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Developmental Patterns in Decision-Making Autonomy across Middle Childhood and Adolescence: European American Parents' Perspectives

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Abstract

Longitudinal patterns in parents' reports of youth decision-making autonomy from ages 9 to 20 were examined in a study of 201 European American families with two offspring. Multilevel modeling analyses revealed that decision-making autonomy increased gradually across middle childhood and adolescence before rising sharply in late adolescence. Social domain theory was supported by analyses of eight decision types spanning prudential, conventional, personal, and multifaceted domains. Decision making was higher for girls, youth whom parents perceived as easier to supervise, and youth with better educated parents. Firstborns and secondborns had different age-related trajectories of decision-making autonomy. Findings shed light on the developmental trajectories and family processes associated with adolescents' fundamental task of gaining autonomy.

Developmental scholars have placed a high priority on understanding autonomy in youth (Baumrind, 1991; Collins, Gleason, & Sesma, 1997; Eccles et al., 1991; Holmbeck, Paikoff, & Brooks-Gunn, 1995; Smetana, Campione-Barr, & Daddis, 2004; Steinberg, 2001). Although autonomy can be defined in terms of behaviors, cognitions, or emotions, behavioral autonomy has been of particular interest (Collins et al., 1997; Hill & Holmbeck, 1987). Because it has long been acknowledged that becoming more autonomous is a central developmental task for adolescents (Erikson, 1968), most research and theorizing on autonomy has focused on adolescence. There is a paucity of longitudinal studies on autonomy across middle childhood and adolescence, however, and little is known about the nature of growth and change in behavioral autonomy as children become adolescents and move toward young adulthood.

The first goal of this study was to chart the trajectory of decision making – an indicator of behavioral autonomy – from middle childhood through adolescence using longitudinal data spanning ages 9 to 20 based on European American parents' reports. Everyday decisions about youth activities cut across a variety of social domains, and social domain theory predicts that autonomy levels will differ depending on the domain in question (Smetana, 1995; Turiel, 1998). Thus, a second goal was to examine the trajectories of eight decision-making items representing four domains: personal, social-conventional, prudential, and multifaceted. Based on an ecological perspective, the third goal was to examine correlates of decision-making trajectories including child characteristics (e.g., birth order, gender, openness to supervision) and family socioeconomic background.

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Development of Decision-Making Autonomy

Behavioral autonomy refers to youth's freedom to regulate their own behavior as part of the process of developing independence and self-guided action (Collins et al., 1997; Feldman & Wood, 1994). Family decision making, a type of behavioral autonomy, refers to the everyday practices of making choices about youth activities, a process within which youth assert and parents negotiate control (Collins, et al., 1997). Youth autonomy is minimal when parents make unilateral decisions for youth, moderate when parents and youth make joint decisions, and complete when youth make decisions unilaterally (Dornbusch et al., 1985; Lamborn, Dornbusch, & Steinberg, 1996). The development of behavioral autonomy has important implications: both parent-unilateral and adolescent-unilateral decision making in adolescence have been linked to negative adjustment, whereas joint decision making is often seen as optimal for developmental and family functioning (e.g., Lamborn et al., 1996; Steinberg, Elmen, & Mounts, 1989). The level of decision making considered optimal, however, likely depends on what is normative for youth's age and developmental stage, as well as child and context characteristics.

Cross-sectional and longitudinal studies of adolescents have documented that family decision making becomes more adolescent-driven and less parent-unilateral with age (Dornbusch et al., 1985; Dornbusch, Ritter, Mont-Reynaud, & Chen, 1990; Eccles et al., 1991; Gutman & Eccles, 2007; Smetana et al., 2004). Using cross-sectional data, Dornbusch and colleagues found that age was associated with more youth-unilateral and less parent-unilateral decision making (Dornbusch et al., 1985; 1990). Joint decision making was highest during middle adolescence and lower in early and late adolescence (Dornbusch et al., 1985), suggesting that joint decision making is a transition between low and high decision-making autonomy. In other words, these studies suggest that the development of decision-making autonomy sequentially progresses through parent-unilateral, joint, and adolescent-unilateral decision making across adolescence.

Taking a more comprehensive longitudinal approach than previous studies, Gutman and Eccles (2007) examined decision-making autonomy using four waves of data spanning eight years from 7th grade to the year after high school. They found a quadratic pattern: decision making increased across ages 13 to 19 and rose sharply between ages 15 and 17. These findings shed light on decision-making trajectories and suggest that steep increases occur in late adolescence, but the trajectory was estimated using only a single item reported by adolescents. Research on *autonomy expectations*, which are moderately correlated with behavioral autonomy, also provides insight into the timing of increase in autonomy across adolescence: Daddis and Smetana (2005) found that on average, mothers expected adolescents to have autonomy for personal issues (i.e., decisions of individual preference) at ages 14 to 15 and to have autonomy for prudential issues (i.e., decisions with more negative consequences) at ages 16 to 17. In other longitudinal work, Smetana and colleagues (2004) studied an African-American adolescent sample at three occasions over five years between ages 13 and 17 and reported a linear increase in decision-making autonomy. This finding was qualified by the social domain in which decisions were made, an issue discussed below. With only three occasions of measurement, however, complex longitudinal patterns could not be uncovered.

Longitudinal work on decision making has focused on adolescence, and little is known about the nature of autonomy in middle childhood. Decision-making processes do not always follow a simple linear progression across childhood and adolescence (Jacobs & Klaczynski, 2002). Charting how and when decision-making autonomy increases from middle childhood through adolescence, as our study does for a sample of European American families, fills a lacuna in the documentation of longitudinal developmental

processes. Based on previous work (Daddis & Smetana, 2005; Gutman & Eccles, 2007), and using parents' reports, we expected a gradual increase in decision-making autonomy across ages 9 to 15, followed by a steep rise starting between ages 15 and 17.

Domain-Specific Decision Making

Social domain theory (Nucci, 2001; Smetana, 1995; Smetana, Crean, & Campione-Barr, 2005; Turiel, 1998) suggests that youth may achieve different levels of decision-making autonomy depending on the domain under which the decision falls. Autonomy is expected earliest in *personal domains* such as appearance (e.g., hairstyle, clothing) where decisions only impact the individual and pertain to private aspects of life (Daddis & Smetana, 2005; Feldman & Wood, 1994; Nucci, 2001; Smetana et al., 2004). Decisions falling under the *social-conventional domain* are those for which cultural norms within the family, community, or society serve as guidelines (e.g., manners, responsibility for household chores). Due to the possible negative consequences of violating such norms, lower autonomy is expected in the conventional as compared to the personal domain. *Prudential issues* are those that have potential negative consequences for health and safety, and thus the lowest levels of autonomy are expected in this domain (Smetana et al., 2004).

Multifaceted decisions reflect overlapping domains and typically traverse the personal and conventional or prudential domains (Smetana, 2000). For example, an adolescent's choice of friends is often seen as a personal issue by the adolescent but as a prudential issue by parents. Thus, multifaceted decisions may be a source of conflict for parents and adolescents (Smetana et al., 2005). Predictions about multifaceted decisions are least clear as there is little theorizing regarding the expected level of autonomy in relation to other domains (Baumrind, 2005). However, Smetana and colleagues (2004) predicted and found that adolescents had higher autonomy for multifaceted decisions than for those in conventional or prudential domains, as multifaceted decisions tend to be made jointly by parents and adolescents.

In the current study, youth's decision-making autonomy was measured by asking parents to report on youth decisions in eight areas: appearance, choosing activities, money, social life, bedtime/curfew, chores, homework/schoolwork, and health. Appearance lies in the personal domain, chores in the conventional, and health in the prudential domain; the remaining decision types are multifaceted. Even though these items are more generally worded than in previous research in social domain theory, longitudinal trajectories by domain represent a contribution to this literature. Based on theory and previous findings, we expected that parents' reports of youth autonomy levels would be highest for decisions about appearance, followed by the multifaceted decisions of choosing activities, homework/schoolwork, money, social life, and curfew. Autonomy levels should be lower for conventional decisions about chores than for personal or multifaceted decisions. Lowest autonomy levels were expected for (prudential) health decisions.

Along with testing predictions regarding level differences across decision domains, we also examined differences in developmental trajectories by decision type. Smetana et al. (2004) found that both adolescents' and mothers' reports of autonomy in decisions across personal, conventional, prudential, and multifaceted domains increased gradually across ages 13 to 17, with one exception: Mothers' reports of adolescent autonomy in conventional decisions did not change. Our study examined decision-making autonomy over a longer time frame, and thus increases were expected across all domains. Based on Daddis and Smetana's (2005) finding that parents had expectations for earlier youth autonomy in personal decisions than in prudential ones, it is plausible that autonomy in conventional and prudential decisions may increase at a slower rate across adolescence. An alternative hypothesis, however, is that

domains with lower autonomy levels in middle childhood and early adolescence would show steeper increases because they begin at a lower baseline and thus have farther to go before reaching full autonomy. Given the lack of previous research and theorizing, our examination of trajectory differences by domain was exploratory.

Correlates of Decision-Making Trajectories

From an ecological perspective, individual characteristics and family context help to shape youth development. As we elaborate, certain individual characteristics, such as gender and openness to supervision, may elicit more autonomy than others. In addition, two children within the same family may have different opportunities for decision-making autonomy based on their position in the family. Socioeconomic status (SES) may foster or hinder children's autonomy.

Gender

Findings on the role of gender in adolescent decision making are mixed. Some literature documents more autonomous decision making for boys (Dornbusch et al., 1990; Dowdy & Kliewer, 1998), and parents' autonomy expectations have also been found to be earlier for boys than for girls (Daddis & Smetana, 2005). In contrast, other literature suggests that girls experience greater decision-making autonomy than boys (Bumpus, Crouter, & McHale, 2001; Flanagan, 1990), and still other work finds no gender differences (Fuligni & Eccles, 1993; Peterson, Bush, & Supple, 1999; Smetana, 2000; Smetana et al., 2004). Gutman and Eccles (2007) found no main effects for gender but reported that girls and boys had different trajectories in decision-making autonomy: Girls increased from ages 13 to 19, rising steeply between ages 15 and 17, whereas boys increased linearly from ages 13 to 17 and afterwards were stable. We examined gender differences in autonomy and tested for an interaction between gender and age, but proposed no hypotheses, given prior mixed findings and lack of theory.

Openness to supervision

Openness to supervision is defined as a youth's willingness to disclose information to parents and cooperate in the monitoring process (Kerns, Aspelmeier, Gentzler, & Grabill, 2001), and has been linked to greater parental knowledge of youth's activities and more positive parent-child relationships (Crouter, Bumpus, Davis, & McHale, 2005; Kerns et al., 2001). We measured parents' reports of children's openness to supervision in middle childhood, giving us the opportunity to examine how parents' perceptions of their children predict their reports of youth's autonomy development through adolescence. Children are active agents in their own development, and children's personal characteristics can influence family dynamics (Crouter & Booth, 2003). Children's openness to supervision should afford them greater involvement in decision making within the family, as cooperation engenders trust (Maccoby & Martin, 1983). We expected that parents' perceptions of children's openness to supervision would predict reports of higher levels and faster increases in youth decision-making autonomy from middle childhood through adolescence.

Birth order

Family theories imply birth order differences in decision-making autonomy. First, a growing body of literature based in a family systems perspective (Cox & Paley, 1997) suggests that parents with two children tend to learn from experience with their firstborn and adjust their parenting practices toward, expectations for, and relationships with their secondborn child (Shanahan, McHale, Crouter, & Osgood, 2007; Whiteman, McHale, & Crouter, 2003; Whiteman, McHale, & Crouter, 2007). These studies have shown that when siblings are compared at the same age, parents have less conflict with, more warmth toward, and more

knowledge about secondborn compared to firstborn children. Regarding autonomy, the learning from experience model suggests that parents may relax expectations and allow autonomy earlier for secondborns compared to firstborns. Second, differentiation theory predicts that siblings endeavor to establish unique niches within the family in order to minimize their competition and maximize parental investment of resources (Ansbacher & Ansbacher, 1956; McHale, Kim, & Whiteman, 2006; Sulloway, 1996). Building on Adler's theory of Individual Psychology, Sulloway (1996) argued that later-born children seek autonomy in order to set themselves apart from more conforming and adult-oriented firstborns.

Both the learning from experience hypothesis and sibling differentiation theory imply greater autonomy for secondborns than for firstborns. Yet two cross-sectional studies found higher autonomy for firstborns than for secondborns (Bumpus et al., 2001; Small, Eastman, & Cornelius, 1988). In the majority of cross-sectional designs, birth order and age are confounded, in that later-born siblings are also chronologically younger than earlier-born siblings. Only in cross-sectional studies with substantial variability in the ages of sibling pairs can birth order and age be disentangled, and this concern has not been a focus of prior research. In contrast, a longitudinal design comparing siblings from the same family at the same age eliminates the confounding of age and birth order that characterizes most cross-sectional studies of siblings. Our data include 201 firstborn and secondborn sibling pairs that entered the study at roughly ages 11 and 9, respectively; our longitudinal design allowed us to make within-family comparisons to understand birth order differences and study developmental changes for individuals. To fully illustrate the advantages of within-family comparisons related to birth order, we tested birth order differences in decision making by siblings' chronological age *and* by occasion of measurement, comparing firstborn and secondborn siblings' decision-making autonomy at the same age (using data from different measurement occasions) and at the same points in time (when the siblings differed in age). Using these two approaches, our goal was to reconcile differences between theoretical perspectives predicting greater autonomy for secondborns with cross-sectional findings showing greater autonomy for firstborns.

Parents' Education

We treated parents' education as a proxy for social class, testing competing hypotheses regarding social class and youth decision making. According to Lareau (2003), parents from lower-SES backgrounds value "accomplishment of natural growth" and leave children to create their own stimulation, thus granting them more autonomy. In contrast, parents of higher-SES backgrounds value "concerted cultivation" and structure children's social lives and activities, resulting in lower autonomy for these youth. Consistent with this model, Flanagan (1990) found that mothers with long-term unemployment and less education reported greater decision-making autonomy for youth (particularly daughters).

Other studies, in contrast, suggest that higher SES predicts greater adolescent autonomy (e.g., Dornbusch et al., 1990; Nucci, Camino, & Sapiro, 1996). These studies are grounded in a broad literature suggesting SES differences in parenting styles. Lower-SES parents tend to rely on more imperatives and restrictions, lowering youth autonomy, compared to higher-SES parents (cf. Parke & Buriel, 2006). Thus, two bodies of literature suggest that parents' education may be related to youth decision-making autonomy in different ways. We examined the association between parents' education and youth decision making to test these competing hypotheses.

Study Goals

In sum, this study addressed three goals. First, we examined the trajectory of global decision-making from middle childhood through late adolescence using reports from European American parents. Second, we charted trajectories of eight decision-making items in four domains to test hypotheses derived from the social domain literature. Third, we tested gender, youth's openness to supervision, birth order, and parents' education as potential correlates of the development of decision-making autonomy from middle childhood through adolescence.

Method

Sample and Procedure

Data were drawn from 7 waves (waves 2, 3, and 6 through 10) of a 10-year longitudinal study exploring family relationships and gender development across middle childhood and adolescence. Waves 1, 4, and 5 could not be included because the decision-making measure was not available at these waves. Waves 2, 3, and 6 through 10 are referred to here as Occasions 1 through 7. Families were recruited through letters sent home with fourth and fifth grade students in 16 school districts. Interested families returned self-addressed stamped postcards if they met three criteria: (1) a mother and father (either biological or adoptive) present in the household, (2) a firstborn child in the fourth or fifth grade, and (3) at least one sibling one to four years younger. Of the eligible families who returned postcards, over 90% agreed to participate in the study. Comparisons of participating families with U.S. Census data suggested that parents in the sample were slightly older and better educated than dual-earner families from the same counties.

Of the 203 families that originally agreed to participate, two families dropped out after the first wave and were excluded here. Thus, current analyses used 201 families. A team of interviewers conducted separate two to three hour home interviews with fathers, mothers, and the two target siblings in each family. Families received a $100 honorarium in Waves 1, 2, and 3 and $200 thereafter. The last point of data collection for each family was the year after the firstborn sibling graduated from high school, which varied across families, and meant that the sample size dropped beginning at Occasion 4. Attrition was low: At Occasion 4, the last wave in which all youth participated, 95% of the original sample remained. Across the study, nine families experienced divorce, three sets of parents separated, a parent's death affected six families (five were fathers), and two adolescents had children of their own. Of the 177 individuals who reached the ages of 19 or 20 by the end of the study (mostly firstborns), the majority were attending a 4-year college (66%). In addition, 18% were employed full-or part-time, 12% attended a 2-year or vocational school, and 4% had joined the military. Finally, 24% lived at home with their parents.

The sample was comprised of White working and middle-class families residing in small cities and rural areas. With the exception of two adopted Asian American children, all families were European American, which was representative of the region. At Occasion 1, average family income was $63,355 ($SD$ = 31,472), slightly wealthier than other families in the area. Mothers and fathers averaged 14.63 (SD = 2.11) and 14.72 (SD = 2.40) years of education, respectively, representing vocational training/some college. Firstborn children (103 girls and 98 boys) were 11.83 years of age on average (SD = .55), and secondborns (100 girls and 101 boys) averaged 9.22 years of age (SD = .93).

Measures

Decision making—The adolescent decision-making questionnaire was adapted from Dornbusch et al. (1985), and domains were taken from Smetana (1988). Only parent reports were collected across the entire study period. The decision-making measure consisted of eight items. Mothers and fathers were asked to "think about how decisions have been made during the past year in different areas of your child's life." They circled the number corresponding to the family member(s) who usually made decisions in eight areas: chores, appearance, homework/schoolwork, social life, bedtime/curfew, health, choosing activities, and money. Appearance was classified under the personal domain, chores under the conventional domain, and health under the prudential domain; all other decision types were classified as multifaceted. Original response options ranged from 1 to 9, representing the following: (1) Child Alone, (2) Mother, (3) Father, (4) Both Parents, (5) Father and Child, (6) Mother and Child, (7) Parents and Child, (8) Other Person(s), and (9) Nobody. Items were recoded to a 3-point scale to indicate decisions made by: (1) One or Both Parents, (2) Child and One or Both Parents, and (3) Child Alone. The 3-point scale captures the dimensions of parent-unilateral, joint, and adolescent-unilateral decision making used in previous literature (Dornbusch et al., 1985). Autonomy is conceived of as a continuum from parent-unilateral to adolescent-unilateral with joint decision making as the midpoint. A continuous scale was considered most appropriate for illustrating developmental patterns.[1] Responses of "Nobody" or "Other Person(s)" were rare (.01% and .001% of all responses across waves) and were coded as missing.

Collapsed across occasions and reports for each child, mother and father reports were moderately correlated ($r = .50$, $p < .001$). Thus, mother and father reports of decision-making autonomy were averaged. In cases where one parent's report was missing, data from the available parent were used. The decision to average parents' reports was supported by additional analyses (available upon request) showing the same longitudinal pattern for mothers and fathers as well as high percent agreement on reports for each child and each item. Across occasions, mothers ($M = 1.94$) reported higher decision-making autonomy for secondborns than did fathers ($M = 1.77$), $t(200) = 9.75$, $p < .001$; the difference between mother ($M = 2.05$) and father ($M = 2.02$) reports of decision making for firstborns was marginal, $t(200) = 1.80$, $p < .10$.

A global decision-making index was created by averaging all items. In addition, each item was examined separately. Creation of the global decision-making index was supported by satisfactory Cronbach's alpha coefficients for each offspring at each wave (α range = .74 to .83, $M = .79$). Higher item and index means on decision-making items reflected greater autonomy in decision making. Means for the decision-making index appear in Table 1.

Openness to supervision—At Occasion 2, mothers and fathers rated offspring's openness to supervision using 12 items adapted from the Child Check-In Scale (Kerns et al., 2001), e.g., "My child returns periodically throughout the day to check in." Response options ranged from *not at all* (1) to *very often* (5). Mother and father reports were moderately correlated for firstborns ($r = .36$, $p < .001$) and secondborns ($r = .40$, $p < .001$), and were averaged. Higher scores reflected greater openness to supervision. Cronbach's alphas were satisfactory ($\alpha = .89$ and .92 for firstborn and secondborn offspring, respectively). Firstborns were perceived as easier to supervise ($M = 4.23$), on average, than

[1]We acknowledge that the analysis assumes an interval measurement scale – i.e., that joint decision making is the midpoint between the two ends of parent-unilateral and adolescent-unilateral decisions – and thus the linear form may misrepresent the true functional form if the assumption is not valid. Multilevel modeling analyses are particularly robust to the assumptions of an interval scale when means are used. Thus, in analyses related to the global decision-making index, the robustness of the tests mitigates any potential distortion if the single item scale is non-interval.

secondborns (M = 4.16), $t(199) = -2.31$, $p < .05$. Firstborn girls were perceived as easier to supervise (M = 4.30) than firstborn boys (M = 4.15), $t(199) = 2.26$, $p < .05$, but there were no differences in openness to supervision for secondborn girls (M = 4.21) versus boys (M = 4.10), $t(198) = 1.53$, *n.s*.

Parents' education—We treated parents' education in years as a correlate of decision making. Both mothers' and fathers' levels of education were highly stable over time. The average correlation across all occasions was .96 for mothers and .84 for fathers. Mothers' and fathers' education was moderately correlated (r = .45, on average, across waves). Thus, we used the average of both parents' education at Occasion 1 (M = 14.67, SD = 2.00).

Table 1 shows correlations between the global decision-making index and continuous predictors. Parents' reports of decision-making autonomy were highly correlated across waves; Occasion 7 correlations were less strong, probably due to the smaller sample size that was an artifact of the study's design (i.e., following families until the year after the firstborn's high school graduation). Parents' education was more highly correlated with decision-making autonomy in earlier waves. Correlations between openness to supervision and decision-making autonomy were low.

Results

Analytic Plan

Multilevel modeling (MLM) analyses were conducted using SAS PROC MIXED 9.1. Unconditional polynomial growth models were estimated for the global decision-making index and each of the eight decision-making items. Correlates of gender, children's openness to supervision, birth order, and parents' education were examined in each model.

Our nested data design called for three levels. The *Level 1*, or within-person, model captured predictors of intraindividual change in decision making over time, and time (defined as age of the child) was the unit of analysis. Time was centered at age 10, the earliest age at which both siblings were surveyed. *Level 2* captured the between-sibling (or within-family) effect, and thus the unit of analysis was individual siblings (i.e., firstborns, secondborns). Effects estimated at Level 2 were gender (girl = 0, boy = 1), birth order (firstborn = 0, secondborn = 1), openness to supervision (mean-centered), and interaction terms involving those variables. *Level 3* included parents' education (mean-centered) as a between-family effect (shared by both offspring).

We estimated a series of models, beginning with unconditional growth models, to describe change in global decision making and decision-making types. Prior to adding predictors to the global decision-making index model, intraclass correlation coefficients revealed substantial variance at each level: 74% of the variance at Level 1 (within-person) was unshared, and 48% of variance at Level 2 (between-siblings) was unshared. Restricted maximum likelihood (REML) estimates were used for reporting model parameters and assessing the significance of random effects. As each correlate was added to the models, interactions were tested with fixed effects of time, birth order, and gender. Nonsignificant interactions were pruned before testing additional effects.

Pattern of Change for Global Decision-Making Index

The overall pattern of change for the global decision-making index was a positive cubic effect of age (see Table 2 and Figure 1). The best-fitting unconditional growth curve called for a random linear term at Level 3 and a random intercept at Level 2; in other words, a linear slope was estimated for each family and an intercept was estimated for each child.

As Figure 1 illustrates, parents' reports of youth input into decision making increased gradually in middle childhood (from age 9 to 11), remained relatively flat across early adolescence (age 11 to 13) and increased more steadily across middle adolescence (age 13 to age 15). After age 15, the curve rose steeply, indicating that adolescents began to experience greater autonomy in decision making. Thus, the overall pattern was a gradual yet steady increase in decision making across middle childhood through middle adolescence, followed by a rapid increase in decision-making autonomy in middle to late adolescence. The decision-making scale ranged from 1 to 3, with a score of 2 indicating joint parent-offspring decision making. At age 18 and after, mean levels of decision making approached but did not reach full autonomy, suggesting that joint decision making between parents and adolescents remained normative in most domains.

Mean Differences for Decision-Making Items

After specifying the growth curve for the decision-making index, we turned to item-level analyses. As described above, social domain theory posits different levels of decision-making autonomy depending on the domain. To test for overall level differences, we averaged each item across all occasions, and conducted repeated measures analyses of variance (ANOVA) separately on parents' reports for firstborns and secondborns, repeating on the eight decision-making domains (means shown in Figure 2). Using contrast statements, means for each domain were contrasted with every other domain. Given the 28 comparisons for each child, we used a stringent error rate of $p < .001$ to evaluate significant differences.

For firstborns, all means were significantly different from the others with a few exceptions: decision-making means for schoolwork ($M = 2.21$), activities ($M = 2.20$), and money ($M = 2.14$) were not significantly different, and means for money and social life ($M = 2.13$) were not different (see Figure 2). A similar pattern emerged for secondborns, yet fewer differences were found: Decision making for money ($M = 2.06$) was not significantly different from means for appearance ($M = 2.07$); schoolwork ($M = 1.96$), activities ($M = 1.98$), and social life ($M = 1.97$) were not different; and health ($M = 1.64$) was not different from curfew ($M = 1.68$).

In accordance with the predictions of social domain theory (Smetana, 1995; Smetana et al., 2004), the personal domain of appearance had the highest mean level of autonomy compared to all other domains for firstborns ($M = 2.31$). As expected, low levels of autonomy were found for the prudential domain of health for both children (see Figure 2). Unexpectedly, however, autonomy was lower for chores than for health for both firstborns and secondborns. As hypothesized, means for multifaceted decisions generally fell in between highest means of the personal domain and lowest means of the conventional and prudential domains. For secondborns, however, decision-making autonomy for money was as high as the personal domain of appearance, and autonomy for curfew was as low as the prudential domain of health.

Growth Curves by Decision-Making Type

Next, we examined growth curves by decision type to determine whether developmental trajectories differed by decision-making domain. Fixed and random effects for final models are shown in Table 3. Figure 3 depicts patterns in predicted means for parents' reports of decision-making items by age. Unconditional growth curves revealed that six out of eight decision-making items followed a cubic pattern, as shown by significant fixed effects of age up to the cubic polynomial. Consistent with the global decision-making index, these curves were relatively stable in middle childhood, increased gradually during early and middle adolescence, and increased sharply during late adolescence. Only decisions made about

money and health followed a different, linear pattern, with parents' reports of autonomy in decisions of these types increasing gradually and steadily from age 9 to 20.

Item-level trajectories elaborated on the findings of average level differences reported above. Items seemed to form two groups reflecting higher and lower autonomy in middle childhood and again in late adolescence (see Figure 3); these observations were supported by repeated measures ANOVAs of mean differences by item at the beginning (ages 9 to 11) and end (ages 17 to 20) of the trajectories. In middle childhood, means for chores, health, and curfew fell close to parent-unilateral decision making (M = 1.43, SD = .29), reflecting low autonomy. The remaining items reflected high autonomy in middle childhood, approaching joint decision making (M = 1.87, SD = .27). Decision types that started high tended to remain higher in autonomy across time, and types that started low tended to remain lower in autonomy across time, with two exceptions. In late adolescence, decisions about money were still made jointly. Thus, in late adolescence, chores, money, and health reflected joint decision making on average (M = 2.01, SD = .28). Decisions about curfew started low in autonomy (M = 1.37 at age 9) but showed high autonomy in late adolescence (M = 2.70 at age 20), exhibiting substantial change over time. Overall, decisions regarding curfew, social life, activities, schoolwork, and appearance, when averaged in late adolescence, fell between joint decision making and adolescent-unilateral decision making (M = 2.36, SD = .38).

Correlates of Decision Making

To address our third goal, we examined youth characteristics and parents' education as correlates of parents' reports of global decision making.[2] The final global decision-making model (see Table 4) explained 31% of within-person (Level 1) variance and 33% of between-sibling (Level 2) variance.

There was a significant main effect of gender on global decision making: Parents reported more decision-making autonomy for girls than for boys, and girls were higher, on average, by a factor of .04 units. Openness to supervision was positively associated with parent reports of global decision-making autonomy: For each ease of supervision unit above average, decision-making autonomy was higher on average by .06 units. Parents' education was significantly and positively related to global decision-making autonomy. For each year of parents' education over the sample average, decision making was higher on average by .01 units. The effects of gender, openness to supervision, and parents' education were consistent over time, and did not interact with other predictors.

Turning to birth order, a significant main effect of birth order indicated that parents reported greater autonomy for secondborns than firstborns at age 10 (β = .16, $p < .001$). This birth order effect was qualified by interactions with linear, quadratic and cubic age effects (see Table 4). These effects indicated a significant statistical test of different age-related trajectories for firstborn and secondborn siblings: Firstborns showed a clear cubic pattern, like the average decision-making trajectory described above. In contrast, secondborns increased gradually and linearly in decision-making autonomy with age. Although secondborns had higher decision-making autonomy than firstborns at age 10, this birth order difference lessened with age (see Figure 4a). Reestimating the model with the intercept at ages 13 (β = .01, *n.s.*), 15 (β = .04, $p < .01$) and 18 ($\beta = -.02$, *n.s.*) confirmed the attenuated effect of birth order on decision-making autonomy with age.[3]

[2]Separate models also examined the main effects of gender, openness to supervision, birth order, and parents' education for each decision-making item. In all cases, effects were in the same directions as reported for the global decision-making index, but not all coefficients reached statistical significance. Item-level analyses are available upon request.

To reconcile our findings with the extant literature, we contrasted the effect of birth order when siblings were *the same age* with the effect of birth order when parents were asked at *the same occasion* about each offspring's decision-making autonomy. To conduct this analysis, we treated occasion as the metric of time instead of age. After first fitting an unconditional growth model to decision-making autonomy by occasion, we entered birth order and the birth order by occasion interaction. Occasion was centered at the first occasion, which was most comparable to centering (age 10) in the age-based model. The best-fitting unconditional growth curve was a fixed linear effect, with a random Level 2 intercept and random linear slope at Level 3.

In the occasion-based model, parents reported significantly higher decision-making autonomy for firstborns at Occasion 1 than for secondborns at the same occasion by a factor of .06 units. This birth order effect was qualified by an interaction with occasion (see Figure 4b). The interaction indicated that the difference between siblings, favoring firstborns, increased across measurement occasions. Thus, although secondborns had higher decision making than firstborns when measured at age 10 and this effect became smaller with time, firstborns had higher decision making than secondborns at the first occasion, and this effect became larger with time. Firstborns reached the oldest ages in the study (19 and 20; the year after high school graduation) and showed steep increases in autonomy at these ages (see Figure 4a), whereas secondborns were not surveyed at these ages. This difference helps to explain why firstborns had greater decision-making autonomy on average across the study compared to secondborns (Figures 2 and 4b), and why the overall pattern looks more similar to the firstborn trajectory (Figure 1). Yet during middle childhood, parents reported more autonomy for secondborns than firstborns.

Discussion

This study provides a comprehensive longitudinal examination of youth decision-making autonomy in European American families from the perspective of parents. Developing autonomy is a fundamental task of middle childhood and adolescence (Erikson, 1968), and part of the developmental process involves mothers and fathers exercising authority and negotiating control with children (e.g., Smetana, 1995). Thus, mother and father reports of youth decision-making autonomy are important sources for information about family processes. Rather than finding one normative developmental pattern, our study charted variability in the development of decision-making autonomy that depended on decision domain as well as birth order. The findings from parents' reports of global and specific types of decision making enhance our understanding of the development of behavioral autonomy across middle childhood and adolescence and its correlates. In concluding, we summarize the developmental patterns, couch our findings in social domain theory, review the correlates of decision making, discuss limitations, and point to directions for future research.

Overall Developmental Patterns

Global decision-making autonomy increased gradually from middle childhood through adolescence, and showed a steep increase in late adolescence after age 15. This pattern adds specification to past literature documenting increases in behavioral autonomy in adolescence (Dornbusch et al., 1985; 1990; Gutman & Eccles, 2007; Smetana et al., 2004). For both older and younger siblings, the period spanning middle and late adolescence, from age 15 to

[3]In accordance with literature suggesting the importance of gender composition of the sibling dyad for family processes generally (McHale et al., 2006) and for decision-making autonomy specifically (Bumpus et al., 2001), we tested a gender of target x gender of sibling interaction to examine the role of gender composition. This effect was not statistically significant, and was not discussed in the paper due to limited space.

20, was characterized by higher autonomy compared to middle childhood and earlier adolescence.

Analyses of both global and domain-specific decision-making trajectories revealed that joint decision making was normative in our sample across middle childhood and adolescence. Five of the eight decision-making items showed joint decision making starting in middle childhood, and means remained at or below joint decision making for money, health, and chores between ages 17 and 20. The latter findings confirm that parents still have input into some offspring decisions in late adolescence. In middle childhood, joint decision making is not always a given, as our findings revealed that children, before adolescence, had little input in decisions about chores, curfew, and health. Many studies have suggested that joint decision making between parents and offspring has positive implications for adolescents' adjustment (e.g., Lamborn et al., 1996; Peterson et al., 1999; Steinberg et al., 1989). Moreover, behavioral autonomy is defined by independent decision making tempered with support from family and others (Collins et al., 1997; Hill & Holmbeck, 1987). Based on a person-environment fit perspective (Eccles et al., 1991), an ideal family context should provide levels of control and autonomy that entail not giving too much autonomy in middle childhood and not giving too little in late adolescence; though needing replication in other samples, the overall developmental trajectory found for parents' reports in our sample reflects such a pattern.

Social Domain Theory

The tenets of social domain theory were generally supported by our analyses of level differences as a function of decision domain. For both firstborn and secondborn siblings, decisions in the personal domain garnered the most autonomy, decisions in the prudential and conventional domains garnered the least, and multifaceted domains typically fell in the middle. Youth had lower autonomy in decisions about chores than about health, and developmental trajectories also showed that autonomy for decisions about chores was lower than for decisions about health across adolescence. These findings deviated from social domain theory's prediction of lowest autonomy levels for prudential decisions, yet autonomy for health decisions were lower than other domains, as predicted. Findings for the conventional domain of chores were consistent with Smetana et al.'s (2004) findings that autonomy levels were similar for prudential and conventional decisions, that mothers and adolescents tended to view conventional domains as parent decisions, and that mothers' reports of youth autonomy in conventional decisions (i.e., chores, how to talk to parents, language, and manners) remained low over time. Mean differences in decision types for secondborns were not as strong or as consistent with social domain theory as were findings for firstborns, likely because decision-making autonomy was lower, on average, across domains for secondborns.

Item-level developmental trajectories of decision-making autonomy showed variability in terms of growth patterns. Unlike the majority of decision types that followed a cubic pattern of change with age, autonomy for decisions about health and money increased gradually in a linear fashion. Health decisions fit with the conceptual argument that when families negotiate lower levels of adolescent autonomy on prudential decisions, autonomy in these types of decisions also increases at a slower rate across adolescence. The linear increase of autonomy for decisions about money – with means hovering around joint decision making across the study – represents a novel finding to be considered in future studies of social domain theory. Previous work has measured aspects of decisions about money more specifically and categorized them in the personal domain (e.g., Smetana et al., 2004), yet this distinct linear pattern was not consistent with patterns for either the multifaceted or personal domains. It is unclear whether our findings regarding money warrant a substantive conclusion or represent a measurement issue, as the general nature of our question may be

responsible for this finding. Future research should consider differentiating the sources of adolescents' money (e.g., job earnings, allowance, gifts), as these sources may relate to families' decisions about autonomy with money.

Overall, similar developmental trajectories emerged for the majority of decision-making types, supporting the use of a global decision-making index. However, decisions about money and health followed linear trajectories, which diverged from the general pattern and thus represent novel findings. Indeed, this study provides the first findings of trajectory differences in decision domains across middle childhood and adolescence and informs future theorizing about domain-specific developmental changes in decision-making autonomy. Level differences in item means and trajectories were prominent, yet necessarily obscured when decision making was examined as a global index. In short, the global and specific approaches convey important but distinct information about decision-making autonomy.

Correlates of Offspring Decision Making

Parents reported greater decision making for daughters, for youth initially viewed as easier to supervise, and for youth with better educated parents. Furthermore, different age-related trajectories in decision-making autonomy emerged for firstborn and secondborn siblings. Each of these findings is a novel addition to the literature.

Our results converged with those of several prior studies (Bumpus et al., 2001; Flanagan, 1990) in documenting that girls have more autonomy in decisions than do boys. Girls may have greater decision-making autonomy as a function their relative maturity (Bumpus et al.; Flanagan). Our results are inconsistent with studies that have found no gender differences (e.g., Fuligni & Eccles, 1993; Smetana et al., 2004) or differences favoring boys (e.g., Dornbusch et al., 1990). Differences across studies may reflect sample variation in terms of families' gender role traditionality, and autonomy in global or domain-specific decisions may depend on gender socialization (e.g., Bumpus et al., 2001; Crouter, Whiteman, McHale, & Osgood, 2007).

As expected, openness to supervision in middle childhood predicted greater decision-making autonomy. Being perceived as easy to supervise may indicate to parents that youth can be trusted and are ready to handle more autonomy (Fuligni & Eccles, 1993; Kerns et al., 2001). This effect was moderate in effect size (Cohen's $d = .4$), and as openness to supervision was only measured once in middle childhood, its predictive power suggests that this characteristic matters for autonomy development.

Our finding of a positive association between parents' education and youth decision-making autonomy is consistent with some prior work (Dornbusch et al, 1990; Nucci et al., 1996) and with the link between social class and autonomy found in the broader parenting literature (cf. Parke & Buriel, 2006). Our findings did not support Lareau's (2003) perspective that parents of lower social status offer more autonomy to encourage "natural growth" in their children. Instead, our findings suggest that parents with less formal education may emphasize parental authority, perhaps to create a safer environment (Parke & Buriel, 2006), whereas more educated parents emphasize self-direction (Kohn, 1977; Nucci et al., 1996). Further research is needed to identify the mechanisms underlying this association.

Our longitudinal within-family design enabled us to reconcile discrepancies between theory and empirical findings regarding birth order and autonomy. The learning from experience perspective (e.g., Whiteman et al., 2003) and sibling differentiation theory (e.g., Sulloway, 1996) posit greater autonomy for secondborn compared to firstborn children. Empirical findings that older siblings have more decision-making autonomy than younger siblings have been cross-sectional (Bumpus et al., 2001; Small et al., 1988). Consistent with these

results, when we used occasion of measurement as the time metric, firstborns had higher decision-making autonomy than secondborns. In contrast, by treating *age* as the time metric, that is, when siblings were compared at the same age, we found that secondborns had greater autonomy in decisions than firstborns, primarily in middle childhood. The latter finding provides some support for the idea that parents relax expectations for secondborns and that younger offspring seek autonomy in an effort to set themselves apart from older siblings. These birth order effects were particularly prominent in middle childhood and early adolescence, as all youth increased in decision-making autonomy over time. Firstborns tended to increase in decision-making autonomy in a cubic fashion much like the overall pattern whereas secondborns' autonomy increased gradually and linearly. Overall, these findings suggest that developmental patterns of decision-making autonomy may be dependent on the family context. The different trajectories may be in part explained by the later ages that firstborns, in contrast to secondborns, reached in our study. Further investigations in other samples are needed to replicate these within-family patterns.

Limitations and Directions for Future Research

This study highlights the merits of longitudinal, within-family designs for understanding how developmental patterns of autonomy unfold over time. An important next step for future research is extending the examination of autonomy further into young adulthood. Arnett (2000) reported that a key criterion for being considered an adult is making independent decisions, yet today's young adults are only "semi-autonomous". Data are needed to examine the circumstances under which joint decision making versus complete autonomy becomes the norm in young adulthood. More data could also demonstrate whether the trajectory for secondborns conforms to firstborns' pattern in late adolescence or whether it remains distinct. Future research on decision-making autonomy may benefit from using measures with a larger range than our 3-point scale in order to capture developmental shifts with greater sensitivity.

Our findings supported and extended the tenets of social domain theory, yet several questions remain unaddressed. Unexpectedly, based on previous work (Smetana et al., 2004), the conventional domain of chores showed a steep rise in late adolescence rather than increasing gradually. Perhaps parents are more restrictive of autonomy in conventional domains like chores in middle childhood and earlier in adolescence, an idea needing further investigation. Though, as predicted, multifaceted decisions showed autonomy levels lower than those in the personal domain and higher than those in conventional and prudential domains, multifaceted decisions represent an ambiguous category that deserves further discussion among social domain theorists. For example, Baumrind (2005) suggests that multifaceted decisions should be classified based on the domain (e.g., conventional, prudential) that is mixed with the personal domain to avoid ambiguity. Our domain-specific findings are noteworthy given their compatibility with social domain theory despite the general nature of our decision-making items; yet, replication of these longitudinal findings with other measures would increase confidence in the results.

Other studies have pointed to variation in autonomy reports depending on which family member's perspective is examined (Smetana, 1995; Smetana et al., 2004), and this is an area also in need of further investigation. Although a strength of our study is the combined use of both mother and father reports, as clearly both mothers and fathers are instrumental in negotiating youth decision-making autonomy and related family processes (cf. Parke & Buriel, 2006), the combined index of mothers and fathers may obscure important variability between parents in their perspectives on youth decision-making autonomy. Much of the previous research on decision-making autonomy has used adolescents' reports (e.g., Dornbusch et al., 1990; Fuligni & Eccles, 1993; Lamborn et al., 1996), yet further investigation of the congruence between mother, father, and adolescent reports could shed

light on the family processes associated with negotiations of decision-making autonomy (see Smetana et al., 2004; Smetana et al., 2005).

Youth decision-making autonomy is likely to be best understood when studied from an ecological perspective and in cultural context. Thus, future research should implement longitudinal within-family designs to study a more diverse array of families than we were able to study here. Findings from our middle/working class European American sample may not generalize to other racial, ethnic, social class, regional, or cultural groups or to dynamics in single-parent or multi-generational families. A burgeoning body of research has begun to consider adolescent autonomy in a wide range of cultural contexts (e.g., Huiberts, Oosterwegel, VanderValk, Vollebergh, & Meeus, 2006; Love & Buriel, 2007; Phinney, Kim-Jo, Osorio, & Vilhjalmsdottir, 2005). Longitudinal work is now needed to examine the developmental patterns of decision-making autonomy in these various family and cultural contexts, taking advantage of designs that permit between- as well as within-family comparisons.

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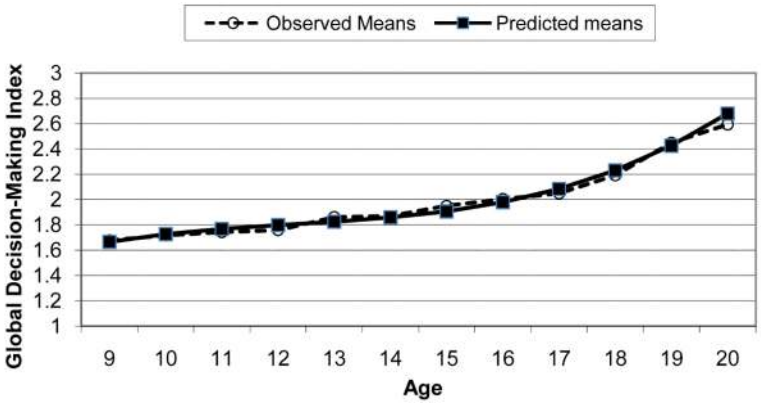

Figure 1.
Average trajectory and observed means for global decision-making index by age.

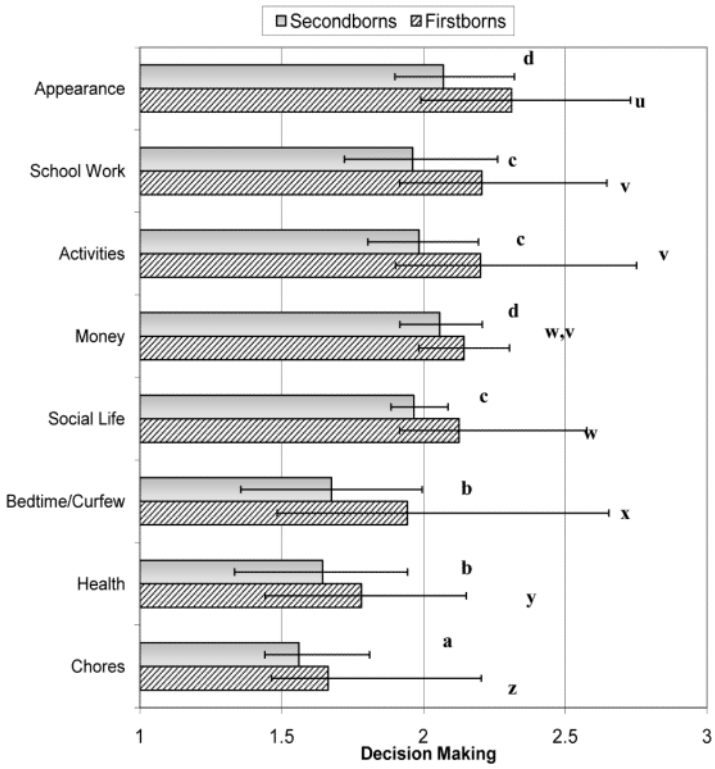

Figure 2.
Across-time decision-making item means for firstborn and secondborns.
Note. Means represent averages pooled across 7 occasions. Bars represent range of change over time for each item. Secondborn differences (shaded bars) of $p < .05$ are denoted by a, b, c, d, and e. Firstborn differences (striped bars) of $p < .001$ are denoted by u, v, w, x. y, and z.

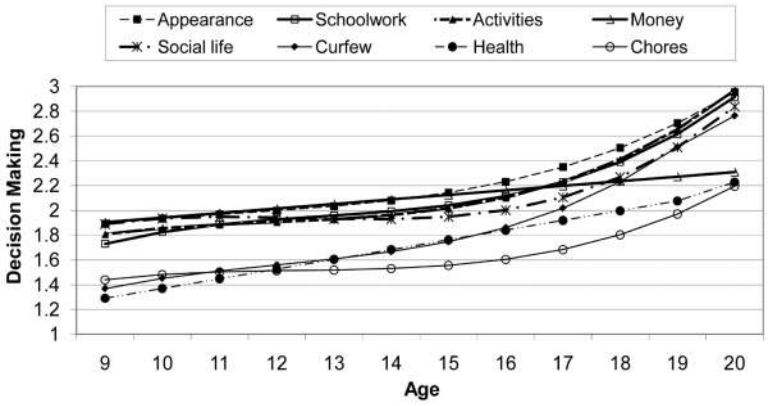

Figure 3.
Developmental trajectories of decision making by item.
Note. Predicted means from growth curve models are displayed.

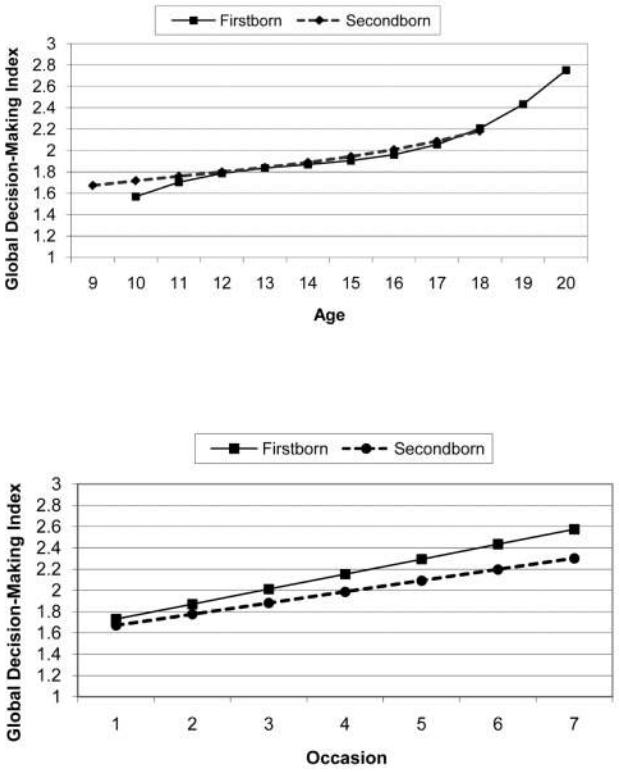

Figure 4.

a. Birth order by age interaction for global decision-making index.

b. Birth order by occasion interaction for global decision-making index.

Table 1

Means, Standard Deviations, and Correlations for Global Decision-Making Index for Each Measurement Occasion and Continuous Predictors

		M (*SD*)		Correlations								
	N	**First-borns**	**Second-borns**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1. DM[a] 1	402	1.76*(.27)*	1.67*(.25)*	--	.54***	.37***	.40***	.32***	.39***	.22	.13†	.28***
2. DM 2	402	1.83*(.24)*	1.74*(.23)*	.59***	--	.49***	.49***	.42***	.42***	.40*	.19**	.18†
3. DM 3	387	2.02*(.25)*	1.89*(.22)*	.38***	.43***	--	.64***	.52***	.43***	.55**	.14*	.19**
4. DM 4	380	2.10*(.26)*	1.94*(.24)*	.39***	.40***	.59***	--	.61***	.57***	.44*	.11	.14†
5. DM 5	379	2.31*(.30)*	2.00*(.26)*	.25***	.31***	.48***	.62***	--	.74***	.51**	.17*	.10
6. DM 6	231	2.45*(.28)*	2.04*(.24)*	.21*	.27**	.38***	.51***	.61***	--	.52**	.12	.22*
7. DM 7	53	2.49*(.24)*	2.09*(.24)*	.28	.09	.34†	.38†	.31	.60***	--	.20	−.14
8. Open to Supervision	401	4.23*(.47)*	4.16*(.51)*	.11	.16*	.10	.04	−.03	.10	.05	--	.20**
9. Parents' Education	402	14.67*(2.0)*		.26***	.26***	.22**	.07	.03	−.01	−.23	.23***	--

Note. *N*s represent number of adolescents, including both siblings. Correlations for firstborns are below the diagonal and correlations for secondborns are above the diagonal.

[a]DM = Decision Making.

Table 2
Unconditional Growth Curve Model for Global Decision-Making Index

Parameter	Global Decision-Making Index		
	Estimate	**Standard Error**	***t*-value**
Fixed Effects			
Intercept (Age 10)	1.73	.02	111.24***
Linear	.05	.005	9.60***
Quadratic	−.01	.002	−6.38***
Cubic	.001	.0001	11.42***
Level 2 Variance			
Intercept	.003	.001	3.29***
Level 3 Variance			
Intercept	.04	.005	7.62***
Intercept-Linear	−.003	.001	−5.08***
Linear	.0007	.0001	6.76***
Residual	.03	.001	28.25***
Model Fit			
REML Deviance	−813		
AIC	−803		
BIC	−786		

*** $p < .001$.

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Table 3

Fixed and Random Effects for Unconditional Growth Curve Models by Item

	Fixed Effects			
	Intercept	**Linear**	**Quadratic**	**Cubic**
Appearance	1.93*(.02)****	.04*(.01)****	−.004*(.003)*	.001*(.0002)****
Schoolwork	1.82*(.02)****	.08*(.01)****	−.02*(.003)***	.002*(.0003)****
Activities	1.86*(.02)****	.04*(.01)****	−.01*(.003)***	.002*(.0002)****
Money	1.94*(.02)****	.04*(.003)****	--	--
Social Life	1.93*(.02)****	.03*(.01)***	−.02*(.002)****	.002*(.0002)****
Bedtime/Curfew	1.45*(.02)****	.07*(.01)****	−.01*(.003)*	.002*(.0003)***
Health	1.37*(.02)****	.08*(.003)****	--	--
Chores	1.48*(.02)****	.03*(.01)***	−.01*(.003)**	.001*(.0002)****

	Random Effects				
	Level 2	**Level 3**			**Residual**
	Intercept	**Intercept**	**Linear**	**Quadratic**	
Appearance	.01*(.003)****	.05*(.01)****	.002*(.0003)****	--	.10*(.003)****
Schoolwork	.03*(.01)****	.05*(.01)****	.001*(.0002)****	--	.11*(.004)****
Activities	.002*(.002)*	.05*(.01)****	--	--	.10*(.004)****
Money	.01*(.003)**	.08*(.01)****	.002*(.001)****	--	.16*(.01)****
Social Life	.0004*(.002)*	.06*(.01)****	.003*(.001)***	.00003*(.00001)****	.07*(.003)****
Bedtime/Curfew	.01*(.003)**	.05*(.01)****	.003*(.001)**	.00004*(.00002)**	.12*(.01)****
Health	.002*(.002)*	.04*(.01)****	.001*(.0002)****	--	.10*(.003)****
Chores	.003*(.003)*	.06*(.01)****	.001*(.0002)****	--	.11*(.004)****

Note. Standard errors appear in parentheses.

* $p < .05$

** $p < .01$

*** $p < .001$

Table 4
Global Decision-Making Index Model with Correlates

Parameter	Global Decision-Making Index		
	Estimate	**Standard Error**	***t*-value**
Fixed Effects of Age			
Intercept	1.58	.05	32.05***
Linear	.17	.03	5.03***
Quadratic	−.04	.007	−5.32***
Cubic	.003	.0004	7.61***
Child Characteristics			
Birth order (0 = FB[a], 1 = SB[b])	.16	.05	3.37***
Birth order x Linear Age	−.13	.03	−3.81***
Birth Order x Quadratic Age	.03	.007	4.86***
Birth Order x Cubic Age	−.003	.0005	−5.56***
Gender (0=Girl, 1 = Boy)	−.04	.01	−3.21**
Openness to Supervision	.06	.02	3.45***
Parent Characteristics			
Parents' Education	.01	.006	2.60**
Model Fit			
REML Deviance	−674		
AIC	−664		
BIC	−648		

[a] FB = Firstborn

[b] SB = Secondborn

* $p < .05$

** $p < .01$

*** $p < .001$