HHS Public Access

Author manuscript

J Marriage Fam. Author manuscript; available in PMC 2019 December 13.

Published in final edited form as:

J Marriage Fam. 2018 February ; 80(1): 166–181. doi:10.1111/jomf.12432.

Mothers' Time, the Parenting Package, and Links to Healthy Child Development

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Abstract

Studies consistently show that mothers' time in particular activities with children is positively associated with child well-being, but results are mixed regarding associations between child outcomes and the sheer amount of time that mothers spend with children. Using time diary and survey data from three waves of the Panel Study of Income Dynamics Child Development Supplement (N = 2,622), we assess whether gains from mothers' total time with children vary by the quality of mothers' other investments in children, or the "parenting package." Mother-child shared time was associated with children's broad reading scores and adolescents' externalizing behavior, but mothers' other parenting investments did not moderate these associations. Results were robust to alternative measures of mothers' time and to the incorporation of earlier assessments of child academic and behavior problems. Parenting investments may be indicative of the quality of children's home environments but do not magnify gains from mother-child shared time.

Keywords

child development; family interaction; parental investments; time use

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Studies have long demonstrated the importance of mothers' time investments for healthy child development. These have often relied on parents' reports of usual time in specific activities, such as reading to a child, eating dinner together, talking, or helping with homework (Amato & Rivera, 1999; Astone & McLanahan, 1991; Musick & Meier, 2012; Kalil, Ziol-Guest, Ryan, & Markowitz, 2016). Time diary data similarly have shown that shared time in educational and enriching activities is linked to child well-being (Fiorini & Keane, 2014; Hsin & Felfe, 2014; Raley, 2014). Studies assessing the *total amount of time* parents spend engaged in activities with children have come to weaker or more mixed results (Milkie, Nomaguchi, & Denny, 2015; Hofferth, 2006; Hsin & Felfe, 2014). In a recent set of commentaries arising from these discrepant findings, scholars engaged in a useful exchange over how best to conceptualize, measure, and model the link between parents' time

investments and child development (Kalil & Mayer, 2016; Nomaguchi, Milkie, & Denny, 2016; Waldfogel, 2016).

This exchange highlighted critical challenges to understanding the importance of parental time with children, including how to think about the measurement of parental time, the quantity and quality of parental time, and the factors potentially confounding associations between parental time and child well-being. We take steps to address these issues and extend the existing literature in three key ways: First, we pay close attention to the measurement of mothers' total time with children, addressing concerns about the reliability of time diary data and exploring differences in mothers' time engaged in activities with children versus present but not involved. Second, we examine the quantity and quality of parental time as distinct dimensions, tapping quality with rich indicators of children's physical and emotional home environments, parenting style, and parenting strategies. We ask to what extent these aspects of quality moderate the association between parents' total time with children and child outcomes. Finally, we use longitudinal data to provide some leverage into difficult questions of causal order and confounding factors.

These extensions allow us to explore the contexts in which parental time may matter more or less for children and adolescents. A large literature demonstrates the importance of children's home environments, parent-child interactions, and parental involvement for child development (Bradley, Corwyn, Burchinal, McAdoo, & Coll, 2001; Grolnick & Slowiaczek, 1994). Studies of parental time to date, however, have tended to conceive of quality in terms of particular activities that mothers engage in with children. We shift the focus on quality away from activity type to the parenting context in which shared time occurs, including various aspects of parents' material and emotional resources, parenting style, and parenting strategies that we call the "parenting package." We examine how the parenting package conditions the association between mothers' time and behavioral outcomes of children (6–11 years) and adolescents (12–17 years), anticipating that where the parenting package is supportive of child development, mothers' time will be associated with positive developmental outcomes. Conversely, where the parenting package is weak, mothers' time will have a neutral or negative association with child well-being. Our study uses time diary and questionnaire data from three waves of the Panel Study of Income Dynamics Child Development Supplement (CDS), a nationally-representative sample of children born between 1985 and 1997 (Panel Study of Income Dynamics, 2012a).

Background

Measuring maternal time with children

The measurement of mothers' time with children raises issues around the reliability of assessments and, more generally, the extent to which measurement strategies capture relevant variation. Quantitative assessments rely on two basic approaches for collecting data on time: survey questions that ask about time in particular activities like reading, eating dinner, or outings; and time diaries that account for all activities over the course of a day. Time diaries have several advantages over stylized reports. The format of the time diary leaves less leeway in question interpretation, and by design, all activities have to be reconciled within the constraints of a 24-hour day. Time diary data suffer less from social

desirability bias and are more accurate, and thus tend to be more valid indicators of parental time investments (Robinson, 1985). For example, Hofferth (2006b) showed that parents' stylized reports of reading to children were inflated relative to diary reports, that this was particularly true among highly educated parents who see reading as central to good parenting, and finally that stylized reports of reading were not as strongly associated with children's test scores as diary reports.

Time diaries have disadvantages as well. Whereas stylized reports may ask about longer units of time or about what is typical, time diaries reference a particular day. Thus they represent a thin slice of children's daily lives (two days in the case of CDS) and may be an inaccurate representation of parents' time with children (e.g., Kalil & Mayer, 2016; Wolfers, 2015). To the extent the days recorded are unusual (e.g., a sick day or day in which the parent was traveling for work), the time diary reports will be a poor measure of parental investments and misestimate relationships between parental time and child outcomes. Nomaguchi and colleagues (2016) tested associations between mothers' time and child outcomes for a subset of children whose diary days were rated "very typical," and found the same pattern of results as in the total child sample (i.e., weak associations between mothers' time and child outcomes). We extend this strategy to minimize concerns about mismeasurement, first limiting our analysis to very typical days and further examining time use on weekdays only. Qualitative accounts suggest a substantial amount of routine in children's time (Lareau, 2011), and we expect this to be particularly true of days already highly structured by children's school schedules and parents' work schedules.

We also address more general measurement issues about what counts as time with children and what increments should matter for children. Much work has emphasized the distinctive value of mothers' engagement in shared activities for children's development, particularly in activities tailored to children's developmental needs (Altintas, 2016; Kalil, Ryan, & Corey, 2012). But other research has highlighted the substantial time mothers invest in supervising, monitoring, and facilitating children's activities even when they are not directly involved (Folbre, Yoon, Finnoff, & Fuligni, 2005; Sayer et al., 2004; Sandberg & Hofferth, 2001). "Being there" (Bianchi, 2000)—or time mothers spend accessible but not directly engaged with children—may keep children out of trouble and signal a strategic use of scaffolding to promote children's problem-solving skills and self-regulation as independent learners (Neitzel & Stright, 2003). Following Milkie et al. (2015), we include both engaged and accessible time in our analysis. We go beyond prior work by investigating how these components differ and whether they should be treated separately or pooled into a single indicator of maternal time. We further assess what increments of time might matter for children. We start with the simplest assumption of a linear relationship between mothers' time and child outcomes and then estimate two supplementary models: one including a quadratic to account for potential diminishing returns of shared time (Connelly & Kimmel, 2015; Oster, 2013) and another incorporating categories of time to test whether very low or high levels of shared time are associated with distinct returns to children.

Conceptualizing quality of time

As noted, whereas much prior literature has used time in particular activities with children to signal quality, we propose thinking about the broader context in which children's time with parents unfolds. We conceptualize this as a malleable set of resources that are proximal determinants of how children experience the emotional, interpersonal, and material context of their shared time with mothers apart from the nature of their joint activity. We call this the "parenting package" and operationalize this term to include six indicators of parents' material and emotional resources, parenting style, and parenting strategies. Broadly, our choice of indicators is driven by the expectation that parents endow children with resources intended to enhance their human capital development, and that these resources are transmitted both through parents' direct interaction with children (Coleman, 1988) and through parents' involvement in structuring how children use their time even when parents and children are not together (Lareau, 2000; Lareau, 2011).

Ample evidence suggests a critical role for features of what we call the parenting package in shaping child outcomes. Exposure to a *stimulating home environment* with access to books, music, and toys is consistently associated with children's and young adolescents' higher scores on tests of motor and social development, language competence, and cognitive achievement across race/ethnic groups and levels of household poverty (Bradley et al., 2001). Likewise, exposure to an *emotionally supportive home environment* that includes positive parental responsiveness and verbal or physical expressions of affection is predictive of children's positive behavioral and cognitive outcomes in early and middle childhood and lower risk of delinquent behavior in adolescence (Bradley et al., 2001; Han, Leventhal, & Linver, 2004; Parker & Benson, 2004).

Beyond engagement in learning-focused activities, *parent-child discussions* about children's interests and educational experience likely reinforce parental expectations and values about peer relationships, academic performance, and social identity. Talking with children may further encourage their self-expression and verbal development and provide a model for interaction with adults outside the home. Conversely, *punitive approaches to discipline*, including threats, denigration, anger, or corporal punishment, are associated with children's subsequent behavior problems (Stormshak, Bierman, McMahon, & Lengua, 2000), although the strength of this association varies by race/ethnicity and by perceived parental warmth (Deater-Deckard & Dodge, 1997).

Finally, the management strategies that mothers use to support their children's development constitute an important dimension of the parenting package—particularly as children age (Kalil et al., 2012). Attention to these strategies is informed by Lareau (2011, 2000), who described social class differences in whether and how parents spend their time to shape children's educational and social environments in ways that best meet children's individualized needs. One way that mothers do this is by *organizing children's educational or structured activities* outside of school, including organized sports, arts activities, and other extracurricular activities that are conducive to children's development. These structured activities often require parents' effort to identify opportunities, enroll children, and arrange transportation, and they are associated with better school and behavioral outcomes (Raley, 2014). Another way that mothers manage children's environments is by actively

participating in their formal schooling, for example, in parent-teacher meetings, school functions, and parent-teacher organizations. This kind of involvement allows parents to advocate for children's learning needs, to influence the accumulation and distribution of resources in the school, and to identify programming and activities that support children's learning and development—and is associated with children's achievement (Lareau, 2000; Van Voorhis, Maier, Epstein, Lloyd, & Leung, 2013). These strategies do not involve direct engagement with children, but serve to shape time and experiences in ways that promote children's learning and development.

We propose the parenting package as a salient indicator of the quality of parent-child shared time for three reasons. First, the proportion of time that parents and children spend together in educational and enriching activities is small compared to the time children spend in other activities such as play, media consumption, meals, and travel (Hofferth & Sandberg, 2001; Hsin & Felfe, 2014). Thus, strategies to enhance the parenting context in which children spend the majority of their discretionary time may complement efforts to increase time in enriching but lower-frequency activities like shared reading. Second, the parenting package is likely to be consequential for children's time use and well-being across the early life course, even as developmentally-appropriate parent-child activities change as children age (Kalil et al., 2012). Therefore, strategies to enhance the parenting package may pay off for parents of children at all ages. Third, a substantial literature demonstrates that elements of the parenting package are independently associated with children's cognitive and behavioral development net of parent-child shared time in educational and enriching activities (Barnard, 2004; Bradley et al., 2001; Gershoff, Lansford, Sexton, Davis-Kean, & Sameroff, 2012; Linver, Brooks-Gunn, & Kohen, 2002; Morris, Silk, Steinberg, Myers, & Robinson, 2007; Tang & Davis-Kean, 2015). Our key hypothesis is that the quality of the parenting package will shape the association between time with mothers and child outcomes, with more positive associations when the parenting package is supportive of children's development.

Potential confounders

We distinguish the parenting package from other resources that are likely to precondition the contents of the parenting package in families and also to structure children's time and development. We recognize that family attributes including socioeconomic status, union status, and family size likely shape both the parenting package and children's behavioral and cognitive outcomes (Downey, 1995; Duncan & Magnuson, 2005; Kalil, Ryan, & Chor, 2014). Our analysis focuses on the more proximate and potentially more malleable indicators of parenting but controls for these covarying and more distal factors in addition to other sociodemographic characteristics.

Although CDS includes a rich set of observed background characteristics, it does not capture the full range of factors potentially at play in shaping both the parenting package and child outcomes. Reverse and reciprocal causation complicate efforts to tease out causal processes; for example, if mothers' time investments increase in response to children's needs, any positive effect of mothers' time on child outcomes may be masked by the additional time required by children experiencing academic or behavioral problems. We address this by including an indicator of child development observed prior to maternal time investments:

child low birthweight. This is associated with poorer child health, behavior, and achievement (Corman & Chaikind, 1998; McCormick, 1985), and should help to account for child effects on mothers' time. Further, for a subset of our sample, we leverage the panel nature of CDS and include earlier assessments of children's behavior and achievement. This offers a more stringent control for children's pre-existing characteristics and a further check on reverse causation.

Method

Panel Study of Income Dynamics Child Development Supplement (CDS)

We used data from three waves of CDS, which began in 1997 as a cohort study of children aged 0–12 years in a nationally representative sample of U.S. families. CDS is uniquely suited to this study as it provides the only source of nationally-representative data on children's time use in the United States. Up to two age-eligible children per household were randomly selected to participate. Children were re-contacted at five-year intervals (2002 and 2007) or until they reached age 18. At each wave, children's primary and secondary caregivers completed survey interviews about the child and the child's household. Children 3 years and older completed a battery of cognitive assessments, and 24-hour time diaries from two days were collected for all participating children. All interviews and assessments were completed in-person, and interviewers helped children and caregivers to complete and edit time diaries during the home visit. At wave 1, 88 percent of eligible families in the PSID sample participated (N=3,563 children in 2,380 families), and 82 percent of participating children submitted completed time diaries (N=2,904 children in 1,966 families). Response rates for the survey interview and time diaries were respectively 91 percent and 88 percent in 2002 and 90 percent and 86 percent in 2007 (Panel Study of Income Dynamics, 2010; Panel Study of Income Dynamics, 2012b).

For the time diaries, children were assigned one random weekday and one weekend day during which to record all activities from midnight to midnight. All children within a household were assigned the same diary days. Diaries were most often completed by the caregiver alone or by the caregiver and child together, although some were completed by older children alone. In addition to recording the nature of each activity, the diary also recorded the location of the activity, who else was present, whether those present were actively engaged in the activity, and whether the child was engaged in any secondary activity at the same time. Start and end times of each activity were recorded to the level of seconds. After the field interviewer's initial review and edit, time diaries were returned to University of Michigan for further cleaning and coding. The codeframe includes categories for children's educational activities, work, sport and recreation, leisure, media use, organized activities, and social activities, among many others. The public release data files include a separate record of each activity in which a child was engaged. Across records for each day, time sums to 24 hours and can be aggregated into time in particular activities, time with a particular individual, or some combination.

We pooled observations across waves and restricted the analysis to youth ages 6 to 17 years for whom comparable outcome measures were available. The analytic sample excludes observations in which the child was not residing with their biological or adoptive mother

(N=153) or the household did not complete both the weekday and weekend diary for a child (N=138). Our sample includes more than one observation for most children, and thus models cluster on the individual. (Our sample also includes siblings; results are substantively similar when models cluster on sibling pairs.) Without accounting for missing data on our outcomes, our final analytical sample includes 2,662 children and 4,354 observations (2,323 and 2031 among children ages 6–11 and 12–17, respectively; because the study was conducted at five-year intervals, most children were observed only once in each of these age groups). For 98% of these children, the mother is the primary caregiver and responds to questions about the child's diary day and family environment. Final sample sizes vary depending on the outcome and are reported in the results tables.

Measures

Outcomes.—We assess two academic and two behavioral indicators, following the coding strategy of Milkie et al. (2015). Our two measures of cognitive achievement were derived from the child's performance on three standardized assessments included in the Woodcock Johnson-Revised Tests of Achievement. We generated a *broad reading score* by combining scores on the letter-word assessment (reflecting children's skill in recognizing and pronouncing written words) and the passage comprehension assessment (measuring skills in word choice, syntax, and inference). We used the applied problems assessment to measure *quantitative reasoning*. Children's scores were age-normed and standardized to have a mean of 100 and a standard deviation of 15.

Externalizing and internalizing behavior scores came from responses provided by the child's primary caregiver to the 30-item Behavior Problems Index (BPI, Peterson and Zill 1986). *Externalizing behavior* is defined as disruptive, aggressive, or destructive, and is characterized by low self-regulation. Examples of externalizing behavior indicators include "[CHILD] argues too much" and "[CHILD] bullies or is cruel or mean to others." *Internalizing behavior* is characterized by expressions of withdrawn, sad, fearful, or anxious feelings and is predictive of clinical diagnoses of anxiety and depression. Examples of internalizing behavior indicators include "[CHILD] feels or complains that no one loves him/her" and "[CHILD] is too fearful or anxious." Scores on each item (1 = *never true*, 2 = *sometimes true*, 3 = *often true*) were converted to a dichotomous variable coded 1 for sometimes or often true and 0 otherwise. These dummies were in turn summed into separate scales for externalizing and internalizing behavior problems ranging from 0 to 15 and 0 to 13, respectively.

Mothers' time.—For each of the child's activities, we constructed indicators for whether the mother was directly engaged in the activity (based on the question "Who was doing the activity with the child?") or present but not engaged ("Who (else) was there but not directly involved in the activity?"). We summed all time in these activities to generate the number of hours that mothers were engaged with or accessible to children in the diary day. Finally, following the standard approach (Milkie et al., 2015; Hofferth, 2006), we constructed an estimated number of *hours in the week mothers spent engaged or accessible* by multiplying the weekday total by five and the weekend total by two and adding these to sum to the week.

Parenting package.—We incorporated six indicators of the parenting package. To measure *cognitive stimulation* and *emotional support*, we used subscales from the Home Observations for Measurement of the Environment (HOME) Inventory-Short Form (Caldwell and Bradley 2003), which include caregivers reports and interviewer observations. The cognitive subscale is a set of age-specific items pertaining to the frequency of caregiver-child outings, the availability of reading material in the home, the caregiver's attitude and support for child learning, and interviewer observations of children's access to stimulating toys and games during the home visit. The emotional subscale includes age-specific items addressing the frequency of family activities like shared meals and play, the frequency of conversation and verbal and physical expressions of affection or harsh parenting, caregiver support for children's independent decision making and activities, and the interviewer's assessment of positive and negative dialogue and emotional engagement with the child during the home visit. We used the cognitive and emotional subscale scores constructed by PSID staff and included in the public-use PSID CDS data files (and control in all analyses for a count of items in the cognitive subscale that were imputed by PSID staff.) Scores range from 0–14 and 0–11, respectively.

To capture the frequency *of parent-child discussions*, we averaged three survey items about children's school activities and events, topics studied in class, and experiences in school. Ordinal response options on each item ranged from *never* (rescaled to 0) to *at least once a week* (3). *Punitive parenting* was measured by the mother's response to a hypothetical question about how she would respond if her child were to bring home a bad report card. Mothers who reported that they would punish or lecture the child were coded as engaging in punitive parenting strategies. Results were similar when punishment and lectures were considered separately. Relative to actual behavior like spanking or scolding, this hypothetical assessment has the advantage of not presupposing child behavior problems or academic setbacks to which parents have been compelled to respond.

Children's time in educational and structured activities was constructed from the time diaries and measures the number of hours per week that a child spent in educational and structured activities outside of school when the mother was not present, including organized sports, arts, civic, volunteer, and religious activities, being tutored, homework, and computer-based learning activities. Analogous to our measure of time with mothers, we multiplied diary reports of weekday and weekend hours in these activities by 5 and 2, respectively, and summed to obtain hours per week. Using the "who" questions discussed above, we counted only activities in which the child's mother was not present. Children may have been alone in these activities or with other adults, including other relatives, teachers, or coaches. The activities considered here fall under the broader categories of educational and professional training, organizational activities, and classes, lessons, or organized events for leisure activity and sport in the CDS time diary coding manual (Panel Study of Income Dynamics, 2008). To assess *mother's school involvement*, we averaged responses to a series of survey questions about the frequency of participation in conferences with children's teachers, volunteer activities at school, informal conversations with teachers or the school principal, attendance at school events such as theater performances and sporting events, and

involvement in the school's parent-teacher organization (0=*never*, 1=*once*, 2=*more than once a year*).

Controls.—All models control for socio-demographic characteristics of the family and aspects of data collection that may be associated with mothers' time, parenting, and child outcomes. Demographic characteristics include the *primary caregivers' age* at the preceding core PSID interview and the *child's race/ethnicity* (non-Hispanic white, non-Hispanic black, Hispanic, or other race/ethnicity), *gender*, and *age* at the CDS wave from which the observation was drawn. The primary caregiver's *employment* was categorized as employed, unemployed, and out of the labor force, and *education* as fewer than 12 years (i.e., less than a high school diploma), 12 years (high school diploma), 13 to 15 years (some college), and 16 years or more (4-year college degree or higher). Family structure was measured by a five-category indicator of the primary caregiver's *union status* at the time of the CDS interview (married, cohabiting, or single) cross-classified by whether the child's *biological father* was in the household. We also accounted for the *number of siblings* (full, half, or step) in the household. Critically, we also control for whether the child was *low birthweight* (less than 5.5 pounds at birth). Controls for data collection include the *typicality of each diary day* and whether the *primary caregiver was involved in completing each time diary* compared to the child completing the diary alone. Appendix Table A1 shows descriptive statistics on all key variables and controls for our analytical sample.

Analytic approach

Our analysis proceeds in three steps. First, we provide a descriptive assessment of various strategies for measuring mothers' time with children. Second, we examine how the parenting package is linked to child outcomes and—critically—how its components moderate the link between mothers' time and child outcomes. Third, we estimate supplementary analyses on a subset of children observed at least twice in CDS. Results are based on ordinary least squares (OLS) regression models of children's (ages 6–11) and adolescents' (12–17) academic and behavioral outcomes. Separate models account for developmental differences across child age. Models testing moderation include interactions between mothers' time and separate components of the parenting package. All models use the weight for the wave from which data are drawn to account for differential sampling probabilities and nonresponse and (as noted earlier) are clustered on the child's unique identifier to adjust for repeated observations on the same individual.

Results

Table 1 describes the time that mothers spend engaged with versus accessible to children ages 6–11 (panel 1) and 12–17 (panel 2). Within each panel, the first row summarizes hours of mother's engaged, accessible, and total time per week, and the next five rows show the distribution of maternal time with children in children's most frequent activities (excluding time spent sleeping or at school). Mothers' time with younger children was about equally divided between engaged and accessible time (19.7 vs. 18.7 hours, respectively), but mothers spent less time engaged with adolescents (13.8 hours of engaged vs. 19.0 hours of accessible time). In both age groups, mothers were more often accessible rather than

engaged when children were involved in educational and structured activities, unstructured play, and media consumption. Mothers were more often engaged in the same activity with children during meals and travel. In sum, a substantial amount of mother-child shared time is not spent directly engaged with each other, and engaged time often occurs outside of the activities that are considered developmentally advantageous.

Table 2 compares various specifications of mother-child shared time that have been suggested in prior literature. Models include all socio-demographic controls (but not indicators of our parenting package) and are weighted and clustered on the child. The first panel summarizes the association between mother-child time and child and adolescent outcomes, including engaged and accessible time as separate components in the same predictive model. (The correlation between the two measures of maternal time was −.09, suggesting that collinearity was not a concern.) Mother's engaged time was not associated with any outcome in either age group. Time when a mother was accessible was significantly associated in the expected direction with three of four outcomes for adolescents: broad reading scores, externalizing behavior problems, and internalizing behavior problems. Post-hoc tests indicated that the coefficients for the two measures of mother-child time were never significantly different at $p<.05$. Given similarities in what engaged and accessible time look like and a lack of any compelling evidence of difference in their associations with child outcomes, we conclude that engaged time is no more salient to the construct of mother-child shared time than is time when mothers are present but not engaged. Thus, we proceed with an analytic approach that pools these two types of time into a single indicator of *total mother-child shared time*.

The second panel of Table 2 shows results from a model that includes the linear specification of total time. Total time was significantly positively associated with adolescents' broad reading scores and negatively associated with externalizing behavior scores, indicating that the sheer quantity of time, rather than the level of engagement, is predictive of outcomes in adolescence. The remaining panels of Table 2 include further tests of our measurement strategy. The third and fourth panels shows results of OLS models with total mother-child shared time described as a quadratic function and as a nonlinear (categorical) set of dummy variables ($<25^{th}$ percentile of time, middle 50, $>75^{th}$ percentile). The quadratic term was never statistically significant, providing no evidence against a linear specification. Results based on the categorical coding are further consistent with the linear specification, i.e., coefficients for mother's total time changed monotonically in the expected direction for each outcome.

The final two panels address potential measurement error by limiting the analysis to children's usual circumstances: The fifth panel summarizes results from models that considered only children's weekday time under the expectation that children's weekdays are more uniformly organized compared to weekend days. (All CDS diaries were collected during the traditional school year.) And the sixth panel presents results of OLS models that limited analysis to subsamples of children whose diary days were described as "very typical." Limiting the sample to children whose diary days were "very typical" potentially biases the sample toward families that have especially structured lives, but considering time during weekdays should involve no such bias (i.e., the sample remains the same, only the

measure of time varies). For “very typical” reports, we find a stronger association between mother-child shared time with younger children’s reading scores, but a weaker association with adolescent externalizing behavior compared to the full sample. Other associations remain similar in magnitude in both panels 5 and 6, suggesting that greater precision around what is routine or “typical” does not necessarily yield a stronger statistical association between maternal time and child outcomes.

Table 3 presents results from models predicting child and adolescent outcomes as a function of total mother-child shared time (entered as a linear term), the parenting package, and control variables. Coefficients and robust standard errors are shown for mothers’ time and the parenting package, and full model results are included in Appendix Table 2. Adding components of the parenting package to our models, we find that mothers’ time was associated with 3 of the 8 outcomes across age groups: Mother-child shared time positively predicted children’s broad reading scores in both age groups and negatively predicted adolescents’ externalizing behavior. Shared time was not associated with applied problems scores or internalizing behavior in either age group. These null findings and the negative association with externalizing behavior are consistent with Hsin & Felfe (2014) and in line with Milkie et al. (2015), who found a negative association between mother’s engaged time and adolescent *delinquent* behavior.

In contrast to our finding positive associations between mother-child shared time and children’s broad reading scores, Milkie et al. (2014) reported null associations between mother-child time and broad reading scores, but considered engaged and accessible time separately. Hsin and Felfe (2014, Table 5) found no association between mother-child total time and letter-word scores (a subset of broad reading scores) among children 6–18, using fixed effects applied to a more limited sample of two-parent families from the same data source. Among younger children (<6), they found a *negative* association—a counter-intuitive result attributable to the share of mother-child time spent in unstructured activities that were detrimental to child development, relative to cognitively stimulating activities such as reading. Whereas our research question is focused on the moderating effect of the parenting package, we acknowledge that some parent-child activities are more likely to be associated with positive developmental outcomes compared to others. The positive association we find between total mother-child shared time and children’s broad reading scores suggests that a mix of mothers’ direct involvement and more detached availability and supervision facilitate children’s engagement in learning activities that promote language activity. The magnitude of statistically significant associations is modest, however: for example, in the model of broad reading in adolescence, the 0.070 coefficient on mothers’ time indicates that for every one standard deviation change in mother’s time (17.26 hours, see Appendix Table A1), adolescent reading scores would increase 1.21 points, or less than 10% of one standard deviation in reading (17.05, A1).

The other coefficients in Table 3 show that each indicator of the parenting package was directly associated with at least one outcome. Time in structured and educational activities without a mother present was consistently and positively associated with cognitive achievement and negatively associated with behavior problems in adolescence. A one-standard deviation increase in this measure was associated with a 1.43-point increase in

younger children's predicted broadd reading scores (B=.418, SD=3.43) and a 1.16-point in increase in adolescents' scores (B=.173, SD=6.7), comparable to the expected change in children's scores associated with a one standard deviation change in mother-child total time. Other indicators of the parenting package were standardized to facilitate comparisons among measures. Hence, coefficients describe units of change in the predicted value of the dependent variable associated with a one standard deviation change in the value of an independent variable. Punitive parenting predicted more behavior problems (internalizing among adolescents only) and, unexpectedly, higher reading scores in early childhood. School involvement was positively associated with children's cognitive achievement in middle childhood but negatively associated in adolescence, perhaps because of reverse causation; that is, mothers may be more involved in adolescents' schooling when they are struggling. Emotional support was negatively associated with internalizing behavior in middle childhood and externalizing behavior in adolescence. Cognitive stimulation at home was more strongly related to children's academic outcomes, positively predicting broad reading in children of both age groups and applied problems in adolescence; it was also negatively associated with externalizing behavior in adolescence and positively associated with internalizing behavior in middle childhood. Parent-child discussions had the weakest predictive power but were significantly associated with children's broad reading scores in adolescence. Taken together, elements of the parenting package were most consistently associated with children's broad reading scores (both age groups) and externalizing behavior among adolescents. The magnitude of these associations was generally modest, with the exception of cognitive stimulation in adolescence, which was associated with a predicted one-third standard deviation change in each of the cognitive achievement outcomes.

Table 4 shows interaction terms from models testing the expectation that mother-child time would have a stronger association with children's developmental outcomes in the context of a favorable parenting package. This expectation was generally not supported. We estimated models adding interaction terms between mothers' total time with children and each component of the parenting package in turn. Thus each of the coefficients in Table 4 is from a separately estimated model that added one interaction term to the corresponding model summarized in Table 3. Only five of 48 interactions were statistically significant at $p<.05$. Four of the five significant interaction terms were observed among adolescents, and these were not always in the expected direction: e.g., adolescents had higher predicted reading scores when they experienced mother-child time in the context of more frequent school involvement; they also had higher predicted externalizing behavior problems when they experienced above-average levels of cognitive stimulation at home. Given the number of interaction terms we tested, we would expect 5 to be statistically significant by chance alone. In sum, we find little evidence that the *quality* of mother-child shared time as characterized by indicators of the parenting package moderates the relationship between the *quantity* of shared time and child cognitive achievement or behavior.

In a final set of supplementary analyses (not shown but available upon request), we considered that parents and children may choose to spend more time together when children have strong cognitive ability or few behavior problems. That is, the amount of time mothers and children spend together may be the outcome of children's cognitive achievement and behavior, rather than the other way around. To assess this hypothesis, we re-estimated

models presented in Table 3 with an additional control for children's scores on the dependent variable measured in the prior wave. Requiring observations from two consecutive study waves restricted the analysis mostly to adolescents from the latter two waves of CDS and reduced sample sizes by between one-third and one-half. This more restricted analytic sample may differ from our broader sample in ways unaccounted for by control variables. In this specification, the statistically significant association between mother-child shared time and children's predicted reading scores was reduced to marginal significance, but the strong negative association with externalizing behavior observed among adolescents remained. Further, a marginally significant positive association between mother-child shared time and adolescents' predicted applied problems scores emerged in the lagged models. We cautiously suggest that there is at least a modest contemporaneous association between mother-child shared time and some dimensions of adolescent well-being net of salient prior child characteristics. As above, we found little evidence that these associations were moderated by the parenting package. Adding lagged dependent variables to models incorporating interaction terms did not alter our mostly null findings regarding the potential for the *quality* of mother-child shared time to shape the association between the *quantity* of shared time and child cognitive achievement or behavior.

Discussion

We contribute to ongoing debates about the relationship between mother's time with children and well-being in childhood and adolescence by considering the quality of the context in which mothers and children interact, rather than by focusing on mother-child engaged time (Milkie et al., 2015; Nomaguchi et al., 2016) or the nature of the specific activities they share (Fiorini & Keane, 2014; Hsin & Felfe, 2014; Kalil & Mayer, 2016). We focused on six dimensions of children's family context that we describe as the parenting package, or the resources and strategies parents use in order to shape how they and their children relate and how children use and experience their time. We expected that aspects of the parenting package would moderate the association between parent-child shared time and cognitive achievement and behavior during middle childhood and adolescence.

This expectation was not supported in our analyses. We found that mothers' total time with children was directly and positively associated with children's reading scores at both life stages and negatively associated with children's externalizing behavior in adolescence. However, associations were small in magnitude and did not vary consistently by our measures of parenting quality. Although indicators of the parenting package were themselves associated in expected ways with child outcomes, few interacted significantly with mother-child shared time, and interactions were not always in the expected direction. We were surprised by the general lack of any meaningful interaction between mothers' time and other aspects of the parenting package. There is sound theory to suggest that parental involvement should condition the value of parental resources such as time (Coleman, 1988; Kalmijn, 2015; Lareau, 2011). And on a more intuitive level, it makes sense that maternal time characterized by talking, warmth, and support for learning would be more strongly associated with child well-being than time void of these qualities, whether engaged in homework help or just passing the day together. That said, others have found little variation in the association between parenting and other aspects of family life (Amato & Fowler,

2002; Berger & McLanahan, 2015). Future research to resolve this inconsistency might consider how the parenting package moderates parent-child time in specific activities, such as educational and structured activities, that are positively associated with children's cognitive achievement (Hsin & Felfe, 2014; Fiorini & Keane, 2014).

Two other key contributions stem from our conceptualization of mothers' time: First, we found that total shared time, including time when mothers and children are directly engaged with each other and when mothers are present but not engaged, is a more sensitive predictor of child outcomes than is either of these more narrowly defined measures on their own. Indeed, we found little difference in the activities that children do with mothers when they are engaged versus accessible, and no statistically significant difference in the associations between these components of time and child outcomes. Mothers' total time with children accounts for the time and effort involved in providing care, supervision, and support to children even when not directly involved in a common activity (Folbre et al., 2005). Second, we demonstrated that the strategies parents use to structure children's time may influence children's well-being as much through how children spend their time *apart from parents* as through how they spend time together. Together, these findings motivate future research to consider how mothers use their own time to shape the structure, context, and content of children's time use in ways that are consequential for their development and well-being.

We relied on unique data that links children's time diaries to high quality behavioral and cognitive assessments in the framework of a nationally representative survey with detailed information from mothers on many other aspects of family life. We showed that our results were robust to various approaches to measuring mothers' time. Further, our main results held up in models that incorporated rich controls and leveraged the panel nature of the CDS to address issues of causality. Despite the strengths of the data and approach for our research question, limitations remain. To the extent that time diary data are not representative of the time mothers typically spend with children, they will introduce noise into estimated associations between time and child well-being. And to the extent that time is a less reliable measure than maternal education or family structure, for example, our estimates understate the *relative importance* of time (Wolfers, 2015; Kalil & Mayer, 2016). These are significant concerns, although time diaries do a good job of capturing routine behavior (Robinson, 1985), and much of family life is about routines. Beyond measurement, there are always challenges associated with interpreting processes linking parenting and child outcomes. For example, if mothers spend more time with children struggling with behavioral or academic problems, any benefits of time would be underestimated. (Of course if mothers avoid time with problem children, the opposite would be true.) Even with data over time, causal arrows are difficult to sort out, as the reciprocal relationships between parenting and child well-being evolve in nuanced ways over the life course.

Caveats notwithstanding, we address many outstanding methodological concerns in the literature on mothers' time investments and child well-being. This work further adds conceptually in important ways to ongoing debates about mothers' time: whereas prior research has emphasized the importance of mothers' quality time investments as defined by activity type, we focused on the potential importance of quality time as defined by the parenting package.

Appendix A1.: Descriptive statistics, PSID Child Development Supplement (1997–2007)

	All		Ages 6–11 years		Ages 12–17 years	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Dependent variables						
Woodcock-Johnson broad reading score (age-standardized)	105.83	17.05	107.52	16.29	104.31	17.57
Woodcock-Johnson applied problems score (age-standardized)	107.49	16.45	108.95	16.76	106.19	16.05
Behavior Problems Index - externalizing	5.21	3.96	5.35	3.82	5.09	4.08
Behavior Problems Index - internalizing	2.99	3.03	2.97	2.87	3.01	3.16
Independent variables						
Mother-child total time (weekly hours)	35.56	17.26	38.31	15.84	32.81	18.17
Mother-child engaged time (weekly hours)	16.73	12.28	19.66	11.55	13.80	12.28
Mother present, not engaged (weekly hours)	18.83	13.27	18.65	12.22	19.01	14.24
Child time in educational or structured activities (weekly hours)	3.21	5.50	1.82	3.43	4.59	6.70
Punitive parenting	3.31	1.28	3.17	1.33	3.44	1.22
Parental school involvement	1.24	0.69	1.51	0.68	0.98	0.60
Parent-child discussions	2.80	0.47	2.82	0.42	2.78	0.51
Emotional support	5.90	3.76	6.09	4.86	5.72	2.15
Cognitive stimulation	6.17	3.56	6.05	4.58	6.29	2.09
Child characteristics						
Age in years	11.44	3.23	8.71	1.74	14.17	1.73
Male	0.49	0.50	0.49	0.50	0.49	0.50
Race/ethnicity						
Non-Hispanic white	0.65	0.48	0.66	0.47	0.64	0.48
African-American	0.14	0.35	0.14	0.34	0.15	0.35
Latino	0.14	0.35	0.14	0.35	0.15	0.36
Other race	0.07	0.25	0.06	0.24	0.07	0.25
Number of siblings	1.69	1.45	1.53	1.07	1.86	1.74
Was low birthweight	0.06	0.24	0.06	0.24	0.06	0.24
Primary caregiver characteristics						
Age in years	38.44	6.47	35.69	5.81	41.19	5.90
Education						
Less than high school	0.13	0.34	0.12	0.33	0.14	0.34
High school	0.32	0.47	0.34	0.47	0.30	0.46
Some college	0.26	0.44	0.27	0.44	0.25	0.44
College or more	0.24	0.42	0.22	0.41	0.26	0.44
Employment status						
Employed	0.63	0.48	0.62	0.49	0.64	0.48
Unemployed	0.04	0.20	0.04	0.20	0.05	0.21
Out of labor force	0.33	0.47	0.34	0.47	0.31	0.46
Union status						

	All		Ages 6–11 years		Ages 12–17 years	
	Mean	SD	Mean	SD	Mean	SD
Married to other biological/adoptive parent	0.67	0.47	0.68	0.47	0.66	0.47
Married to child's step-parent	0.06	0.24	0.06	0.23	0.07	0.25
Cohabiting with other biological/adoptive parent	0.02	0.13	0.02	0.13	0.01	0.12
Cohabiting with stepparent	0.01	0.11	0.01	0.11	0.01	0.11
Unpartnered	0.24	0.43	0.23	0.42	0.24	0.43
Diary characteristics						
Weekday diary day is typical/very typical	0.70	0.46	0.73	0.44	0.67	0.47
Weekend diary day is typical/very typical	0.55	0.50	0.59	0.49	0.52	0.50
Typicality of weekday diary day missing	0.03	0.17	0.03	0.16	0.03	0.17
Typicality of weekend diary day missing	0.04	0.19	0.03	0.18	0.04	0.20
Caregiver wrote/helped with weekday diary	0.68	0.47	0.80	0.40	0.55	0.50
Caregiver wrote/helped with weekend diary	0.66	0.47	0.80	0.40	0.52	0.50
Who completed weekday diary missing	0.06	0.23	0.04	0.19	0.08	0.27
Who completed weekend diary missing	0.07	0.25	0.04	0.19	0.10	0.30
Wave						
Wave 1 (1997)	0.27	0.44	0.43	0.50	0.10	0.30
Wave 2 (2002)	0.46	0.50	0.47	0.50	0.44	0.50
Wave 3 (2007)	0.28	0.45	0.10	0.30	0.46	0.50
N (person-wave records)	4,696					

Note: Observations are pooled across waves. Statistics are weighted and clustered on the child.

Appendix A2.: Complete coefficients from ordinary least squares regression models estimating child outcomes as a function of mother's time with children and parenting package indicators, PSID Child Development Supplement (1997–2007).

	Ages 6–11 years							
	Broad Reading		Applied Problems		Externalizing Behavior		Internalizing Behavior	
	B	SE	B	SE	B	SE	B	SE
Mother-child total time (weekly hours)	0.055	0.027*	0.001	0.029	−0.006	0.007	−0.006	0.005
Child time in educational or structured activities (weekly hours)	0.418	0.122**	0.305	0.120*	−0.004	0.029	−0.028	0.021
Punitive parenting (standardized)	1.177	0.429**	0.289	0.451	0.384	0.107***	0.029	0.077

	Ages 6–11 years							
	Broad Reading		**Applied Problems**		**Externalizing Behavior**		**Internalizing Behavior**	
	B	**SE**	**B**	**SE**	**B**	**SE**	**B**	**SE**
Parental school involvement (standardized)	1.268	0.565*	1.560	0.616*	−0.258	0.135	−0.137	0.103
Parent-child discussions (standardized)	−0.170	0.510	0.286	0.558	−0.065	0.131	−0.015	0.096
Emotional support (standardized)	−2.032	1.284	0.249	1.370	−0.355	0.309	−0.797	0.220***
Cognitive stimulation (standardized)	1.936	0.927*	0.849	0.974	0.015	0.220	0.326	0.155*
Child age in years	−0.413	0.336	0.373	0.348	−0.037	0.078	0.300	0.054***
Child is male	−2.167	0.827**	2.610	0.856**	1.047	0.199***	0.387	0.150*
Primary caregiver age	0.245	0.083**	0.356	0.086***	−0.049	0.020*	−0.029	0.015
Child race/ethnicity (vs. non-Hispanic white)								
African-American	−6.467	1.449***	−8.386	1.372***	−0.563	0.327	−0.449	0.238
Latino	−2.287	1.456	−3.234	1.418*	−0.785	0.370*	0.349	0.306
Other race	−1.241	1.733	−2.070	2.530	−0.267	0.460	−0.806	0.306**
Primary caregiver's education (vs. high school)								
Less than high school	−4.840	1.524*	−5.951	1.713**	−0.164	0.375	0.149	0.312
Some college	3.825	1.071***	3.289	1.075**	−0.259	0.256	0.024	0.191
College or more	5.392	1.143***	7.066	1.230***	−0.631	0.284*	−0.252	0.214
Primary caregiver's employment status (vs. working)								
Unemployed	0.757	1.768	1.730	1.867	−0.382	0.453	−0.267	0.343
Out of labor force	1.348	0.880	1.625	0.951	−0.038	0.235	−0.080	0.175
Primary caregiver's union status (vs. married to other biological/adoptive parent)								
Married to child's steparent	−1.435	1.809	−2.459	1.832	0.634	0.455	0.095	0.300
Cohabiting with other parent	1.011	2.533	3.361	2.704	1.169	0.723	0.260	0.523
Cohabiting with stepparent	−1.447	3.957	2.582	3.635	1.916	0.790*	1.632	0.620**
Unpartnered	−3.643	1.275**	−0.878	1.244	1.096	0.287***	0.511	0.231*
Number of siblings	−1.800	0.425***	−1.121	0.407**	0.053	0.100	−0.081	0.067
Child was low birthweight	−1.583	1.568	−4.645	1.929*	−0.051	0.417	0.669	0.275*
Diary characteristics								
Caregiver wrote/ helped with weekday diary	−1.558	1.645	2.750	1.598	−0.037	0.454	0.034	0.306
Caregiver wrote/ helped with weekend diary	2.409	1.709	−2.523	1.543	0.413	0.452	0.558	0.314

	Ages 6–11 years							
	Broad Reading		**Applied Problems**		**Externalizing Behavior**		**Internalizing Behavior**	
	B	**SE**	**B**	**SE**	**B**	**SE**	**B**	**SE**
Report on weekday diary completion missing	−3.172	3.610	−2.883	2.626	0.739	0.914	0.200	0.596
Report on weekend diary completion missing	4.558	3.033	0.863	2.573	−0.630	0.730	−0.006	0.520
Weekday diary day is typical/very typical	−0.347	0.890	0.410	0.942	0.102	0.229	0.068	0.176
Weekend diary day is typical/very typical	−1.242	0.817	−1.303	0.891	−0.574	0.212**	−0.393	0.164*
Weekday diary day typicality is missing	−4.193	3.586	1.305	3.113	0.677	0.681	1.346	0.549*
Weekend diary day typicality is missing	−2.992	2.956	1.172	2.500	−0.607	0.553	−0.234	0.428
Wave (vs. wave 1, 1997)								
Wave 2, 2002	2.522	2.548	1.323	2.487	−1.089	0.626	−1.096	0.465*
Wave 3, 2007	−2.684	2.521	1.604	2.567	−0.596	0.624	−1.113	0.494*
Intercept	103.189	4.095***	91.548	4.527***	8.024	0.924***	1.931	0.716**
N (person-wave records)	2143		2180		2300		2302	

	Ages 12–17 years							
	Broad Reading		**Applied Problems**		**Externalizing Behavior**		**Internalizing Behavior**	
	B	**SE**	**B**	**SE**	**B**	**SE**	**B**	**SE**
Mother-child total time (weekly hours)	0.070	0.028*	0.029	0.022	−0.024	0.007***	−0.009	0.005
Child time in educational or structured activities (weekly hours)	0.173	0.071*	0.146	0.064*	−0.056	0.016***	−0.035	0.014*
Punitive parenting (standardized)	−0.027	0.472	−0.303	0.449	0.646	0.119***	0.206	0.092*
Parental school involvement (standardized)	−2.051	0.645**	−1.817	0.668**	0.301	0.173	0.220	0.152
Parent-child discussions (standardized)	0.966	0.378*	0.539	0.397	0.075	0.118	−0.139	0.105
Emotional support (standardized)	0.670	1.848	1.140	1.580	−1.849	0.505***	−0.737	0.400
Cognitive stimulation (standardized)	6.431	1.175***	5.134	1.021***	−1.033	0.283***	−0.090	0.224

	Ages 6–11 years							
	Broad Reading		**Applied Problems**		**Externalizing Behavior**		**Internalizing Behavior**	
	B	**SE**	**B**	**SE**	**B**	**SE**	**B**	**SE**
Child age in years	−0.240	0.260	−0.705	0.258**	−0.212	0.070	−0.049	0.058
Child is male	−1.327	0.907	4.144	0.826***	0.249	0.226	−0.364	0.179*
Primary caregiver age	0.158	0.092	0.143	0.081	−0.075	0.024**	−0.046	0.019*
Child race/ethnicity (vs. non-Hispanic white)								
African-American	−10.338	1.508***	−10.517	1.141***	−0.043	0.387	−0.741	0.284**
Latino	−3.813	1.598*	−6.296	1.589***	−0.284	0.438	0.364	0.340
Other race	−1.553	1.750	0.696	2.314	0.278	0.548	0.142	0.362
Primary caregiver's education (vs. high school)								
Less than high school	−5.107	1.598**	−3.912	1.649*	−0.183	0.452	0.258	0.358
Some college	2.627	1.190*	2.086	1.068	0.060	0.300	0.125	0.236
College or more	7.534	1.321***	7.167	1.223***	0.016	0.312	−0.074	0.240
Primary caregiver's employment status (vs. working)								
Unemployed	3.482	1.563*	3.329	1.850	−0.475	0.555	−0.410	0.465
Out of labor force	0.194	1.016	1.286	0.945	0.227	0.261	0.455	0.207*
Primary caregiver's union status (vs. married to other biological/adoptive parent)								
Married to child's steparent	−0.460	2.241	−1.354	1.792	1.269	0.482**	0.626	0.392
Cohabiting with other parent	−1.454	2.047	5.235	2.542*	−1.907	0.901*	−0.382	0.934
Cohabiting with stepparent	−0.021	3.286	0.221	3.012	−0.576	0.815	−1.049	0.507*
Unpartnered	−0.551	1.378	−0.707	1.069	0.471	0.332	0.764	0.254**
Number of siblings	−0.392	0.249	0.100	0.222	0.049	0.070	0.042	0.056
Child was low birthweight	−3.037	1.620	−4.087	1.748*	−0.352	0.463	0.171	0.323
Diary characteristics								
Caregiver wrote/ helped with weekday diary	−0.104	1.554	−0.168	1.429	0.069	0.387	−0.324	0.339
Caregiver wrote/ helped with weekend diary	−1.494	1.520	−0.146	1.447	−0.279	0.396	0.322	0.344
Report on weekday diary completion missing	−0.195	1.978	−2.200	2.185	0.588	0.586	−0.302	0.441
Report on weekend diary completion missing	−1.660	1.761	0.127	2.058	−0.609	0.523	−0.166	0.403
Weekday diary day is typical/very typical	−0.944	0.968	0.393	0.902	−0.250	0.247	0.137	0.199

	Ages 6–11 years							
	Broad Reading		**Applied Problems**		**Externalizing Behavior**		**Internalizing Behavior**	
	B	**SE**	**B**	**SE**	**B**	**SE**	**B**	**SE**
Weekend diary day is typical/very typical	0.552	0.909	1.585	0.814	−0.301	0.240	−0.679	0.186***
Weekday diary day typicality is missing	0.362	2.248	−0.100	2.523	−1.186	0.680	−0.856	0.520
Weekend diary day typicality is missing	−0.147	1.916	−2.196	2.518	1.179	0.723	0.756	0.527
Wave (vs. wave 1, 1997)								
Wave 2, 2002	0.277	3.303	2.894	2.902	−3.569	0.927***	−0.517	0.759
Wave 3, 2007	−0.915	3.329	5.281	3.059	−4.499	0.985***	−1.171	0.806
Intercept	100.853	5.874***	101.994	4.856***	15.977	1.494***	6.895	1.222***
N (person-wave records)	1977		1978		2023		2019	

Notes: Models are weighted. All models include controls for sociodemographic characteristics and are clustered on the child.

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Table 1.

Mothers' engaged, accessible, and total time with children aged 6–17 years, weekly hours (weighted), PSID Child Development Supplement (1997–2007)

	Engaged		Accessible		Total	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Children 6–11 years (N=2,323 records from 2,142 individuals)						
All time	19.66	11.55	18.65	12.22	38.31	15.84
Educational and structured activities	1.55	2.77	2.26	3.64	3.80	4.41
Unstructured play	1.29	2.77	5.89	6.48	7.17	7.09
Television and media	3.53	5.03	6.70	7.34	10.22	8.78
Meals	4.45	3.14	1.65	1.88	6.09	3.23
Travel	8.06	6.05	1.66	2.06	9.71	6.09
Children 12–17 years (N=2,031 records from 1,883 individuals)						
All time	13.80	12.28	19.01	14.24	32.81	18.17
Educational and structured activities	0.53	1.96	3.66	5.87	4.18	6.23
Unstructured play	0.57	1.96	2.86	5.37	3.43	5.77
Television and media	3.23	5.41	7.86	8.94	11.06	10.31
Meals	3.05	2.94	1.21	1.69	4.26	3.29
Travel	5.55	5.85	1.14	1.66	6.69	5.99

Note: Observations are pooled across waves. Statistics are weighted and clustered on the child.

Table 2.

Coefficients from ordinary least squares regression models estimating child outcomes as a function of mother's time with children, PSID Child Development Supplement (1997–2007)

	Cognitive Achievement				Behavior Problems Index			
	Broad Reading		Applied Problems		Externalizing		Internalizing	
Child age in years	**6–11**	**12–17**	**6–11**	**12–17**	**6–11**	**12–17**	**6–11**	**12–17**
(1) Type of time								
Engaged time	0.024	0.026	−0.040	−0.013	−0.013	−0.017	−0.004	0.004
Accessible time	0.034	0.068 *	0.016	0.028	−0.002	−0.021 **	−0.004	0.013 *
(2) Linear specification of total time	0.034	0.054 *	−0.010	0.012	−0.008	−0.020 **	−0.005	−0.006
(3) Quadratic specification of total time								
Total time	0.051	0.038	0.009	0.010	−0.008	−0.024	−0.006	−0.008
Total time squared	−0.001	0.001	−0.001	0.000	0.000	0.000	0.000	0.000
(4) Categorical specification of time (reference is 25–50th percentile)								
Total time below 25th percentile	−1.204	0.104	0.750	−0.287	0.013	0.802	0.052	0.387
Total time above 75th percentile	0.337	1.158	−0.155	−0.187	−0.348	−0.235	−0.135	0.047
(5) Total time, weekday only	0.008	0.070	−0.006	0.016	−0.009	0.017	−0.003	−0.001
(6) Total time, very typical weekday and weekend days	0.135 *	0.025	0.032	−0.007	−0.016	−0.015	0.001	−0.015
N for models 1–5 (person-wave records)	2143	1977	2180	1978	2300	2023	2302	2019
N for model 6 (person-wave records)	487	492	538	538	367	368	375	374

*** p<.001,

** p<.01,

* p<.05

Notes: Models are weighted. All models are clustered on the child and include controls for child characteristics (age, gender, race/ethnicity, number of siblings, whether low birthweight), primary caregiver characteristics (age, education, employment status, union status), and diary characteristics (whether diary day typical [only very typical days in model 6], who completed diary). Coefficients in the first panel for mother's accessible time and total time do not significantly differ from each other. Complete list of model coefficients and standard errors available upon request.

Table 3.

Coefficients from ordinary least squares regression models estimating child outcomes as a function of mother's time with children and parenting package indicators, PSID Child Development Supplement (1997–2007)

	Broad Reading		Applied Problems		Externalizing Behavior		Internalizing Behavior	
	B	**SE**	**B**	**SE**	**B**	**SE**	**B**	**SE**
Ages 6–11 years								
Mother-child total time (weekly hours)	0.055	0.027*	0.001	0.029	−0.006	0.007	−0.006	0.005
Child time in educational or structured activities (weekly hours)	0.418	0.122**	0.305	0.120*	−0.004	0.029	−0.028	0.021
Punitive parenting	1.177	0.429**	0.289	0.451	0.384	0.107***	0.029	0.077
Parental school involvement	1.268	0.565*	1.560	0.616*	−0.258	0.135	−0.137	0.103
Parent-child discussions	−0.170	0.510	0.286	0.558	−0.065	0.131	−0.015	0.096
Emotional support	−2.032	1.284	0.249	1.370	−0.355	0.309	−0.797	0.220***
Cognitive stimulation	1.936	0.927*	0.849	0.974	0.015	0.220	0.326	0.155*
Intercept	103.19	4.095***	91.55	4.527***	8.02	0.924***	1.93	0.716**
N (person-wave records)	2143		2180		2300		2302	
Ages 12–17 years								
Mother-child total time (weekly hours)	0.070	0.028*	0.029	0.022	−0.024	0.007***	−0.009	0.005
Child time in educational or structured activities (weekly hours)	0.173	0.071*	0.146	0.064*	−0.056	0.016***	−0.035	0.014*
Punitive parenting	−0.027	0.472	−0.303	0.449	0.646	0.119***	0.206	0.092*
Parental school involvement	−2.051	0.645**	−1.817	0.668**	0.301	0.173	0.220	0.152
Parent-child discussions	0.966	0.378*	0.539	0.397	0.075	0.118	−0.139	0.105
Emotional support	0.670	1.848	1.140	1.580	−1.849	0.505***	−0.737	0.400
Cognitive stimulation	6.431	1.175***	5.134	1.021***	−1.033	0.283***	−0.090	0.224
Intercept	100.85	5.874***	101.99	4.856***	15.98	1.494***	6.90	1.222***
N (person-wave records)	1977		1978		2023		2019	

*** p<.001,

** p<.01,

* p<.05

Notes: Models are weighted. Parenting scales (punitive parenting, parental school involvement, parent-child discussions, emotional support, cognitive stimulation) are standardized to have a mean of 0 and standard deviation of 1. All models are clustered on the child and include controls for child characteristics (age, gender, race/ethnicity, number of siblings, whether low birthweight), primary caregiver characteristics (age, education, employment status, union status), and diary characteristics (whether diary day typical, who completed diary). Complete list of model coefficients and standard errors shown in Appendix Table A2.

Table 4.

Interaction terms from ordinary least squares regression models estimating child outcomes as a function of mother's time with children, parenting package indicators, and their interaction, PSID Child Development Supplement (1997–2007)

	Broad Reading	Applied Problems	Extern-alizing Behavior	Intern-alizing Behavior	Broad Reading	Applied Problems	Extern-alizing Behavior	Intern-alizing Behavior
	6–11 years				*12–17 years*			
Child time in educational or structured activities	−0.004	0.002	0.001	−0.003 *	−0.006	−0.003	0.001	0.000
Punitive parenting	−0.019	0.015	0.004	0.001	0.052 *	0.007	−0.013 *	0.007
Parental school involvement	−0.029	−0.011	−0.003	0.004	0.052 *	0.025	−0.001	−0.003
Parent-child discussions	−0.016	0.031	−0.008	−0.004	−0.012	0.003	0.004	0.005
Emotional support	0.020	−0.003	0.000	−0.001	0.038	0.030	−0.008	−0.006
Cognitive stimulation	0.012	0.003	−0.001	−0.001	0.014	0.016	0.023 *	0.003

*** p<.001,

** p<.01,

* p<.05

Notes: Models are weighted. Parenting scales (punitive parenting, parental school involvement, parent-child discussions, emotional support, cognitive stimulation) are standardized to have a mean of 0 and standard deviation of 1. All models are clustered on the child and include all control variables. Complete list of model coefficients and standard errors available upon request.