

**MEASURING CHILDREN'S TIME
USE: A REVIEW OF
METHODOLOGIES AND FINDINGS**

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Introduction

For those interested in child wellbeing, time use can provide an unusually objective measure of exactly what youth are doing. Before we can evaluate how well children are doing and why some are doing better than others, it is important to understand what they are doing, with whom, and in which social contexts and institutions.

The report is intended to serve as a basic starting point for those interested in pursuing research in children and adolescents' time use. It presents an overview of recent research on how American youth use time, focusing on methodological issues in measuring their time use and highlighting substantive findings from the literature. The procedures, advantages, and disadvantages of the three primary methods of measuring children's time use, along with general issues which are relevant to all three methods, are discussed. Findings include general results about how youth divide their time between life's domains such as work, maintenance, and leisure, relationships between time use and outcomes, and how youth differ in time use by race, class, gender, and age, with special attention paid to the area which has inspired the most time-use research, girls' and boys' household work.

The literature cited in this paper was assembled using standard sociological search software (*Sociofile* and *Social Science Citation Index*) and by following references contained within the literature.¹

Methodological Approaches

There are three basic ways to measure time use: standard survey instruments, time diaries, and the experience sampling method. Each has its advantages and disadvantages.

Standard Survey Instruments

Standard survey instruments include questions about how much time children spend on specific activities such as television, homework, or sports. They are often

¹ Social Science Citation Index allows the researcher to find all articles that have referenced another article, which proved especially useful for this investigation since, for example, most Experience Sampling Method studies referenced Larson (1989), the major methodological evaluation of the technique.

asked in the forms “How often do you ...?”, “About how many hours a week do you spend...?”, “When was the last time you...?”, etc. Questions are asked of either parents, children, or both. One advantage of this method is that there are already many instruments developed and tested in previous surveys. Another is that it is very efficient in terms of time costs. It is possible to get a great amount of detail about specific uses of time without spending a long time talking to each subject. Also, this method probably has the fewest problems with sampling biases (see below for other methods’ sampling problems) and is easiest to do over the telephone. One disadvantage is that it is necessary for the researcher to know before designing measurement instruments exactly what activities or social institutions are to be examined; the data gathered from this technique will not be very rich or readily reusable by researchers looking at issues not explicitly considered by the original researchers. In addition, this method requires the child and/or parent to recall information, introducing selective memory and social desirability biases. It is also not very good at distinguishing between primary and secondary activities.

Perhaps the most comprehensive study of children’s time use to employ standard survey instruments is the 1976 Children’s Time Study (Medrich *et al.*, 1982), which examined children’s use of non-school time. Seven-hundred sixty-four Oakland sixth-graders were interviewed in their homes about their time use in five domains: activities without adult supervision, activities with parents, in and out-of-home chores, jobs or other responsibilities, organized activities, and television viewing. Parents completed questionnaires about their children’s activities, their attitudes toward those activities, and background information about their neighborhood and other details of the child’s life. The sample was selected via a multi-stage stratified random sample based on elementary school and socioeconomic status of subjects. Children from 20 schools participated in the study, with a completion rate of 87.2 percent.

Some of the surveys that have measured time use with standard survey instruments (and the studies cited in this paper that have used their data) include:

Children’s Time Study, 1976

Medrich *et al.*, 1982

Youth Development Study, 1988 (Jeylan Mortimer, University of Minnesota)

Gager *et al.*, 1997

National Survey of Families and Households, 1988 (NSFH) (Sweet, Bumpus, and Call, University of Wisconsin, Madison)

Blair, 1992a

Blair, 1992b
National Longitudinal Survey of Youth, 1997 (NLSY97)
High School and Beyond, 1980 (HSB)
National Educational Longitudinal Study, 1988 (NELS:88)
National Commission on Children Survey of Parents and Children, 1990 (NCC)
National Survey of Children (NSC)
Monitoring the Future (MTF)

Time Diaries

Time diaries are charts that subjects or interviewers complete in order to detail every activity done in a certain period of time along with information about each activity such as starting and stopping time, location, other people present, and feelings. Time diaries are always accompanied by other instruments to gather background information and long-term histories. They can be completed in two ways. The first is non-retrospective. As the subject completes an activity, he or she records it in the diary. For this procedure to be effective, a pre-interview must be held in which the interviewer gathers background information and explains how to fill out the diary. After the diary has been completed, a post-interview is held in which the interviewer checks for inconsistencies in the diary and asks the subject how well he or she thinks the diary captured time use and how accurately it was completed. This method requires the most resources (pre and post-interviews can last for an hour or more each) but also provides the most accurate and comprehensive information.

In the 1981 Time Use Longitudinal Panel Study conducted by the Survey Research Center at the University of Michigan Institute for Social Research (Timmer *et al.*, 1985; Mauldin and Meeks, 1990), children in the fourth grade were able to complete the time diaries on their own and younger children were able to complete the time diaries with the help of parents. To validate the accuracy of information in the time diary, researchers call each subject at a random time during the diary period and record what he or she is or was recently doing. This information is then checked with the time diary (Carpenter *et al.*, 1989). Diary activities are usually coded into specific and general categories for analysis. There are many examples of previous coding schemes, dating back to Robinson (1977). Timmer *et al.* (1985) point out two minor problems with using time diaries with children: 1) Some children are more specific than others about what exactly they are doing, making comparisons problematic. 2) Older and younger children use the same terms to mean very different activities. In addition, the difficulty of completing the time diary over a period that is often as long as a week may

cause some subjects to self-select out of the study or may make some subjects' data too patchy to be useful. Often those who do not complete the study or provide poor information are different from the rest of the sample.

The second type of time diary is retrospective. This method requires only one visit, in which the interviewer and subject fill out the time diary together for the previous day's activities with the aid of a chart or timeline. This visit also involves a general face-to-face interview and can last up to one and a half to two hours. The advantages of the retrospective method over the non-retrospective method are that the retrospective method cannot influence behavior and there is less chance of recording errors with the retrospective method since a trained interviewer is doing the recording. Obviously, the disadvantage is that it relies on children's memories.

Montemayor and Brownlee (1987) used the retrospective time diary method over the telephone in a study of how satisfied 61 6-to-12 year olds were with time spent with their parents. The sample included only white children from middle and upper-middle class homes with intact families, 65% of whom were Mormon. Even though very little background information was gathered, each interview took about an hour to complete.²

Silvers *et al.* (1994) also used the retrospective time diary method over the telephone. They interviewed the caretakers of 1000 5-to-12 year olds in six states: New Jersey, New York, Pennsylvania, California, Oregon, and Washington. Interviews were conducted during all four seasons and for both weekends and weekdays. The purpose of the study was to measure the extent of children's exposure to contaminants and pollutants to calculate risk assessments. Caretakers were asked to recall what the child did for 24 hours starting at midnight the night before, including the activity, location (home/not home and indoors/outdoors), and several other factors related to exposure to contaminants. Information was also collected on family demographics and modes of transportation. The cooperation rate for the final survey was 62.3 percent. No information was provided as to how long these interviews took. Unfortunately, because of the nature of the investigation, none of the results is directly related to child wellbeing.

Bianchi and Robinson (1997) used data from the California Children's Activity Survey, a study similar to that of Silvers *et al.* (1994), conducted in California by the California Air Resources Board between April 1989 and March 1990. While the

² For Montemayor and Brownlee's (1987) findings, see the appendix.

primary purpose of the Activity Survey was to examine time spent in indoor and outdoor locations and activities to assess potential exposure to contaminants and pollutants, information was also gathered on time use in developmentally important activities such as reading, watching TV, studying, and doing household chores. Time use was measured with a retrospective one day time diary during a telephone interview of both the parent and child. Children 11 years of age and younger living in English-speaking households were the subjects of the study. Those age 9 to 11 completed the time diary on their own in 85 percent of the cases. For other children, the parent completed the time diary, often with the help of the child. Twelve hundred respondents were interviewed with a response rate of 78 percent. In 80 percent of cases, the interviewer rated their confidence in the accuracy of the diary as “complete.” Unfortunately, the study did not include information about who the child spent time with, and the inclusion of only English-speaking households caused the under-representation of Hispanic children.

Overall, time diaries are comprehensive and accurate. They have been used extensively in studies of adults and are becoming more popular for studies of children, so there are plenty of examples of how to construct and code diaries. Unfortunately, they are expensive and time consuming and can introduce sampling biases due to subject attrition.

Other studies that have used time diaries include those by Carpenter *et al.* (1989) and Peters and Haldeman (1987). The Panel Study of Income Dynamics/Family Economics Study (Child Development Supplement) conducted by the Survey Research Center, Institute for Social Research at the University of Michigan used time diaries as well. Bryant and Zick (1996) examined changes in time spent by parents in caring for children over time using time diaries from the 1920's and 1930's and those from the 1970's and 1980's.

Experience Sampling Method

The Experience Sampling Method (ESM) uses an electronic pager, programmable watch, or programmable calculator to signal a subject when he or she should record information about what he or she is doing, with whom, and how the subject feels about the activity. Information is recorded in a book of 40 to 60 Experience Sampling Forms (ESFs), one form per signal. Each ESF takes approximately two minutes to complete. Signaling times are selected with a systematic random sample, designed to signal each subject within several 90 to 120 minute

signaling blocks. Signals are also spaced at least 15 minutes apart. Most often subjects fill out an ESF within ten minutes of receiving the signal. Generally, signal density must be balanced with total sampling period (which, for children, is usually one week) or compliance declines as subjects get tired of the study. The ESM can be used on a variety of populations, though it has been more successful with adolescents and clerical and managerial workers than blue collar workers. The youngest subjects to participate in an ESM study were 10 years old (Csikszentmihalyi and Larson, 1987).

Response rates to signals have varied from 73 percent to over 90 percent in various ESM studies of adults and children. Most signals are missed for one of three reasons. Device malfunction accounts for about six percent of lost signals. Since this should be random, it should not cause bias. Sometimes subjects leave the signaling device or ESFs at home or the nature of the subject's activity prevents them from hearing the signal or completing the form (Csikszentmihalyi and Larson, 1987). Subjects often left their pagers at home or turned them off in situations involving high physical or social demands, which may bias the activities sampled. In addition, exclusion of some times, such as late at night or early in the morning, from sampling blocks may also affect representativeness of the activities sampled. Finally, "positively adjusted individuals" more reliably report their experiences, so experiences by these individuals constitute a disproportionate part of the total experiences sampled (Larson, 1989).

There is also potential for bias in the initial sample. Older boys have lower rates of study participation, as do girls with mothers in low status jobs, and children from step-families. Students of lower SES, with lower GPAs, and those judged less mature by teachers self-select out of the study by dropping out before it is completed (Larson, 1989). There is also the question of whether participating in the study affects children's behavior. Larson (1989) notes that children spend some time thinking or talking about the study, but this problem can be corrected by removing those experiences from the data set. He does not address whether thinking or talking about the study displaces thinking or talking about other topics, or whether the prospect of having to record one's behavior deters delinquent or deviant behavior that would otherwise occur (the same problem might exist in non-retrospective time diary studies as well).

ESM data is usually coded into categories of activities for analysis. Previous studies have used the individual signal events rather than individual children as the unit of

analysis so that the data is representative of what children do.³ In order to compare signal events across people, affect measures must be standardized between people by changing them to z scores. This transformation is accomplished by subtracting each affect score from the subject's mean affect score and then dividing by the standard deviation of that subject's affect score, so the final value is the number of standard deviations above or below the subject's mean affect score (Raffaelli and Duckett, 1989). Using signal events as the unit of analysis has the advantage of creating a very large n size, making statistically significant results more likely, but also more difficult to interpret. It has the disadvantage of making relationships between variables difficult to measure. For example, to look at the relationship between school performance and time use, Leone and Richards (1989) had to group signal events into three categories by subjects' school performance and then compare the groups' time use by t-tests of difference of means. This made it impossible to control for background factors once the measure of school performance had been established. In addition, it is possible to study the frequency of an activity, but more difficult to study how children perceive the activity itself. As an example, if we would like to know how often children play soccer, we would only need to look what percentage of signal events are coded as the activity "soccer," but we cannot say how much children in general like playing soccer (from the soccer activities' affect scores) because the signal events that have soccer as the activity will be disproportionately from those children who like playing soccer. More information on analyzing ESM data can be found in Larson and Delespaul (1990).

Despite the potential problems discussed above, both Csikszentmihalyi and Larson (1987) and Larson (1989) have found that ESM studies have a high degree of reliability and validity. Csikszentmihalyi and Larson (1987) report that subjects do not feel the method is intrusive and feel that the method accurately records their time use. ESM records idling time, which time diaries often miss. ESM measures have high stability of activity estimates and psychological states over time (beginning of the week to the end of the week) and are internally consistent. ESM psychological measures vary in expected ways with activity measures and differentiates successfully between groups one would expect to differ. Larson (1989) reports that post-study questionnaires indicated that subjects reported accurately a large proportion of the time. ESM studies also have several advantages over other time use measurement techniques. They avoid an intrusive observer, avoid reliance on long-term recall, and, most importantly, have the ability to gather information about subjects subjective evaluations of experiences. ESM

³ ESM studies are not the only studies to use activities rather than people as the unit of analysis. For example, Carpenter *et al.* (1989) is a time diary study which uses activities as the unit of analysis.

is particularly good at measuring subjective moods and feelings because they are recorded as they are occurring (Larson, 1989). Of the ESM studies I have looked at, none has presented results outrageously different from time use studies using other techniques.

There have been two primary studies of children's time use using ESM. The first is given a book-length treatment in *Being Adolescent* (Csikszentmihalyi and Larson, 1984). This study, conducted in the spring of 1977, used ESM with a sample of 75 9th through 12th graders at a community high school in a suburb of Chicago. Stratified random sampling was used to achieve equal numbers of boys and girls, students in each of four grade levels, and lower-middle class and upper-middle class students. For each student, signals were sent over a week-long period, between 7:30 a.m. and 10:30 p.m. on Sunday through Thursday nights and until 1:30 a.m. on Friday and Saturday nights. Sixty percent of the girls and 45 percent of the boys invited to participate in the study completed it with usable data. Of those who began the study, 76 percent completed it with usable data. Of all the signals sent by the researchers, students responded to 69 percent.

The second study was done by Reed Larson and Maryse H. Richards. Its sample and methods are described in Larson (1989) and Larson and Richards (1989). The sample consisted of 483 5th through 9th graders, each of whom carried a pager over a week-long period. Subjects came from two suburban Chicago communities, one middle class and one working class. The study was conducted in eight waves over a two-year period, with approximately 16 students per grade level per wave (four boys and four girls from each community). The sample was all white and contained a disproportionate number of children from intact families. Seventy percent of the randomly selected students who were asked to be in the study agreed to participate and provided usable data. Except for the above-mentioned study, all studies that I have found which used the ESM to investigate children's time use have used Larson and Richards' data set. This is rather unfortunate since their sample, while better than that in most studies of children's time use, is far from being nationally representative. Papers and studies discussing or using ESM are listed below.

ESM papers with a methodological focus:

Csikszentmihalyi and Larson, 1987

Larson, 1989

Larson and Delespaul, 1990

ESM papers with a content focus (using Larson/Richards data):

- Duckett *et al.*, 1989
- Kirshnit *et al.*, 1989
- Larson *et al.*, 1989
- Larson and Lampmann-Petraitis, 1989
- Larson *et al.*, 1990
- Larson *et al.*, 1996 (also adds follow-up data)
- Larson *et al.*, 1997 (new study uses subsample of original)
- Leone and Richards, 1989
- Raffaelli and Duckett, 1989
- Richards and Duckett, 1994
- Thompson and Larson, 1995

ESM papers with a content focus (other data):

- Csikszentmihalyi and Larson, 1987

Though ESM has only been used on children 10 years of age and older, the “spot observation” method can be used to achieve a similar sampling of events for younger children. With spot observation, the primary caretaker of the subject child is telephoned (instead of signaling the subject with a signaling device). The caretaker is briefly interviewed about what the child is doing, where he or she is, and whom he or she is with. If the caretaker cannot be reached by telephone, researchers attempt to call again later and ask the caretaker what the child was doing at the time of the initial call. Before data collection begins, researchers meet with each child’s caretaker to explain the study (for a more detailed description of the procedures, see Bloch, 1987). The weaknesses of this approach are many. First, it has all the potential problems of the ESM without its principle benefit, information on subjective feelings and moods of the subject. Second, spot observations must be conducted during a time when the child will be regularly at home with a caretaker so that calls can be received. For children in pre-school or grade school, this is usually during the summer, but for younger children it may be year round. Also, interviewers must often deal with several different caretakers for a single child.

Bloch (1987) used the spot observation method with 83 zero to six-year-old children from a middle-class suburb of Madison, Wisconsin. These children lived in 38 different families. Each family was called at a random time once each day, seven days a week, over a two-month summer period, resulting in 2012 total interviews, of which 1474 yielded usable information on location, activity, and others in the setting.

Measurement Issues

There are two important methodological issues that apply to all research on children's time use, no matter which of the three methods is used.

Primary vs. Secondary Activities

It is often important to distinguish between primary and secondary activities when gathering time use data. Primary activities are those in which the child is most heavily involved. Often they are defined as the most functional or productive activity. Secondary activities are those that are happening at the same time but are of less importance and are therefore not being concentrated on by the child. Distinguishing between primary and secondary activities is often left to the subject. Some examples: if a child is eating breakfast and talking to a sibling, eating is the primary activity and talking is secondary; if a child is riding between school and basketball practice and listening to the radio, riding is the primary and listening is the secondary activity. Most research to date has distinguished between primary and secondary activity but only analyzed primary activities, sorting them into different domains such as work, leisure, and maintenance and subdomains such as schoolwork vs. household work and passive leisure such as television vs. active leisure such as reading or sports.

The importance of making the primary-secondary distinction is highlighted by recent findings on the affects of television. Previous research found negative relationships between time spent watching television and academic performance and achievement scores and hypothesized that time spent watching television displaces time spent in other activities such as reading, homework, and more active leisure – the “displacement hypothesis” (Mutz *et al.*, 1993). Much of this research focused specifically on television viewing, often using devices or methods that record time spent watching television whether or not it is really the primary activity. In reality, television may be a secondary activity more often than previously recorded, as is the case in households in which the television seems to be on all the time (which may also explain why it seems like Americans watch so much television). For example, children and adolescents may watch television while eating breakfast, talking with friends or family members, or playing computer games. When television viewing is recorded only when it is a primary activity, there is no correlation between television viewing and academic achievement (Carpenter *et al.*, 1989). However, Timmer *et al.* (1985), who also differentiated between primary and secondary activities, found a negative relationship

between weekend television viewing and cognitive test scores, but no relationship between weekday viewing and test scores. One possible explanation for previous findings of a relationship between television viewing and academic performance is that both poor academic performance and the amount of time a television is on are correlated with a third factor, such as social class, family organization, or parents' involvement in schooling. Whatever the reason for the correlation, television viewing provides a good example of why researchers should distinguish between primary and secondary activities.

Seasons/Days of the Week

The season of the year or even the number of daylight hours may affect how children use time. Differences between summer and school year extend beyond the obvious differences in time spent in school to time spent watching television (Larson *et al.*, 1989; Carpenter *et al.* 1989) and time spent in organized and informal sports (Kirshnit *et al.*, 1989). To deal with this problem, most studies either analyze summer separately and/or gather data throughout the year so that different seasons are represented in the sample. For example, ESM and time diary studies space their subjects' weeks of observation around the calendar year. The same problem occurs with days of the week, primarily in differences between weekdays and weekends. Most studies have either concentrated on only weekdays or only weekends, sampled an entire week, or sampled one weekday and either Saturday or Sunday and then weighted data accordingly.

Findings

General Time Use

Table 1 summarizes results from Larson and Richards (1989) and Timmer *et al.* (1985) outlining the activities in which boys and girls spend their time. Results from Larson and Richards are coded into more general categories than those from Timmer *et al.*, which may explain the discrepancies between the two studies. The differences in ages of the subjects of the studies should also be kept in mind. The largest discrepancy is in proportion of time spent in schoolwork. The lower values in Larson and Richards can be accounted for by the fact that activities they included in this category are only those directly involving learning, such as time spent in class working or time spent at home doing homework or studying. This is in contrast to Timmer *et al.*'s

“School” category which includes all time spent at school, even if that time is spent playing sports in gym class, socializing, eating, or in personal care.

Perhaps one of the most important factors in children’s time use is time spent with parents and other adults. Bryant and Zick (1996) examined time spent by married parents in primary child care activities, comparing time spent per child in the 1920’s and 1930’s with the late 1970’s and early 1980’s. They found that time spent per child increased over time, an effect due mostly to decreasing family size, spending more time caring for children over one year old, and increasing educational levels. Little time, in either time period, was spent in primary care of teenagers. Interestingly, fathers with non-employed wives spent more time in child care activities than those with employed wives.

Differences by Race, Class, Gender, and Age

There has been little work on the relationships between race and class and children’s time use (indeed, as noted above, ESM studies have been restricted to white, mostly middle-class youth). Using parents’ education as a measure of social class, Timmer *et al.* (1985) found that children of college-educated parents spent more time in personal care, studying, and reading and less time watching television than children of parents with less than a college education. Based on previous research and their own findings about parental behavior, they hypothesized that this result was due to modeling parental behavior and different parental encouragement and values. Among California children under the age of 12, Bianchi and Robinson (1997) found that parental income and education were both positively related to time spent reading or being read to. In addition, Blair (1992a) found that children’s household labor was negatively related to income and that non-whites performed more household labor than whites. However, Bianchi and Robinson (1997) report that white children spend more time on household chores. Finally, Medrich *et al.*, (1984) report no differences by SES in time use in unsupervised activities and chores or other responsibilities. Upper-class children watched slightly less television; middle-class children and non-whites had the lowest parent-child interaction scores; and middle and upper-class children participated in private, fee-based organized activities while lower-class children participated in free, community or government provided organized activities.

With regard to gender, it is clear from Table 1 that girls spend more time than boys in household work, personal care, and socializing and less time watching TV and in sports and play. Similar results were found by Mauldin and Meeks (1990). Timmer

et al. (1985) also report that girls spend more time in school and more time studying. Moreover, girls spend more time in adult structured activities while boys spend more time in unstructured activities with peers (Carpenter *et al.*, 1989). The difference in girls and boys' participation in sports has been traced to lower participation in informal sports by girls (Kirshnit *et al.*, 1989). All of the above differences between boys and girls conform to adult gender roles, and many studies find that this effect increases with age (e.g. Timmer *et al.*, 1985). The extensive findings on gender differences in household work are discussed in a separate section below.

Age differences in children's time use are not particularly surprising if we think of adolescence as a time of transition from child activities to adult activities. Timmer *et al.* (1985) found that older children spend more time in school, studying, doing household and market work, socializing with friends, and in passive leisure such as music listening. Younger children spend more time eating, sleeping, playing, and attending church. Eleven and 12-year-old boys spend the most time watching television, an average of 26 hours a week. Older children also engage in a wider variety of activities. Carpenter *et al.* (1989) report that older children spend less time with adults. Larson *et al.* (1996) found that older children disengage from their families, spending less time with them, and that the relationship between children and parents gradually transforms during adolescence to a more mature, enjoyable, and equality-based relationship. Among children less than 12 years old, age has been found to be positively related to time studying, doing household chores, and watching TV but not to time spent reading or being read to (Bianchi and Robinson, 1997). Finally, ESM studies have demonstrated that children spend more time talking with peers as they age without a corresponding drop in talk with parents (Raffaelli and Duckett, 1989), older children listen to more music, especially rock music (Larson *et al.*, 1989), and older children spend less time in informal sports than younger children, primarily because of lower self-perceptions of skill (Kirshnit *et al.*, 1989).

Other Determinants of Children's Time Use

Carpenter *et al.* (1989) found that maternal employment and family structure were not related to children's time use. Timmer *et al.* (1985) found that maternal employment and family structure were only loosely related to children's time use. Children of employed mothers and single mothers spend more time in school and less time sleeping. Children of single mothers spend slightly more time watching TV and slightly more time in household labor. Richards and Duckett (1994) found that maternal employment has little effect on children's time use, except that children of full-time

employed mothers engage in more household work with parents and less leisure, and that children of part-time employed mothers engage in more sports with parents. Bianchi and Robinson (1997) found that marital status, family size, and birth order did not affect time use among children younger than 12, but that children of part-time employed mothers watched less TV than those of non-employed mothers. Determinants of time spent in household labor are covered below in the section on gender and household labor. In general, it seems that mothers who are pressed for time with their children, either because of single parenthood or labor force participation, make up for a lack of time by engaging in more functional activities with their children, such as household labor, or more passive leisure, such as television viewing. This may be more true of mothers with older children than mothers of younger children.

Gender and Household Labor

A substantial portion of the research on children's time use has focused on gender differences in household labor such as chores, yard work, meal preparation and cleanup, care of younger siblings, etc., both in terms of amount of work and type of work done by boys and girls. The motivation for many of these studies is explaining the Second Shift/No Man's Land phenomenon, i.e. adult males' lack of participation in household labor and the continued gender differences in type and amount of housework despite high rates of labor market participation by married women. The basic hypothesis is that behaviors and attitudes learned in childhood through a gender-based division of labor between boys and girls and parental role models translate into current sexist adult behaviors and attitudes regarding the division of household labor (for an excellent review of the literature as it specifically relates to this issue, see Gager *et al.*, 1997).

Girls have been found to spend significantly more time in household work than boys, leaving boys more time for leisure. Sex-typing of tasks begins at a young age and intensifies as children grow older. Children engage in the most household chores between the ages of 11 and 15. (Benin and Edwards, 1990; Blair, 1992a; Blair, 1992b; Carpenter *et al.*, 1989; Duckett *et al.*, 1989; Gager *et al.*, 1997; Mauldin and Meeks, 1990; Peters and Haldeman, 1987; Timmer *et al.*, 1985). There is some evidence that the difference in time spent on household work declines with age (Duckett *et al.*, 1989) and some evidence that it increases with age (Gager *et al.*, 1997). Children in families with mothers who work part-time do the least household work, followed by children in families in which the mother does not work, and those in which both parents work full time. Families in which the mother does not work also assign children more sex-typed

tasks (Benin and Edwards, 1990; Peters and Haldeman, 1987; Bianchi and Robinson, 1997). Children in single-parent families spend the most time on household labor (Peters and Haldeman, 1987; Gager *et al.*, 1997). Children of more educated parents tend to have the least sex-typed task differentiation (Blair, 1992a, 1992b).

Other factors which are related to the gender-based division of labor and household work include family size (children in larger families do more housework, with girls doing significantly more than boys), gender of siblings (boys with no sisters engage in more traditionally female tasks while girls with no brothers engage in more traditionally male tasks), allowance received (boys with allowances do less household work than those without allowances, while the opposite holds for girls), social class (children from middle class families do less household work than those from lower class families), parent-child interaction (parent-child interaction and parental concern for children's development of intelligence are negatively related to time spent in household tasks), paid employment (children who work in the labor market do less household work), other activities (children who are more involved in extra-curricular and other organized activities do more household work), and race (non-white children spend more time in household labor) (Gager *et al.*, 1997; Blair, 1992a, 1992b). Finally, Bloch (1987), in a study of very young children's general time use, found that sex-typing of activities and tasks begins at a very young age.

Listed below are those articles on gender differences cited in this paper (a very small subset of the entire literature) and the methodologies used to measure time use in each:

- Benin and Edwards, 1990 – 1981 Time Use Longitudinal Panel Study (TULPS), time diaries
- Bianchi and Robinson, 1997 – California Air Resources Board's California Children's Activity Survey, time diary
- Blair, 1992a – 1988 National Survey of Families and Households (NSFH), parent interviews, standard survey instruments.
- Blair, 1992b – NSFH
- Bloch, 1987 – spot observation
- Carpenter *et al.*, 1989 – time diary
- Duckett *et al.*, 1989 – ESM, Larson/Richards data
- Gager *et al.*, 1997 – Youth Development Study, child interviews, standard survey instruments
- Mauldin and Meeks, 1990 – TULPS

Peters and Haldeman, 1987 – time diary
Timmer *et al.*, 1985 – TULPS

Other Specific Activities

More information about time use in specific activities is available from ESM studies focusing on schoolwork (Leone and Richards, 1989), maintenance activities (Duckett *et al.*, 1989), conversations and communication (Raffaelli and Duckett, 1989), television and music (Larson *et al.*, 1989; Thompson and Larson, 1995), sports (Kirshnit *et al.*, 1989), over-time changes in interaction with family (Larson *et al.*, 1996), and subjective experience of family leisure time (Larson *et al.*, 1997).

Time Use and Child Outcomes

There has been little research attempting to link how children use time with outcomes such as social adjustment, educational achievement, or mental health. Perhaps unsurprisingly, Leone and Richards (1989) found that time doing homework, but not time doing in-class work, was positively related to academic performance. Carpenter *et al.* (1989) found that intellectual skills were negatively related to television viewing with parents (but not television viewing with peers) and time spent in unorganized indoor activities and positively related to time spent in “organized meals and snacks” and studying.

A report by the Carnegie Corporation of New York (1997) highlights the importance of after-school, unsupervised discretionary time in adolescent well-being and the transition to adulthood. “Unsupervised after-school hours represent a period of significant risk; it is a time when adolescents may engage in dangerous and illegal activities, and is the most common time for adolescent sexual intercourse... Unsupervised young adolescents stand a greater chance of engaging in substance abuse.” (p. 33). The report recommends greater provision for community youth development programs to better take advantage of discretionary time and reduce the risk of dangerous behavior.

Conclusion

In sum, there are three basic methodologies for measuring children’s time use. Standard Survey Instruments are readily available in previous surveys, efficient, have the potential for high detail, are relatively free of sampling biases, and are easy to use over

the telephone, but they require highly specific research questions, are based on recall, and are not good at distinguishing between primary and secondary activities. Time Diaries are also readily available and easy to develop, provide comprehensive information, and may be retrospective or non-retrospective, but they are expensive and time-consuming to administer, are difficult to use over the telephone, and may introduce sampling biases due to subject attrition. The Experience Sampling Method does not rely on recall and captures immediate subjective evaluations from subjects, has been shown to have high reliability and validity, and records a wider range of activities than other methods, but it is subject to problems with initial samples, subject attrition, and, potentially, modification of behavior. Researchers concerned with children's time use should also keep in mind distinctions between primary and secondary activities, seasons, and days of the week, which, if ignored, may bias results.

With regard to substantive findings, most of the research on children's time use has focused on describing how children use time and on identifying the determinants of time use. There are significant differences in time use by gender and age of children, and some minor differences by maternal employment status and family structure. A significant proportion of research on children's time use has focused on the relationship between gender and household labor, uncovering severe inequities between boys and girls. The relationships between race and class and children's time use and between time use and outcomes have not been addressed adequately in the literature.

Table 1: Summary of Children’s Time Use Findings (activities as percentage of non-sleeping hours during a non-summer seven-day week – adapted from Larson and Richards (1989: 505) and Timmer *et al.* (1985: 366-367)).

Larson and Richards (1989)—ESM			Timmer <i>et al.</i> (1985)—Time Diary		
grades 5-9			ages 12-17		
activity	girls	boys	girls	boys	activity
Schoolwork ^a	21.8	21.9	30.5	27.9	School ^b
			<u>4.2</u>	<u>3.5</u>	Studying
Household and Personal Maintenance	24.7	21.6	6.8	3.0	Household Work
			9.6	5.5	Personal Care
Socializing	12.4	8.2	<u>8.5</u>	<u>8.5</u>	Eating
			24.9	17.0	
Media	15.1	17.4	4.1	3.1	Visiting
			<u>3.8</u>	<u>2.7</u>	Household Conversations
Sports and Play/Games	8.5	13.4	7.9	5.8	
			14.6	19.3	TV
Other	15.7	16.4	4.2	6.9	Sports
			1.6	2.2	Outdoors
			<u>2.0</u>	<u>4.5</u>	Playing
			7.8	13.6	
			2.8	4.1	Market Work
			1.9	1.7	Church
			1.8	1.3	Reading
			0.6	1.5	Art Activities
			0.6	0.7	Hobbies
			<u>2.4</u>	<u>3.4</u>	Other Passive Leisure
			10.1	12.5	

NOTE: Percentages may not add to 100 due to rounding.

^a Includes time spent doing homework or studying and time spent working in class.

^b Includes all activities at school.

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Appendix: Summaries of Selected Literature on Children's Time Use

Method: Standard Survey Instruments

Gager, Constance T., Cooney, Teresa M., and Call, Kathleen T. (1997) "Teenage Girls' and Boys' Contributions to Household Labor: Which Family Characteristics Make a Difference?" (in press).

This study uses data from the Youth Development Study (9th and 12 grade waves) to examine the correlates of boys' and girls' household labor. Gender differences are greatest in families with less educated parents, stepparents, mixed sex siblings, small family size, part-time employed mothers, and in white families. Girls in 9th grade performed more household work and the difference increased by 12th grade. Consequently, boys have more leisure time than girls. In larger families, only girls spent more time on housework, but boys in larger families spent more time on female-typed tasks than those in smaller families. Boys also devoted more time to female-typed tasks when they did not have sisters. Household work did not seem to detract from youths' other activities, though the study did not include activities such as television watching and video/computer games. Youths in a single-parent family perform more total tasks and more female tasks, though the effect is larger for girls than boys. Girls with more educated parents spend less time in female typed tasks, as is the case with boys and male-typed tasks. The only activity associated with less time in household work is employment outside the home by the child. The study finds partial support for the time availability hypothesis, which states that children will do more household work as their other activities decrease and their parents' time available for household work decreases, due to employment, larger families, or single parenthood. The authors hypothesize that greater gender equality among African-Americans is due to a long history of mother's employment and single parenthood.

Mutz, Diana C., Roberts, Donald F., and van Vuuren, D.P. (1993) "Reconsidering the Displacement Hypothesis: Television's Influence on Children's Time Use," *Communication Research*, 20, 51-75.

The displacement hypothesis is that time spent watching television cannot be used for other activities and so these activities are displaced by television. There are at least two assumptions underlying this hypothesis. 1) television is a primary rather than a secondary activity (an important distinction for the measure of time use). 2) Television replaces "functionally equivalent" activities. A second hypothesis is the engagement hypothesis, in which children watch television instead of engaging in marginal activities like day dreaming or hanging out. Functional reorganization may also occur, in which "the introduction of a new medium triggers complex functional reorganization rather than

straight forward functional displacement." To test these hypotheses, one should use longitudinal individual level data to examine individual changes over time, but even this technique cannot control for historical or cohort effects. To test these hypotheses, the authors use data from South Africa collected around the time television was introduced. Over seven thousand children completed questionnaires over an 8 year period. Results found that much television viewing time came from "marginal activities" and the introduction of television led to a restructuring of leisure. Both findings support the engagement hypothesis. The effect was also found to be asymmetrical, i.e. when television viewing declined, previously displaced activities were often not resumed.

Method: Time Diary

Carpenter, C. Jan, Huston, Aletha C., and Spera, Laura. (1989) "Children's Use of Time in Their Everyday Activities During Middle Childhood," p. 165-190 in Bloch, Marianne N. and Pellegrini, Anthony D. (eds.) *The Ecological Context of Children's Play*. New Jersey: Ablex Publishing.

This is a week-long time diary study of 117 Midwestern boys and girls age 7 to 11. Many of the children were recruited from a previous study conducted by the authors; the rest were recruited from public schools in a Midwestern city. Subjects also attended a week long day camp and completed several psychological measures. Each child completed the time diary for all non-school, non-sleep hours over 7 days in 15 minute intervals. Information was recorded on nature of activity, who else was present, and whether the activity was primary or secondary. A validity check was conducted during the week by telephone. Activities were coded into 20 categories (see page 173-175). The study had four purposes: 1) analyze children's activities within the ecological conceptual framework. 2) investigate gender differences in activities. 3) investigate the relationship between children's activities and social status and family structure. And 4) investigate how time use related to intellectual and personal development. The Study found support for the ecological context framework (in which adult-supplied social structure shapes children's behavior, both social and cognitive). Girls spent more time in adult structured activities, boys spent more time in unstructured activity with peers; sex differences conformed to gender stereotypes. Older children spent less time with adults; there were no gender differences in time with adults. Parent education, but not maternal employment of family structure, was related to children's time allocation. Children's intellectual abilities were related to their time use.

Mauldin, Teresa and Meeks, Carol B. (1990) "Sex Differences in Children's Time Use," *Sex Roles*: 22, 537-554.

This study investigates sex differences in children's time use (children ages 3-17, weekends and weekdays) using data from the 1981 Time Use Longitudinal Panel Study (Survey Research Center, Institute for Social Research, University of Michigan) -- the same data set used by Timmer *et al.* (1985 -- see below). Time use was categorized into six categories: household work, leisure, sleep, personal care, school, and paid work. Leisure was divided into structured and unstructured leisure. Independent variables were sex and age of child, mother's education, employment status of mother, and family income. From the abstract: "Males spent more time in leisure activities and less time in household work and personal care than females. Differences in time allocation appeared to be in accordance with traditional male-female roles. These patterns were established at early ages." See Tables III and IV on pages 544-546 and 548-550 for detailed list of differences. Authors note that season of the year may have played a role in lack of differences in a previous study. (TULPS was conducted year round to avoid this problem).

Montemayor, Raymond and Brownlee, John R. (1987) "Fathers, Mothers, and Adolescents: Gender-Based Differences in Parental Roles During Adolescence," *Journal of Youth and Adolescence*, 16: 281-291.

This study used a telephone survey of 61 children (grades 6-12) to examine children's satisfaction with time spent with fathers and mothers. The sample included white children from middle and upper-middle class intact homes, 65 percent of whom were Mormon. Telephone interviews, conducted by five undergraduates, asked each child to recount the previous days events. For each event information was gathered on duration, who else was present, and how satisfied the child was with the event. Each interview took one hour. Activities were coded as either work, leisure, or meals and according to who was present, mother only, father and mother, father only, or neither. Satisfaction was highest in leisure activities and meals and when both parents were present. Work was most satisfying when fathers only or both parents were present. Children spent more time with their mothers than fathers and were more likely to be engaged in leisure when with fathers than any other activity. Older children spent less time with parents.

Peters, Jeanne M. and Haldeman, Virginia A. (1987) "Time Used for Household Work: A Study of School-Age Children from Single-Parent, Two-Parent, One-Earner, and Two-Earner Families," *Journal of Family Issues*, 8: 212-225.

This study uses time diaries and questionnaires, both completed by a parent, to assess children's involvement in household tasks. The time diary recorded information about household tasks over two 24-hour periods. The 10 household tasks were food prep, dishwashing, shopping, housecleaning, maintenance, care of clothing and linens,

construction of clothing and linens, physical care of family members, nonphysical care of family members, and management. (According to the authors, these categories were created in the 1920's and have been used by social scientists ever since). Time was divided into three categories: primary activities, secondary activities, and travel. Only primary activities and travel were used in the analysis. Dependent variables were actual and relative (to total work by the whole family) time spent on household tasks. Mother's employment was related to relative time spent but not actual time spent (mothers' time spent on household tasks declines, decreasing total time, and therefore increasing everyone else's relative time). Children in two-parent families spent less relative and actual time on household tasks.

Timmer, Susan Goff, Eccles, Jacquelynne, and O'Brien, Kerth. (1985) "How Children Use Time," Ch. 14 in Juster, F. Thomas and Stafford, Frank P. (eds.) *Time, Goods, and Well-Being*. Ann Arbor, Michigan: Institute for Social Research, University of Michigan.

This study uses data from the 1981 Time Use Longitudinal Panel Study (TULPS). Children were interviewed and also filled out time diaries. Children reported sequentially what they did, for how long, where they did it, and who else they were with. Diaries were used for both weekdays and weekends (one day each). Children in fourth grade and above were able to complete the diaries on their own. Young children were especially eager to describe their days in exhaustive detail. Activities were coded into specific categories and more general categories. The researchers concluded that the diaries were generally reliable in reporting what was done and for how long. They found a few problems: 1) Some children were more specific about activities than others, making comparison difficult. 2) Older and younger children used the same terms for very different activities. Some general findings: 1) The older the child, the more varied the activities and the more activities he or she participated in. 2) [see table of major activity categories, page 360]. 3) Children of employed mothers and single mothers spend more time in school and less time sleeping. Children of single mothers spend slightly more time watching TV and slightly more time in household labor. 4) Parents' education was related to children's time use in that children of more educated parents watched less television and spent more time studying and reading. 5) Children differed in time allocation by age but, in general, not by sex. Activities conformed more closely to sex-roles as children aged.

Method: ESM

Csikszentmihalyi, Mihaly and Larson, Reed (1987) "Validity and Reliability of the Experience Sampling Method," *Journal of Nervous and Mental Disease*, 175: 526-536.

This article outlines the methodology of the ESM and evaluates its reliability and validity in several previous studies that have used ESM. When a person is beeped or otherwise notified to record their experience and other evaluative measures, he or she completes an Experience Sampling Form (ESF), which is usually designed to take less than two minutes to complete. Most ESM studies signal subjects seven to ten times a day for a period of seven days. Signaling times are selected with a systematic random sample, designed to signal each subject within several 90 to 120 minute signaling blocks. Signals are also spaced at least 15 minutes apart. Generally, signal density must be balanced with total sampling period or compliance declines. Each subject must carry, in addition to the signaling device, a booklet of 40 to 60 ESFs. Data is usually coded into categories of activities and thoughts. The ESM can be used on a variety of populations, though it has been more successful with adolescents and clerical and managerial workers than blue collar workers. Missing signals tend to occur for three principle reasons: signaling device malfunction, subject leaving the device at home, or the nature of the subject's current activity. Most responses occur within 10 minutes of receiving the signal. Subjects do not feel the method is intrusive and feel that the method accurately records their time use. The authors state that one piece of evidence of the superiority of the ESM is that it records idling time, which time diaries often miss. ESM measures have high stability of activity estimates and psychological states over time (beginning of the week to the end of the week) and are internally consistent. ESM psychological measures vary in expected ways with activity measures and differentiates successfully between groups one would expect to differ. The authors conclude that ESM provides a reliable and valid way to measure activities and psychological states in everyday life.

Duckett, Elena, Raffaelli, Marcela, and Richards, Maryse H. (1989) "'Taking Care': Maintaining the Self and the Home in Early Adolescence," *Journal of Youth and Adolescence*, 18: 549-565.

[Same data as Larson, 1989]. This study examines adolescents' time spent in personal and household maintenance, companionship during maintenance activities and subjective experience during maintenance activities. Subjects spent approximately 23.4% of their time in maintenance activities; girls spent more time than boys. Personal maintenance occupied approximately 17% of children's time, with girls spending more time in personal maintenance than boys. Household maintenance occupied 6.5% of children's time. Younger girls spent more time than younger boys in these activities but this difference disappeared in older groups. Unsurprisingly, most of personal maintenance time was spent alone and sometimes with family members. In terms of household maintenance, girls spent more time than boys with family members and boys spent more time alone. There were no differences by age or gender of subjective experience during these activities. The results of this study differ from some previous studies of time use in that time spent on maintenance is slightly lower.

Kirshnit, Carol E., Ham, Mark, and Richards, Maryse H. (1989) "The Sporting Life: Athletic Activities During Early Adolescence," *Journal of Youth and Adolescence*, 18: 601-615.

[Same data as Larson, 1989]. This study examines patterns of participation of sports among adolescents. Results find that adolescents spend about 6% of their time playing sports, either organized or unorganized. From the abstract: "Older students spent less time in sports than their younger peers. The age difference was due primarily to a decline in informal sports participation, with less pronounced attrition from organized sports... While informal sports were experienced more positively than gym class or organized sports, perceptions of skill were lowest during organized sports and declined with age. It seems youngsters stop participating in organized sports because these activities are less enjoyable to them while attrition from informal sports is more performance based. Boys spent more time in sports than girls and this difference was based primarily on significant gender differences in participation in informal sports. in spite of their differential rates of participation, boys and girls reported similar levels of affect, arousal, and skill during sports."

Larson, Reed. (1989) "Beeping Children and Adolescents: A Method for Studying Time Use and Daily Experience," *Journal of Youth and Adolescence*, 18: 511-530.

This paper discusses methodological issues relating to the Experience Sampling Method (ESM), i.e. paging subjects at random times to gather a sample of their experiences and feelings/attitudes toward those experiences. The advantages of ESM are avoidance of an intrusive observer, avoidance of reliance on long-term recall, and the ability to gather information about subjects subjective evaluations of experiences. The paper addresses methodological issues by examining a study of time use by 483 5th through 9th graders over a week-long period. Subjects came from two suburban Chicago communities, one middle class and one working class. The study was conducted in eight waves over a two-year period, with approximately 16 students per grade level per wave (four boys and four girls from each community). The sample was all white and had disproportionate number of intact families. Seventy percent of randomly selected students asked to be in the study agreed to participate and provided usable data. The four methodological issues are: 1) Sample selection biases. Of the original sample, who agrees to participate? Older boys have lower rates of participation, as do girls with mothers in low status jobs, and children from step-families. overall these differences are small. Of those who agree to participate, who drops out during the study? Students of lower SES, with lower GPAs, and those judged less mature by teachers self-select out of the study. 2) Biases in experiences sampled. The pagers malfunction at a rate of 6%, but this should be random. Subjects

often left their pagers at home or turned them off in situations involving high physical or social demands. This bias was judged to be nonsubstantial. Also, "positively adjusted individuals" more reliably report their experiences so their experiences are a disproportionate number of the total number of experiences. Because children were only beeped between 7:30 am and 9:30 p.m., some experiences, especially those on the weekends were missed. 3) Effects of participating in the study on subject behavior. Subjects spent time talking and thinking about the study. The paper does not address whether children are less likely to engage in deviant behavior while participating in the study. 4) Validity of the data. Are subjects accurately recording their activities. Post-study questionnaires indicated that subjects reported accurately a large proportion of the time.

Larson, Reed, Kubey, Robert, and Colletti, Joseph. (1989) "Changing Channels: Early Adolescent Media Choices and Shifting Investments in Family and Friends," *Journal of Youth and Adolescence*, 18: 583-599.

[Same data as Larson, 1989]. The study examines patterns of media use (TV and music) among adolescents. It documents a shift from TV, which reinforces family values, to music, which reinforces peer group values, during adolescence. Boys and older subjects watch less television. As children age, they listen to more music, primarily rock music. Much television watching by adolescents occurs with family members. While music listening is correlated with spending time with friends, most listening occurs alone. Most reading occurs alone. Subjective affect is lower when watching TV alone than when watching with friends or family.

Larson, Reed, Gillman, Sally, and Richards, Maryse H. (1997) "Divergent Experiences of Family Leisure: Fathers, Mothers, and Young Adolescents," *Journal of Leisure Research*, 29: 78-97.

This study examines how different family members experience leisure time. It uses a subsample of 55 children from the study described by Larson (1989) along with their parents. Subjects carried beepers for one week and recorded information about activity and affect whenever the family was beeped. Beeps were concentrated in the afternoon and evenings to capture times when family would be together. Results found significant differences between family members in intrinsic motivation and affect but not experience of freedom during family and home leisure activities. Mothers reported less positive affect than fathers and children less intrinsic motivation and positive affect than parents. Fathers' high positive affect during family leisure was balanced by lower affect in all other activities. Children experienced more positive affect in non-family leisure. Authors hypothesized that mothers' less positive affect during family leisure was the result of more responsibilities such as child care during leisure time.

Leone, Carla M. and Richards, Maryse H. (1989) "Classwork and Homework in Early Adolescence: The Ecology of Achievement," *Journal of Youth and Adolescence*, 18: 531-548.

[Same data as Larson, 1989]. This study examines children's time use in classwork and homework, their subjective feelings and moods, and companions. Subjects reported doing 15.5 hours of classwork and 6.5 hours of homework per week, on average, which is consistent with previous findings. Time spent in classwork and homework decreased as children aged. Classwork time was unrelated to academic performance, but homework was positively related. Average students and overachievers tended to spend more of their homework time alone or with parents (as opposed to friends) than underachievers. Regardless of age, sex, or achievement, all students felt similarly negative while doing homework. Students also do not "exert much effort" during the time when they do study. The authors conclude that the students in the sample do not like doing schoolwork. As for gender differences, girls were more likely to do homework with friends and family members than boys. Younger girls did more homework than boys, but the opposite was found for older girls and boys.

Raffaelli, Marcela, and Duckett, Elena. (1989) "'We Were Just Talking...': Conversations in Early Adolescence," *Journal of Youth and Adolescence*, 18: 567-582.

[Same data as Larson, 1989]. This study examines adolescents' time spent talking, who they talk with, about what subjects, and how they feel about their conversations. This study examines only those activities in which the primary activity was specifically recorded as talking (either in person or on the phone). Results show that subjects spent about 10% of their time in conversations, with girls talking more often than boys. Youths spent more time talking during the summer than during the school year. As children aged, talk with peers did not replace talk with parents and other family members, though talk with peers increased. Youths talked with friends about "peer concerns" and with family members about family concerns, leisure, and maintenance activities. Gender related patterns emerged in conversations with peers but not with family members. Youths showed "highest levels of affect" when talking with friends and when talking with one parent, and neutral affect when talking with siblings and family groups.