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Descriptive Finding

Siblings and children's time use in the United States

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Siblings and children's time use in the United States

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Abstract

BACKGROUND

Eighty-two percent of children under age 18 live with at least one sibling, and the sibling relationship is typically the longest-lasting family relationship in an individual's life. Nevertheless, siblings remain understudied in the family demography literature.

OBJECTIVE

We ask how having a sibling structures children's time spent with others and in specific activities, and how children's time and activities with siblings vary by social class, gender, and age.

METHODS

We use time diary data from the US Panel Study of Income Dynamics' Child Development Supplement (PSID-CDS), comparing the time use of children with and without siblings and presenting regression-adjusted descriptive statistics on patterns among those with siblings.

RESULTS

Children with siblings spend about half of their discretionary time engaged with siblings. They spend less time alone with parents and more time in unstructured play than those without siblings. Brothers and more closely spaced siblings spend more time together and more time in unstructured play. For example, boys with at least one brother spend five more hours per week with their siblings and over three more hours per week in unstructured play than boys with no brothers.

CONCLUSION

The presence and characteristics of siblings shape children's time use in ways that may have implications for child development.

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CONTRIBUTION

This is the first study to use children's time diary data to examine how the presence and characteristics of siblings structure ways in which children spend their time. This contributes to our broader understanding of sibling relationships and family dynamics.

1. Introduction

This paper examines how the presence of siblings and sibling age and gender composition structure children's time use. Eighty-two percent of children under age 18 live with at least one sibling – a number that is greater than the number of children living with a father figure (McHale, Updegraff, and Whiteman 2012) – and the sibling relationship is typically the longest-lasting family relationship in an individual's life. Nevertheless, siblings remain understudied in the family demography literature (McHale, Updegraff, and Whiteman 2012). Research on siblings tends to focus on structural factors, such as birth order and spacing, or reciprocal relationships between parents and siblings within a family. How the presence and characteristics of siblings structure children's time use is unknown. Such information is key to our understanding of sibling relationships, as time together represents an important mechanism through which siblings may influence each other and by which the presence or absence of a sibling may spill over to influence parent-child relationships. The current study is the first to use nationally representative US time diary data to examine children's time with siblings as well as the ways in which the presence of a sibling is linked to time with others. In doing so, we respond to recent calls for a greater examination of the processes via which siblings may influence children and family systems (e.g., Cox 2010; McHale, Updegraff, and Whiteman 2012).

Previous research in economics and demography examines the ways in which structural factors such as birth order, sibling spacing, and sibship size influence parental investments in children and predict a range of later outcomes, including health, education, and financial well-being (Buckles and Munnich 2012; Conley 2000; Emery 2013; Hanushek 1992; Keister 2003; Pavan 2016; Price 2008). This research has tended to find that being first born, longer intervals between siblings, and fewer siblings are associated with better child outcomes, potentially due to higher quality parent-child time. A few recent studies suggest that the association between sibship size and human capital may not be causal (Ferrari and Dallazuanna 2010) and that short birth intervals and bigger families may have few adverse consequences in contemporary high-income welfare states (Baranowska-Rataj, Barclay, and Kolk 2017; Barclay and Kolk 2017). With the exception of Price (2008), this body of research has not examined time use.

Additionally, Price focused on parental time with siblings but did not examine siblings' time with each other, thereby missing a key mechanism through which the presence and characteristics of siblings may influence children.

In the family studies and psychology literature, most research on siblings examines how siblings influence individual development and relationship dynamics within families as well as the nature of the emotional relationship between siblings (reviewed in Whiteman, McHale, and Soli 2011). Many studies in this area use smaller, nonrepresentative samples and self-reported information on family relationships. This research suggests that siblings can influence each other directly and also influence the larger family system, including the availability of parental resources and parent-child relationships (Cox 2010; Hetherington 1994). Other studies, based on interviews with parents, demonstrate that parents commonly treat siblings differentially and that such patterns can complicate family dynamics into adulthood (e.g., Suito and Pillemer 2007). Theoretical perspectives on sibling relationships suggest that factors such as family socioeconomic status (SES) and the gender and age mix of siblings may play key roles in sibling relationships. However, research to date on these dimensions is limited and inconsistent (Whiteman, McHale, and Soli 2011). The current study contributes to the literature by examining the ways in which family SES and siblings' gender and age composition correspond to children's time use in a large, nationally representative US sample.

Understanding how siblings shape children's day-to-day activities can shed light on the findings noted above and provide insight into sibling relationships across the life course. We address the following research questions, which are descriptive in nature: 1) How does having a sibling structure children's time with others? 2) How does having a sibling structure children's activities? 3) Among those with siblings, how do children's time and activities with siblings vary by social class and by the gender and age mix of the siblings? We focus on middle childhood (ages 6–12 years) and compare children with and without coresident siblings.

2. Data

We address these questions using time diary data from the US Panel Study of Income Dynamics' Child Development Supplement (PSID-CDS), the world's longest-running household panel study. The embedded CDS collects information about children's family, school, and neighborhood contexts that are expected to be predictive of status attainment in adulthood. The CDS began in 1997 (CDS-I) with a cohort of children residing in families participating in the PSID main interview in that year, and it includes interviews with the primary caregivers (PCGs) of those children, most often

mothers. Up to two children between 0 and 12 years old per family were randomly selected for inclusion ($N = 3,563$ children, 88% response rate). Children under 18 and their caregivers were reinterviewed in 2002 (CDS-II) and 2007 (CDS-III). We use household roster information collected during the round of PSID data collection that immediately preceded each wave of CDS to determine the age and gender composition of coresident siblings.

Time diaries were collected from all children at each wave (~80% response rate overall). For children aged 6–12, 85% of diaries were completed by the child's primary caregiver or the caregiver and child together. Diaries chronicled children's primary and secondary activities over 24 hours during one randomly selected weekday and one weekend day. Each activity occupies a record in the time diary data file, and each record contains information on the nature of the primary and any secondary activity, its start and end time, where the activity took place, who else was present, and whether those present were also engaged in the activity. Individual activity records are aggregated to capture the total time in a day that children spent with particular people or engaged in particular activities. A detailed coding scheme captures the range of children's activities. Time diaries offer an unbiased account of time use relative to measures derived from survey questions (Hofferth 2006; Robinson 1985), and aggregated time diary data provide a comprehensive profile of how time is allocated in the target population, capturing behaviors, patterns, and tradeoffs that are unlikely to be observable in survey-based measures (Vandewater, Bickham, and Lee 2006).

3. Measures and method

We pool records from the three waves of CDS. Our analytic sample includes observations for children when they were between 6 and 12 years old ($N = 3,023$ records). We focus on this age range because family remains central to children's time use outside of school, and sibship composition is likely to be complete (e.g., only about 3% of children ages 6–12 in our sample have a next-youngest sibling who is more than 6 years younger). We restrict our analysis to primary activities during children's discretionary time, defined as time children are not at school, sleeping, or engaged in personal care such as bathing or dressing (~7 hours per weekday and ~12 hours per weekend day). Following the standard approach (Hofferth and Sandberg 2001), we use weekday and weekend reports to estimate children's total discretionary time during the week (i.e., summing weekday time $\times 5$ and weekend time $\times 2$). Although the diary day for any given child may not be typical, diary days provide an excellent accounting of time use when aggregated over large samples or subsamples of the population (Juster

and Stafford 1991). Additional analyses (available upon request) show that the patterns presented in this paper hold when examining weekends and weekdays separately.

For each activity, we construct indicators of sibling engagement (based on the question “Who was doing the activity with the child?”) and presence (“Who (else) was there but not directly involved in the activity?”). We create parallel indicators to record whether parents, other kin, friends, or other adults were present or engaged, or whether the child was engaged in an activity alone. We use these indicators in combination to establish the amount of time children spend engaged with siblings and/or with others in their primary activities over the course of a given day. We focus on five sets of activities: education and structured activities (including homework, learning activities, and team sports); unstructured play; media (including television, music, and video games); eating; and travel. Together these activities consume more than 90% of children’s discretionary time.

To address our research questions about differences in time use between children with and without siblings, we present unadjusted estimates of children’s time use by indicators of who else was present, who was engaged in the activity, and activity type. To address questions about how siblings spend time together and how their time and activities vary by socioeconomic status and age and sex composition, we present regression-adjusted values of total time with siblings, time engaged with siblings, and time engaged in particular activities with siblings. Models control for the primary caregiver’s education, age, and union status; the child’s age, gender, race and ethnicity, and birth order; and the number of coresident children. Table 1 shows these characteristics for our sample of children with and without coresident siblings, indicating significant differences between the two groups.

For example, children without coresident siblings are slightly younger and less likely to live with a married parent (56% vs. 77%). Not surprisingly, they are also much more likely to be first born (among those with older siblings living outside the household, these tend to be the fathers’ children).

Regression-adjusted predicted values of time use account for characteristics that might confound comparisons by mother’s education and the age and sex composition of siblings, such as family size. Predictions are generated from estimated model coefficients varying values on mother’s education and the age and sex composition of siblings while holding all other covariates at their mean values. Regressions cluster on the child identifier to account for multiple observations. All analyses are weighted using the child probability weight from the relevant CDS wave.

Table 1: Time use and sociodemographic characteristics of children and their families, PSID-CDS (N = 3,023 records from 2,549 individuals)

	No siblings		Any siblings	
	Mean	SD	Mean	SD
Child's time use				
Total weekly discretionary hours				
Weekday	35.91	10.00	36.62	11.50
Weekend	24.31	4.23	24.25	3.87
Total weekly hours engaged with parent	27.24	13.96	21.81	12.16 *
Total weekly hours with parent present, not engaged	15.71	10.25	19.98	13.05 *
Child's characteristics				
Age in years	9.49	1.88	9.87	2.07 *
Gender	50.9%		48.3%	
Race/ethnicity				
Non-Hispanic White	61.4%		66.1%	
Non-Hispanic Black	18.3%		13.8%	
Hispanic	7.5%		13.8% *	*
Asian/Pac Islander	4.2%		2.5%	
Am Indian/Alaskan Native	0.6%		0.7%	
Other	7.6%		3.1%	
NA/refused	0.3%		0.0%	
Birth order				
To mother	1.09	0.31	2.07	1.10 *
To father	1.24	0.68	2.03	1.10 *
Number of coresident siblings	–		1.77	1.05
Primary caregiver's characteristics				
Years of education (0–20)	13.09	2.22	12.95	2.85
Education missing (N)	25		128	
Age in years	37.06	7.79	36.52	6.38
Union status				
Married	55.8%		77.0%	*
Never married, not cohabiting	19.0%		7.6%	*
Widowed, not cohabiting	1.0%		0.6%	
Divorced, not cohabiting	15.8%		6.6%	*
Separated, not cohabiting	3.9%		3.9%	
Cohabiting	4.4%		4.4%	
N	327		2,696	

Note: Children from the 1997, 2002, and 2007 waves of the PSID-CDS. Means and percentages are weighted (Ns are unweighted).

* Group differences are statistically significant at $p < .05$.

4. Results

Table 2 addresses our first research question: How does having a sibling structure children's time with others?

Table 2: Children's engaged time with others, PSID-CDS (N = 3,023 records from 2,549 individuals)

Panel 1: Engaged time with others, categories mutually exclusive					
	With parents only	With others (siblings, friends, other adults) but not parents	With others (siblings, friends, other adults) and parents	With no one	Total
Children without siblings	22.21	17.02	5.03	15.95	60.20
Children with siblings	6.31 *	26.87 *	15.50 *	12.14 *	60.82
Sibling present, engaged					
Total time	–	14.69	14.36	–	29.04
% time	–	54.7%	92.6%	–	47.8%
Sibling present, not engaged					
Total time	2.82	2.04	0.21	7.15	12.22
% time	44.7%	7.6%	1.3%	58.9%	20.1%

Panel 2: Engaged time with others, categories not mutually exclusive					
	Parents	Grandparents	Other relatives	Nonrelatives	Friends
Children without siblings	27.24	3.86	4.43	8.58	8.20
Children with siblings	21.81 *	2.33 *	3.82	7.95	9.16
Sibling present, engaged					
Total time	14.36	1.41	2.27	1.82	2.64
% time	65.8%	60.8%	59.4%	22.9%	28.8%
Sibling also present, not engaged					
Total time	3.03	0.28	0.57	0.62	1.24
% time	13.9%	12.0%	15.0%	7.9%	13.6%

Note: Children from the 1997, 2002, and 2007 waves of the PSID-CDS. Means and percentages are weighted.

* Differences between children with and without siblings statistically significant at $p < .05$.

Key findings are summarized in Figure 1. Here we focus on the time children spend engaged with parents, others (including siblings), and no one. Both groups of children have roughly 60 hours per week of discretionary time.

Of this time, children without coresident siblings spend much more time engaged with their parents and no one else compared to children with siblings in the household (22 vs. 6 hours per week). Children without siblings also spend more time engaged with no one (16 vs. 12 hours per week). In contrast, children with siblings spend more time engaged with those who are not their parents (27 hours total, including 15 hours engaged with siblings) and with parents and others at the same time (the vast majority of which they are also engaged with a sibling). In total, children with siblings spend about half of their time outside of school engaged with siblings, and another 20% with siblings present, meaning that the vast majority of children's discretionary time is spent with their siblings.

In the second panel of Table 2 we broaden our examination of the types of people with whom children may spend time to include grandparents, other relatives, nonrelatives, and friends. These categories are not mutually exclusive. Here we see that children without siblings spend more time with their parents and with their grandparents than do children with siblings (e.g., spending almost 4 hours per week

with grandparents, compared to just over 2 among children with siblings). Children with siblings spend more time with their friends (9.2 vs. 8.2 hours per week), although differences are not statistically significant. Finally, not only do children with siblings spend less time with their parents and grandparents, but the majority of the time they do spend with these family members involves time in which their sibling is also present and engaged (over 60% in both cases).

Figure 1: Share of time with parents, others, and alone by sibship status

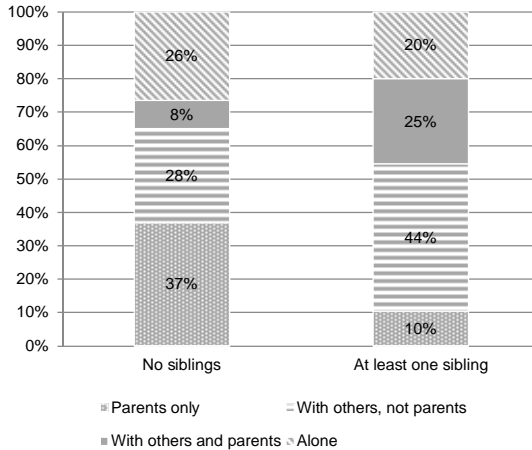


Table 3 addresses our second research question: How does living with a sibling structure children's activities?

For the most part, children with and without siblings look very similar in the amount of time they spend in various activities, with one exception: children with siblings spend more time in unstructured play (almost 2 hours more per week). Children with coresident siblings spend most of the time in the various activities shown in Table 3 with siblings (overall 50% with siblings engaged, 23% with siblings present). Nearly half or more of their time in each of the activities shown is spent engaged with a sibling, with the exception of educational and structured activities.

Table 3: Children's time by activity type, PSID-CDS (N = 3,023 records from 2,549 individuals)

	Educational and structured activities	Unstructured play	Media	Eating	Travel	Total
Children without siblings	6.46	12.27	14.40	7.61	15.18	55.91
Children with siblings	5.92	14.07 *	15.22	7.47	14.43	56.77
Sibling present, engaged						
Total time	0.81	6.15	8.34	5.10	8.45	28.82
% time	13.7%	43.7%	54.8%	68.2%	58.5%	50.8%
Sibling present, not engaged						
Total time	3.05	3.41	4.56	1.17	1.39	13.30
% time	51.5%	24.2%	29.9%	15.6%	9.6%	23.4%
Sibling not present						
Total time	2.06	4.51	2.32	1.21	4.60	14.65
% time	34.8%	32.0%	15.3%	16.2%	31.9%	25.8%

Note: Children from the 1997, 2002, and 2007 waves of the PSID-CDS. Means and percentages are weighted (Ns are unweighted). Selected activities constitute over 90% of children's total discretionary time.

* Differences between children with and without siblings statistically significant at $p < .05$.

Table 4 addresses our final research question: Among those with siblings, how do children's time and activities with siblings vary by social class and by the gender and age mix of the siblings?

The first panel of Table 4 presents regression-adjusted estimates of total and engaged time with siblings. Results show some evidence that both time with siblings present and time engaged with siblings are slightly lower among children whose caregivers (in most cases, mothers) have a college degree versus less education, although differences are small and not consistently significant. Time use gaps by gender and age composition of siblings are larger. Boys who have at least one brother and children with a sibling born within three years spend more time with siblings compared to other children. For example, boys with at least one brother spend about 44 hours per week with a sibling, compared to 39 hours per week among boys with no brothers.

The second panel of Table 4 describes specific activities that siblings do together, again based on regression-adjusted estimates. Children with more educated caregivers spend more time in educational activities and travel with their siblings and less time in unstructured play and media use than those whose parents have lower levels of education. Brothers spend more time in unstructured play and media use than other sibling combinations. The differences in unstructured play are particularly large; boys with brothers spend 8.4 hours per week in such activities, compared to 4.8 hours per week for boys with no brothers and 5.9 hours per week for girls with sisters. Finally, siblings within a three-year age range of each other spend more time in all types of activities together, particularly unstructured play, media use, and travel. Findings are summarized in Figure 2.

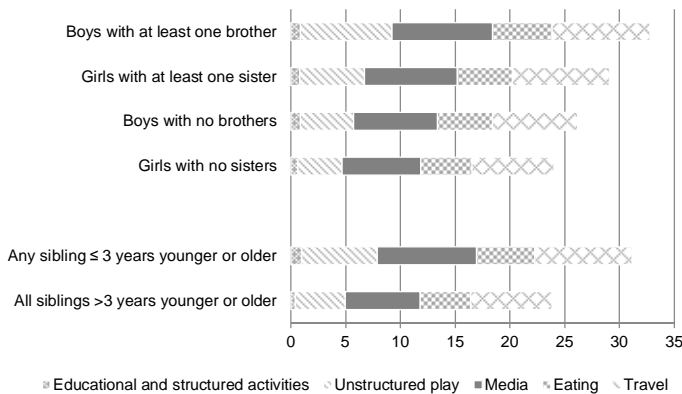
Table 4: Regression-adjusted estimates of children's time with siblings by mother's education and sibship composition, children with siblings, PSID-CDS, (N = 2,696 records from 2,271 individuals)

	All	PCG HS or less	PCG some college	PCG college+	Girls with no sisters	Boys with no brothers	Girls with at least one sister	Boys with at least one brother	All siblings >3 years younger or older	Any sibling ≤3 years younger or older
Total time with siblings	41.28	41.25	42.79	40.71 ^a	37.07	38.74	42.58 ^{cd}	43.73 ^{cd}	37.05	43.25 ^f
Total time engaged with siblings	29.04	29.39	30.39	27.97 ^b	23.88	25.81	30.04 ^{cd}	32.71 ^{ode}	23.70	31.53 ^f
Activity type										
Educational and structured activities	0.81	0.67	0.99	0.94	0.66	0.90	0.81	0.85	0.43	0.99 ^f
Unstructured play	6.15	6.38	6.50	5.52	4.01	4.81	5.89 ^d	8.37 ^{ode}	4.54	6.90 ^f
Media	8.34	9.19	7.92	7.19 ^e	7.22	7.69	8.49 ^f	9.18 ^{cd}	6.81	9.05 ^f
Eating	5.10	4.97	5.25	5.31	4.67	5.00	5.02	5.47	4.64	5.31
Travel	8.45	7.94	9.19	8.99 ^e	7.46	7.80	8.87 ^{cd}	8.94 ^{cd}	7.42	8.93 ^f
N	2,696	1,356	704	496	508	475	852	861	895	1,801

Note: Children with at least one sibling from the 1997, 2002, and 2007 waves of the PSID-CDS. Means and percentages are weighted (Ns are unweighted). Each row presents predicted values estimated from a separate model. Predicted values estimated using the margins postestimation command in Stata SE 14 with all covariates held at their respective means. PCG = primary caregiver; HS = high school.

- ^a Different from PCG education ≤ high school diploma (p < .05).
- ^b Different from PCG education ≤ some college (p < .05).
- ^c Different from girls with no sisters (p < .05).
- ^d Different from boys with no brothers (p < .05).
- ^e Different from girls with sisters (p < .05).
- ^f Different from all siblings at least three years older than focal child (p < .05).

Figure 2: Time in activities with siblings by sibling gender and age (weekly hours)



5. Conclusion

This descriptive analysis sheds new light on a topic that has received virtually no attention in prior literature: How does having a sibling structure time use among children, how do siblings spend their time together, and how does their time together vary by socioeconomic status and the gender and age mix of siblings? Importantly, children with coresident siblings spend the majority of their discretionary time engaged in activities with their siblings, highlighting the important role that siblings can play in each other's lives. Our findings show key ways in which siblings structure children's time – ways that may have offsetting implications for child development. For example, children with siblings spend less time alone with parents, which is potentially an indicator of less quality time. However, such children also spend more time in unstructured play, a factor linked to healthy development (Burriss and Tsao 2002).

We also find that social class differences in how siblings spend their time together may be associated in offsetting ways with child development, with more time together in educational and structured activities but less time together in unstructured play among those with highly educated mothers. Finally, we find that gender and age play key roles in sibling relationships, with brothers and more closely spaced siblings spending more time together and more time in unstructured play. This again suggests that the potential benefits of having a sibling depend in some part on the age and gender composition of one's siblings. As noted by McHale, Updegraff, and Whiteman (2012), increasing our understanding of siblings helps scholars better understand the role of families as socializing systems. As the first study to use time diary data to document how siblings structure children's time in a large national sample, this study sheds light not only on the longest lasting relationship many of us have, but generally informs our understanding of family demography.

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