Parent-Child Shared Time From Middle Childhood to Late Adolescence: Developmental Course and Adjustment Correlates

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Abstract

The development and adjustment correlates of parent-child social (parent, child, and others present) and dyadic time (only parent and child present) from age 8 to 18 were examined. Mothers, fathers, and firstborns and secondborns from 188 White families participated in both home and nightly phone interviews. Social time declined across adolescence, but dyadic time with mothers and fathers peaked in early and middle adolescence, respectively. Additionally, secondborns' social time declined more slowly than firstborns', and gendered time use patterns were more pronounced in boys and in opposite-sex sibling dyads. Finally, youths who spent more dyadic time with their fathers, on average, had higher general self-worth, and changes in social time with fathers were positively linked to changes in social competence.

Keywords

birth order; gender; parent-child relationships; psychosocial adjustment; social context; time use

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Although parent-child shared time is theorized to play a critical role in youth development (Bronfrenbrenner, 1979), surprisingly little research is available on how it develops as youths make the transition from childhood to adolescence or on whether changes in parent-child shared time are linked to changes in youth adjustment. Moreover, most prior work has not differentiated between social time (i.e., time with parents in the presence of others) and dyadic time (i.e., time with just the single parent), although these two types of time may have different developmental course and correlates (Larson & Richards, 1991; 1994). Most prior work has also ignored important contextual factors, such as the presence and gender of siblings, which may have implications for mother- and father-child involvement (McHale, Kim, & Whiteman, 2006). In this study, the two eldest siblings from each family provided data across a 7-year period on their time use and psychosocial adjustment, presenting a unique opportunity to examine: (a) the developmental course of parent-child shared time from middle childhood to late adolescence; (b) whether changes in parent-child time varied as a function of youths' birth order and gender and the sibling dyad gender composition; and (c) whether changes in parent-child shared time were associated with changes in youths' general self-worth and social competence.

Developmental Course of Parent-Child Shared Time

To capture how parent-child shared time develops requires a design that draws information from parents or youths on multiple occasions over a substantial period of time. However, to

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date there has been only one short-term longitudinal study conducted with a US sample on how parent-child shared time changes with age (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996). Larson et al.'s (1996) study found declines in parent-child shared time across age. However, because it included only two occasions of measurement, more complex patterns of change could not be detected. Using a long-term longitudinal design, the first goal of our study was to expand upon this work to examine the developmental course of youths' social and dyadic time with their mothers and fathers from middle childhood to late adolescence.

According to an individuation hypothesis, at the transition to adolescence, youths are motivated to gain independence from their parents and become more involved in peer relationships (Grotevant & Cooper, 1986). Indeed, time use data suggest that youths become behaviorally less engaged with their parents across adolescence. Buhrmester and Furman (1987), for example, administered a questionnaire to children and young adolescents and showed that total time with parents decreased with age. Montemayor and Brownlee (1987) used a phone diary approach, calling participants on multiple days and asking them to recount their previous day's experiences, and found that youths spent proportionally less time with their parents in early than in middle adolescence. Larson and Richards (1991) used an experience sampling approach, beeping participants at random times and asking them to report on current experiences, and documented a decline in social time with parents across adolescence. Although a follow-up of about half of their sample further confirmed that adolescents' social time with parents declined longitudinally (Larson et al., 1996), the study design did not allow for an examination of curvilinear changes. Given that youths' individuation begins in early adolescence and gains momentum in middle and late adolescence (Grotevant & Cooper, 1986), in this study, we tested whether the developmental course of parent-child social time was best described as quadratic, remaining stable in middle childhood and decreasing gradually from early to late adolescence.

A continued connectedness hypothesis contrasts with an individuation hypothesis in that, despite their efforts to gain independence, youths also seek to maintain close relationships with their parents (Grotevant & Cooper, 1986). Because the presence of others may make the parent and the child less aware of and attentive to each other than they would be when alone (Crouter & Crowley, 1990), parent-child *dyadic time*, as opposed to *social time*, may best reflect reciprocal interest. Larson and colleagues (Larson & Richards, 1991; Larson et al., 1996) were among the few researchers to distinguish between social and dyadic time with parents. Their cross-sectional and longitudinal analyses showed that, although social time with parents declined across adolescence, dyadic time remained unchanged. The authors interpreted the findings to mean that parents and youths choose to maintain their more intimate interactions and forgo their less intimate ones in a way that serves youths' needs for both connectedness and autonomy. Although Larson et al. (1996) provided a rare glimpse into how parent-child dyadic time changed over time, their study design only allowed for a test of a linear pattern of change. If youths strategically spend dyadic time with their parents to compensate for a decline in social time, a more fine-grained longitudinal analysis may reveal that its change pattern is complementary to that of social time, that is, that dyadic time remains stable in middle childhood and increasing gradually from early through late adolescence.

Developmental Course of Parent-Child Shared Time by Birth Order and Gender

Although individuation and continued connectedness hypotheses are useful for predicting the average development of parent-child shared time, they consider parent-child relationships without reference to their embedding contexts. Increasing evidence suggests

that siblings establish their own niches within the family and may interact with their parents in complementary ways (McHale et al., 2006). However, nearly all studies of parent-child shared time are based on between-family comparisons of youths from different families, and very little is known about how the presence and gender of siblings may influence parent-child involvement.

Using a within-family comparison design, the second goal of our study was to examine whether the developmental course of parent-child shared time varied as a function of youths' birth order and gender and the gender composition of the sibling dyad.

A learning-from-experience hypothesis posits that parents become more experienced after parenting their firstborn child and thus better able to maintain a close relationship with their later born children across adolescence (Whiteman, McHale, & Crouter, 2003). Short-term longitudinal data, for example, showed that, when compared at the same age, parents had less conflict with and greater knowledge about their secondborn than firstborn child (Whiteman et al., 2003). Longitudinal data further suggested that the decline in parent-child intimacy (Shanahan, McHale, Crouter, & Osgood, 2007) and the increase in parent-child conflict (Shanahan, McHale, Osgood, Crouter, 2007) were less pronounced for secondborns than for firstborns. Research exploring the impact of birth order on parent-child shared time is rare, but one study (Harris & Morgan, 1991) used cross-sectional questionnaire data from two adolescent siblings from the same family, and showed that later born siblings perceived higher levels of involvement with their fathers than did earlier born siblings. Although such findings are consistent with a learning-from-experience hypothesis, birth order and age were confounded in that later born siblings were also chronologically younger than earlier born siblings. Given that older youths spend less time with their parents in general (e.g., Buhrmester & Furman, 1987; Montemayor & Brownlee, 1987), a longitudinal design that *compares siblings at the same age* is needed to isolate birth order differences from developmental changes. Based on theory and the limited research available, we expected that, when compared at the same age, secondborns would spend more social and dyadic time with their parents than firstborns, and that declines in parent-child shared time would be less pronounced for secondborns than for firstborns.

There is evidence that parents, especially fathers, are more involved with their same-than opposite-sex offspring (Raley & Bianchi, 2006). Paternal differential involvement may be related to their awareness of peer demands for boys to be masculine and their institutionalized roles in socializing sons to become men (Maccoby, 2003); boys' physically tougher and more competitive styles of play may also contribute to their preferences of fathers as social companions (Parke & Buriel, 2006). Inconsistent findings do exist, however. For example, some questionnaire studies found that both mother- and father-child involvement was gendered (Maccoby, 2003), whereas others found that parents did not differentiate between daughters and sons in time use (e.g., Almeida & Galambos, 1991; Montemayor & Brownlee, 1987). The discrepancies among these studies may be due to their neglect of important contextual factors, such as the presence and gender of siblings. As observed by McHale et al. (2006), only parents with both a daughter and a son have the opportunity to spend more time with a same-than an opposite-sex child. Indeed, in the already cited study by Harris and Morgan (1991), a gender difference favoring boys in perceived involvement with fathers was observed in opposite-, but not same-, sex sibling pairs. Based on this work, we expected that girls and boys would spend more time with their mothers and fathers, respectively, especially when they had an opposite-sex sibling. Few studies are available on whether parent-child shared time changes differently for girls and boys, but a gender intensification hypothesis (Hill & Lynch, 1983) predicts that, at the transition to adolescence, youths face increased pressure to conform to traditional gender roles, and some longitudinal research is consistent with this hypothesis, particularly in the

case of boys (e.g., Crouter, Whiteman, McHale, & Osgood, 2007; Galambos, Almeida, & Petersen, 1990). Therefore, we expected that youths' time use would become increasingly gendered over time, especially for boys and in families with both a daughter and a son.

Parent-Child Shared Time and Youths' General Self-Worth and Social Competence

Compared to the limited research on patterns of change, we know more about the role of parent-child involvement in youth development. In much of this work, however, researchers have collapsed across multiple aspects of parent-child relationships to create a general index, and it remains unclear whether social and dyadic time with parents, in itself, have implications for youths. Moreover, nearly all prior studies have focused on between-person associations, which can be easily confounded with third variables that are not controlled for in the analyses (Raudenbush & Bryk, 2002). Testing social and dyadic time with mothers and fathers as time-varying covariates, the third goal of our study was to examine the within-person associations between parent-child shared time and youths' general self-worth and social competence.

A self-conception hypothesis asserts that youths establish their self-concepts by observing the consequences of their behaviors (Gecas & Schwalbe, 1986): When youths' actions are greeted with parents' participation and interest, for example, they will make positive attributions about themselves and develop positive self-concepts. Numerous studies have combined both temporal and emotional dimensions of parent-child relationships to show that youths with higher levels of psychological well-being have more involved and intimate relationships with their parents (e.g., Ackard, Neumark-Sztainer, Story, & Perry, 2006; Kerr, Capaldi, Pears, & Owen, 2009), and a handful have used questionnaire time use data to show that time with parents, per se, is positively correlated with general self-worth among adolescents (Demo, Small, & Scavin-Williams, 1987; Bulanada & Majumdar, 2009). Nearly all of these studies, however, have focused on between-person variation; a focus on within-person variation represents a notable extension of prior research, because it examines whether *changes* (i.e., deviations from an individual's *own* norm) in parent-child involvement are linked to *changes* in psychosocial adjustment, and thereby rules out stable confounding variables as alternative explanations (Raudenbush & Bryk, 2002). Based on prior theory and research, we predicted that parent-child shared time would be positively linked to youths' general self-worth. Further, to the extent that dyadic time with parents marks reciprocal interest (Crouter & Crowley, 1990) and closeness in parent-child relationships (Larson & Richard, 1991; Larson et al., 1996), dyadic time may be more tightly related to general self-worth than is social time.

According to a socialization hypothesis, parent-child relationships afford opportunities for social skill learning, provide emotional resources for social exploration, and create cognitive scripts that direct peer interactions (Hartup, 1989). Studies that have operationalized parent-child relationships as an aggregate construct document that engaging and dynamic interactions with a parents build the rudiments of positive social expectations and behaviors, such as social interest and reciprocity, that other youths find attractive (e.g., Kerns, Klepac, & Cole, 1996; Simpkins et al., 2009). Researchers have rarely directly examined the inter-relation between parent-child shared time, per se, and youths' social competence, but youths who spend more unsupervised time with peers are more prone to peer pressure and delinquency (Flannery, Williams, & Vazsonyi, 1999), and data collected using questionnaires (Duncan, Duncan, & Strycker, 2000) and phone diaries (Crouter, Tucker, Head, & McHale, 2004) showed that adolescents who spent more time with their families reported fewer delinquent behaviors over time. Considered together, existing theory and research suggest that parent-child shared time may be positively linked to youths' social

competence. Further, to the extent that social time with parents includes interactions with others, social time may afford more opportunities for parents to coach their children on their social skills, and for children to observe their parents' social behaviors. As such, social time may be more tightly related to social competence than is dyadic time.

The Present Study

This study examined the developmental course and adjustment correlates of parent-child shared time from middle childhood to late adolescence. Guided by individuation and continued connectedness hypotheses (Grotevant & Cooper, 1986), we expected that social time with parents would remain stable through middle childhood and then gradually decline across adolescence, but that dyadic time would show a complementary pattern, remaining stable in middle childhood and increasing gradually from early through late adolescence. Additionally, a learning-from-experience hypothesis (Whiteman et al., 2003) led us to predict that, when compared at the same age, secondborns would spend more time with their parents than firstborns and that changes in parent-child shared time would be less pronounced for secondborns than for firstborns; a gender intensification hypothesis (Hill & Lynch, 1983) led us to predict that youths would spend more time with the same-sex parent, that their time use would become more gender stereotypical across adolescence, and that these patterns would be more salient for boys and in families with opposite-sex sibling dyads. Finally, self-conception (Gecas & Schwalbe, 1986) and socialization (Hartup, 1989) hypotheses led to the expectations that parent-child shared time would be positively linked to youths' general self-worth and social competence, with dyadic and social time more closely linked to general self-worth and social competence, respectively.

Method

Participants

Data came from 5 waves of a longitudinal study exploring family relationships and youth development. We only used waves that included the time use measure of interest, and waves 1, 2, 3, 6, and 7 are referred to as Times 1 through 5 hereafter. Recruitment letters explaining the purpose of the research project were sent home to all families with 4th and 5th grade children within 16 school districts of a northeastern state. Families interested in participating returned self-addressed postcards. Families were eligible if the parents were married and the firstborn child was in the 4th or 5th grade with a sibling 1-4 years younger. Over 90% of families that returned postcards were eligible and participated. The retention rate was very high across these 5 waves of data collection. At Time 5, 95% of parents and children remained in the study.

Of the 203 families that originally agreed to participate, two families dropped out after Time 1, and 13 families experienced parental divorce or the death of a father in the interval between Times 1 and 5. We deleted these 15 families, and based our results on the remaining 188 families. This sample included almost exclusively European American, working- and middle-class families living in small cities, towns, and rural communities. At Time 1, the average level of education was 14.62 years (SD = 2.14) for mothers and 14.73 years (SD = 2.41) for fathers, where a score of 12 signified a high school graduate. About 60% of the families included four members when they first entered our study. The sample came close to capturing the racial background of families from the region where the study was conducted (> 85% European American), but it included parents who were better educated than the average parents in the region (US Census Bureau, 2000). Sibling dyads were divided almost equally among the four possible gender compositions. At Time 1, the average age was 10.86 years (SD = .53) for firstborns and 8.28 years (SD = .94) for secondborns; at Time 5, the average age was 17.35 years (SD = .80) for firstborns and 14.79

years (SD = 1.15) for secondborns. The age difference between siblings and multiple waves of data collection meant that there were at least 80 youths who provided data for the analyses at each year of age from about age 8 (i.e., ages 7.5-8.5) to about age 18 (i.e., ages 17.5-18.5). The data from the younger and older ends of the age range, however, were mainly provided by secondborns and firstborns, respectively.

Procedures

Data were collected through home and phone interviews. Trained interviewers conducted home interviews with mothers, fathers, and the two target siblings. Informed consent was obtained at the beginning of the interview and the family received $100-200 (depending on the wave of data collection) for compensation. Family members then completed questionnaires individually on family relationships and personal characteristics. In the two to three weeks following the home interviews, youths completed seven (5 weekdays, 2 weekend days) nightly phone interviews. Trained interviewers called youths individually in their homes, guided them through a list of 70 activities (see categories in Table 1), and probed for the duration and social contexts (i.e., with whom the youths engaged in the activities) of any completed activities.

Measures

Parent-child shared time was measured in phone interviews at Times 1 through 5. Social and dyadic time with mothers and fathers was, respectively, measured by summing the minutes each sibling reported spending with each parent in the presence of others and with only the target parent across all activities and across the seven calls. To assess reliability, we calculated the correlations between the two siblings' reports of their shared time. The results suggested that, even though siblings received no prior training, their reports were highly correlated (average r = .72). To correct for skewness, square root transformations were used in the analyses. For ease in interpretation, however, nontransformed scores were presented in the figures.

Youths' general self-worth was measured in home interviews using the 5-item subscale from the Self-Perception Profile (Harter, 1988). At Times 1 through 5, youths used a 4-point scale to rate how well such statements as, "Some kids don't like the way they are leading their life but other kids do like the way they are leading their life," described them. Item ratings were averaged, with higher scores indicating higher levels of general self-worth. Cronbach's alphas averaged α = .79 for firstborns and α = .72 for secondborns.

Youths' social competence was measured in home interviews using the 5-item subscale from the Self-Perception Profile (Harter, 1988). At Times 1 through 5, youths used a 4-point scale to rate how well such statements as, "Some kids find it hard to make friends but other kids find it pretty easy to make friends," described them. Item ratings were averaged, with higher scores indicating higher levels of social competence. Cronbach's alphas averaged α = .76 for firstborns and α = .67 for secondborns.

Control Variables

When examining the developmental course of parent-child shared time, we controlled for the age of youths at Time 1 to separate longitudinal developmental changes from cross-sectional age differences; this also meant that any observed birth order differences could not be attributed to the fact that the siblings entered the study at different ages. In addition, because socioeconomic resources place limits on parents' and youths' time use options (Crouter & Crowley, 1990) and sibship size can affect parents' investments in each of their children (Raley & Bianchi, 2006), we controlled for parents' average levels of education and family size at Time 1. When examining the adjustment correlates of parent-child shared

time, we further controlled for parents' psychological and marital characteristics to rule out two alternative explanations of the associations: Although the modeling of parent-child shared time as time-varying covariates partialed out the possible influence of stable individual differences, within-person variation might still be affected by time-varying factors (Raudenbush & Bryk, 2002). At times when parents feel more stressed or less satisfied with their marriages, for example, they may be more likely to withdraw from their children *and* compromise the psychosocial development of their offspring in different ways (Parke & Buriel, 2006). Therefore, we measured parents' role overload using the 13-item measure by Reilly (1982) and marital love using the 9-item measure by Braiker and Kelley (1979) in the home interviews at Times 1 through 5, and included these as time-varying controls in the analyses. Mothers' and fathers' reports of marital love were moderately correlated (average $r = .50$), and thus were averaged at each time point. To correct for skewness, log transformations of parents' marital love were used in the analyses.

Results

Descriptive Statistics

Across Times 1 through 5, social time with mothers averaged 479.08 minutes per 7 days ($SD = 177.98$) for firstborns and 507.94 minutes per 7 days ($SD = 177.40$) for secondborns, and social time with fathers averaged 429.71 minutes per 7 days ($SD = 176.42$) for firstborns and 450.54 minutes per 7 days ($SD = 171.96$) for secondborns; dyadic time with mothers averaged 75.47 minutes per 7 days ($SD = 53.16$) for firstborns and 97.13 minutes per 7 days ($SD = 65.48$) for secondborns, and dyadic time with fathers averaged 64.76 minutes per 7 days ($SD = 51.61$) for firstborns and 65.96 minutes per 7 days ($SD = 52.11$) for secondborns. Also, for descriptive purposes, we examined the nature of activities youths engaged in with their parents by following Larson and Verma (1999) and grouping the 70 activities measured in the phone interviews into 5 categories: Work (e.g., housework, homework), media use (e.g., watching TV, reading magazines and newspapers), leisure (e.g., sports, outdoor play, hanging out), eating meals, and other entertainments (e.g., going to a movie, going to a party). Table 1 shows the cross-time average percentages of social and dyadic time with parents in these categories of activities. To explore mother-father differences, we conducted a 2 (Social Context) × 2 (Birth Order) × 2 (Parent) mixed model ANOVA for each activity category. Social Context × Parent interactions were significant for work, $F(1, 186) = 25.33$, $p < .01$, media use, $F(1, 186) = 19.50$, $p < .01$, and eating meals, $F(1, 186) = 6.93$, $p < .01$, with follow-up tests showing that, whereas mothers spent proportionally more dyadic time on working and eating, fathers spent proportionally more dyadic time on media use, with their offspring. A significant Social Context × Birth Order × Parent interaction, $F(1, 186) = 6.24$, $p < .05$, in combination with follow-up tests, indicated that, fathers, as compared to mothers, spent proportionally more social time with firstborns and more dyadic time with secondborns on leisure activities.

Analysis Plan

Given the nested (i.e., correlated residual errors) and unbalanced nature (i.e., variable measurement spacing) of our data, we used multi-level modeling (MLM) as the analytic strategy (Raudenbush & Bryk, 2002). A major strength of MLM is that it accommodates missing data and effectively reduces biases in the estimation of parameters and standard errors (Schafer, 1997), although only about 5% of our data were missing across variables, persons, and time points. We estimated a series of 3-level models using the MIXED procedure in SAS 9.0. Level 1 (within-sibling) included time-varying variables (i.e., youths' ages, time-varying covariates and time-varying controls); Level 2 (between-sibling or within-family) included time-invariant variables that differed across siblings (i.e., youths' birth order and gender, cross-time averages of the time-varying covariates, and ages at Time

1); Level 3 included time-invariant variables that were common to both siblings (i.e., sibling dyad gender composition, parents' levels of education and family size).

We conducted the analyses in two parts. The first part of the analyses examined the developmental course of social and dyadic time with mothers and fathers and whether the course varied by youths' birth order and gender and sibling dyad gender composition. To begin with, we controlled for youths' ages at Time 1, and tested the linear and quadratic effects of youths' ages on parent-child shared time. Youths' ages were centered at age 13 (the mean age across all youths and across all time points), such that the intercept represented the sample mean at age 13. To identify the best error structure, we compared a series of nested models that differed only in the random effect of interest. We used deviance tests (instead of parameter estimates as in the case of fixed effects) to determine the statistical significance of the random effects (Raudenbush & Bryk, 2002). Because the difference between two nested models in their deviances (i.e., −2 log likelihood) was chi-squared distributed, it indicated whether adding the random variance component constituted a better error structure. Next, we controlled for parents' educational levels and family size, and tested the interactions between linear and quadratic age effects and youths' birth order and gender and sibling dyad gender composition. The reference groups for birth order, gender, and sibling dyad gender composition were firstborns, girls, and same-sex sibling dyads, respectively. Parents' educational levels were centered at 12 (i.e., a high school graduate) and family size was centered at 4 (i.e., a family of four).

The second part of the analyses examined whether changes in parent-child shared time were linked to changes in youths' psychosocial adjustment. We began by examining the developmental course of youths' psychosocial adjustment. Specifically, we tested the effects of youths' age on general self-worth and social competence and the interactions between these age effects and youths' birth order and gender. Next, we controlled for time-varying parents' role overload and marital love, and tested whether changes in social and dyadic time with mothers and fathers were linked to changes in youth adjustment. To distinguish within- from between-person variation, each of the four time-varying covariates was indicated by two variables. At Level 1, the covariate was indicated by a time-varying, group-mean centered (i.e., centered at each individual's cross-time average) variable; at Level 2 the covariate was indicated by the grand-mean centered (i.e. centered at the sample mean), cross-time average. Because the cross-time average of the covariate at Level 2 captured all the between-person variation, the time-varying version of the covariate at Level 1 was limited to explaining within-person variation and indicated youths' deviations from their *own* cross-time averages at each time point. The time-varying controls, however, were grand-mean centered without including the cross-time averages, as we did not intend to distinguish the within- and between-person effects of these factors. For both parts of the analyses, we only included significant interactions, because retaining nonsignificant interaction terms tends to increase standard errors (Aiken & West, 1991).

Developmental Course of Parent-Child Shared Time by Birth Order and Gender

MLM models were estimated separately for each type of time and for each parent. Baseline empty models partitioning variance into between- and within-person variance indicated that there was significant variance to explain in the development of social and dyadic time with mothers (σ^2_{social} = 31.89, $p < .01$; σ^2_{dyadic} = 17.01, $p < .01$) and fathers (σ^2_{social} = 31.95, $p < .01$; σ^2_{dyadic} = 18.48, $p < .01$). Table 2 presents the parameter estimates for the final models.

The analyses of *social time with mothers* revealed a significant fixed linear effect, $\gamma = -.72$, $t = -10.48$, $p < .01$, and a significant random linear effect at Level 3, $X^2(2) = 67.30$, $p < .01$. The average developmental course (for all youths in the sample) was characterized by a

steady decline from middle childhood through adolescence (see Figure 1). Interaction analyses further revealed a significant Birth Order × Linear interaction, $\gamma = .47$, $t = 5.06$, $p < .01$. Follow-up tests suggested that, although the linear effect was significant for both firstborns and secondborns, its effect was stronger for firstborns, $\gamma = -.95$, $t = -11.51$, $p < .01$, than for secondborns, $\gamma = -.48$, $t = -5.77$, $p < .01$. As Figure 1 shows, mother-firstborn social time declined more rapidly than did mother-secondborn social time. There was also a significant gender difference, indicating that girls, on average, spent more social time with mothers than did boys, $\gamma = -1.40$, $t = -4.18$, $p < .01$.

The analyses of *social time with fathers* revealed significant fixed linear, $\gamma = -.54$, $t = -7.74$, $p < .01$, and quadratic, $\gamma = -.088$, $t = -5.34$, $p < .01$, effects, and a significant random linear effect at Level 3, $X^2(2) = 68.90$, $p < .01$. The average developmental course was characterized by stability between ages 8 and 12 and a steady decline thereafter (see Figure 2). Interaction analyses further revealed significant Birth Order × Linear, $\gamma = .34$, $t = 2.14$, $p < .05$, and Birth Order × Quadratic, $\gamma = -.11$, $t = -2.13$, $p < .05$, interactions. Follow-up tests suggested that, although the linear effect was significant for both firstborns and secondborns, the effect was stronger for firstborns, $\gamma = -.84$, $t = -6.70$, $p < .01$, than for secondborns, $\gamma = -.50$, $t = -4.25$, $p < .01$. Moreover, the quadratic effect was significant only for secondborns, $\gamma = -.092$, $t = -2.65$, $p < .01$, but not for firstborns. As Figure 2 shows, father-firstborn social time declined more rapidly than did father-secondborn social time and, whereas father-firstborn social time showed a linear decline, father-secondborn social time remained stable between ages 8 and 12 and declined steadily thereafter. There was also a significant gender difference, indicating that boys, on average, spent more social time with fathers than did girls, $\gamma = .81$, $t = 2.32$, $p < .05$.

The analyses of *dyadic time with mothers* revealed a significant fixed quadratic effect, $\gamma = -.046$, $t = -3.55$, $p < .01$, and a significant random linear effect at Level 3, $X^2(2) = 14.3$, $p < .01$. The average developmental course had a shallow, inverted-U shape, characterized by a slight increase between ages 8 and 12, flattening out between ages 12 and 14, and a slight decrease between ages 14 and 18 (see Figure 3). Interaction analyses further revealed a significant Gender × Linear interaction, $\gamma = -.16$, $t = -2.05$, $p < .05$. Follow-up tests suggested that, although the linear effect was nonsignificant for girls, it was negative and significant for boys, $\gamma = -.13$, $t = -2.04$, $p < .05$. As Figure 3 shows, whereas mother-daughter dyadic time followed the average, inverted-U pattern, mother-son dyadic time increased steadily between ages 8 and 11 and declined thereafter. A significant Gender × Gender Composition interaction, $\gamma = -1.87$, $t = -3.28$, $p < .01$, in combination with follow-up tests, indicated that girls spent more dyadic time with mothers than did boys at age 13, but the effect was stronger in opposite-, $\gamma = -3.24$, $t = -8.83$, $p < .01$, than in same-sex, $\gamma = -1.37$, $t = -3.12$, $p < .01$, sibling dyads.

The analyses of *dyadic time with fathers* revealed a significant fixed quadratic effect, $\gamma = -.075$, $t = -5.29$, $p < .01$, and a significant random linear effect at Level 2, $X^2(2) = 15.7$, $p < .01$. The average developmental course was an inverted U-shape, characterized by a steady increase between ages 8 and 12, flattening out between ages 12 and 14, and a steady decrease between ages 14 and 18. Interaction analyses further revealed significant Birth Order × Linear, $\gamma = .27$, $t = 2.04$, $p < .05$, and Gender × Linear, $\gamma = .20$, $t = 2.45$, $p < .05$, interactions. Separate follow-up tests suggested that a positive linear slope was significant for secondborns, $\gamma = .20$, $t = 2.50$, $p < .05$, but not for firstborns, and for boys, $\gamma = .16$, $t = 2.68$, $p < .01$, but not for girls. As Figure 4 shows, whereas dyadic time with fathers followed the average, inverted-U pattern for firstborns and for girls, it increased steadily between ages 8 and 15 and then leveled off for secondborns and for boys. A significant Gender × Gender Composition interaction, $\gamma = 2.67$, $t = 4.84$, $p < .01$, in combination with

follow-up tests, indicated that boys in opposite-, $\gamma = 3.35$, $t = 9.34$, $p < .01$, but not same-sex, sibling dyads spent more dyadic time with fathers than did girls at age 13.

Adjustment Correlates of Parent-Child Shared Time

MLM models were estimated separately for each adjustment variable. Results for the developmental course of general self-worth (Lam & McHale, 2011) and social competence (Kim, McHale, Crouter, & Osgood, 2007) were reported elsewhere, and thus are not discussed here. Instead, we focus on the within- and between-person effects of parent-child shared time on youths' psychosocial development. Table 3 presents the parameter estimates for the final models.

The analyses of *general self-worth* revealed a significant between-person effect of father-child dyadic time. The cross-time average of father-child dyadic was linked to the cross-time average of youths' general self-worth, indicating that youths who spent more dyadic time with their fathers, on average, had higher levels of general self-worth, $\gamma = .017$, $t = 2.14$, $p < .05$. The analyses of *social competence* revealed a significant within-person effect of father-child social time. Changes in father-child social time were positively linked to changes in social competence, indicating that, at times when youths spent more social time with fathers *than usual*, they also reported higher levels of social competence *than usual*, $\gamma = .0057$, $t = 1.99$, $p < .05$.

Discussion

Using a long-term longitudinal design and within-family comparisons, this study expanded upon prior cross-sectional and short-term longitudinal studies to examine the developmental course of parent-child shared time from middle childhood to late adolescence and whether the course varied as a function of youths' birth order and gender and sibling dyad gender composition. In addition, with a focus on within-person variation, we examined whether changes in parent-child shared time were linked to changes in youths' psychosocial adjustment.

On the most general level, our results offer a three-part take-home message that underscores the importance of contextualizing the study of child development. First, although the average change pattern of social time with parents was one of decline, those of time with mothers and with fathers were characterized by temporary rises in early and middle adolescence, respectively. Such findings suggested that, while adolescents individuated from the family, they continued to have one-on-one opportunities to maintain close relationships with their parents (Larson & Richards, 1991; Larson et al., 1996). Future researchers should take into account the composition of the immediate social context (i.e., whether others are present) when studying parent-child interactions. Second, the decline in social time with parents was less drastic for secondborns than for firstborns, and both mothers and fathers spent more dyadic time with children of their own sex when they had both a daughter and a son. Most studies on parent-child relationships are grounded in an implicit assumption that developmental processes are similar for all children in a family, but our work shows that the structure of the family (i.e., whether it includes a sister or a brother) may foster differential experiences for youths in the same family, highlighting the importance of considering within-family differences in developmental research. Third, youths who spent more dyadic time with their fathers, on average, reported higher levels of general self-worth, and changes in social time with fathers were positively related to changes in social competence. Consistent with Bronfenbrenner's (1979) observation that youths' activities have different implications depending on which element of the microsystem (i.e., whether the mother or the father) is involved, at least in two-parent families, time with fathers, but not mothers, appeared to convey psychosocial benefits to youths. An important direction for future

studies is to examine the distinct roles of mothers versus fathers and how non-scripted parental behaviors, such as high involvement of fathers in childrearing, are linked to youth adjustment. Below, we elaborate on each of these themes and discuss the limitations of our study.

Developmental Course of Parent-Child Shared Time

Consistent with an individuation hypothesis, that youths shift their dependence from their parents to peers at the transition to adolescence (Grotevant & Cooper, 1986), and previous cross-sectional (e.g., Buhrmester & Furman, 1987; Montemayor & Brownlee, 1987) and short-term longitudinal (Larson et al., 1996) studies, the average developmental course of social time with parents was one of decline. However, although the decline in social time with mothers was persistent from middle childhood through adolescence, the decline in social time with fathers did not begin until early adolescence. It is well-established that mothers are more involved in childrearing than fathers (Larson & Verma, 1999). Because youths spend so much time with their mothers in early childhood, the change in social time with mothers may be linked to other developmental processes, such as the transition to school and establishment of peer relationships, which take place before youths reach adolescence. More research is needed to explore the development of social time with parents from toddlerhood through early childhood and its links to the developmental themes of these periods.

Turning to the average developmental course of dyadic time with parents, our results supported a continued connectedness hypothesis, that adolescents continue to rely on their parents for intimacy and support (Grotevant & Cooper, 1986). Consistent with Larson et al.'s (1996) findings that parent-child dyadic time did not decline linearly across adolescence, our analyses revealed that dyadic time with mothers and with fathers changed in a curvilinear way, showing temporary rises in early and middle adolescence, respectively. These increases may be compensatory to the decline in social time with parents (Larson & Richards, 1991; Larson et al., 1996). To balance the needs of youths for connectedness and autonomy, parents and youths who are experiencing fewer opportunities for joint activities may increase their dyadic involvement. The rises in dyadic time with both parents were nevertheless modest and temporary, indicating that the majority of parent-child dyads in our sample adjusted quickly to the adolescent transition. It has been proposed that, with their growing cognitive and socioemotional capacities, youths transform their relationships with their parents in a direction of increasing reciprocity and mutuality, and such a process involves a temporary period of intense exchanges and realignment of expectations (Zimmer-Gembeck & Collins, 2003). A time-limited increase in dyadic time with parents may be part of such transitional state of relational re-negotiation.

Developmental Course of Parent-Child Shared Time by Birth Order and Gender

Although a Birth Order × Quadratic change interaction was significant for social time with fathers, it was not interpreted because the data from the younger end of the age range were mainly provided by secondborns, and the result might merely reflect our lack of data to capture the stable period of father-firstborn social time. The developmental course of parent-child shared time, however, did differ for firstborns versus secondborns in other important ways. Specifically, despite the fact that secondborns did not spend more time with their parents at age 13 than did firstborns, secondborns' social time with parents declined less drastically than firstborns'. Moreover, whereas father-firstborn dyadic time followed the average inverted-U pattern, father-secondborn dyadic time actually increased over time.

One potential mechanism underlying the birth order differences in parent-child shared time is that parents learn from their experiences with their firstborns (Whiteman et al., 2003), and

thus are more motivated and more able to maintain involvement with their later born children. Once firstborns become more involved in the world beyond the family, parents may begin to pay more attention to the secondborn; the secondborn may also collaborate in this process by taking advantage of newfound opportunities for parental time and attention. This pattern was most clearly illustrated by our finding that secondborns, but not firstborns, spent increasingly more dyadic time with their fathers over time. Considering that the interests and needs of later born children may not be best served by a status quo that proscribes status and privileges for firstborns (Sulloway, 1996), secondborns may be motivated to alter family alliances when the opportunity arises. More generally, these results imply that children's interactions with parents are shaped not only by their own, but also by their siblings', development. Future studies should investigate how parental socialization vis a vis one child is influenced by other children in the family.

The developmental course of parent-child shared time also varied by youths' gender and sibling dyad gender composition. On average, girls spent more social time with their mothers, and both girls and boys spent more dyadic time with their same-sex parents at age 13. These gender differences, as predicted, were more pronounced in families with opposite-sex sibling dyads. Prior research based on between-family comparisons reveals few overall differences in how mothers and fathers treat their daughters versus sons (Leaper, 2002). However, studies using within-family comparisons, including ours, have demonstrated that the extent to which parents and youths use their time in a gendered way is constrained by the family structure, namely, whether there is both a daughter and a son in the family (McHale et al., 2006). These results, again, speak to the role of the family composition in shaping parent-child dynamics and to the importance of sampling more than one child from each family to understand how families operate as inter-linked socialization systems (McHale et al., 2006).

Our longitudinal analyses further revealed that, although girls' dyadic time with their parents followed the average quadratic pattern, boys' dyadic time with their mothers and their fathers decreased and increased over time, respectively. Prior theory (Hill & Lynch, 1983) and research (e.g., Crouter et al., 2007; Galambos et al., 1990) have shown that youths, especially boys, become more gender stereotyped at the transition to adolescence. One possible reason for such findings is that violation of gender role norms is less tolerated in boys than in girls. Moreover, girls tend to profit from gender equality, whereas boys, privileged by traditional attitudes and roles, do not. Researchers have just begun to examine patterns of change in gendered characteristics with multi-wave longitudinal data, and this work suggests that different dimensions of gender change in different ways across childhood and adolescence (Martin & Ruble, 2010). Given the implications of gender for youths' psychosocial adjustment and achievement orientation (Martin & Ruble, 2010), the development of gendered characteristics merits continued investigations.

Parent-Child Shared Time and Youths' General Self-Worth and Social Competence

As predicted by self-conception (Gecas & Schwalbe, 1986) and socialization (Hartup, 1989) hypotheses, youths who spent more dyadic time with their fathers, on average, had higher levels of general self-worth, and increases and decreases in social time with fathers were linked to increases and decreases in social competence. On a methodological level, our reliance on different methods to measure youths' time use and psychosocial adjustment reduced potential biases due to common methods variance. Moreover, our use of time-varying covariates and inclusion of time-varying controls allowed us to rule out several important alternative explanations of the observed association between father-child dyadic time and social competence, including stable individual differences and parents' psychological stress and marital dynamics. On a theoretical level, although ample research based on aggregate measures of parent-child relationships has shown that youths who

consider themselves worthy and who feel accepted by peers also have involved and intimate relationships with their parents (e.g., Kerr et al., 2009; Simpkins et al., 2009), our study contributes to the literature by showing that parent-child shared time, in itself, has implications for youth development. Perhaps even more importantly, paternal involvement in a dyadic versus a social setting manifested unique links to adolescents' psychosocial adjustment. Dyadic time with fathers, which is thought to indicate reciprocal interest (Crouter & Crowley, 1990) and a close parent-child relationship (Larson & Richards, 1991; Larson et al., 1996), was linked to general self-worth. In contrast, social time with fathers, which may provide opportunities for parents to coach their offspring and for youths to observe their parents' interpersonal behavior, was linked to social competence. Because our time use measure did not tap onto the emotional or cognitive aspect of parent-child shared time and little prior research is available for comparison purposes, our findings, though consistent with our predictions, should be treated as hypothesis generating. Replications of these results are needed, and the future challenge is to go beyond theoretically-grounded speculations and test whether parent-child interactions in a social versus a dyadic setting actually vary in relational intimacy and opportunity affordances for social skill development.

There are a number of potential explanations of the null findings on mother-child shared time. First, at least in two-parent families, the mother's role as caregiver is so scripted that her involvement can easily go unnoticed and unacknowledged (Coltrane, 1989). In contrast, a father's role as the family provider does not highlight shared activities with offspring, and thus high levels of paternal involvement may be especially salient. Youths with fathers who spend dyadic time with them may develop higher general self-worth because their fathers go beyond social expectations to devote undivided attention to them. Second, as observed by Larson and Richards (1994), fathers' interactions with their children often involve joking, teasing, and other playful interactions; as indicated by our descriptive statistics and previous research (Larson & Verma, 1999), fathers, as compared to mothers, were more involved in leisure activities with their offspring. The peer-like interaction style as well as high involvement in leisure activities by fathers may be particularly conducive to egalitarian exchanges, and thus crucial for youth social development (Parke & Buriel, 2006). Third, fathers' parenting is, in general, more affected by child characteristics than mothers' (Raley & Bianchi, 2006). Fathers' greater involvement with better adjusted youths, therefore, may be interpreted as fathers being drawn to youths who, for reasons of mastery or other elements of attractiveness, have higher self-worth and social competence. Fourth, mother-child shared time may be linked to other domains of adjustment that were not included in this study. In fact, boys who spent more dyadic time with their mothers, but not with their fathers, were found to be less depressed in Larson and colleagues' (Larson & Richards, 1994) experience sampling study. Clearly, the unique contributions of mothers versus fathers to specific aspects of youth adjustment need to be further explored.

Limitations and a Final Note

Our study had several limitations. First, our sample was not representative of the diversity of families in the US. Given that how youths spend their time varies greatly across cultures (Larson & Verma, 1999), the findings need to be replicated in more diverse samples. Second, because of the complexity of our models, we focused on examining social and dyadic time with mothers and fathers. A number of studies have shown that the types of activities that parents and children engage in can have unique developmental implications (Crouter et al., 2004; Larson & Verma, 1999). Future researchers should explore how the time parents and youths spend on different activities changes over time and has implications for youth adjustment. Third, although our use of time-varying covariates and time-varying controls helped rule out alternative explanations, causal inferences cannot be made based on a correlational study like this one. Experimental interventions that manipulate parent-child

involvement may be particularly useful for disentangling the causal paths underlying parent-child shared time and its psychosocial implications. Despite these limitations, our study's focus on social and dyadic time with parents and its use of a long-term longitudinal design, within-family comparisons, and time-varying covariates provide new insights about how parent-child relationships unfold across adolescence, and underscore the importance of contextualizing the study of child development.

Acknowledgments

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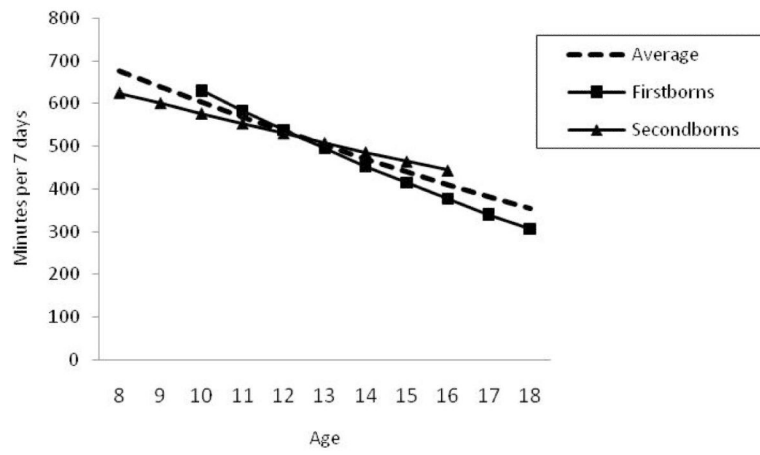
Figure 1.
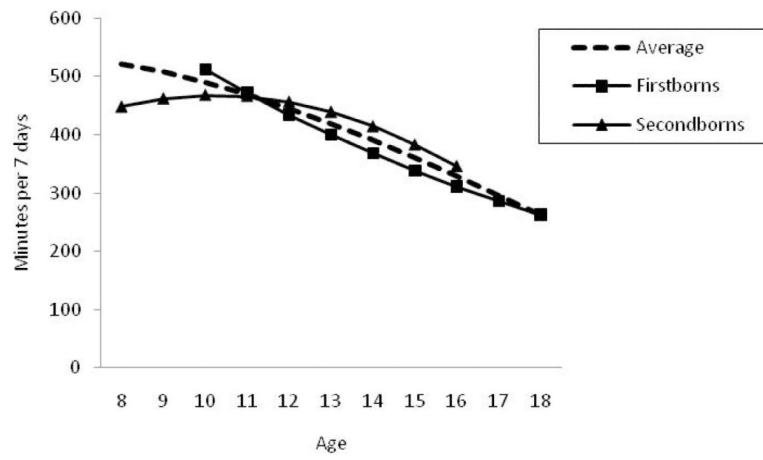Developmental course of social time with mothers by birth order.

Figure 2.
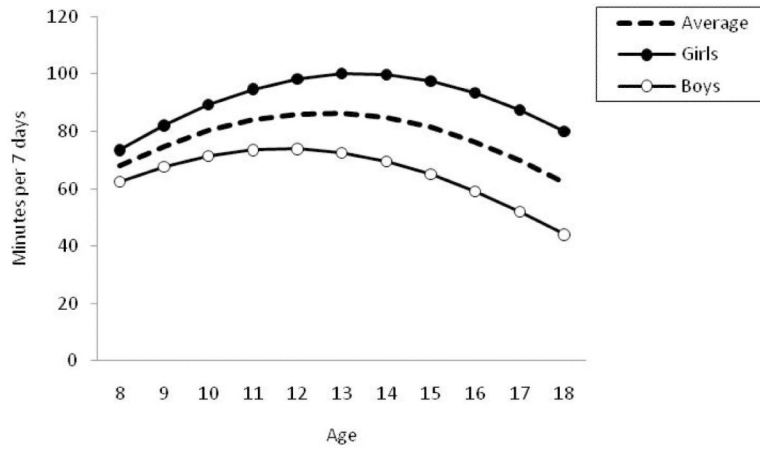Developmental course of social time with fathers by birth order.

Figure 3.
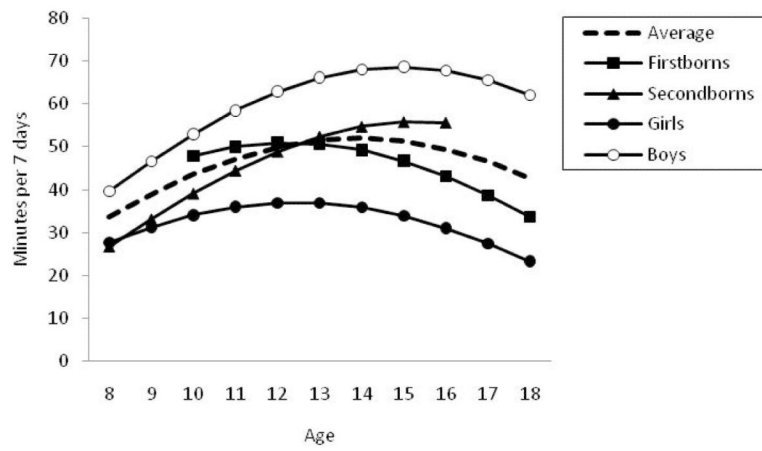Developmental course of dyadic time with mothers by gender.

Figure 4.
Developmental course of dyadic time with fathers by birth order and gender.

Table 1

Cross-Time Mean Percentages (and Standard Deviations) of Social and Dyadic Time With Mothers and Fathers in Activity Categories for Firstborns (FBs) and Secondborns (SBs)

		Social time		Dyadic time	
		Mothers	**Fathers**	**Mothers**	**Fathers**
Work	FBs	10.00 (6.69)a	9.44 (8.86)a	41.67 (21.09)b	34.54 (23.42)c
	SBs	9.50 (6.95)a	9.07 (7.90)a	42.99 (19.25)b	33.04 (23.32)c
Media use	FBs	12.54 (10.76)a	12.74 (10.50)a	13.43 (14.93)b	21.84 (22.97)c
	SBs	11.96 (9.62)a	12.15 (9.93)a	14.52 (13.99)b	19.11 (19.69)c
Leisure	FBs	26.56 (12.86)a	29.51 (14.99)b	17.10 (15.07)c	19.76 (17.93)c
	SBs	29.42 (13.25)a	30.70 (15.60)a	17.47 (16.18)b	24.46 (19.91)c
Eat meals	FBs	42.77 (14.58)a	41.93 (15.00)a	11.11 (13.96)b	7.46 (10.66)c
	SBs	41.03 (13.28)a	41.11 (15.24)a	10.40 (11.27)b	7.88 (10.75)c
Other entertainment	FBs	8.13 (7.16)a	6.38 (6.60)a	16.68 (14.28)b	16.39 (17.50)b
	SBs	8.10 (6.63)a	6.25 (6.31)a	14.63 (13.35)b	15.50 (16.99)b

Note.

[a] Scores with different subscripts within each row are significantly different, $p < .05$.

[b] Scores with different subscripts within each row are significantly different, $p < .05$.

[c] Scores with different subscripts within each row are significantly different, $p < .05$.

Table 2

Gamma Coefficients (γ) and t-Ratios for Multi-level Models of Social and Dyadic Time With Mothers and Fathers

| | Social time | | | | Dyadic time | | | |
| | Mothers | | Fathers | | Mothers | | Fathers | |
Fixed effects	γ	t-ratio	γ	t-ratio	γ	t-ratio	γ	t-ratio
Linear and quadratic age effects and age at Time 1								
Intercept	22.49	26.28**	19.97	22.06**	8.35	13.27**	6.08	9.95**
Linear effect	−.95	−11.51**	−.84	−6.70**	.04	.62	−.18	−2.06*
Quadratic effect	-	-	.02	.41	−.05	−3.91**	−.04	−2.02*
Age at Time 1	.31	1.18	.24	.87	−.13	−.63	−.17	−.84
Birth order, gender, sibling dyad gender composition and parental education and family size								
Birth order	.28	.41	.96	1.20	1.06	1.87†	.13	0.23
Birth order × Linear effect	.47	5.06**	.34	2.14*	-	-	.27	2.04*
Birth order × Quadratic effect	-	-	−.11	−2.13*	-	-	-	-
Gender	−1.40	−4.18**	.81	2.32*	−1.37	−3.12**	.69	1.63
Gender × Linear effect	-	-	-	-	−0.16	−2.05*	.20	2.45*
Gender composition	.09	.16	−.11	−.20	1.83	4.43**	−.16	−.41
Gender × Gender composition	-	-	-	-	−1.87	−3.28**	2.67	4.84**
Parents' levels of education	.03	.20	−.01	−.05	.07	.92	−.01	−.17
Family size	.31	.83	.42	1.10	−1.62	−7.90**	−.97	−4.92**

Note.

† $p < .10$

* $p < .05$

** $p < .01$.

Table 3

Gamma Coefficients (γ) and *t*-Ratios for Multi-level Models of Youths' General Self-Worth and Social Competence

Fixed effects	General self-worth		Social competence	
	γ	*t*-ratio	γ	*t*-ratio
Linear, quadratic, and cubic age effects and age at Time 1				
Intercept	3.215	35.75[**]	3.209	35.02[**]
Linear effect	.009	.62	.024	2.65[**]
Quadratic effect	−.010	−4.00[**]	−.008	−3.35[**]
Cubic effect	−.0004	−.56	-	-
Age at Time 1	.002	.07	.002	.08
Birth order, gender, sibling dyad gender composition and parental education and family size				
Birth order	−.036	−.43	.006	.06
Birth order x Linear effect	−.045	−2.77[**]	−.020	−1.37
Gender	.059	1.16	.018	.35
Gender x Linear effect	.027	2.43[*]	-	-
Gender composition	−.020	−.42	.023	.47
Parents' levels of education	.034	2.96[**]	.019	1.64
Family size	.045	1.30	.015	.41
Social and dyadic time with parents and parents' role overload and marital love				
BP social time with mothers	−.0002	−.02	−.001	−.16
WP social time with mothers	.0003	.09	−.0009	−.31
BP social time with fathers	.007	.74	.013	1.45
WP social time with fathers	.005	1.55	.006	1.99[*]
BP dyadic time with mothers	−.004	−.47	−.005	−.66
WP dyadic time with mothers	.004	1.18	.003	1.07
BP dyadic time with fathers	.017	2.14[*]	−.002	−.20
WP dyadic time with fathers	.002	.75	.0004	.16
Mothers' role overload	−.001	−.74	.001	.80
Fathers' role overload	.0002	.10	.001	.47
Parents' marital love	−.020	−.41	−.054	−1.15

Note. BP = between-person; WP = within-person.

[*] *p* < .05

[**] *p* < .01.