early adult life course. In their early employment experiences, young adults develop skills, amass human capital, adopt workplace norms and develop preferences for future work roles (Becker 1975; Mortimer, Harley and Aronson 1999). By serving as a track record of an individual's activities and capabilities, early employment may influence an individuals' ability to achieve further employment in the future, and is a strong predictor of the stability of employment to come (Alon, Donohoe and Tienda 2001). The importance of first substantial employment as a life-course event is elevated in the current U.S. context in which secure, stable jobs are less common (Kalleberg 2011).

Time spent employed in early adulthood is particularly critical to cumulative earnings for less-skilled workers. For all workers, the majority of individual-level earnings growth occurs in the first ten years in the labor market (Bernhardt et al 2001). Whereas more-educated workers', salaries increase with seniority and can buffer time out of paid employment, less-educated workers' lifetime earnings are primarily dependent on the accumulation of wages through consistent working hours (Alon, Donohoe and Tienda

2001; Alon and Haberfeld 2007). Early employment trajectories also have implications for an individual's ability to maintain a household, enter into marriage, and financially support children. In the face of Welfare policy change that emphasizes work over cash entitlements, the economic wellbeing of low-income single mothers and their children alike is primarily dependent on their labor market success (Pavetti and Acs 2001; Wu and Eamon 2013). In the present study, we evaluate the accuracy of reporting about the first occurrence of substantial employment among young women. We evaluate respondent reports of three different conceptualizations of women's first substantial job or employment, given retrospectively in three major nationally-representative U.S. surveys. We also evaluate the associations of socioeconomic status and early family formation with reporting accuracy.

Although the substantive topic we study relates to broad questions of gender and social inequality, we also aim to contribute to literature that evaluates the accuracy of large-scale survey data based on theory about the role of cognition and memory in retrospective reporting on employment histories. Our study is novel because it focuses on reporting about employment (versus unemployment), because it focuses on reporting about *first* employment in particular, and because it focuses on employment reporting in the United States. Recent research about the accuracy of survey reporting on employment histories has focused to a large extent on Europe (Jürges 2007; Manzoni et al 2010; Manzoni et al 2011; Kyyra and Wilke 2014). Few recent studies have examined retrospective reports of employment histories in the U.S. Furthermore, most studies have focused on reporting about unemployment more than employment. Recall about employment is conceptually distinct from previous literature on recall about

*unemployment* because remembering employment involves remembering the presence of an activity rather than its absence, and involves grounding details such as a distinct workplace, colleagues and activities (Tourangeau, Rips and Rasinski 2000).

Our study is also novel to the extent that it examines reports made about a recall period of relatively lengthy duration—between the occurrence of a respondent’s first job and the time at which she is interviewed about it—which for some of our respondents is a period of fifteen years or more. Research into the reporting of employment histories in the U.S. has largely examined only relatively short periods of recall, of one or two years (Sudman and Bradburn 1973; Morgenstern and Barrett 1974; Horvath 1982; Bowers and Horvath 1984; Duncan and Hill 1985; Mathiowetz and Duncan 1988; Evans and Leighton 1994; Pierret 2001). Panel surveys, including the Survey of Income and Program Participation (SIPP, U.S. Census Bureau 2014) and the National Longitudinal Study of Adolescent to Adult Health (Add Health, Harris 2009), and cross-sectional surveys, including the National Survey of Family Growth (NSFG, National Center for Health Statistics 2014), frequently ask respondents for employment histories covering periods longer than one or two years. Retrospective employment histories may ask about more recent jobs in detail, whereas questions about first employment experience tend to be covered in summary form only. The SIPP, in its initial wave, asks only about the individual’s first job of 6 months or longer, without distinguishing fulltime from part-time employment. Add Health asks only for the first fulltime job that was not a summer job, and that was undertaken while not primarily a student (Harris 2009). Whereas the 1995 and previous cycles of the NSFG included fairly extensive employment histories, the 2002 and 2006-2010 cycles only include questions about the start date of the

individual's first spell of fulltime employment of six months or longer duration. We evaluate retrospective reporting on the timing of first substantial employment, as differently defined across these latter three surveys, against the equivalent statistics derived from annual panel reports of employment for the same cohorts in the National Longitudinal Survey of Youth, 1997 Cohort (NLSY97).

### **Theory on Factors Affecting Reporting Accuracy and Application to Employment Histories**

At least four major factors have been claimed to account for inaccuracies in respondents' reporting of life course events (see, for example, Schaeffer and Presser 2003), and we use these in formulating our study hypotheses below. These four factors are: (1) the practical and emotional salience of the topic to the respondent; (2) the length of the period over which the respondent is asked to recall events and the amount of time that has elapsed since an event and the interview itself—what we here jointly term “recall duration”; (3) the complexity of the topic on which the respondent is being asked to report; and (4) the extent to which the topic being reported on can be situated chronologically in the context of other “anchoring” events. Below we discuss these factors specifically as they relate to reporting on employment, and with respect to their implications for our study.

Respondents are more likely to remember and report the occurrence of events that are *salient* to them, and may also report more accurately about the details of such events. More salient events are rarer, and have higher social and economic consequences, whether positive or negative (Linton 2000). In the context of the present study, we assert

that holding fewer jobs makes the jobs that are held more salient to the individual respondent. Jobs of longer duration also have greater salience because they take up more time in the individual's life, and have an impact on her finances and daily social interactions for a longer period of time than do shorter jobs.

Whereas more salient events are easier for respondents to remember, more *complex* topics are harder for them to remember (Sudman, Bradburn and Schwarz 1996). In an employment context, complexity refers to multiple and layered job patterns, with many starts and stops of jobs, overlapping of jobs, and spells of both fulltime and part-time employment. Comparing Panel Study of Income Dynamics (PSID) self-reports and company administrative records, Mathiowetz and Duncan (1988) find that respondents with more, shorter spells of unemployment within a period of time (i.e., multiple start and stop dates) report their unemployment less accurately than respondents with single, longer spells of unemployment, or no unemployment.

Both the length of the period the respondent is asked to recall and the time that has elapsed since the event being reported on present cognitive challenges to respondents' recall abilities (Sudman, Bradburn and Schwarz 1996). Although the period of recall and the time elapsed since the event are conceptually distinct, for the purposes of this paper we combine them into the concept of "recall duration." We do so because when respondents are asked to recall their complete employment histories and to report on events from that period, the period of recall and the time that has elapsed since the event increase in tandem—i.e., the longer one's work history, the longer the period one describes, and the more time has passed since its beginning.



Longer recall duration can result not only in underreporting of the occurrence of discrete events, but also in oversimplification of reporting on sequences of events (Pierret 2001; Jürges 2007; Manzoni 2010; Dex and McCulloch 1998; Manzoni et al 2011). In a study of reporting on unemployment, Jürges (2007) shows that respondents who reported that they were unemployed at the date of a first interview were less likely to report an unemployment spell at that time when they are surveyed one year later. Manzoni et al (2010) found underreporting of both employment and unemployment episodes when Swedish Level of Living Survey respondents' 2000 reports were compared to the same respondents' 1991 reports on the same period. Manzoni et al (2010) and Manzoni et al (2011) found a “smoothing” effect of reporting on complex employment after extended recall time has elapsed, with, respectively, reports of full-career sequencing in the Swedish Level of Living Survey displaying fewer episodes of employment, self-employment, unemployment and non-employment when reported in 2000 versus 1991, and oversimplifying of employment careers in retrospective reports versus panel surveys of employment transitions in Germany.

The use of individuals' life events as cues to “anchor” their recall of the timing of other events being reported on can also play a role in reporting accuracy. Memory of the timing of an event may be linked to memory of the timing of other events that happened close to it. Individuals who can recall a topic in relation to a personally significant event, and those who are prompted to report on whether an event occurred before or after a shared publicly significant event, report more accurately on event timing than those with no such anchoring details (Loftus and Marburger 1983). Individuals who have had such salient life experiences as marriage and childbirth may use the dates of these events to

recall the timing of other events being reported on, resulting in more accurate reporting. Manzoni (2012) finds that women with children report on their employment transitions more accurately than women without children, although she does not find this same effect for married versus unmarried women.

### *Sociodemographic Differences in Reporting Accuracy*

In addition to considering how the above four major factors may affect the accuracy of women's retrospective reporting on their first substantial employment, we also consider the effects of sociodemographic factors on their reporting accuracy. These are women's birth cohort, their race/ethnicity, their early family formation behavior and, in the NSFG and Add Health only, their socioeconomic status (SES). Substantively, we include race/ethnicity and SES variables in our analysis because to do so is important to understanding employment reporting specifically in the U.S. context, in which racial and socioeconomic inequalities may lead to large differences in early working-life experience by race and SES education (Bernhardt et al 2001; Kalleberg 2011). Existing evidence on race/ethnic differences in retrospective reporting is mixed. Mathiowetz and Duncan (1988) find no race/ethnic differences in reporting on unemployment after controlling for the difficulty of the recall task, whereas Morgenstern and Barrett (1974) find that White women's reporting on unemployment is worse than that of non-White women, and men.

Regarding SES, Mathiowetz and Duncan (1988) find that more education is associated with fewer errors in reports of unemployment, but that this association also disappears after controlling for the complexity of employment history. This is consistent with evidence that respondents with complex employment histories—such as multiple

entries and exits in close proximity, and multiple concurrent jobs—are disproportionately low-wage workers (Presser and Cox 1997). It is less clear, however, that among young women at the beginning of their working lives, lower SES will be associated with more complex employment histories. Middle- and higher-SES women are more likely to pursue post-secondary education (Mare 1981), which may frequently be combined with part-time and short-duration (e.g. summer break) fulltime employment.

We also examine differences in the accuracy of young women’s reporting of first substantial employment by whether or not they engage in early family-formation behavior. As discussed above, family transitions may affect both the complexity and salience of a woman’s employment experience, and may thereby affect reporting accuracy. In addition, some evidence suggests that retrospective reporting on employment may be better among women with children than women without children. Manzoni (2012) shows that in reporting of dates of job entry and exit, women with children appear to use dates of childbirth as “anchoring” time cues. Hence, the retrospective reports of women with children may alternatively be more accurate than those of women without children.

## **Data and Methods**

We evaluate the accuracy of women’s retrospective survey reporting on the date of their first substantial employment using retrospective questions from the 2006-2010 NSFG, the SIPP 2004 and 2008 panels, and Wave 4 of Add Health, against dating of equivalently-defined first substantial employment from reporting in annual panel interviews in the NLSY97. In order to best match the retrospective-question data sources

to the NLSY97, we focus on reporting among women born in the U.S. between 1980 and 1984 who are non-Hispanic White, non-Hispanic Black, and Hispanic of any race. We ground our hypotheses in the evidence from research to date on the accuracy of retrospective reporting about employment and unemployment, which focuses mainly on the effects of recall duration, the complexity of the respondent’s employment or unemployment history, the salience of employment or unemployment to the respondent, and the presence or absence of biographical anchoring details.

Due to wording differences in how the SIPP, NSFG and Add Health ask their retrospective questions about first employment, we define “first substantial employment” differently in our evaluation of each of these surveys as compared with the NLSY97. (See Appendix A for details on question wording.) In the SIPP versus NLSY97 comparison, first substantial employment is defined as a first job, whether fulltime or part-time, of six months or more. In the NSFG versus NLSY97 comparison, it is defined as a first period of fulltime work of six months or more (though not necessarily all at the same job). In the Add Health versus NLSY97 comparison, it is defined as a first period of fulltime work of any duration, undertaken while not a student, and not including summer jobs. For the sake of brevity, we refer to these three distinct operationalizations of first employment collectively as “first substantial employment” on the assumption that they each refer to one variety of “substantial” work—whether it covers fulltime hours, is of non-trivial duration, or is not undertaken while primarily engaged in studies or for the summer only.

We use annual panel reporting from the NLSY97 as the standard against which to evaluate the accuracy of retrospective reporting in the NSFG, the SIPP and Add Health.

In the NLSY97, respondents are asked to list their job information at each interview, and this information is stored from year to year. They then are asked at the next interview if they still work for any of the employers they listed as current at the last interview, and to report any new employers (Bureau of Labor Statistics 2014). Pierret (2001) shows that in the National Longitudinal Survey of Youth -1979 (NLSY79), which has a comparable interview structure to the NLSY97, annual reporting of employment yields substantially more accurate reports of numbers of employers than does reporting in biennial interviews. For these reasons, we consider the NLSY97 to provide the best available benchmark data against which to evaluate the accuracy of retrospective reporting in the SIPP, NSFG, and Add Health.

#### *Survey of Income and Program Participation (SIPP)*

The SIPP is a household-based panel survey (U.S. Census Bureau 2009) that has drawn new samples approximately every four years beginning in 1996, and at more frequent intervals between 1984 and 1992. In the present study, we use the 2004 and 2008 panels, begun respectively in approximately those two years (with the first 2004 panel interviews beginning in late 2003). These two SIPP panels are representative of the U.S. household population at the time each panel began. The SIPP oversamples low-income households. Each household member aged 15 and above is interviewed if possible, and otherwise proxy responses are obtained from another household member. Out of our focal sample of women born in the U.S. between 1980 and 1984 who are non-Hispanic White, non-Hispanic Black and Hispanic of any race, 45% of interviews on first employment were given by proxy in the 2004 panel, and 28% of interviews on first

employment were given by proxy in the 2008 panel. Proxy and self-reports are quite evenly distributed across all our sociodemographic categories of interest, except for the fact that, particularly in the 2004 panel, women from later birth cohorts (i.e. younger women, who were more likely to be living with parents at the time of interview) are more likely to have proxy reports. The retrospective questions on employment history that we evaluate are asked of individuals ages 18 and above (to a maximum age of 75) in Wave 1 of each panel. For both the 2004 and 2008 panels, this included all women born between 1980 and 1984. Respondents were asked to report on the timing of their first job of six months or more, which could be either a fulltime or part-time job. This is our SIPP outcome variable. See question details in Appendix A. We derive our predictor variables from questions asked in Wave 1 and Wave 2, conducted four months after Wave 1, of each panel. Between interview Waves 1 and 2, 16.3% and 16.8% of cases were lost to attrition in the 2004 and 2008 panels, respectively. We lose to item non-response 224 cases from the 2004 SIPP panel, which represents 9.1% of this group, and 70 cases from the 2008 SIPP panel, which represents 3.2% of this group.

#### *National Survey of Family Growth 2006-10*

The 2006-2010 NSFG is a nationally-representative sample of the household population aged 15 to 44 (National Center for Health Statistics 2014), with oversamples of African-Americans and Hispanics, and of young adults aged 15-24. It is a cross-sectional survey in which each respondent was interviewed in person once over the 2006-2010 period. The NSFG 2006-2010 contains an array of information on respondents' demographic characteristics, family history and living situation, sexual behavior, and

contraceptive history. All respondents were asked whether they had ever worked fulltime (defined as 35 hours per week or more) for six months or longer. If they answered yes, they were then asked the month and year in which their first fulltime period of work of six months or more began. This is our NSFG outcome variable. This period could include one job or multiple jobs, but the respondent was not asked to report on the number of jobs held. See question details in Appendix A. From our sample of non-Hispanic White, non-Hispanic Black and Hispanic women of any race who were born in the U.S. between 1980 and 1984, we lose to item nonresponse 13 cases, which represents less than 1% of this group.

*National Longitudinal Study of Adolescent Health (Add Health)*

Add Health is nationally representative of adolescents in grades 7-12 during the 1994-1995 school year (Harris 2009). Subsequent interviews were conducted in 1996, 2001-2, and 2007-8. Add Health oversamples for students who are African-American, Chinese, Cuban and Puerto Rican, as well as students with disabilities, and siblings. The survey asks questions about respondents' family of origin, socioeconomic, health, friendship and relationship characteristics, and labor market and family-formation experiences. At Wave 4, all respondents were asked if they had ever worked for 35 hours per week or more, at a paying job while not primarily a student, and not including summer jobs. Those who answered "yes" were asked how old they were when they first began working fulltime. We derive our Add Health outcome variable from these questions.

Uniquely among our evaluated surveys, the Add Health asked retrospective questions that allow us to evaluate the roles of employment-history salience and complexity at an individual level (not just a socio-demographic group level). Individuals reporting any fulltime job were also asked how many jobs they had had at which they worked at least ten hours per week for nine weeks or more between 2001 and the Wave 4 interview in 2007-08. Those who were still employed at their first fulltime job at the time of interview were asked the start date of the job. Those who were not still employed at their first fulltime job were asked the length of their first fulltime job. See question details in Appendix A.

Of our group of interest, 553 women dropped out of the survey prior to Wave 4, which represents 16.3% of the original group of non-Hispanic White, non-Hispanic Black and Hispanic women of any race who were born in the U.S. between 1980 and 1982 and were interviewed in Wave 1. We lose to item non-response from our group of interest an additional 551 Wave 4 respondents, which represents 19.4% of our focal group members still in the survey at Wave 4. Non-response on the mother's education variable accounts for almost all of these missing cases because it uses a self-report by the parent completing the Wave 1 parent survey. Respondents with no mother's education variable either do not have a parent's report on this variable, or have a self-report from another adult family member who is not the respondent's biological or adoptive mother.

#### *National Longitudinal Survey of Youth – 1997 (NLSY97)*

The NLSY97 is representative of people living in the United States who were aged 12-16 in 1997, with oversamples for Hispanic and African-American respondents.



Respondents were interviewed annually from 1997 through 2011, and biennially thereafter (Bureau of Labor Statistics 2014). We use the NLSY97 to obtain annual panel reporting about jobs respondents held after they turned 16, including jobs that began before they turned 16, but which continued while they were aged 16 or older. Sixteen is the age at which the U.S. Fair Labor Standards Act no longer sets limits on the number of hours an individual can work (U.S. Department of Labor 2015), which we consider to be a prerequisite for our definition of “substantial” work. NLSY97 respondents over age 14 were asked in the first interview (1997) to report all jobs, and then in subsequent interviews, to report all jobs since their last interview. Respondents who were under age 14 at the first interview began to be asked about their work histories at subsequent interviews after they turned 14, including reporting on jobs that began before they turned 14. At each interview, respondents report on both fulltime and part-time work, and a specific question asks them to report how many hours per week they worked at each job. They are asked to report start and end dates of each job, as well as details about the employer and their activities in the job. From among the non-Hispanic White, non-Hispanic Black, and Hispanic women of any race who were born in the U.S. between 1980 and 1984, we lose to item non-response 30 cases in the comparison with the SIPP, which represents less than 1% of the sample, and 197 cases in the comparison with the NSFG, which represents 6.3% of the sample. In the comparison with Add Health, from among the non-Hispanic White, non-Hispanic Black, and Hispanic women of any race who were born in the U.S. between 1980 and 1982, we lose to item non-response 115 cases, which represents 6.7% of the sample.

### *Sample Restrictions, Outcome Variables, and Matching to the NLSY97 Data*

Our population of interest is women born in the U.S. between 1980 and 1984 who are non-Hispanic White, non-Hispanic Black, and Hispanic of any race. For brevity, we will refer to these three groups below as White, Black, and Hispanic, respectively. We include in our study only women born in the U.S. because the foreign-born population sampled in 1994 for Add Health and 1997 for the NLSY97 differs from that sampled in the mid-to-late 2000s for the NSFG and the SIPP. We also limit our study to include only White, Black and Hispanic women because the relatively small numbers of women of other race/ethnic categories in our four surveys means we would be unable to meaningfully examine differences in reporting accuracy by these race/ethnic groups. We examine 1980-1984 birth cohorts in the NSFG and SIPP because adequate numbers of women born in these years can be found in both these two surveys and the NLSY97. We are only able to examine Add Health respondents born in 1980-1982, because no women born in 1984 and only very few women born in 1983 are present in Add Health. We compare Add Health respondents born in 1980-1982 to NLSY97 women born in those same years.

As our outcome variable, we examine two dimensions of entry into first substantial employment. In the NSFG and the SIPP, we first examine whether or not a woman had a first substantial job or employment experience by the end of calendar year 2002. In Add Health, we first examine whether or not a woman had a first substantial job at or before the respondent's age at the end of calendar year 2002. We choose 2002 as a cutoff point partly for practical reasons—the year 2002 is the latest full year reported on by members of the 2004 SIPP panel. We also choose 2002 as a cutoff point because it

serves as a meaningful marker of “early employment” for all five birth cohorts. Women born in 1980 to 1984 were aged 18 to 22 at the end of 2002; those born in 1980 to 1982 were aged 20 to 22.

The second dimension of entry into first substantial employment that we examine is the respondent’s age at the beginning of her first reported substantial employment, among those respondents who report having had a substantial employment experience by their retrospective interviews in 2008-2010. Between 2008 and 2010, women born in 1980 to 1984 ranged in age from 24 to 30; those born in 1980 to 1982 ranged in age from 26 to 30. We choose this measure because it is an intuitive indication specifically of the *timing* of first substantial employment. We define age at first substantial employment as follows. In the SIPP versus NLSY97 comparison, we subtract the respondent’s year of birth from the year in which she reports that her first job began. In the NSFG versus NLSY97 comparison, we take the respondent’s age in the starting month of her stated first six month fulltime employment spell. Add Health respondents were directly asked the age at which their first substantial employment began; to match this measure in the NLSY, we take the respondent’s age in the starting month of the comparably-defined first substantial employment period.

To create the NLSY97 sample for comparison to the SIPP and NSFG on the measure of whether a first substantial job was held before 2002, we include NLSY97 respondents who were interviewed every year, with no attrition or skipped years, through either a 2003-wave interview or a 2002-wave interview that took place during or after December 2002. To create the NLSY97 sample for comparison to Add Health on the measure of whether a first substantial jobs was held by the respondent’s age at the end of

2002, we include NLSY97 respondents who were interviewed every year, with no attrition or skipped years, through either a 2004-wave interview or a 2003-wave interview that took place during or after December 2003. In excluding respondents who were not interviewed continuously through the end of 2002, we lose to attrition 679 cases from our group of interest, which represents 21.6% of the sample of White, Black and Hispanic women born in the U.S. 1980-1984. In excluding respondents who were not interviewed continuously through the end of 2003, we lose 819 cases from our group of interest, which represents 21.4% of the sample of White, Black and Hispanic women born in the U.S. 1980-1982.

When the outcome variable is the respondent's age at her first reported substantial employment, we observe NLSY97 respondents until the last relevant interview date of the comparison survey. For the SIPP comparison, we include NLSY97 respondents who were interviewed continuously at every wave up through an interview covering December 2008, including both 2008 and 2009 interviews. For the NSFG comparison, we include NLSY97 respondents who were interviewed continuously at every wave up through an interview covering June 2010, including 2010 interviews only. For the Add Health comparison, we include NLSY97 respondents who were interviewed continuously at every wave up through an interview covering February 2009, including both 2009 and 2010 interviews. In excluding respondents not interviewed continuously through December 2008 in the SIPP comparison, we lose to attrition an additional 523 cases, 17.1% of those with a first job in the SIPP definition who were interviewed through the end of 2002. In excluding respondents not interviewed continuously through June 2010 in the NSFG comparison, we lose to attrition an additional 526 cases, 18.3% of those with a

first employment spell in the NSFG definition who were interviewed through the end of 2002. In excluding respondents not interviewed continuously through February 2009 in the Add Health comparison, we lose to attrition an additional 406 cases, 14.6% of those with a first job in the Add Health definition who were interviewed through the end of 2003.

In each comparison of retrospective questions to the NLSY97, we identify NLSY97 respondents' "first substantial employment" as follows. For our use of the NLSY97 to evaluate the SIPP, we identify the chronologically earliest-starting job reported by the respondent as lasting at least six months. For our evaluation of the NSFG, we identify NLSY97 respondents' first period of fulltime employment lasting six months or longer by counting consecutive months in which the respondent held a fulltime job (but not necessarily the same job across the six months). For our evaluation of Add Health, we identify the chronologically-earliest fulltime job reported that did not both start and end during summer months of the same year, and that did not completely overlap with either enrollment in secondary school or fulltime enrollment in college or graduate school; we place no restrictions on the duration of this job. Thus for comparison with the NSFG 2006-10 and Add Health, we limit jobs reported to fulltime jobs only, and for comparison with the SIPP we include both fulltime and part-time jobs.

### *Analyses*

We conduct both bivariate and multivariate analyses of the accuracy of first employment reporting in retrospective versus panel reports. We evaluate the effects on reporting accuracy of recall duration, biographical anchoring, job salience, and

employment history. In the bivariate analyses, we first compare the overall proportions of NLSY97 respondents who have had first substantial employment by 2002 to the comparable proportions from the SIPP, NSFG and Add Health. We make the same comparison with respect to respondents' age at first job for those women who had a first job by 2008-2010. These bivariate analyses allow us to draw conclusions about the effect on reporting accuracy of recall duration, with retrospective reports representing longer recall duration than NLSY97 reports.

In the Add Health comparison only, we also include direct measures of the complexity and salience of an individual's employment history. We compare respondents from the NLSY97 and Add Health on measures of the length of their first reported fulltime job, and the number of jobs of at least 10 hours per week lasting 9 weeks they report having between 2001 and February 2009. The length of the first reported fulltime job is intended as a measure of the effect of job salience on reporting accuracy, with longer jobs representing more-salient jobs. If retrospective Add Health reports are skewed more toward reporting longer jobs overall than NLSY97 reports, this likely indicates that longer jobs are being overreported as first jobs because of their greater salience. The number of jobs reported as taking place from 2001 to 2009 is intended as a measure of the effect of employment history complexity on retrospective reporting, with more jobs reported indicating greater complexity. If retrospective Add Health reports are skewed toward reporting fewer jobs than NLSY97 reports, this likely indicates that Add Health respondents with more complex job histories have forgotten some of their jobs, and hence underreport their job totals.

To measure employment history salience and complexity in the SIPP and NSFG comparisons, we rely on aggregate differences in job histories by sociodemographic group. We use the NLSY97 to descriptively compare the complexity and salience of women's employment histories by single-year birth cohort, race/ethnicity, mother's education, and family-formation by 2002. We identify complexity and salience by proportions with two or more jobs of any type in a given year, two or more part-time jobs in a given year and any part-time jobs in a given year, and whether the respondent's first job was fulltime or part-time. We interpret a higher number of jobs in a given year as indicating higher complexity, and we interpret fulltime jobs as being more salient than part-time jobs. We use these findings about different levels of employment salience and complexity among different groups to make inferences about how varying levels of salience and complexity may lead women of different socio-demographic groups to report more or less accurately their first substantial employment.

In the multivariate component of our analysis, we separately pool NLSY97 data with NSFG data, NLSY97 data with SIPP data, and NLSY97 data with Add Health data. We conduct two regression analyses with each pooled data file. The first regression analysis is a logistic regression in which the outcome variable is whether the respondent reported attaining first substantial employment by 2002, when aged 18-22. In this analysis, we include both women who reported having a substantial job by 2002 and those who did not. In each pooled sample, we test for differences in the retrospectively-reported first employment outcome measures (i.e. as reported in the NSFG, SIPP, or Add Health) relative to those same measures derived from the NLSY97 panel reports. We include as a covariate a variable denoting whether the respondent is drawn from a survey

with retrospective employment reports (i.e. the NSFG, SIPP, or Add Health) versus from the NLSY97. We interact this “retrospective survey” variable with our sociodemographic covariates, which include single-year birth cohort, race/ethnicity, and, in the regressions contrasting the SIPP and NSFG with the NLSY97, whether a woman ever gave birth or ever married by the end of calendar year 2002. In the regression contrasting Add Health with the NLSY97, we operationalize this latter variable as whether a woman ever gave birth or ever married at or before the age she attained in December 2002. In the regressions contrasting the NSFG versus NLSY97, and contrasting Add Health versus NLSY97, we also include mother’s educational attainment as a covariate. (No comparable mother’s-education variable is available in the SIPP.) We test our hypotheses about recall accuracy in retrospective reporting of first employment based on the “retrospective survey” main effect and the interactions of “retrospective survey” with other covariates. In this step in the analysis, the emphasis is on assessing whether retrospectively reporting women were more or less likely to report *having had* a first substantial job by 2002, taking into account the fact that captured in this outcome variable are both some women who were employed but may have forgotten early jobs, as well as other women who may not have had first substantial employment during this period, or at all.

Our second regression analysis is a linear regression in which the outcome variable is the respondent’s age at her first reported substantial employment. We limit this sample to women who reported having a first substantial job at any time by 2008-2010. This includes respondents to the SIPP 2008 panel, NSFG respondents interviewed between 2008 and 2010, Add Health respondents interviewed at Wave 4, and samples of



NLSY97 respondents matched to the comparison survey interview schedule as described above. The emphasis here is on evaluating the accuracy of women's reporting about *when* their first substantial employment occurred. We include the same sociodemographic covariates as in the logistic regression of first job or employment by 2002. In the Add Health/NLSY97 comparison of age at first job at fulltime employment, we also include as covariates the length of the job that the respondent said was her first fulltime job, and the number of jobs the respondent reported having had of at least 10 hours per week and lasting at least nine weeks between 2001 and the survey date. (Comparable measures are not available in the SIPP or NSFG.) Here, the length of the job that the respondent said was her first is intended as a measure of the salience of the reported first job, with longer jobs interpreted as being more salient. The number of jobs held is intended as a measure of the complexity of the respondent's job history, with more reported jobs indicating greater complexity. In both sets of regression models, we use the normalized sample weights of the two surveys (SIPP and NLSY97, NSFG and NLSY97, or Add Health and NLSY97) to account for differences in the sample designs and oversampling plans over and above those included in the regressor variables.<sup>1</sup>

### *Sociodemographic Covariates*

The sociodemographic covariates we include in our two regression models represent characteristics that at the same time both meaningfully affect the actual timing

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<sup>1</sup> Unweighted models were overall very similar to weighted models in terms of direction of effects, with some variations in magnitude and statistical significance of effects. In general, weighting tends to increase both the magnitude and statistical significance of effects.

of women's entry into first substantial employment, and may also play a role in affecting reporting recall about first employment through group-level aggregate employment history salience and complexity, duration of recall, and biographical anchoring.

The respondent's year of birth affects her probability of being employed before 2002, with older women experiencing longer exposure to potential employment. We also use the respondent's birth year as one way to operationalize duration of recall. (See more details on this below.) We include race/ethnicity and mother's educational attainment because group-level differences in labor market experiences among different race/ethnic groups and by socioeconomic status may affect whether and when women engage in first substantial employment. Group-level race/ethnic and socioeconomic differences in job history salience and complexity may also affect the accuracy of women's reporting on first employment. We treat family-formation status as bearing directly on the probability of employment itself because marriage, partnership, and children can all either hinder employment or promote it, depending on individuals' particular circumstances. We also treat marriage and childbirth as biographical anchors for the timing of first substantial employment

## **Hypotheses**

### *Recall Duration*

We evaluate differences in reporting accuracy according to the amount of time that has elapsed since the respondent's first employment ("recall duration") in three ways. First, we compare responses to the 2008 and 2004 panels of the retrospective SIPP questions to one another. Second, treating the NLSY97 as the more-accurate standard, we

compare the retrospective SIPP, NSFG and Add Health responses to the NLSY97 responses. We hypothesize that reporting on first employment from the 2008 panel of the SIPP will be less accurate than reporting from the 2004 panel, and that reporting in both panels of the SIPP, the NSFG and Add Health will be less accurate than reporting in the NLSY97. We additionally use the birth year of the respondent to measure differences in recall duration, since for earlier birth cohorts, more time will have elapsed on average between the retrospective interview and the first-employment outcome they are reporting on. We hypothesize that the earlier cohorts' reporting on first employment will be less accurate than that of younger respondents.

### *Salience and Complexity*

We make the following hypotheses about the effects of employment salience and complexity for the portion of our analysis in which we indirectly draw inferences about respondents' employment salience and complexity based on race/ethnicity and SES. We hypothesize that because of the greater amount of respondents' weekly time that fulltime jobs take up, fulltime jobs will be more salient than part-time jobs and hence easier for respondents to remember, such that respondents with fulltime jobs will be more likely to accurately report their first jobs. We hypothesize that job histories that include part-time work and multiple jobs within a given year will present more complexity, and be harder for respondents to remember, such that respondents with more employment history complexity will be more likely to underreport their first jobs. By extension, we also hypothesize that whichever groups of women have the highest employment complexity

and the lowest employment salience will exhibit the most underreporting of first employment.

For the portion of our analysis in which we measure salience and complexity more directly, we hypothesize that longer jobs will be more salient, and hence less likely to be forgotten, possibly leading to underreporting of shorter first jobs in favor of later, more salient jobs. That is, when a longer job is a first job, it will make reporting about that first job more accurate. However, when a longer job is not a first job, it will make reporting about the respondent's actual first job (which is shorter, and less salient) less accurate. If longer jobs are more salient, then Add Health respondents should be more likely to report longer jobs as their first jobs, forgetting shorter jobs that may have come earlier. If reporting more-salient jobs as first jobs means forgetting earlier, less-salient jobs, then Add Health respondents who report longer jobs as their first jobs will report their age at first substantial employment as inaccurately high, compared with the more-accurate NLSY97. We hypothesize that employment histories featuring higher numbers of jobs held will increase the complexity of the recall task, and hence may lead to forgetting of early jobs and over-reporting of later jobs as "first" jobs. If Add Health respondents with relatively more-complex employment histories are more likely to report their first jobs as happening later than NLSY97 respondents with comparable employment history complexity, then we can infer that these Add Health women may be forgetting their early jobs.

### *Biographical Anchoring*

Among women who have engaged in early family formation—i.e. those who have ever given birth or ever married by 2002—dates of marriage and childbirth may serve as biographical anchors that improve the accuracy of retrospective reports on first employment timing. We hypothesize that ever-married women and women with children will offer more accurate retrospective reports on their first employment. They will be more likely to report first substantial employment by 2002, and more likely to report younger (more accurate) ages at first substantial employment.

### *Sociodemographic Characteristics*

The exposure period for first employment before 2002 is longest for earlier cohorts because they reach ages at which it is both legal and socially acceptable for them to work in earlier years than later cohorts. Because of this longer exposure period, we expect that earlier cohorts of women will have had more jobs overall, including fulltime, part-time and multiple overlapping jobs, and thus hypothesize that their reporting on first employment will thus be less accurate than that of early cohorts.

For each of the other sociodemographic dimensions of our model, we offer two competing hypotheses about the relationship of membership in a particular group to employment salience and complexity. Each set of competing hypotheses about reporting accuracy hinges on differences between groups with respect to the salience and complexity of their early employment patterns. Because race/ethnicity, socioeconomic status, and likelihood of early family-formation are all closely tied both to one another and to the likelihood of attaining postsecondary education, our hypotheses about the relationship between reporting accuracy and membership in these groups are also

interconnected. On the one hand, because of labor market dynamics that give those with a bachelor's degree easier access to stable, well-paying jobs (Kalleberg 2011), respondents from more-advantaged socioeconomic backgrounds and those who are members of overall more-advantaged race/ethnicities may display less-complex employment histories, involving fewer, shorter, and more part-time jobs than less-advantaged groups (Presser and Cox 1997). Based on this scenario, we would hypothesize that White women, and those whose mothers have more education, will *more* accurately report their first jobs than less-advantaged respondents with greater job complexity.

On the other hand, because women from more-advantaged socioeconomic backgrounds and race/ethnic groups are more likely to attend college (Mare 1981), they may delay their first significant and fulltime employment until their schooling is complete, which may result in their having on average more part-time jobs of short-duration (e.g. summer jobs and internships), and fewer fulltime and longer jobs (Alon, Donohoe and Tienda 2001). Based on this alternative scenario, we would hypothesize that White women and those from more socioeconomically advantaged backgrounds will report *less* accurately on their early employment. In this scenario, the retrospective reports of White women and those whose mothers have a bachelor's degree or more will be less likely to include substantial employment by 2002 and more likely to show older (less accurate) ages at first substantial employment versus the reports of Black and Hispanic women, and women with less-educated mothers. Our bivariate analyses of indicators of employment-history complexity and salience in the NLSY97, described above, will determine which of these two scenarios applies.

We also offer two sets of competing hypotheses with respect to the association between early family-formation and reporting accuracy based on the employment salience and complexity. Because of the association between early family-formation and disadvantaged socioeconomic status, we speculate that women who engage in early family-formation behavior may be less likely to be employed overall and may have more complex employment histories than women who postpone family formation. In addition, because of its affective importance, family life may render employment less emotionally salient than paid work—that is, women with spouses and children may “care” less about work than never-married and childless women. Based on this scenario, we hypothesize that the retrospective reports of ever-married women and women with children will be less accurate than the retrospective reports of women who had not married or had children by 2002. In this scenario, the retrospective reports of women who engaged in early family formation will be less likely to include first substantial employment by 2002, and more likely to show older ages at first substantial employment.

Alternatively, women who engage in early family-formation may be more likely to have steady early employment whether because of a need to support family members, or because their early family-formation is part of an overall “accelerated adulthood” pattern of early engagement in adult life course behaviors (Vuolo, Mortimer and Staff 2013), of which early substantial employment and early family-formation are both components. In addition, among women who gave birth or married prior to their first employment, family responsibilities—in particular the need to arrange for child care, and the need to financially support family members—may render employment more practically salient because of the added work-life pressures these responsibilities entail.

That is, women with spouses and children may remember their jobs more clearly because of the conflicts they create with family life (Bianchi and Milkie 2010; Milkie et al 2010).

## **Results**

Table 1 shows the composition of the analytic samples by year of birth, race/ethnicity, and family-formation status for all three surveys, and mother's education for the NLSY97, NSFG and Add Health (see Panel A). The NSFG and SIPP 2004 and 2008 panels do not differ significantly from the NLSY97 on distributions of women by birth year. In addition, the NSFG and Add Health do not differ significantly from the NLSY97 with respect to race/ethnicity and family-formation behavior. However, women in the NSFG and Add Health have overall somewhat more highly-educated mothers than do women in the NLSY97. Women in the 2004 and 2008 panels of the SIPP have significantly different race/ethnic distributions from those in the NLSY97, with a somewhat higher proportion of Hispanics and lower proportion of African-Americans in the SIPP. Women from the SIPP 2004 and 2008 panels are also more likely to have ever married by the end of calendar year 2002 than are women in the NLSY97.

[TABLE 1 ABOUT HERE]

Table 1 also compares the length of the first reported fulltime job, and the reported number of jobs of 10 hours or per week of 9 or more weeks in duration, between Add Health and the NLSY97 (Panel B). These provide information relevant to our hypotheses about survey response error. Consistent with our hypothesis that longer jobs



will be more salient and thus that respondents will be more likely to report longer jobs retrospectively as being their first jobs, Add Health respondents reported substantially lower percentages of first fulltime jobs that lasted two months or less, or between 3 and 5 months, and higher percentages of first fulltime jobs that lasted six months or more, relative to NLSY97 respondents. Two thirds of first fulltime jobs reported retrospectively in the Add Health were of at least 6 months duration, whereas just under half of first fulltime jobs in the NLSY97 were of at least 6 months duration. We interpret this as evidence that Add Health respondents tended to forget earlier, less salient (that is, shorter duration) first fulltime jobs. Also consistent with our hypothesis that longer recall duration induces forgetting of employment history details, substantially higher percentages of Add Health than NLSY97 respondents reported having had two or fewer jobs between 2001 and 2009 (a third versus a fifth), whereas substantially lower percentages of Add Health respondents reported 6-9 jobs (11% versus 29%).

[TABLE 2 ABOUT HERE]

Table 2 compares retrospective reporting on the outcome variables to NLSY97 panel reports of those variables. Consistent with our hypothesis that longer recall duration induces underreporting, women in all three retrospective-reporting surveys were less likely to have reported having a first substantial job or employment by the end of calendar year 2002 than women in the NLSY97 (see Panel A). The differences, however, are in all cases quite small. Women in the SIPP 2004 and 2008 panels were respectively 2.9 and 4.9 percentage points less likely to have reported a having had a first job of six

months or more by 2002 than women in the NLSY97. Women in the NSFG reported were 3.5 percentage points less likely to have reported a fulltime employment spells of six months or more by 2002 than women in the NLSY97. Women in the Add Health were 2.9 percentage points less likely to have reported a first fulltime, non-summer jobs undertaken while not primarily a student between than women in the NLSY97, but this difference is significant only at the .10 level.

Also consistent with our hypothesis that longer recall duration induces forgetting of earlier jobs, retrospective reports from the SIPP, NSFG and Add Health exhibit higher proportions of respondents reporting older ages at their first substantial employment than in the NLSY97, and on this metric the differences from the NLSY97 are greater (see Panel B). Between 8 and 9 percentage points fewer SIPP and NSFG women reported retrospectively that their first substantial employment occurred when they were aged 18 to 21, and 5 to 6 percentages points more reported that it began when they were aged 22 to 24, compared to in the NLSY97. In the Add Health, 9 percentage points fewer women reported a first substantial job at age 17 or younger than in the NLSY97 (12.7% versus 21.4%).

[TABLE 3 ABOUT HERE]

We next use the NLSY97's panel-reporting detail to compare the complexity and salience of employment histories by our four main socio-demographic dimensions: year of birth, race/ethnicity, early family-formation (ever married and any children born by 2002) and mother's education (See Table 3). We interpret percentages of years with no

job and with two or more jobs as indicating employment histories with lower and higher complexity, respectively. We interpret higher percentages of employed months in which the only job held was a part-time job as indicating lower job salience, whereas higher percentages of women for whom their first job of six months was fulltime represent higher job salience. We interpret higher percentages of employed months in which two or more part-time jobs were held as indicating both higher employment-history complexity and lower salience.

On average, women from earlier birth cohorts (and who were therefore older at the end of calendar year 2002) reported having experienced a lower proportion of years with no jobs and a higher proportion of years with two or more jobs. Of years when employed, women from the 1980 birth cohorts had a lower proportion of months in which they held only a part-time job relative to the 1982-1984 cohorts. For those who reported a job of 6 months or more, women from the 1980 birth cohort were more likely to have had a first job that was fulltime relative to women from the 1982-1984 cohorts. These statistics likely reflect their longer period of exposure to holding any job, more than one job, and a fulltime job.

The breakdown of employment salience and complexity along the four other socio-demographic dimensions is consistent with a scenario in which more-advantaged women delay first substantial employment in favor of schooling whereas less-advantaged women begin their substantial employment at younger ages. White women and women whose mothers have more education display early employment patterns with the highest amount of employment complexity and the lowest salience. They are more likely to have been employed at all, but more likely to have had part-time and multiple jobs. White

women and women whose mothers have a bachelor's degree or more had the lowest percentages of years with no job and first job as a fulltime job, but the highest percentages of years with two or more jobs, and months with only part-time jobs and with more than one part-time job. Thirty percent of Black women and 25% of Hispanic women had years with no jobs, compared with 17% of White women. Black and Hispanic women both had higher percentages of first job's that were fulltime (39% and 38% respectively) compared to White women (32%). Percentages of employed months in which two or more part-time jobs were held, and percentages of months in which only a part-time job was held, are all higher for White women than for Black and Hispanic women. Black and Hispanic women had much lower percentages of years with two or more jobs (32% and 33%) than did White women (45%). All these statistics point to lower salience and higher complexity in the early employment histories of White than either Black or Hispanic women.

The employment salience and complexity of women who engaged in early family-formation follows a related pattern, with higher salience and lower complexity than the early employment patterns of women who did *not* engage in early family formation. Women with any children by 2002 had overall lower employment complexity than women without children. Lower percentages of women with children experienced years with two or more jobs, and two or more part-time jobs. Their first job of 6 months or more was much more likely to be fulltime (47%, compared to roughly 31% for women without an early birth). An exception to this greater salience, however, is found in women with children's greater percentage of employed months in which the only job held was part-time (52%, versus 39% for women without early children). Women who had ever

married by the end of 2002 were also more likely to report a first job that was fulltime, and lower percentages of part-time and more than one part-time job as compared with never-married women. These are again indicators of higher job salience and lower complexity for ever-married than never-married women.

In summary, women from later birth cohorts (and so with fewer years of exposure to early-adult employment), White women, daughters of mothers with a bachelor's degree, and women who did not start a family at a young age, have employment histories exhibiting low salience and high complexity. We therefore hypothesize that reporting of first substantial employment by White women and women whose mothers have bachelor's degrees will be less accurate than reports among Black and Hispanic women, women with less-educated mothers, and women who started a family at a young age.

[TABLE 4 ABOUT HERE]

Our main research hypotheses are tested in regressions pooling data from each of the three retrospective-report surveys (SIPP, NSFG, and Add Health) with the panel-report survey (NLSY97). We test these hypotheses using the sign and statistical significance of coefficients on the retrospective-survey indicator variable, and the sign and statistical significance of the interactions between retrospective-survey and our other covariates. We also conduct bivariate statistical tests of the regression outcome variable across each predictor variable, comparing each retrospective survey to the NLSY97. The results of these bivariate tests are reported in Appendix Tables A, B, and C respectively

for the SIPP, NSFG, and Add Health comparisons to the NLSY97, but are not discussed here.

Table 4 shows the results of logistic regressions estimating the probability of reporting first substantial employment before the end of calendar year 2002, in the SIPP relative to the NLSY97, in the NSFG relative to the NLSY97, and in Add Health relative to the NLSY97. In these regressions, the main-effect coefficient for each of the sociodemographic variables represents the reporting of that particular sociodemographic group in the reference survey, the NLSY97. Note that in the SIPP versus NLSY97 comparison, we are unable to include mother's education among the predictors, and this will account for some of the differences in the coefficients on the other predictors between the SIPP equation and the NSFG and Add Health equations. Furthermore, only the SIPP includes part-time jobs in its measure of first substantial employment.

Unsurprisingly, being from a later birth cohort was associated with a lower likelihood of having had a first substantial employment by 2002. By race/ethnicity, being Black or Hispanic tended to be associated with a lower likelihood of having had a first substantial employment by 2002, controlling for other characteristics. However only in the SIPP versus NLSY97 comparison, in which mother's education was not controlled for, were differences from White women statistically significant at the  $p < .05$  level. Lower maternal education is a consistently strong predictor of having had a first substantial employment by 2002 in our NSFG and Add Health comparison equations. Relative to women whose mothers have a Bachelor's degree, having a mother with any lower level of educational attainment was associated with a greater likelihood of having had a first fulltime employment spell of six months or more, or a first fulltime

employment spell of any length undertaken while they were not primarily students, and not as a summer job, by 2002. Early family formation had mostly positive associations with early first substantial employment. Having married by 2002 was associated with a higher likelihood of having had a first fulltime employment spell of six months or more by 2002, and of having had a first fulltime employment spell of any duration that was not undertaken while primarily a student or as a summer job. Having a birth by 2002 was associated with a higher likelihood to have had a fulltime employment spell by 2002 that was not undertaken while primarily a student or as a summer job, but a lower likelihood of having had a first fulltime or part-time job of six months or more by 2002.

The coefficients of interest for testing our recall-accuracy hypotheses are those that indicate differences in the outcome variable between the retrospective survey (NSFG, SIPP, or Add Health) and the NLSY97. A statistically-significant negative coefficient on the retrospective-survey main effect indicates underreporting of first substantial employment by 2002 among respondents who are members of the reference-category groups of the socio-demographic variables in that particular survey. In the SIPP versus NLSY97 comparison, consistent with our recall-duration hypothesis, women in the 2004 and 2008 SIPP were significantly less likely to report a first six-month job by 2002 than women in the NLSY97, and women in the 2008 SIPP panel were significantly less likely to report such a job than women in the 2004 SIPP panel ( $p=.009$ , results not shown). Similarly, in the NSFG versus NLSY97 comparison, women in the NSFG were significantly less likely to report a first six-month job by 2002 than women in the NLSY97. The coefficient for being observed in the Add Health is also negative, but is not statistically significant ( $p = 0.15$ ).

Given these negative coefficients for retrospective-survey main effects, we interpret a positive interaction coefficient of a sociodemographic-group category with retrospective survey as indicating less underreporting, and a negative interaction coefficient as indicating more underreporting, than for the reference-category sociodemographic group. That is, the interactions between “retrospective survey” and each sociodemographic group describe how the gap between reporting of first substantial employment in the NSLY97 versus in retrospective reports (i.e. in the NSFG, SIPP or Add Health) contracts (better reporting) or expands (worse reporting) according to the value on the sociodemographic variable.

Turning first to the SIPP versus NLSY97 comparison, consistent with our recall-duration hypothesis, there is a statistically significant positive coefficient for women from the youngest, 1984 cohort relative to the 1980 birth cohort. Consistent with our hypothesis that women with higher employment salience and lower complexity would be less likely to retrospectively underreport first substantial employment by 2002, being Black and giving birth by the end of calendar year 2002—groups with among the highest employment-history salience and lowest complexity—were both associated with a differentially higher likelihood in the SIPP (than in the NLSY97) of reporting a first six-month job relative to White women and women who had not given birth. That is, Black women and women who had given birth were less likely to underreport a first substantial employment, as measured by any job of 6 months or more. The result for early mothers is also consistent with our hypothesis that women with biographical anchoring details—in this case, the birth of one or more children—would report on their employment more accurately. Hispanic women’s reporting accuracy in the SIPP did not differ significantly



from White women's, despite the higher employment salience and lower complexity of Hispanic women's employment histories. Moreover, being ever-married did not significantly reduce underreporting, despite the higher salience in this group's employment histories, and the anchoring detail of a marriage date.

In the NSFG versus NLSY97 comparison, the direction and significance of the birth year coefficients are consistent with our recall-duration hypothesis, such that women from earlier birth cohorts in the NSFG were significantly less likely than women from later birth cohorts in the NSFG to report a first six-month fulltime employment spell, relative to the difference between these cohorts for women in the NLSY97. This suggests more retrospective underreporting of first employment among women from earlier birth cohorts. Consistent with our hypothesis that women with higher employment salience and lower complexity would be less likely to retrospectively underreport their first employment, Hispanic women and Black women were more likely than White women to report a first six-month fulltime employment spell in the NSFG, relative to women in the NLSY97. This suggests more retrospective reporting error among White women, consistent with their having the highest employment complexity and lowest salience of the three race/ethnic groups in our model. However, there are no statistically-significant differences in the interaction of NSFG with mother's educational attainment nor with early family formation.

In the Add Health versus NLSY97 comparison, consistent with our salience and complexity hypotheses, Hispanic Add Health respondents were more likely than White Add Health respondents to report first fulltime employment by 2002, relative to the Hispanic and White respondents in the NLSY97. Consistent with the salience,

complexity, and anchoring hypotheses, Add Health women who had a birth by 2002 were more likely to report first fulltime employment by 2002 than women without a birth, relative to reporting in the NLSY97. Contrary to this conclusion, however, is the finding that Add Health women who had ever married by 2002 were less likely to report a first fulltime job relative to those who had not married by 2002, relative to reports in the NLSY97. No statistical evidence for recall-duration effects is found in the Add Health versus NLSY97 comparisons of women from earlier versus later birth cohorts.

[TABLE 5 ABOUT HERE]

Table 5 shows the results of our linear regression model of age at the start of first reported substantial employment by 2008-10, among women who were aged 24 to 30 and had had any substantial employment by that time. Here, positive coefficients represent increases to the respondent's reported age at first substantial employment. The main-effect coefficient for each of the sociodemographic variables again represents the reporting of that particular sociodemographic group in the reference survey, the NLSY97. These indicate that being Black was associated with a higher likelihood of having started their first job of six months or more at an older age, and with a higher likelihood of having begun at older ages a first fulltime or part-time employment spells that they undertook while not primarily a student, and not as a summer job, relative to White women. Being Hispanic was not associated with any statistically significant difference in age at first substantial employment relative to White women. Again, mother's education is a strong predictor, with mother's lower attainment associated with younger age at first

fulltime employment spell of six months or more, and with younger age at first fulltime employment undertaken while not primarily a student, and not as a summer job. Both early births and early marriages tended to be associated with younger ages at first substantial employment, though in each case in only two of the three data sources.

A statistically significant positive coefficient on the “retrospective survey” main effects indicates that retrospective reports in that survey are of older ages on average than NLSY97 reports for the reference-category group. We interpret this as indicating retrospective underreporting of earlier first substantial jobs or employment. In all three retrospective surveys, respondents report first substantial employment on average half a year older than NLSY97 respondents, consistent with our recall-duration hypothesis.

Given these positive retrospective-survey main-effect coefficients, a statistically significant negative coefficient for the interaction of a covariate value with “retrospective survey” indicates that retrospective reports from this group are more accurate—i.e. they engage in less underreporting of earlier jobs and less overreporting of later jobs—than retrospective-survey respondents who are members of the reference category. Consistent with our salience, complexity, and anchoring hypotheses, SIPP respondents who had a birth by 2002 were significantly more likely to report younger (i.e. more accurate) ages at their first employment than those without births, as compared with respondents with and without births by 2002 in the NLSY97. However, there is no statistically significant difference in reporting accuracy between women who did and did not marry by 2002, nor is there a statistically significant difference in reporting accuracy of age at first substantial employment by race/ethnicity.

Consistent with our salience and complexity hypothesis, Hispanic NSFG respondents were more likely to report younger ages at first substantial employment than White NSFG respondents, relative to Hispanic and White women in the NLSY97. Consistent with both the salience and complexity and anchoring hypotheses, women with a birth by 2002 were more likely to report younger ages at first substantial employment than women without a birth by 2002, versus women with and without early births in the NLSY97. However, there are no statistically significant differences in reporting accuracy between earlier and later birth cohorts, between White and Black women, between women with differing levels of maternal education, or between those who did and did not marry by 2002.

Consistent with our recall-duration hypotheses, the youngest Add Health women, who were born in 1982, reported statistically significantly younger (i.e. more accurate) ages at first substantial employment than women born in 1980, relative to the NLSY97 1980 and 1982 birth cohorts. Consistent with our salience and complexity hypotheses, Add Health respondents whose mothers have less than a high school education, or a high school diploma only, reported younger ages at first substantial employment than Add Health respondents whose mothers have some college or a Bachelor's degree, as compared to NLSY97 respondents. Also consistent with our salience and complexity hypotheses, Hispanic women reported younger ages at first substantial employment than White women, relative to in the NLSY97, although these results are significant only at the .10 level. There is no statistically significant difference, however, in reporting accuracy between Black and White Add Health respondents relative to NLSY97 respondents, nor between women who did or did not form families early.

Uniquely in the Add Health versus NLSY97 comparison, Table 5 shows individual-level indicators of employment history salience and complexity. Regarding complexity, there was no statistically significant relationship with age at first fulltime job found between women who reported having more or fewer jobs between 2001 and 2009, whereas we expected that reporting would be worse among those women with a higher number of jobs. Consistent with our salience hypothesis, however, relative to NLSY97 respondents, Add Health women who said their first job lasted 3-5 months reported those purported first jobs as beginning at younger ages than those who reported that their first jobs lasted 2 months or less. Add Health women who said their first jobs lasted 6 months or more reported those purported first jobs as beginning at older ages than those who reported the shortest first jobs. Although these results testing our salience hypothesis with individual data are not monotonic in their direction, we argue they are nonetheless consistent with our hypothesis, because theory suggests that more-salient jobs don't necessarily contribute to more accurate overall reporting so much respondents simply give them greater emphasis in their reports. In this particular measure in Add Health, we can only know the length of the job that the respondent *said* was her first, which may or may not have been her actual first job. If her first job lasted six months or more, she might be more apt to remember and report accurately the timing of its occurrence. But, for example, if her first two jobs lasted less than two months, and her third job lasted six months or more, she might forget the occurrence of her first two jobs, and report her third, longer job as being her first job. Our results here suggest that among Add Health respondents who reported that relatively short jobs (of less than six months) were their first fulltime jobs, those who reported first jobs of 3-5 months' duration remembered the

timing of their jobs better (reporting them as beginning at younger ages) than those who reported first jobs of less than two months. Hence, respondents with first jobs of 3-5 months retrospectively reported their age at the start of these longer short first jobs *more* accurately because of the jobs' greater salience. On the other hand, when Add Health respondents reported (*even more* salient) jobs of six months or more as being their first jobs, they were more likely to report those jobs as starting at *older* ages. No such discrepancy exists in the NLSY97. This suggests that some of the Add Health respondents who reported jobs of six months or more as being their first jobs had in fact forgotten earlier, shorter jobs due to the longer, later jobs' higher salience. Their greater reporting of longer jobs that occurred at older ages indicates that their reporting is less accurate.

## **Discussion and Conclusion**

In this study, we have examined the accuracy of retrospective survey reporting on first substantial employment among young women born in the U.S. between 1980 and 1984, in three major nationally-representative surveys: the SIPP, the NSFG, and Add Health. By focusing on first substantial employment, we sought to ground our study in a life-course research approach, in which first employment is a key symbolic marker of adult status, a source of economic resources and independence, and a major determinant of employment to come and therefore of longer-term socioeconomic trajectories. We know of no previous study in any country that looks specifically at the accuracy of retrospective reporting on first employment. Moreover, prior studies on the survey reporting of employment have mainly evaluated European surveys (Dex and Joshi 1998;

Jacobs 2002; Jürges 2007; Manzonni et al 2010; Manzonni et al 2011; Kyyra and Wilke 2014). Prior U.S. studies on employment-history reporting have instead focused on respondents' reports of *unemployment* spells (Morganstern and Barrett 1974; Horvath 1982; Akerlof and Yellen 1985; Duncan and Hill 1985; Mathiowetz and Duncan 1988; Pierret 2001), and most, excepting Pierret (2001) are by now quite dated. Having more recent data to evaluate retrospective reporting accuracy is especially important given our focus on women's rather than men's first substantial employment. Women's labor force participation in the U.S. has increased dramatically over the past 30 years, and only recently plateaued (Goldin 1990; Cotter, Hermsen and Vanneman 2011).

We based our hypotheses about recall of first substantial employment on general theory of survey recall accuracy: on length of the recall period, the salience and complexity of women's employment histories, and on the presence or absence of time-anchoring biographical details in respondents' lives (Sudman, Bradburn, and Schwarz 1996; Tourangeau, Rips, and Rasinski 2000; Schaeffer and Presser 2003). Consistent with the theoretical expectation that longer duration since the reported event reduces reporting accuracy, previous studies have found that a longer recall period leads to poorer reporting of both employment and unemployment (Mathiowetz and Duncan 1988; Pierret 2001; Manzonni et al 2010; Manzonni 2012; Jürges 2007). We therefore hypothesized that recall of first substantial employment—either in a dichotomous representation of having occurred or not by age 18-22, or in a continuous representation of age at first substantial employment by a woman's mid-late 20s—would be worse in the retrospective reports of the three surveys examined than in our benchmark annual panel survey reports in the NLSY97. This hypothesis was supported across all three surveys. We additionally

hypothesized and found that recall was somewhat worse among SIPP respondents who were surveyed in 2008 than among SIPP respondents who were surveyed in 2004, when in both cases they were reporting on first substantial employment up to 2002.

Additionally, across our three surveys, the reports of earlier birth cohorts' first substantial employment occurrence and timing tended to have more error than did the reports of later cohorts.

Our results on recall duration are novel not only because they are the first to address the topic of first substantial employment, but also because they address a relatively long period of recall. All previous U.S. studies of employment-history recall that we are aware of investigated recall for no more than two years (see above cites). Research into recall in other domains, however, notably fertility and sexual initiation (Rendall et al 1999; Wu et al 2001) find recall error to increase with the passage of time since the event being reported on, although with the greatest decline in accuracy occurring in the first years after the event (Wu et al 2001). Our results here are consistent also with these findings about longer recall periods.

Survey-recall theory additionally asserts that more "salient" events will be more accurately recalled, but that as the "complexity" of the full event history increases, accuracy of recall with respect to any single event will diminish. We therefore hypothesized that having jobs with greater salience (fulltime and for longer durations) would improve reporting accuracy in most scenarios, in particular when a high-salience job was the woman's first substantial employment. However, under scenarios of complex employment histories (including both short and long, and part-time and fulltime jobs in early adulthood) we also considered the possibility that a lower-salience earlier job might



be forgotten when the woman subsequently experienced a higher-salience job before the time of the retrospective survey report.

Our main method of testing for salience and complexity effects on accuracy of recall of first substantial employment was to compare socio-demographic groups that we knew (from our analyses of our benchmark NLSY97 data) differed in their early employment salience and complexity during this recall period. We took this approach following Mathiowetz and Duncan's (1988) conclusion that the major reason for inter-group differences in accuracy of recall of their *unemployment* events was difficulty of the recall task due to complexity of histories of spells out of employment. Whereas Mathiowetz and Duncan found that greater complexity of the recall task explained the worse recall of unemployment histories of Black respondents and those with less education, we showed that among the younger respondents of our study, *lower* complexity of the recall task explains the *better* recall of early-employment histories of Black and Hispanic women, and of women whose mothers have lower educational attainment. On the other hand, the higher complexity and lower salience of early employment patterns among White women and women whose mothers have Bachelor's degrees is consistent with this group of women engaging in more short-duration and part-time employment while on a path towards obtaining higher educational qualifications. This would plausibly explain their less-accurate reporting.

In one of our three surveys (Add Health), we were able to examine the effects of employment complexity and salience using direct measures at the individual level on retrospective reporting accuracy. Consistent with our hypothesis that greater complexity would reduce accuracy and that more-salient jobs would receive greater emphasis in

respondents' retrospective reports, we found that retrospective reports of Add Health respondents reported too few jobs, and were skewed toward incorrectly reporting longer jobs as first fulltime jobs. As a result, they were more likely to report their first fulltime jobs as starting at older ages.

Survey-recall theory further asserts that important biographical events in other life domains provide “anchoring” assistance. Applying this to our study, we considered that early family-formation behavior would offer respondents anchoring biographical details that might help them better remember the timing of their first substantial employment, aided by its sequencing relative to the well-remembered dates of a marriage or the birth of a child. These anchoring events are directly measured at the individual level.

Confounding the testing of this hypothesis, however, we found (again in analyses of the NLSY97 data) that women who engaged in early family-formation were, as a socio-demographic group, more likely to have early employment patterns characterized by high salience and low complexity: they were more likely have fulltime jobs and less likely to have multiple jobs in a year. Consistent with this combination of high salience, low complexity employment patterns, and “anchoring” family-demographic events, women with early first births or marriages were hypothesized and found to report their first substantial employment more accurately. This is consistent both with other studies that have applied the “anchoring” to employment (Manzoni 2012), and with the use of anchoring events to improve recall in other domains (Loftus and Marburger 1983).

In summary, when any statistically-significant deviations from our benchmark panel-survey data were present, our results on the retrospective reporting of first substantial employment were very largely consistent with theory from the survey-recall

literature. However, our results are also quite reassuring with respect to the possibility for surveys to capture indicators of first substantial employment with acceptable accuracy in retrospective questions. The magnitudes of difference between the estimates of first substantial employment or job based on retrospective versus annual panel reports are relatively small, both before and after controlling for sociodemographic characteristics and indicators of employment history salience and complexity—only about a half-year later, for example, in timing of first substantial employment. Furthermore, given both the policy importance of early employment for the analysis of welfare and work programs (e.g., Pavetti and Acs 2001), it is also reassuring that underreporting in retrospective survey questions is a lesser problem in early adulthood for women from disadvantaged groups, including those who have children at young ages. These more-disadvantaged women are not either inherently better (or worse) reporters of when they first achieved a stable period of employment. Instead, because their early employment experiences are marked by fewer total jobs, and fewer part-time jobs than more-advantaged women, their recall task is simpler, and therefore their reporting of first substantial employment tends to be more accurate.

## APPENDIX A: DATA SOURCES

### *The Survey of Income and Program Participation (SIPP)*

The retrospective questions on employment history are asked of individuals ages 18 and above (to a maximum age of 75). This youngest age of 18 means that data for women with years of birth 1985 and earlier are available in the 2004 SIPP. The questions include the following “first long-term job” questions (U.S. Census Bureau 2009):

*Was [ ] the first job or business [fill TEMPNAME] had that lasted 6 straight months or more?*

In filling in [ ], the interviewers are asked to “*Count any job or business, either fulltime or part-time enter (N) for never worked 6 straight months at a job or business.*”

*How old was she when she [STARTEDWRKFIL]?*

*(Or do you remember the year?)*

*So she was about [fill AGE] when her first long-term job or business started – is that right?*

*That would be around [fill MAKEMTHYR]. Is that correct?*

*I'm sorry. What year was it?*

Interviewers are asked to “*Enter start year of the person’s first ‘6-straight month or more’ job or business.*”

### *National Survey of Family Growth (NSFG 2006-10)*

All respondents are asked specifically about their first fulltime work and, if they have ever worked, about current fulltime or part-time work, but not about any work in between their first and current jobs. The questionnaire doesn’t differentiate between civilian and military employment.

Questions relating to the start of first work are as follows:

*Now I'm interested in knowing if you've ever worked fulltime, for 6 months or longer. By fulltime, I mean 35 or more hours a week. If you've ever taken leave from work, such as family leave, vacations, disability leave, strikes, and temporary layoffs, that counts as still working, as long as you were still officially employed. Have you ever worked for pay, fulltime, for six months or longer?*

*When, in what month and year, did you start your first period of fulltime work that lasted 6 months or longer altogether?*

*National Longitudinal Study of Adolescent to Adult Health (Add Health)*

All respondents are asked at Wave 4 about whether they have ever worked full time at least 35 hours a week at a paying job while they were not primarily a student, and not including summer work. Respondents who answer that they have had a fulltime job are also asked about how many jobs they have had where they worked at least ten hours per week, and that lasted nine weeks or more, how old they were when their first fulltime job began, and how long they worked at their first job. Those still in their first job at the time of the Wave 4 interview are asked the start date of that job. Questions are as follows.

*Have you ever worked full time at least 35 hours a week at a paying job while you were not primarily a student? Do not include summer work.*

*Thinking back over the period from 2001 to the previous year how many total jobs have you had? Include only paying jobs that lasted 9 weeks or more and were at least 10 hours a week.*

*How old were you when you first began working full time (at least 35 hours a week) at a paying job while you were not primarily a student?*

*How long did you work at your first full time job?*

*In what month and year did you begin your (current/most recent) primary job?*

*National Longitudinal Survey of Youth -1997(NLSY97)*

Respondents are not asked specifically about their first job. Respondents over age 14 are asked in the first interview (1997) to report all jobs, and then in subsequent interviews, to report all jobs since last interview. They are asked to report on civilian and military jobs as part of the same portion of the interview, though the survey includes a question to differentiate between the two. Respondents report on both fulltime and part-time work, and a specific question asks them to report how many hours per week they worked at each job.

Respondents report start and end dates of each job, as well as details about the job and their activities in the job, including whether the job was an employer- or self-employment job, a “temp” job, or a private, government, nonprofit or military employer or unpaid work on a family farm, as well as rank, job activities, pay, hours worked per week. Respondents who reported paid internships in the education section of the interview are also prompted to include paid internships in their employment reporting. These questions are too numerous to concisely list here, but can be found in the “employment” questionnaire sections for each survey year at the Bureau of Labor Statistics’ web site: <http://www.bls.gov/nls/quex/y97quexcbks.htm>.

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**Table 1.** Descriptive Statistics, Women Born in the U.S. 1980-84 or 1980-82

				NLSY97	NLSY97	
				Born	Born	Add
	NSFG	SIPP	SIPP	1980-1984 <sup>a</sup>	1980-1982 <sup>b</sup>	Health
<b>A. Sociodemographic Characteristics</b>						
Race/ethnicity						
White, non-Hispanic	73.4	72.7	73.4	72.8	73.8	75.7
Black, non-Hispanic	16.1	14.3	13.8	16.2	15.8	14.1
Hispanic, any race	10.5	13.0	12.7	11.1	10.5	10.2
$\chi^2$ p-value vs. NLSY97	0.857	0.024	0.021			0.335
Birth year						
1980	19.3	20.6	21.6	20.2	32.4	39.0
1981	20.8	18.8	20.9	19.9	33.7	36.3
1982	20.2	20.8	19.3	20.5	33.9	24.7
1983	20.4	18.7	17.8	19.3		
1984	19.3	21.1	20.4	20.0		
$\chi^2$ p-value vs. NLSY97	0.823	0.715	0.373			<0.001
Mother's education						
Less than high school	11.3			16.2	16.5	14.3
High school	35.2			36.1	35.0	44.6
Some college	28.5			26.6	26.3	19.4
BA or more	25.0			21.0	22.1	21.8
$\chi^2$ p-value vs. NLSY97	<0.001					<0.001
Ever given birth by end of year 2002 <sup>c</sup>	18.5	21.8	21.6	20.2	27.3	29.0
$\chi^2$ p-value vs. NLSY97	0.485	0.165	0.214			0.229
Ever married by end of year 2002 <sup>c</sup>	12.2	13.4	15.0	11.1	18.8	19.4
$\chi^2$ p-value vs. NLSY97	0.223	0.018	<0.001			0.626
Unweighted sample size <sup>d</sup>	1,840	2,455	2,206	3,145	1,626	2,295
<b>B. Employment History Characteristics</b>						
Length of first job fulltime job while not primarily a student by February 2009, not including summer jobs						

Two months or less	28.1	21.3
3-5 months	26.7	11.3
6 months or more	45.2	67.4
$\chi^2$ p-value vs. NLSY97		<0.001
Number of jobs of at least 10 hours per week lasting 9 weeks more reported as occurring between 2001 and February 2009		
Two jobs or fewer	19.5	35.3
3-5 jobs	48.6	50.9
6-9 jobs	28.9	10.9
Ten jobs or more	2.9	3.0
$\chi^2$ p-value vs. NLSY97		<0.001
Unweighted sample size	1,317	2,122

*Sources:* National Longitudinal Survey of Youth 1997 (NLSY97), National Survey of Family Growth 2006-10 (NSFG), Survey of Income and Program Participation (SIPP) 2004 and 2008 panels, and National Longitudinal Study of Adolescent to Adult Health (Add Health) Waves 1-4.

*Notes:*

All estimates are weighted.

$\chi^2$  p-value indicates statistical significance of difference in the distribution of retrospective surveys from the comparable distribution in NLSY97.

a. Included NLSY97 respondents born between 1980 and 1984 were interviewed at every survey round up to and including an interview covering the entire calendar year 2002.

b. Included NLSY97 respondents born between 1980 and 1982 were interviewed at every survey round up to and including an interview covering the entire calendar year 2003 in the "sample characteristics" section, and through February 2009 in the "employment history characteristics" section.

c. The family formation histories of Add Health respondents and NLSY97 respondents in the parallel sample are coded as ever having given birth, or ever having married, at or before the respondent's age at the end of 2002.

d. Sample includes respondents with a valid value on each of the variables included in the relevant logistic regression model. 1980-1984 NLSY97 percentages reported are for respondents with a valid value on the variables included in the SIPP04/SIPP08 regression analysis, except for mother's education, in which case they represent respondents with a valid value on the variables included in the NSFG regression analysis.

**Table 2:** Reporting of First Substantial Job or Employment Timing and Characteristics, Women Born in the U.S. between 1980 and 1984

		NLSY97, NLSY97,				
	NSFG	SIPP 2004	SIPP 2008	Born 1980- 1984	Born 1980- 1982	Add Health
Had any job of 6 months or more by 2002		78.1	76.1	81.0		
$\chi^2$ p-value vs. NLSY97		<0.001	<0.001			
Had a spell of fulltime employment of 6 months or more by 2002*	46.1			49.6		
$\chi^2$ p-value vs. NLSY97	0.019					
Ever worked fulltime at least 35 hours per week while not primarily a student by age at end of 2002, not including summer jobs					69.6	66.7
$\chi^2$ p-value vs. NLSY97						0.060
Unweighted sample size	1,840	2,455	2,206	2,950	1,626	2,162
Age at first any job of 6 months or more by December 2008						
17 or younger			59.6	58.9		
18 to 21			27.4	35.1		
22 to 24			11.1	5.4		
25 or more			1.9	0.6		
$\chi^2$ p-value vs. NLSY97			<0.001			
Age at start of first six month fulltime employment spell by June 2010						
17 or younger	24.9			24.3		
18 to 21	40.0			48.6		
22 to 24	29.4			23.9		
25 or more	5.7			3.3		
$\chi^2$ p-value vs. NLSY97	<0.001					
Age at first fulltime job while not primarily a student by February 2009, not including summer jobs						
17 or younger					21.4	12.7
18 to 21					51.1	55.1
22 to 24					23.5	27.6
25 or more					3.9	4.6
$\chi^2$ p-value vs. NLSY97						<0.001

Unweighted sample size	1,030	2,058	2,205	1,317	2,122
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*Sources:* National Longitudinal Survey of Youth 1997 (NLSY97), National Survey of Family Growth 2006-10 (NSFG), Survey of Income and Program Participation (SIPP) 2004 and 2008 panels, and National Longitudinal Study of Adolescent to Adult Health (Add Health) Waves 1-4. NLSY97 respondents included in the "by 2002" measures were interviewed at every survey round up to and including an interview covering the entire calendar year 2002; for age at first employment measures, NLSY97 respondents were interviewed at every round up through an interview that includes reporting on the date noted in the table. Sample includes respondents with a valid value on each of the variables included in the relevant logistic regression model.

*Notes:*  $\chi^2$  p-value indicates statistical significance of difference in distribution of retrospective question responses from the comparable distribution in NLSY97. Estimates are weighted.



**Table 3 :** Complexity of Employment History Experienced up to End of Calendar Year 2002, by Year of Birth, Race/Ethnicity, Mother's Education and Family Demographics among Women Born in the U.S. between 1980 and 1984

	Years with no job		Years with 2 or more jobs		Employed months in which the only type of job held was a part-time job <sup>a</sup>		Employed months in which two or more part-time jobs were held <sup>a</sup>		First job of six months was fulltime <sup>b</sup>	
	Percentage	$\chi^2$ p-value <sup>c</sup>	Percentage	$\chi^2$ p-value <sup>c</sup>	Percentage	$\chi^2$ p-value <sup>c</sup>	Percentage	$\chi^2$ p-value <sup>c</sup>	Percentage	$\chi^2$ p-value <sup>c</sup>
Total	19.8		41.5		64.0		8.7		33.6	
Year of birth										
1980 <sup>d</sup>	17.7	--	45.6	--	53.5	--	8.7	--	39.7	--
1981	19.3	0.209	43.6	0.196	54.1	0.759	7.9	0.381	40.9	0.700
1982	16.4	0.301	45.6	0.985	65.6	<.001	10.8	0.032	33.1	0.032
1983	19.9	0.123	40.7	0.003	70.7	<.001	8.9	0.775	30.2	0.002
1984	25.6	<.001	32.1	0.000	76.8	<.001	7.2	0.102	21.1	<.001
Race/ethnicity										
White, non-Hispanic <sup>d</sup>	16.8	--	44.8	--	65.3	--	9.9	--	31.9	--
Black, non-Hispanic	30.2	<.001	32.1	<.001	60.0	0.001	5.0	<.001	39.2	0.002
Hispanic, any race	25.0	<.001	32.9	<.001	60.4	0.007	5.7	<.001	38.1	0.019
Mother's education										
Less than high school	27.9	<.001	34.3	<.001	56.6	<.001	4.6	<.001	41.0	<.001
High school	19.1	0.181	42.1	0.053	61.0	<.001	7.8	<.001	37.1	<.001
Any college	17.6	0.908	42.1	0.070	65.1	<.001	9.7	0.017	32.3	0.003
Bachelor's degree or more <sup>d</sup>	17.5	--	45.3	--	73.1	--	12.1	--	23.9	--
Ever given birth by year end 2002										
Yes	25.8	<.001	35.7	<.001	52.2	<.001	3.8	<.001	46.8	<.001
No <sup>d</sup>	18.4	--	42.9	--	38.7	--	9.9	--	30.7	--
Ever married by year end 2002										
Yes	20.2	0.771	42.4	0.570	46.7	<.001	4.8	<.001	49.5	<.001

No <sup>d</sup>	19.8	--	41.4	--	66.1	--	9.2	--	31.5	--
Unweighted sample size	2,950		2,950		2,851		2,851		2,454	

*Source:* Annual panel reports for respondents interviewed at every wave between 1997 and end of calendar year 2002 in the National Longitudinal Survey of Youth 1997 (NLSY97). All percentages are weighted.

*Notes:* <sup>a</sup> Among with any employment by year-end 2002. <sup>b</sup> Among women with a job of six months or more by year-end 2002. <sup>c</sup> Chi-squared p-value is for each group vs. the reference category. <sup>d</sup> Indicates the reference category for the relevant chi-squared test.

**Table 4:** Logistic Regression for Reporting First Substantial Employment by end of 2002, Women Born in the U.S. between 1980 and 1984

		NLSY97, SIPP 2004 and SIPP 2008			NLSY97 and NSFG			NLSY97 and Add Health		
Definition of "first substantial employment":		First job of six months or more			First fulltime employment spell of six months or more			First fulltime employment while not a student, and excluding summer jobs		
		Std			Std			Std		
		Coefficient	Error	p-value	Coefficient	Error	p-value	Coefficient	Error	p-value
Birth year (vs. 1980)										
	1981	-0.04	0.19	0.842	-0.33 *	0.13	0.011	-0.64 ***	0.15	<0.001
	1982	-0.29	0.19	0.118	-0.92 ***	0.13	<0.001	-1.17 ***	0.15	<0.001
	1983	-1.20 ***	0.17	<0.001	-1.41 ***	0.13	<0.001			
	1984	-2.05 ***	0.17	<0.001	-2.27 ***	0.14	<0.001			
Race/ethnicity (vs. White, non-Hispanic)										
	Black, non-Hispanic	-0.88 ***	0.12	<0.001	-0.21 †	0.12	0.067	-0.10	0.17	0.542
	Hispanic, any race	-0.37 *	0.15	0.013	-0.07	0.14	0.609	-0.19	0.20	0.341
Mother's education (vs. Bachelor's degree or more)										
	Less than high school				0.66 ***	0.14	<0.001	1.13 ***	0.21	<0.001
	High school				0.71 ***	0.11	<0.001	0.95 ***	0.15	<0.001
	Some college				0.49 ***	0.12	<0.001	0.69 ***	0.16	<0.001
Ever given birth by end of 2002		-0.88 ***	0.13	<0.001	0.02	0.11	0.890	0.34 *	0.15	0.027
Ever married by end of 2002		0.01	0.18	0.943	0.77 ***	0.15	<0.001	0.90 ***	0.19	<0.001
NSFG respondent					-0.81 ***	0.19	<0.001			
SIPP 2004 respondent		-0.54 **	0.19	0.005						
SIPP 2008 respondent		-0.69 ***	0.19	<0.001						
Add Health respondent								-0.28	0.20	0.151

Birth year x survey									
1981 x retrospective survey	-0.27	0.23	0.241	0.08	0.20	0.686	-0.22	0.19	0.260
1982 x retrospective survey	-0.30	0.23	0.179	0.52 **	0.20	0.009	-0.09	0.20	0.644
1983 x retrospective survey	0.06	0.21	0.779	0.63 **	0.20	0.002			
1984 x retrospective survey	0.56 **	0.21	0.007	0.79 ***	0.22	<0.001			
Race/ethnicity x survey									
Black, non-Hispanic x retrospective survey	0.39 *	0.16	0.013	0.44 *	0.18	0.016	-0.37 †	0.23	0.098
Hispanic, any race x retrospective survey	-0.11	0.18	0.542	0.44 *	0.22	0.046	0.57 *	0.27	0.037
Mother's education x survey									
Less than high school x retrospective survey				-0.22	0.24	0.360	0.34	0.28	0.225
High school x retrospective survey				0.21	0.18	0.224	0.20	0.20	0.302
Some college x retrospective survey				0.21	0.18	0.245	-0.03	0.21	0.903
Family status x survey									
Ever given birth by end of 2002 x retrospective survey	0.68 ***	0.16	<0.001	0.18	0.18	0.308	0.41 *	0.20	0.045
Ever married birth by end of 2002 x retrospective survey	0.28	0.22	0.210	0.08	0.23	0.718	-0.64 **	0.24	0.008
Intercept	2.75 ***	0.15	<0.001	0.42 **	0.12	0.001	0.64 ***	0.15	<0.001
N	7,806			4,790			3,545		

*Source:* National Survey of Family Growth 2006-10 (NSFG); Survey of Income and Program Participation (SIPP), 2004 and 2008 Panels; National Longitudinal Study of Adolescent to Adult Health (Add Health) Waves 1-4; National Longitudinal of Youth-1997 (NLSY97) respondents interviewed at every wave through the end of calendar year 2002 in the NSFG and SIPP comparisons, and through the end of 2003 in the Add Health comparison

*Notes:* †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . The family formation histories of Add Health respondents and NLSY97 respondents in the parallel sample are coded as ever having given birth, or ever having married at or before the respondent's age at the end of 2002. In the Add Health/NLSY97 comparison, jobs are limited, per the Add Health questionnaire, to those undertaken while not a primarily a student, and do not include summer jobs. SIPP 2008 panel respondents are statistically significantly less likely to report a first job than SIPP 2004 panel respondents ( $p = .009$ ). "Retrospective survey" refers to either the SIPP, the NSFG, or Add Health. Regressions are weighted.

**Table 5 :** Linear Regression (OLS) for Age at First Substantial Employment among Women Born in the U.S. 1980-1984 and with a First Substantial Employment by 2008-2010

		NLSY97 and SIPP 2008			NLSY97 and NSFG			NLSY97 and Add Health		
Definition of "first substantial employment":		First job of six months or more, by December 2008			First fulltime employment spell of six months or more, by June 2010			First fulltime employment while not a student, and excluding summer jobs, by February 2009		
		Coefficient	Std Error	p-value	Coefficient	Std Error	p-value	Coefficient	Std Error	p-value
Birth year (vs. 1980)										
	1981	-0.11	0.26	0.667	-0.20	0.18	0.264	0.02	0.16	0.908
	1982	-0.17	0.27	0.520	-0.18	0.18	0.325	0.09	0.17	0.595
	1983	-0.21	0.27	0.434	-0.18	0.19	0.350			
	1984	-0.28 †	0.16	0.081	-0.38	0.19	0.046			
Race/ethnicity (vs. White, non-Hispanic)										
	Black, non-Hispanic	0.99 ***	0.27	<0.001	0.21	0.17	0.207	0.46 *	0.19	0.019
	Hispanic, any race	0.40	0.31	0.194	0.07	0.20	0.719	0.05	0.23	0.826
Mother's education (vs. Bachelor's degree or more)										
	Less than high school				-0.75 ***	0.21	<0.001	-1.10 ***	0.24	<0.001
	High school				-0.90 **	0.16	<0.001	-0.76 ***	0.18	<0.001
	Some college				-0.48 **	0.17	0.004	-0.68 ***	0.19	<0.001
Ever given birth by end of 2002		0.93 ***	0.27	<0.001	-0.26	0.17	0.123	-0.82 ***	0.17	<0.001
Ever married by end of 2002		0.07	0.33	0.841	-0.89 ***	0.20	<0.001	-0.86 ***	0.19	<0.001
Number of jobs held since 2001 (vs. two jobs or fewer)										
	3-5 jobs							-0.01	0.02	0.659
	6 or more jobs							0.02	0.20	0.912

Length of first reported fulltime job (vs. less than two months)									
3-5 months							0.20	0.18	0.255
6 months or more							-0.80 ***	0.16	<0.001
SIPP 2008 respondent	0.55 **	0.19	0.004						
NSFG respondent				0.58 †	0.31	0.059			
Add Health respondent							0.56 *	0.28	0.045
Birth year x survey									
1981 x retrospective survey	-0.14	0.29	0.627	-0.09	0.32	0.772	-0.29	0.21	0.156
1982 x retrospective survey	-0.03	0.30	0.920	-0.41	0.32	0.200	-0.53 *	0.22	0.015
1983 x retrospective survey	0.01	0.30	0.980	-0.25	0.33	0.452			
1984 x retrospective survey	0.01	0.32	0.983	-0.23	0.35	0.514			
Race/ethnicity x survey									
Black, non-Hispanic x retrospective survey	0.01	0.32	0.983	-0.20	0.29	0.490	-0.13	0.25	0.616
Hispanic, any race x retrospective survey	-0.02	0.36	0.949	-0.82 *	0.36	0.021	-0.54 †	0.29	0.069
Mother's education x survey									
Less than high school x retrospective survey				0.58	0.40	0.141	-0.79 *	0.31	0.010
High school x retrospective survey				0.12	0.28	0.672	-0.60 *	0.23	0.010
Some college x retrospective survey				0.15	0.29	0.596	-0.25	0.26	0.320
Family status x survey									
Ever given birth by end of 2002 x retrospective survey	-0.92 **	0.31	0.003	-0.71 *	0.29	0.014	-0.33	0.22	0.129
Ever married by end of 2002 x retrospective survey	-0.56	0.37	0.131	-0.30	0.35	0.393	0.41 †	0.24	0.087

Number of jobs since 2001 x retrospective survey									
3-5 jobs x retrospective survey							0.00	0.02	0.968
6 or more jobs x retrospective survey							-0.13	0.27	0.636
Length of first reported fulltime job x retrospective survey (vs. less than two months)									
3-5 months x retrospective survey							-0.64 *	0.27	0.017
6 months or more x retrospective survey							1.42 ***	0.21	<0.001
Intercept	17.21 ***	0.19	<0.001	20.37 ***	0.17	<0.001	20.77 ***	0.22	<0.001
N	4,532			3,235			3,318		

*Source:* Survey of Income and Program Participation, 2008 Panel; National Survey of Family Growth 2006-2010, 2008-2010 interviews; National Longitudinal Study of Adolescent to Adult Health Waves 1-4; National Longitudinal of Youth 1997 respondents interviewed at every wave through the end of calendar year 2008 in the SIPP comparison; through June 2010 in the NSFG comparison; and through February 2009 in the Add Health comparison

*Notes:* †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . In Add Health, age at first job is asked directly of the respondent; for this comparison in the NLSY97, we calculated age at first job as the respondent's age in the starting month of her first reported job. In the SIPP/NLSY97 comparison, we calculated age at first job as year of first reported job minus year of birth. In the NSFG/NLSY97 comparison, we calculated the respondent's age in the first month of her fulltime employment spell of six months or more using her month and year of birth. The family formation histories of Add Health respondents and NLSY97 respondents in the parallel sample are coded as ever having given birth, or ever having married at or before the respondent's age at the end of 2002. "Retrospective survey" refers to the SIPP, NSFG or Add Health. Regressions are weighted.

**Appendix Table A:** Retrospective versus Panel Reporting of Any First Job of 6+ Months Duration, Percentage of Women Born in the U.S. 1980-1984

Percentage with a first six month job occurring in or before 2002																			
Retrospective reporting in the Survey of Income and Program Participation (SIPP)						Panel reporting in the National Longitudinal Survey of Youth-1997 (NLSY97)													
Percentage with a 1st job of 6+ months by 2002						Difference, 2004 SIPP - 2008 SIPP		Percentage with a 1st job of 6+ months by 2002		2004 SIPP difference from NLSY97		2008 SIPP difference from NLSY97							
2004 SIPP		2008 SIPP		p value				p value				p value							
Year of birth																			
1980		90.8		84.9		5.8 **		0.005		89.8		-0.9		0.605		4.9 *		0.018	
1981		84.5		84.0		0.5		0.825		89.7		5.2 *		0.011		5.7 **		0.005	
1982		82.4		77.3		5.1 †		0.054		88.1		5.7 **		0.007		10.8 ***		<.001	
1983		69.3		70.7		-1.3		0.676		76.1		6.7 *		0.014		5.4 *		0.056	
1984		63.4		62.3		1.1		0.719		61.0		-2.4		0.383		-1.3		0.661	
1980-84		78.1		76.1		2.0		0.110		81.0		2.9 **		0.007		4.9 ***		<.001	
Race/ethnicity																			
White, non-Hispanic		80.3		78.8		1.4		0.299		84.5		4.25 **		0.001		5.7 ***		<.001	
Black, non-Hispanic		73.4		66.7		6.7 †		0.051		67.5		-5.93 *		0.034		0.8		0.789	
Hispanic, any race		70.9		70.6		0.3		0.939		77.6		6.71 *		0.037		7.0 *		0.029	
Unweighted sample N						2,455		2,206		3,147									



Age at first job, observed through December, 2008					
		Retrospective reporting in the Survey of Income and Program Participation (SIPP) 2008 panel	Panel reporting in the National Longitudinal Survey of Youth 1997 (NLSY97)	SIPP 08 difference from NLSY97	p value
Year of birth					
	1980	17.9	17.6	-0.3	0.301
	1981	17.6	17.5	-0.1	0.604
	1982	17.7	17.3	-0.3	0.110
	1983	17.7	17.3	-0.4 †	0.063
	1984	17.6	17.3	-0.2	0.712
1980-84		17.7	17.4	-0.3 **	0.005
Race/ethnicity					
	White, non-Hispanic	17.5	17.2	-0.3	0.398
	Black, non-Hispanic	18.5	18.3	-0.2	0.374
	Hispanic, any race	17.9	17.7	-0.2	0.455
Unweighted sample N		2,058	2,530		

*Sources:* Survey of Income and Program Participation (SIPP) and National Longitudinal Survey of Youth-1997 (NLSY97)

*Notes:* † p<.10, \* p < .05, \*\* p < .01, \*\*\* p < .001. Job may be fulltime or part-time. Estimates are weighted.

**Appendix Table B:** Retrospective versus Panel Reporting of First Fulltime Employment Spell of 6+ Months Duration Occurring by 2002, and Age at Start of First Fulltime Employment Spell by 2008-2010, among Women Born in the U.S. 1980-1984

Percentage with a first fulltime employment spell by 2002						Age at start of first fulltime employment spell, by 2008-2010 <sup>a</sup>					
	Retrospective reporting in the National Survey of Family Growth 2006-2010 (NSFG)	Panel reporting in the National Longitudinal Survey of Youth 1997 (NLSY97)	NSFG difference from NLSY97	p value		Retrospective reporting in the National Survey of Family Growth 2006-2010 (NSFG)	Panel reporting in the National Longitudinal Survey of Youth 1997 (NLSY97)	NSFG difference from NLSY97	p value		
Year of birth						Year of birth					
1980	61.7	72.8	11.1 ***	<.001	1980	19.9	19.6	-0.3	0.256		
1981	54.7	65.0	10.3 **	0.001	1981	19.8	19.4	-0.4 †	0.096		
1982	49.8	50.7	0.9	0.781	1982	19.6	19.6	0.0	0.990		
1983	39.2	38.3	-0.9	0.770	1983	19.8	19.6	-0.3	0.269		
1984	25.0	19.9	-5.1 †	0.063	1984	19.8	19.4	-0.3	0.123		
1980-84	46.1	49.4	3.3 *	0.024	1980-84	19.8	19.5	-0.3 *	0.017		
Unweighted sample N	1,853	3,147			Unweighted sample N	1,041	2,343				
Race/ethnicity						Race/ethnicity					
White, non-Hispanic	44.6	50.1	5.5 **	0.005	White, non-Hispanic	19.9	19.5	-0.3 *	0.016		
Black, non-Hispanic	49.6	45.7	-3.9	0.173	Black, non-Hispanic	19.8	19.6	-0.2	0.293		
Hispanic, any race	51.3	50.4	-1.0	0.791	Hispanic, any race	19.1	19.4	0.3	0.327		
Unweighted sample N	1,853	3,147			Unweighted sample N	1,041	2,343				
Mother's education						Mother's education					
Less than high school grad.	45.4	53.5	8.1 *	0.025	Less than high school grad.	19.4	19.2	-0.2	0.465		
High school grad.	54.4	54.3	-0.1	0.960	High school grad.	19.4	19.2	-0.2	0.299		
Any college	48.1	49.0	0.8	0.770	Any college	19.9	19.6	-0.3	0.132		
Bachelors or more	32.4	39.2	6.8 *	0.033	Bachelors or more	20.4	20.1	-0.3 *	0.013		
Unweighted sample N	1,840	2,952			Unweighted sample N	1,030	2,206				

Sources: National Survey of Family Growth 2006-2010 (NSFG) and National Longitudinal Survey of Youth-1997 (NLSY97)

Notes: †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . Estimates are weighted. <sup>a</sup> For the age at first job measure, we include NSFG 2006-10 respondents whose interviews occurred in calendar years 2008, 2009 and 2010, and NLSY97 respondents interviewed at every wave through an interview covering the end of calendar year 2010

**Appendix Table C:** Retrospective versus Panel Reporting of First Fulltime Job of Any Duration Occurring by 2002, not Including Jobs Undertaken while Currently a Student, or Summer Jobs, among Women Born in the U.S. 1980-1982

Percentage with a first fulltime job by 2002					
	Retrospective reporting in the National Longitudinal Study of Adolescent to Adult Health (Add Health) Wave 4	Panel reporting in the National Longitudinal Survey of Youth 1997 (NLSY97)	Add Health difference from NLSY97	p value	
Year of birth					
1980	79.0	82.2	3.1	0.136	
1981	63.8	70.0	6.1 *	0.014	
1982	54.2	56.8	2.7	0.349	
1980-82	67.4	69.5	2.1	0.138	
Race/ethnicity					
White, non-Hispanic	65.4	69.1	3.7	0.111	
Black, non-Hispanic	65.4	71.0	5.6	0.164	
Hispanic, any race	78.8	71.4	-7.4 *	0.039	
Unweighted sample N	2,603	1,741			
Mother's education					
Less than high school grad.	82.3	80.1	-2.2	0.482	
High school grad.	74.5	75.6	1.1	0.627	
Any college	61.8	69.3	7.5 *	0.023	
Bachelors or more	44.1	52.6	8.6 **	0.017	
Unweighted sample N	2,164	1,626			

Age at first reported fulltime job by 2009					
	Retrospective reporting in the National Longitudinal Study of Adolescent to Adult Health (Add Health) Wave 4	Panel reporting in the National Longitudinal Survey of Youth 1997 (NLSY97)	Add Health difference from NLSY97	p value	
Year of birth					
1980	20.1	19.5	-0.5 ***	<.001	
1981	19.9	19.6	-0.3 †	0.077	
1982	19.9	19.8	-0.1	0.594	
1980-82	20.0	19.6	-0.3 ***	<.001	
Race/ethnicity					
White, non-Hispanic	20.1	19.7	-0.4 **	<.001	
Black, non-Hispanic	19.8	19.8	0.0	0.827	
Hispanic, any race	19.2	19.3	0.2	0.468	
Unweighted sample N	2,593	1,412			
Mother's education					
Less than high school grad.	18.9	19.0	0.0	0.937	
High school grad.	19.7	19.4	-0.2 **	0.105	
Any college	20.2	19.6	-0.6 **	0.001	
Bachelors or more	21.4	20.4	-0.9 ***	<.001	
Unweighted sample N	2,134	1,318			

Sources: National Longitudinal Study of Adolescent to Adult Health (Add Health) and National Longitudinal Survey of Youth-1997 (NLSY97)

Notes: † p<.10, \* p < .05, \*\* p < .01, \*\*\* p < .001. Estimates are weighted.