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## Childhood Temperament and Family Environment as Predictors of Internalizing and Externalizing Trajectories from Age 5 to Age 17

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### Abstract

Childhood temperament and family environment have been shown to predict internalizing and externalizing behavior; however, less is known about how temperament and family environment interact to predict changes in problem behavior. We conducted latent growth curve modeling on a sample assessed at ages 5, 7, 10, 14, and 17 ( $N = 337$ ). Externalizing behavior decreased over time for both sexes, and internalizing behavior increased over time for girls only. Two childhood variables (fear/shyness and maternal depression) predicted boys' and girls' age-17 internalizing behavior, harsh discipline uniquely predicted boys' age-17 internalizing behavior, and maternal depression and lower family income uniquely predicted increases in girls' internalizing behavior. For externalizing behavior, an array of temperament, family environment, and Temperament x Family Environment variables predicted age-17 behavior for both sexes. Sex differences were present in the prediction of externalizing slopes, with maternal depression predicting increases in boys' externalizing behavior only when impulsivity was low, and harsh discipline predicting increases in girls' externalizing behavior only when impulsivity was high or when fear/shyness was low.

### Keywords

externalizing; internalizing; temperament; family environment; sex differences

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Understanding how child characteristics and the family environment relate to increases and decreases in problem behavior across childhood and adolescence is of key interest to developmental and clinical psychologists. One avenue to expand such knowledge is to examine the link between specific child characteristics and specific problem behaviors. Several studies have shown that family environmental factors might moderate the relationship between specific child temperamental characteristics and child internalizing and externalizing behavior (Bates, Pettit, Dodge, & Ridge, 1998; Morris et al., 2002; Stoolmiller, 2001). However, knowledge about the unique and interactive effects of temperamental characteristics and family environment on *change* in internalizing and externalizing behavior from early childhood to late adolescence is limited. Further, we know little about whether boys and girls follow similar patterns of change and prediction. In this article, we examine the role of boys' and girls' impulsivity, fear/shyness, and family environment at age 5 on the development of internalizing and externalizing behavior through late adolescence.

## Internalizing Behavior

**Developmental trajectories**—Epidemiological and community-based studies suggest that internalizing behavior is relatively stable across childhood, but increases somewhat during adolescence (Bongers, Koot, van der Ende, & Verhulst, 2003; Twenge & Nolen-Hoeksema, 2002). There is also evidence that internalizing trajectories vary by sex, with girls showing higher mean levels and sharper increases in internalizing symptoms from childhood to adolescence than boys (Angold, Erkanli, Silberg, Eaves, & Costello, 2002; Keiley, Lofthouse, Bates, Dodge, & Pettit, 2003). A meta-analysis of 310 studies using the Children's Depression Inventory (Kovacs, 1985) suggested that girls had slightly fewer depressive symptoms in childhood but surpassed boys after age 13 (Twenge & Nolen-Hoeksema, 2002).

**Predictors of change**—Childhood fear, shyness, and emotional reactivity/inhibition to novelty have been shown to reliably predict concurrent and later internalizing problems at clinical and symptom levels (Colder, Mott, & Berman, 2002; Kagan, Snidman, Zentner, & Peterson, 1999; Prior, Smart, Sanson, & Oberklaid, 2000). For example, Schwartz, Snidman, and Kagan (1999) found that 61% of the toddlers who avoided novelty displayed anxiety symptoms in adolescence, whereas only 27% of the toddlers who were uninhibited showed anxiety symptoms in adolescence. There is some indication that fear/shyness shares a common genetic liability with depression and anxiety, which may partially explain the predictive effects (Goldsmith & Lemery, 2000; Ono et al., 2002). In addition, numerous studies have linked parental depression with child internalizing behavior (NICHD Early Child Care Research Network, 1999; Spence, Najman, Bor, O'Callaghan, & Williams, 2002). Thus, children with a depressed parent have a dual-risk for showing increases in internalizing problems: They are genetically predisposed to have a fearful temperament, and they are exposed to an environment in which the parent suffers from depression. Exposure to harsh discipline and marital discord also increases the likelihood that children will develop internalizing problems (Buehler, Anthony, Krishnakumar, & Stone, 1997; Capaldi, 1992; Davies & Windle, 2001; Shaw, Keenan, Vondra, Delliquadri, & Giovannelli, 1997).

Recently, several studies have shown that temperament interacts with environmental characteristics to predict internalizing behavior. Morris et al. (2002) found internalizing problems in children who were high in irritable distress and had mothers who used high levels of psychological control, and Shaw et al. (1997) found that preschool boys' depressive behaviors were predicted by the interaction between high temperamental negative emotionality and exposure to parental conflict. These studies suggest that an emotional, fearful temperament interacts with characteristics of the family environment to predict internalizing problems. Additional research is needed to examine the prediction of change through adolescence and to determine whether different processes operate by sex.

## Externalizing Behavior

**Developmental trajectories**—Findings on the developmental course of externalizing behavior have been more mixed. Different studies indicate decreasing or increasing externalizing behavior from early childhood to adolescence depending on the measure, reporting agent, and age span used (e.g., Loeber, Burke, Lahey, Winters, & Zera, 2000; Munson, McMahon, & Spieker, 2001). For example, Keiley, Howe, Dodge, Bates, and Pettit (2001) used the externalizing scale from the Child Behavior Checklist (CBCL; Achenbach, 1991) and found that externalizing behavior decreased from kindergarten through Grade 8 based on mother reports, but increased when teacher reports were examined. In a recent, large-scale study examining the normative developmental trajectories of externalizing behavior using the CBCL, Bongers et al. (2003) found a significant reduction in child externalizing from age 4 to age 18. Overall, most studies find that boys have higher mean levels of externalizing

behavior than girls (Broidy et al., 2003), though there is some evidence that growth rates may differ by sex, with the gender gap closing over time (Galambos, Baker, & Almeida, 2003).

**Predictors of change**—In the coercion model, the primary pathway to child and adolescent externalizing problems is through reciprocal, coercive interchanges between the child and parent (Patterson, Reid, & Dishion, 1992). Within this model, harsh discipline has been identified as a key variable in accounting for variance in child externalizing outcomes (Eddy & Chamberlain, 2000; Keiley et al., 2003). Simons, Chao, Conger, and Elder (2001) examined change in delinquent behavior across four waves of data from age 12/13 to age 15/16 and found that harsh parenting predicted growth trajectories of delinquency. Harsh parenting is often correlated with maternal depression and marital discord, but each has been shown to have independent effects on externalizing behavior (Burke, 2003; Marchand, Hock, & Widaman, 2002). Like harsh parenting, maternal depression is related to growth in child externalizing problems (Munson et al., 2001; Owens & Shaw, 2003).

Impulsive temperamental characteristics in early childhood also relate to externalizing problems in later childhood and adolescence (Schwartz, Snidman, & Kagan, 1996; Shaw, Owens, Giovannelli, & Winslow, 2001). For example, lack of self-control in childhood was found to relate to teacher and parent reports of externalizing behavior problems assessed between age 9 and age 15 (Caspi, Henry, McGee, Moffitt, & Silva, 1995), and children rated as high on novelty seeking were at greater risk for early adolescent externalizing behavior (Tremblay, Pihl, Vitaro, & Dobkin, 1994). Additionally, childhood fear/shyness might have a protective effect, as such characteristics are negatively associated with externalizing problems in adolescence (Moffitt, Caspi, Dickson, Silva, & Stanton, 1996; Schwartz et al., 1996).

As with internalizing problems, research is beginning to show that family environment and temperamental characteristics interact to predict externalizing problems. Bates et al. (1998) found that child impulsive/unmanageable temperament more strongly related to later externalizing problems when parents used unrestrictive, noncontrolling parenting strategies. Lengua, Wolchik, Sandler, and West (2000) found that inconsistent parental discipline was most strongly related to externalizing problems for children high on impulsivity. Thus, family environment characteristics and impulsive temperamental characteristics appear to jointly contribute to later externalizing problems. However, effects on change and sex-specific effects need to be explored into adolescence.

### The Current Study

Bates et al. (1998) noted that most developmental studies report only modest-to-moderate levels of associations between temperament and child adjustment outcomes and between parenting and child adjustment outcomes. One explanation for such effect sizes is the tendency to examine the independent contributions of temperament and family environment and to rely on a single reporter (mother) of child temperament (Sanson, Hemphill, & Smart, 2004). The present study examined the independent and interactive contributions of specific temperamental characteristics and family environment characteristics to externalizing and internalizing behavior. We extended prior work by incorporating growth modeling to test how temperament interacts with family environment to predict change in externalizing and internalizing behavior over time in a sample of boys and girls.

The study had two primary aims. First, we sought to examine the developmental trajectories of internalizing and externalizing behavior in a normative sample of boys and girls. It was hypothesized that there would be significant increases in internalizing behavior (especially for girls) and significant decreases in externalizing behavior from age 5 to age 17. Second, we sought to examine childhood temperament, family environment, and Temperament x Family Environment interactions on age-17 internalizing and externalizing behavior and change in

internalizing and externalizing behavior. It was hypothesized that the mean level of age-17 internalizing behavior would be predicted by age-5 fear/shyness, age-5 family environment, and their interaction, and that the mean level of age-17 externalizing behavior would be predicted by age-5 impulsive temperament, age-5 family environment, and their interaction. Specific predictions were not made regarding which variables would predict growth in internalizing and externalizing over time owing to the lack of prior work on this topic. Within these two aims, we also examined the role of gender. As Sanson et al. (2004) noted, there has been suggestive evidence (but no clear pattern) for sex differences in the temperament–behavior problem link.

## Method

### Participants

Participants were part of an ongoing longitudinal study of a community-based sample ( $N = 373$ ). Two cohorts of participants were originally recruited from a medium-sized city in the Pacific Northwest. Cohort one was recruited via advertisements in local newspapers, mailed newsletters, and flyers posted in public areas throughout the local community. All families with 18-month-old children were invited to participate. The resulting sample ( $n = 166$ ) matched the family size, income, and occupational status statistics of the local area. When the children in cohort one reached age 5, a second cohort of 5-year-old children ( $n = 207$ ) was recruited using the same recruitment procedures as with cohort one. Sample retention rates have remained high throughout the study. For example, data were collected on 97% of the original sample ( $n = 363$ ) at the final assessment (age 17).

The ethnic diversity of the sample is similar to the region from which it was drawn: 88% Caucasian, 7% mixed ethnic background, 2% Hispanic, 1% African American, 1% Native American, and 1% Asian American. When children were 5, the mean ages for mothers and fathers were 33 and 36, respectively. At age 5, 79% of the children were living in families with two biological parents. At age 17, 48% of the children were living with two biological parents and 9% of the children were living with a biological parent and a stepparent. When the children were 5, the mean parental educational level was some college (without graduation), and mothers and fathers had mean occupation levels of 5 (e.g., clerical or sales worker) and 6 (e.g., technician, semiprofessional, or small business owner), respectively, on the Hollingshead 9-factor occupational code (Hollingshead, 1975). Mean levels of education level and occupation did not significantly increase by the age-17 assessment. Mean family income levels were \$18,000–24,000 per year at age 5 (1986–1988) and \$40,000 per year at age 17 (1998–2001).

Thus, overall, the sample was comprised of working-class and middle-class families. However, many of the families experienced significant socioeconomic stressors. For example, over 10% of the families reported being homeless for at least 1 month ( $M = 5$  months), 18% had a gross annual income of less than \$25,000/year between 1998 and 2001—the average family income in this area is \$48,527 (U.S. Bureau of the Census, 2000)—and 47% of mothers and 40% of fathers had a high school degree or lower as their highest educational degree.

The analytic sample for this study consisted of 337 youths (174 boys; 163 girls) whose parents had completed the CBCL in at least three of the following data collection points: age 5 (analytic sample  $n = 330$ ), age 7 ( $n = 285$ ), age 10 ( $n = 220$ ), age 14 ( $n = 321$ ), and age 17 ( $n = 312$ ). A 1-year data-collection hiatus occurred when some youths were 7 or 10, resulting in somewhat smaller sample sizes for those assessment waves. A mean comparison test indicated that the mean levels of internalizing and externalizing behavior of the excluded youth were not significantly different from those included in the analytic sample at any time point.

## Procedure

At the age-5 assessment, families participated in a 2-hour home visit during which parents individually completed questionnaires and participated in an interview. At all assessment waves, mothers and fathers completed a battery of questionnaires. Project staff received a minimum of 25 hours of training prior to conducting interviews. Adherence to standardized data collection protocols was monitored via weekly team meetings and weekly one-on-one meetings with the project coordinator. In addition, all instruments were checked for ambiguous or unintentionally skipped responses and any missing data were then collected. There were no mean level differences between cohorts on the measures used in this report.

## Measures

**Internalizing and externalizing behavior across time**—Internalizing and externalizing behavior was measured using parent report on the CBCL at all 5 assessments. Parents individually rated their child on 112 behavior problems on a scale ranging from 0 (*not true*) to 2 (*very true or often true*). Externalizing raw scores (aggressive and delinquent behavior subscales; 33 items total) and internalizing raw scores (the withdrawn, somatic complaints, and anxiety/depressed subscales; 32 items total) were examined in this report.

Scores were averaged across both parents to create an index score.<sup>1</sup> The mean interparent correlation was .51 for externalizing and .35 for internalizing. Scores across all waves consistently demonstrated high internal reliability ( $\alpha = .82-.95$  for externalizing and  $.78-.92$  for internalizing). Examination of the CBCL T-scores indicated that the sample contained variability in the extent to which the youth exhibited clinical-level problems in at least one wave: 19% demonstrated clinical-level externalizing symptoms, and 20% demonstrated clinical-level internalizing symptoms. Means and standard deviations for all variables reported here are included in Table 1.

**Age-5 childhood temperament**—At age 5, the Children's Behavior Questionnaire (CBQ; Rothbart, Ahadi, Hershey, & Fisher, 2001) was administered. The CBQ is a 195-item, parent-report questionnaire that measures temperamental characteristics in 3- to 7-year-olds using a 7-point Likert scale—1 (*extremely untrue of your child*) to 7 (*extremely true of your child*). The temperamental dimensions assessed by the CBQ were derived from dimensions of temperament measurable in infancy and toddlerhood (Goldsmith, 1996; Rothbart, 1981).

For this study, two dimensions of temperament were included: the ability (or lack thereof) to control one's impulses, and the aversion to approach objects or people. We termed these temperament dimensions *impulsivity* and *fear/shyness*, respectively. Based on these definitions and the face value of items on the CBQ subscales, the impulsivity composite was comprised of the impulsivity subscale (13 items) and the reverse-coded inhibitory control subscale (which measures the ability to control impulses; 13 items). Sample items for the two subscales, respectively, include "usually rushes into an activity without thinking about it" and "can lower his/her voice when asked to do so." The fear/shyness composite was comprised of the fear subscale (12 items) and the shyness subscale (13 items). Sample items for the two subscales, respectively, include "is not afraid of large dogs and/or other animals" and "often prefers to watch rather than join other children playing."

Internal consistency for the four subscales was acceptable ( $\alpha = .76-.94$ ,  $M = .82$ ). Internal consistencies for the impulsivity and fear/shyness composite scales were .74 and .68,

<sup>1</sup>At the age-7 and age-10 assessments for Cohort 1, CBCL data were obtained from primary caregiver rather than from both parents. In addition, the number of single-parent families participating at each wave varied, and in some two-parent families, the father did not participate in a given wave. Thus, CBCL data were collected from one parent only for 79, 175, 183, 94, and 89 families at the age-5, -7, -10, -14, -17 assessments, respectively.

respectively. Because correlations between the mother and father ratings on both scales were high (i.e., .58), they were aggregated to form an index of child temperament.

**Age-5 harsh parental discipline**—At the age-5 assessment, parents were individually interviewed regarding discipline practices. Parents used a 5-point Likert-type scale—1 (*never*) to 5 (*very often*)—to indicate how often they scolded, swore at, and hit/slapped/spanked their child. A harsh discipline composite was formed by aggregating these three items with two items from a global interviewer rating. The global interviewer ratings were the interviewer’s responses following the 2-hr home visit to two questions: “How would you rate the parents discipline?” (rated on a 5-point Likert-type scale ranging from 1 [*very good*] to 5 [*poor*]) and “To what extent did the parent use physical punishment such as spanking” (rated on a 3-point scale with values of 1 [*not mentioned*], 2 [*distinct impression*], and 3 [*mentioned directly*]). This 3-point scale was converted to a 5-point scale (with values of 1, 3, and 5) prior to analysis. Maternal and paternal harsh discipline scores correlated .62 and were thus aggregated to represent the average household discipline that the child received at age 5. The internal consistency alpha of the harsh discipline scale was .71.

**Age-5 maternal depressive symptoms**—At the age-5 assessment, mothers completed the Center for Epidemiological Studies of Depression Scale (CES-D; Radloff, 1977) to assess their depressive symptoms. The CES-D consists of 20 items to assess depressive symptomatology among adults in the general population. Mothers reported how they felt during the past week on a 4-point Likert-type scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*); scores were summed across items. The internal consistency alpha was .87.

**Age-5 marital adjustment**—At the age-5 assessment, we combined parents’ Dyadic Adjustment Scale score (DAS; Spanier, 1976) with their marital status to create a marital adjustment variable. The DAS measures the overall quality of the marriage, including dyadic satisfaction, dyadic cohesion, dyadic consensus, and affectional expression across 32 items (usually rated on a 6-point Likert-type scale). Internal consistency alphas were .92 for mothers and .91 for fathers. The sample means for this study were nearly identical to mean levels for married couples reported by Spanier. Because the mother and father ratings correlated .52, their scores were aggregated. Marital status (0 [*single*] and 1 [*married*]) and DAS scores were then multiplied to create a marital adjustment score, thus allowing single-parent families to be included in the analyses.<sup>2</sup>

**Age-5 family income**—Annual family income at child age-5, measured on a 10-point scale ranging from 0 (*less than \$5000 per year*) to 9 (*more than \$54,000 per year*), was included as a control variable.

## Analysis Plan

The present study employed latent growth curve modeling (LGC) using Mplus (Muthén & Muthén, 2001) to test the two study aims: to examine the developmental trajectories of internalizing and externalizing behaviors (age 5–17) and to examine the utility of five variables measured at age-5 (impulsivity, fear/shyness, harsh discipline, maternal depressive symptoms, and marital adjustment) in predicting age-17 internalizing/externalizing and change in internalizing/externalizing. For both aims, parent ratings on the CBCL at ages 5, 7, 10, 14, and 17 were used as indicators to estimate two latent factors (intercept and slope). The intercept factor was centered at age 17. Thus, the intercept factor can be interpreted as the level of internalizing/externalizing behavior at age 17. Because all of the predictors were assessed at

<sup>2</sup>We thank an anonymous reviewer for suggesting this data analytic strategy.

age 5, placing the intercept at age 17 allowed an examination of prospective predictive patterns from childhood to late adolescence. The slope factor represents the rate of change in internalizing/externalizing behaviors (age 5–17). Models were estimated using the full information maximum likelihood (FIML) estimator in Mplus, which allows the inclusion of participants with partial data on the dependent variables. No data imputations were made on any of the predictor variables. Separate models were tested for boys and girls to examine differential change and prediction by sex.

## Results

### Descriptive Analyses

The correlations between the six predictors and internalizing/externalizing behavior for boys and girls are presented in Table 2. For boys, fear/shyness, harsh discipline, maternal depressive symptoms, and marital adjustment were significantly related to internalizing behavior across time points, whereas impulsivity was not. For girls, maternal depressive symptoms and marital adjustment were related to internalizing behaviors across time points, impulsivity was significantly associated only with adolescent internalizing behavior, and fear/shyness was related only to childhood internalizing behavior. Harsh parenting was not associated with girls' internalizing behavior at any time point.

For externalizing behavior, impulsivity, harsh discipline, maternal depressive symptoms, and marital adjustment were strongly associated with boys and girls' externalizing behavior across time points. Fear/shyness showed a modest association with boys' externalizing behavior at age 7 and no associations with girls' externalizing behavior at any time point.

There were also significant correlations among the predictors (not shown in table). Impulsivity showed a significant inverse relationship to fear/shyness for both sexes and correlated with harsh discipline for boys. Harsh discipline was related to maternal depressive symptoms for boys. Finally, maternal depressive symptoms correlated negatively with marital adjustment for both sexes.

### LGC Analyses: Developmental Trajectories of Internalizing/Externalizing Behavior

As is shown in Figure 1, the general trends of internalizing and externalizing behaviors (ages 5–17) appeared to be linear for both sexes, suggesting that linear LGC models would fit the data well for each trajectory model. Because there are multiple types of linear growth models, two 2-factor linear growth models were tested to confirm the linear pattern: a linear growth model and a linear spline growth model. In the linear growth model, the intercept factor loadings were all fixed at 1 and the slope factor loadings were centered at age 17 and therefore fixed at -12, -10, -7, -3, and 0 (for ages 5, 7, 10, 14, and 17, respectively). In the linear spline growth model, the age-5 factor loading of the slope was fixed at -1 and the age-17 factor loading was fixed at 0; the other three loadings were freely estimated (B. Muthén, personal communication, January 10, 2005). The linear spline model is a more general form than the linear model because it allows for some types of nonlinear growth patterns (i.e., only the first and the final factor loadings are fixed). The unconditional growth trajectory models for internalizing and externalizing are described below by sex.

**Internalizing trajectory for boys**—The linear growth model of boys' internalizing behavior did not fit the data well,  $\chi^2(6) = 27.22, p = .00$ . In contrast, the linear spline model had a significantly better fit,  $\chi^2(3) = 5.04, p = .17$ . By freeing three parameters, the  $\chi^2$  statistic reduced from 27.22 to 5.04, nested  $\chi^2 = 22.18, df = 3, p < .00$ . Because this indicated a significant improvement of fit over the linear model, the linear spline model was used for analyses on boys' internalizing behavior. The means of the intercept and slope factor were 4.97

( $z = 13.59, p < .001$ ) and  $.49 (z = 1.26, ns)$ , respectively. These values represent the mean age-17 score (4.97) and mean rate of change (.49) for boys' internalizing behavior. The nonsignificant slope factor mean suggested that boys' internalizing behavior was relatively stable across this time period.

The intercept and slope factor had variances of 6.87 ( $z = 3.95, p < .001$ ) and  $.73 (z = 1.15, ns)$ , respectively. The significant intercept factor variance indicated that there was significant individual variability in age-17 internalizing, but the nonsignificant slope factor variance indicated that there was little individual variance in change of internalizing behavior. The correlation between the intercept and slope factor was not significant ( $1.48, z = 1.24, ns$ ), suggesting that age-17 internalizing had no bearing on change in boys' internalizing behavior.

**Internalizing trajectory for girls**—The linear model of girls' internalizing behavior did not fit the data well,  $\chi^2(6) = 29.55, p = .00$ , but the linear spline model had a significantly better fit,  $\chi^2(3) = 5.12, p = .16$ , nested  $\chi^2 = 24.43, df = 3, p < .00$ . Therefore, the linear spline model was used for analyses on girls' internalizing behavior. The means of the intercept and slope factor were 6.20 ( $z = 13.56, p < .001$ ) and 1.09 ( $z = 2.31, p < .05$ ), respectively. The significant positive slope factor mean indicated that, on average, girls' internalizing behavior increased over time.

The intercept and slope factor had variances of 10.68 ( $z = 4.01, p < .001$ ) and  $.30 (z = .14, ns)$ , respectively, suggesting that there was significant variance in age-17 internalizing behavior but nonsignificant variance in change in internalizing behavior. The correlation between the intercept and slope factor was significant ( $4.13, z = 1.98, p < .05$ ), suggesting that the higher the age-17 internalizing behavior score, the steeper the rate of increase over time.

**Externalizing trajectory for boys**—The linear model of externalizing behavior for boys fit the data well,  $\chi^2(9) = 7.48, p = .59$ . The linear spline model for boys did not result in a significant improvement over the linear model,  $\chi^2(6) = 4.33, p = .63$ , nested  $\chi^2 = 3.15, df = 3, p > .25$ . Therefore, the linear model was used for analyses of boys' externalizing trajectories. The means of the intercept and slope factor were 7.29 ( $z = 13.22, p < .001$ ) and  $-.16 (z = -3.56, p < .001)$ , respectively. The negative slope factor mean indicated that there were significant decreases in boys' externalizing behavior over time.

The intercept and slope factor had variances of 44.08 ( $z = 7.05, p < .001$ ) and  $.21 (z = 4.12, p < .001)$ , respectively, indicating that there was significant variability in age-17 externalizing behavior and change in externalizing behavior. The correlation between age-17 externalizing and the slope factor was significant ( $2.12, z = 4.55, p < .001$ ), suggesting that the higher the age-17 externalizing behavior score, the steeper the rate of increase over time.

**Externalizing trajectory for girls**—The linear model of externalizing behavior for girls fit the data well,  $\chi^2(9) = 17.57, p = .04$ . The linear spline model for girls did not result in a significant improvement over the linear model,  $\chi^2(6) = 13.92, p = .03$ , nested  $\chi^2 = 3.65, df = 3, p > .25$ . Therefore, the linear model was used to analyze girls' externalizing trajectories. The means of the intercept and slope factor were 6.85 ( $z = 11.72, p < .001$ ) and  $-.12 (z = -2.65, p < .001)$ , respectively. The negative slope factor mean indicated that there were significant decreases in externalizing behavior over time.

The intercept and slope factor had variances of 45.92 ( $z = 6.93, p < .001$ ) and  $.19 (z = 4.21, p < .001)$ , respectively, indicating that there was significant variability in age-17 externalizing behavior and change in externalizing behavior. The correlation between age-17 externalizing behavior and the slope factor was significant ( $2.28, z = 4.84, p < .001$ ), suggesting that the higher the age-17 externalizing behavior score, the steeper the rate of increase over time.



## LGC Analyses: Multivariate Prediction Models

To examine our second aim, four multivariate LGC models were tested to examine the utility of impulsivity, fear/shyness, harsh discipline, maternal depressive symptoms, and marital adjustment (measured at age 5) in predicting boys' and girls' internalizing and externalizing growth curve patterns. The control variable (family income) was also included as a predictor in each model. In addition, prior to entry in the multivariate LGC models, the family environment predictors (maternal depressive symptoms, harsh discipline, and marital adjustment) were considered individually for their interaction with the two temperament variables (impulsivity and fear/shyness) in each model. If a Family Environment x Temperament interaction significantly predicted boys' or girls' externalizing or internalizing when examined in isolation, the interaction term was included in that multivariate LGC model. This method of determining which interaction terms to include was driven by the theoretical predictions in this study and by the necessity to limit the number of interaction terms in the models given the number of possible interactions (Kim, Capaldi, & Stoolmiller, 2003). Interaction terms that were significant in the multivariate LGC model were explored post hoc by saving each individual's slope factor score on the dependent variable, conducting a median split on the temperament variable, and then plotting the relationship between the second predictor and the slope factor score by temperament group using SPSS.

**Internalizing trajectory for boys**—In addition to the control variable and predictor variables, the Impulsivity x Marital Adjustment interaction term was significant when tested in isolation and was thus added to this growth model. Boys with higher levels of fear/shyness at age 5, who experienced harsh discipline and whose mothers reported high depressive symptoms at age 5, had higher levels of age-17 internalizing behavior. No variable significantly predicted change over time. The model accounted for 42% of the variance in age-17 internalizing behaviors and 9% of the variance in the rate of change. The parameter estimates, standard errors, and critical ratios for the multivariate LGC models for boys and girls' internalizing behavior are presented in Table 3.

**Internalizing trajectory for girls**—No interaction terms were significant when tested in isolation for girls' internalizing behavior; therefore, only the control variable and five predictors were included in this model. Fear/shyness and maternal depressive symptoms at age 5 were significantly and positively associated with the age-17 internalizing behavior. Maternal depression at age 5 was significantly and positively related to the rate of change, and family income was significantly and negatively associated with the rate of change, suggesting that girls whose mothers reported higher levels of depressive symptoms at age-5 and girls from lower income families showed greater increases in internalizing behavior over time. The model accounted for 49% of the variance in age-17 internalizing behavior and 100% of the variance in the rate of change. (Note that the variance for the slope was negative and therefore fixed at 0. This is common practice and resulted in a complete accounting of the slope variance.)

**Externalizing trajectory for boys**—In addition to the control variable and predictor variables, two interaction terms were included in this multivariate model: Impulsivity x Maternal Depressive Symptoms and Fear/Shyness x Maternal Depressive Symptoms. As shown in Table 4, impulsivity and harsh discipline at age 5 were positively associated with age-17 externalizing behavior. In addition, the Impulsivity x Maternal Depressive Symptoms interaction was negatively associated with age-17 externalizing behavior and the rate of change. Analysis of this interaction indicated that only when impulsivity was low did maternal depressive symptoms predict higher age-17 externalizing behavior and increases in externalizing behavior over time. The model accounted for 23% of the variance in age-17 externalizing behavior and 18% of the variance in the rate of change.

**Externalizing trajectory for girls**—In addition to the control variable and predictor variables, three interaction terms were included in this multivariate model: Impulsivity x Harsh Discipline, Impulsivity x Marital Adjustment, and Fear/Shyness x Harsh Discipline. Impulsivity and the Impulsivity x Harsh Discipline interaction were *positively* associated with age-17 externalizing behavior; while family income, fear/shyness, and the Fear/Shyness x Harsh Discipline interaction were *negatively* associated with age-17 externalizing behavior. The same variables were significant for the slope factor. Analysis of the significant interaction effects indicated that harsh discipline predicted higher age-17 externalizing behavior and increases in externalizing behavior when impulsivity was high but not when impulsivity was low. In the same vein, harsh discipline at age 5 predicted higher age-17 externalizing behavior and increases in externalizing when fear/shyness was low but not when fear/shyness was high. This model accounted for 46% of the variance in age-17 externalizing behavior and 36% of the variance in the rate of change. The Impulsivity and Fear/Shyness x Harsh Discipline interaction effects on girls' externalizing slopes are presented in Figure 2.

## Discussion

Prior research has shown that temperament and family environmental characteristics such as parenting, parent depression, and marital adjustment are among the strongest predictors of internalizing and externalizing behavior. Their importance is highlighted by studies that have shown subsequent decreases in child internalizing/externalizing behavior when such processes are targeted in interventions (Forgatch, DeGarmo, & Beldvas, in press; Stoolmiller, Eddy, & Reid, 2000). However, less is known about the role of temperament and how it might interact with family environmental characteristics to predict intervention efficacy. This report is a first step to inform intervention studies by using growth curve modeling to examine how temperament and family environment interact to predict changes in problem behavior from age 5 to age 17.

## Developmental Trajectories

The LGC analyses suggested that girls' internalizing behavior significantly increased over time, whereas boys' internalizing behavior remained fairly stable. This pattern of results resembles that of prior studies. For example, Bongers et al. (2003) found significant increases for girls' but not boys' internalizing trajectories from age 4–18 and reported mean levels at each time point that were nearly identical to those in the current study. The tendency for girls to show greater increases in depression and anxiety than boys during adolescence has been theorized to relate to girls' increased vulnerability and reactivity to stressful events involving others, girls' greater rumination about events and emotions, and sex-differential socialization pressures (Leadbeater, Blatt, & Quinlan, 1995; Nolen-Hoeksema, 1994; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). Interpersonal stressors such as relationship problems with peers or family members might be increasingly stressful during puberty, when girls develop more negative body images than boys (Allgood-Merten, Lewinsohn, & Hops, 1990). Such biological and environmental factors might precipitate increases in normative levels of girls' internalizing behavior during adolescence.

Conversely, externalizing behavior decreased for both sexes over time, replicating prior studies using the CBCL in this age range (e.g., Bongers et al., 2003). As with internalizing behavior, the mean levels of externalizing behavior at each age were nearly identical to those reported in population-based studies (Bongers et al., 2003). The decrease in externalizing behavior may have resulted in part because externalizing behavior is likely to be more overt during early childhood but more covert during late childhood and adolescence. For example, the frequency of overt physical aggression from childhood to adolescence generally declines, but more concealed externalizing behaviors such as vandalism and theft increase (Lacourse et al.,

2002; Tremblay, 2000). Thus, parents may not know the full range of externalizing behaviors in which adolescents engage, and externalizing behavior may be reported as declining during adolescence. One limitation of this study is the reliance of parent-reported (vs. self-reported) behavior problems. In addition, serious delinquent behaviors that are more common during adolescence than childhood are not captured by the CBCL (e.g., robbery and physical assault), which may also account for the decline found in our study. This measurement bias might also affect the internalizing trajectories, as parents might be better reporters of their child's internal symptoms (e.g., depression and anxiety) during childhood, whereas children might be better reporters during adolescence.

### **Predictors of Age-17 Internalizing/Externalizing Behavior and Change**

Maternal depression and child fear/shyness predicted internalizing behavior across a 12-year time span for both genders (and maternal depression predicted increases in internalizing for girls), suggesting either that these are two very powerful characteristics with long-term effects, or that they set into place a series of environmental events that mediate the association between early childhood characteristics and later internalizing behaviors. The unfolding of adolescent internalizing behavior might begin with the child's exposure at birth to a genetic and an environmental liability (i.e., a depressed parent). The genetic liability may translate into a fearful/shy temperament in early childhood, as there is evidence to suggest a genetic connection between early temperamental fearfulness and later anxiety/depression (Goldsmith & Lemery, 2000; Ono et al., 2002). Mediating processes during later childhood and adolescence might enhance the likelihood that early exposure to maternal depression and temperamental fear/shyness will result in the expression of internalizing problems during adolescence. Examining the known mediators of internalizing behavior, such as peer influences, environmental stress, and pubertal timing (e.g., Ge et al., 1994; Mesman & Koot, 2001; Nolan, Flynn, & Garber, 2003; Scaramella, Conger, & Simons, 1999) might help to further predict internalizing trajectories across childhood and adolescence. Regardless of the specific mediating mechanisms involved, the current results suggest that childhood fear/shyness and maternal depression could be used as markers for screening boys and girls at greater risk for developing internalizing problems in adolescence.

In contrast to the relatively sex-invariant predictors found for internalizing behavior, some clear sex differences were found in the prediction of externalizing behavior. For both sexes, higher age-5 impulsivity predicted higher age-17 externalizing behavior, replicating prior studies and suggesting the importance of individual vulnerabilities on risk for externalizing problems. However, there were marked sex differences in the effect of harsh discipline on externalizing behavior. Whereas age-5 harsh discipline directly predicted boy's age-17 externalizing behavior, it predicted girls' externalizing behavior only when it was accompanied by an individual vulnerability (i.e., low fear/shyness or high impulsivity). The absence of a main effect of harsh discipline of girls' externalizing behavior suggests that it might take more than pure environmental risk for girls to show high levels of a maladaptive behavior that is not well-accepted from females in this society. Beginning in toddlerhood, parents and teachers respond very differently to boys' and girls' aggressive acts, with girls learning early that they will receive more caregiver attention for communicative (vs. aggressive) acts (Fagot, Hagan, Leinbach, & Kronsberg, 1985). Reinforcement for culturally defined, sex-appropriate behavior might thus suppress externalizing behavior in girls, even when environmental risk factors are present (unless a temperamental predisposition to respond impulsively or fearlessly is also present).

Conversely, for boys, harsh discipline and impulsivity had direct effects on age-17 externalizing behavior, and maternal depression emerged as a significant predictor of age-17 externalizing behavior only when the child was low on impulsivity. Impulsivity might have a

sufficiently strong effect on externalizing behavior, such that maternal depression contributes significantly to externalizing problems only for boys without this individual vulnerability. The strength of impulsivity as a predictor for boys might also explain why the combination of harsh discipline and impulsivity did not predict additional variance in boys' externalizing behavior. Considering this effect in tandem with the independent effect of maternal depression on boys' internalizing behavior suggests that the presence of maternal depression predicts later internalizing behavior, whereas the combination of maternal depression with a child's nonimpulsive temperamental predisposition predicts boys' externalizing behavior. As is described above, including mediators such as peer relations during middle childhood might help explain these longitudinal effects.

Somewhat surprisingly, marital adjustment was not significant in any of our analyses, despite the fact that the bivariate correlations suggested significant relations between marital adjustment and externalizing and internalizing in childhood and adolescence for both genders. There was a strong, negative correlation between marital adjustment and maternal depression. Although the correlations between marital adjustment and the other predictors were nonsignificant, most approached significance. Thus, the bivariate correlations between marital adjustment and internalizing/externalizing might represent variance that is largely accounted for by the other predictors. When all predictors were included in the LGC models, little unique variance might have existed for marital adjustment. Additionally, it would be worth considering alternative operationalizations of marital adjustment that incorporate the number of transitions (rather than absolute status) or that examine changes in marital adjustment over time. The issue of change over time in predictors is further discussed in the last section of this report.

Considering the results for internalizing and externalizing together, several distinctions should be noted. First, although the significant predictors of behavior were somewhat similar for boys' and girls' internalizing behavior, sex differences emerged about which specific family environmental variables interacted with temperament to predict externalizing behavior. High impulsivity and low fear/shyness interacted with harsh discipline to predict girls' externalizing problems, whereas low impulsivity interacted with maternal depressive symptoms to predict boys' externalizing problems. This suggests separate gender pathways, with girls being more vulnerable to environments that have multiple reactive or insurgent characteristics (i.e., impulsivity, lack of fear, and harsh discipline) and boys being more vulnerable to environments with multiple depressive, internal state, or emotional characteristics (i.e., lack of impulsivity, and maternal depression). Additional research is needed to explore whether this sex difference can be replicated in other samples.

Second, temperamental characteristics predicted changes in externalizing behavior but not internalizing behavior. This finding may indicate that the relationship between fear/shyness and internalizing in boys is fairly stable across this development period. However, there was not significant change in boys' internalizing scores over time. Furthermore, although girls' internalizing behavior increased significantly over time, there was not significant variance around the changes scores. Thus, the model predictors were competing for a very small amount of variance in change in internalizing behavior. Inclusion of a sample selected for clinical levels of internalizing problems might provide additional variance (and additional utility) in examining the predictors of change in internalizing behavior over time.

The pattern of effects also highlights the importance of examining the co-occurrence of externalizing and internalizing problems. Prior research has shown that internalizing problems in childhood often lead to externalizing problems later in development (Mesman, Bongers, & Koot, 2001) and that externalizing and internalizing behavior co-occur at a high rate (Knox, King, Hanna, Logan, & Ghaziuddin, 2000). In addition, overlapping genetic factors underlie depressive and externalizing symptoms (O'Connor, McGuire, Reiss, Hetherington, & Plomin,

1998). An important next step is to examine the prediction to co-occurring problems using growth curve modeling (e.g., Keiley et al., 2003). Further, it is important to identify unique predictors of externalizing and internalizing behavior. Prior research indicates that temperamental withdrawal and parental internalizing symptoms uniquely predict children's internalizing problems, whereas parenting stress uniquely predicts externalizing behavior (Mesman & Koot, 2000).

In addition, the heterotypic nature of internalizing and externalizing behavior poses methodological challenges for the investigation of change over time. On the one hand, it is important to keep the measurement items and scaling constant to measure true change. If different items or scaling were used across time, one could not be certain whether growth/declines are truly being measured or whether changes seen resulted from change in the measurement. In addition, one assumption of current growth modeling programs is that the same methodological measurement/items (i.e., same metrics) are used at each time point. However, it is impossible to measure growth in behaviors that change developmentally over time (e.g., language skills in young children or specific attachment behaviors) without adjusting the measurement of those behaviors. If no change in measurement were allowed, many children would reach a ceiling (or floor), and growth over time would be misrepresented. Future methodological and statistical advances will greatly benefit our understanding of growth in theoretical constructs that change developmentally over time.

### Limitations and Future Directions

This study is the first to examine how temperament and the family environment interact to predict change in internalizing and externalizing behavior from early childhood through late adolescence. However, some limitations should be noted. First, our temperament measurement was not collected until age 5, when the second cohort began the study. Given evidence of bidirectional effects between parenting and child characteristics (Bates et al., 1998; Ge et al., 1996), it is likely that such effects had occurred prior to the onset of this study. Nonetheless, there is evidence to suggest that temperamental characteristics make unique and independent contributions to problem behavior, as studies beginning in infancy have found direct effects of temperament on problem behavior (Colder et al., 2002; Lemery, Essex, & Smider, 2002). Thus, it is probable that the temperamental effects found in this study represent both unique effects of temperament and interactive effects between temperament and family environment.

A related issue concerns the extent to which the temperament measure (CBQ) taps a different construct than the CBCL given their overlapping conceptual frameworks. Although there is some overlap in the individual items for the two scales, the vast majority of items tap different behaviors or emotions. In addition, the correlations between the CBQ and the CBCL ranged from  $-.14$  to  $.38$  for internalizing and from  $-.07$  to  $.49$  for externalizing (see Table 2), suggesting a significant amount of independence between the two measures. Lemery et al. (2002) showed that, when CBQ temperament items and behavior problem items with confounding content were excluded from analysis, the correlations between temperamental characteristics and behavior problems were unaffected. In addition, the predictive relationship between earlier temperament and later DSM-IV symptoms remains high with the purified CBQ, suggesting that the link between temperament and behavior problems is not measurement specific. Thus, it is unlikely that the predictive utility of temperament on the outcomes found in this study resulted from overlapping measurement issues.

However, as with any study, our findings may be measurement specific, and replication is needed. Our measures included mother and father reports and global interviewer ratings for our predictors and aggregated mother and father reports for our outcome measures. Our reliance on parent reports created significant method overlap. Increasing the method variance by

including self-report and observational data might offer additional utility in explaining problem behaviors.

Furthermore, the study predictors were measured at age 5 and demonstrated utility in predicting outcomes 12 years later. However, many of our predictors have only modest stability across this time period. Although including time-varying covariates was beyond the scope of the current study, testing such models is an important next step in understanding the impact of temperament and family environment over time, and understanding more about the mediating variables that may bridge early childhood characteristics with late adolescent outcomes.

Finally, our sample consisted of economically stressed, community-based families rather than a population-based or risk-selected sample. Although our study one of very few studies to include Caucasian families with limited financial resources, future work should focus on the equally important task of understanding how family environment and temperament interact in more ethnically diverse samples.

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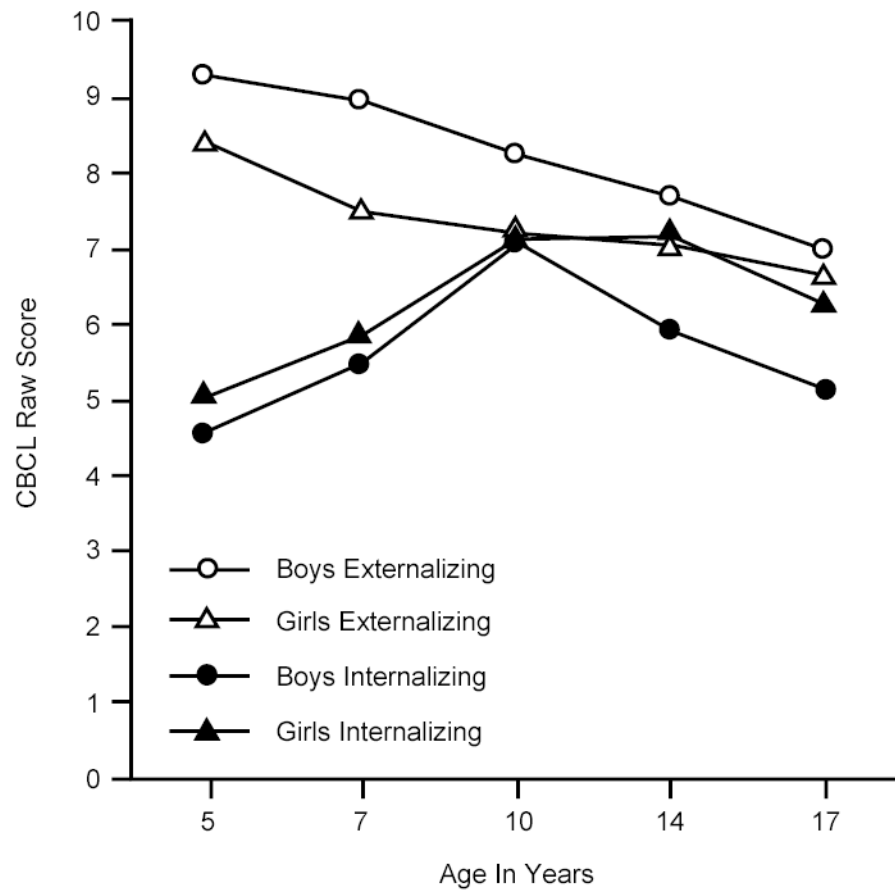
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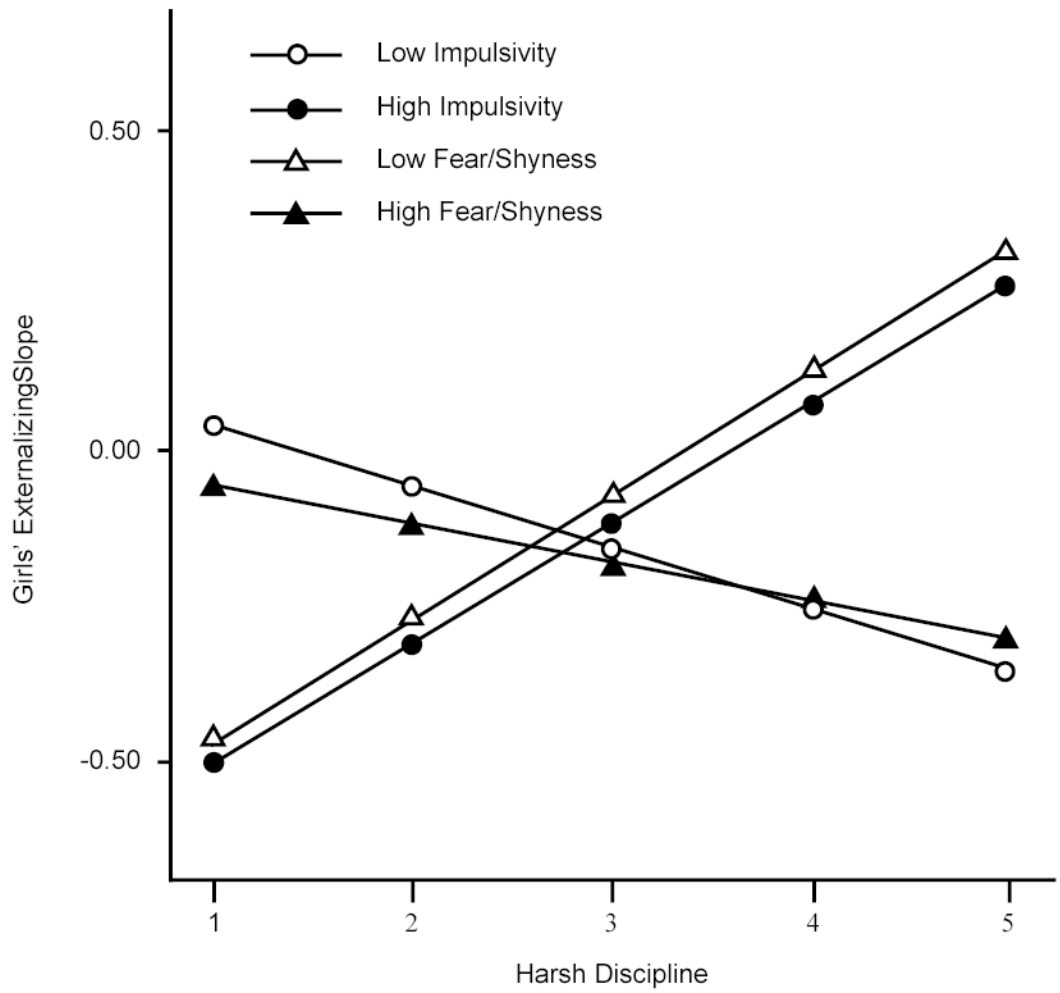
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**Figure 1. Trajectories of internalizing and externalizing behavior by sex**  
*Note.* Linear spline model for internalizing: Boys  $\chi^2(3) = 5.04, p = .17$ ; Girls  $\chi^2(3) = 5.12, p = .16$ . Linear model for externalizing: Boys  $\chi^2(9) = 7.48, p = .59$ ; Girls  $\chi^2(9) = 17.57, p = .04$ .



**Figure 2.** Interactions between harsh discipline and temperament on girls' externalizing slope scores.

**Table 1**

## Means and Standard Deviations

Variable	Boys: <i>M</i> ( <i>SD</i> )	Girls: <i>M</i> ( <i>SD</i> )
Internalizing behavior		
Age 5	4.6 (3.6)	5.0 (3.8)
Age 7	5.6 (4.4)	5.9 (5.0)
Age 10	7.0 (6.1)	7.0 (5.9)
Age 14	5.9 (5.2)	7.1 (6.1)
Age 17	5.3 (4.8)	6.3 (5.6)
Externalizing behavior		
Age 5	9.2 (5.7)	8.4 (5.1)
Age 7	9.0 (7.3)	7.4 (5.5)
Age 10	8.2 (7.3)	7.3 (6.4)
Age 14	7.6 (7.3)	7.2 (8.1)
Age 17	7.2 (7.2)	6.7 (7.2)
Predictors (age 5)		
Impulsivity	3.9 (0.5)	3.8 (0.5)
Fear/shyness	3.5 (0.7)	3.7 (0.7)
Harsh discipline	3.3 (0.5)	3.4 (0.5)
Maternal depressive symptoms	9.0 (6.8)	8.7 (7.1)
Marital adjustment	90.4 (44.6)	84.1 (49.5)

**Table 2**  
Correlations Between Internalizing & Externalizing Behavior and Predictors for Boys and Girls

Behavior	Impulsivity	Fear/ shyness	Harsh discipline	Maternal depressive symptoms	Marital adjustment
Internalizing					
Boys (age 5)	.02	.32 <sup>***</sup>	.20 <sup>**</sup>	.33 <sup>***</sup>	-.19 <sup>*</sup>
Boys (age 7)	-.06	.38 <sup>***</sup>	.22 <sup>**</sup>	.39 <sup>***</sup>	-.27 <sup>**</sup>
	.06	.25 <sup>*</sup>	.20 <sup>*</sup>	.16	-.13
Boys (age 10)	.11	.25 <sup>**</sup>	.19 <sup>*</sup>	.14	-.38 <sup>***</sup>
Boys (age 14)	.01	.16 <sup>*</sup>	.20 <sup>*</sup>	.29 <sup>***</sup>	-.32 <sup>***</sup>
Boys (age 17)					
Girls (age 5)	-.07	.21 <sup>*</sup>	.03	.40 <sup>***</sup>	-.24 <sup>**</sup>
Girls (age 7)	-.04	.33 <sup>***</sup>	.14	.46 <sup>***</sup>	-.35 <sup>***</sup>
	.07	.12	.10	.48 <sup>***</sup>	-.14
Girls (age 10)	.17 <sup>*</sup>	.09	.12	.29 <sup>***</sup>	-.29 <sup>***</sup>
Girls (age 14)	.23 <sup>**</sup>	.01	.07	.28 <sup>**</sup>	-.33 <sup>***</sup>
Girls (age 17)					
Externalizing					
Boys (age 5)	.42 <sup>***</sup>	.11	.39 <sup>***</sup>	.31 <sup>***</sup>	-.27 <sup>***</sup>
Boys (age 7)	.23 <sup>**</sup>	.19 <sup>*</sup>	.35 <sup>***</sup>	.37 <sup>***</sup>	-.26 <sup>**</sup>
	.17	.12	.32 <sup>***</sup>	.27 <sup>**</sup>	-.21 <sup>*</sup>
Boys (age 10)	.23 <sup>**</sup>	.16	.36 <sup>***</sup>	.21 <sup>**</sup>	-.34 <sup>***</sup>
Boys (age 14)	.10	.14	.26 <sup>**</sup>	.24 <sup>**</sup>	-.28 <sup>***</sup>
Boys (age 17)					
Girls (age 5)	.49 <sup>***</sup>	-.06	.27 <sup>**</sup>	.31 <sup>***</sup>	-.05
Externalizing					
Girls (age 7)	.39 <sup>***</sup>	.06	.20 <sup>*</sup>	.31 <sup>***</sup>	-.18 <sup>*</sup>
	.40 <sup>***</sup>	-.13	.21 <sup>*</sup>	.32 <sup>**</sup>	-.07
Girls (age 10)	.40 <sup>***</sup>	-.14	.26 <sup>**</sup>	.19 <sup>*</sup>	-.21 <sup>*</sup>
Girls (age 14)	.39 <sup>***</sup>	-.06	.21 <sup>*</sup>	.21 <sup>*</sup>	-.30 <sup>***</sup>
Girls (age 17)					

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

Table 3

## Multivariate Model of Internalizing Behavior for Boys and Girls

Variable	Boys			Girls		
	Estimates	Standard error	Critical ratio	Estimates	Standard error	Critical ratio
Effects on the intercept						
Family income	-0.06	0.12	-0.50	-0.20	0.18	-1.12
Impulsivity	0.01	0.86	0.01	0.85	0.62	1.37
Fear/shyness	1.63*	0.31	5.20	0.96*	0.45	2.11
Harsh discipline	1.00*	0.50	1.97	0.14	0.62	0.23
Maternal depressive symptoms	0.16*	0.04	4.23	2.63*	0.47	5.62
Marital adjustment	-1.28	1.58	-0.81	-1.85	1.99	-0.93
Impulsivity x Marital Adjustment	-0.12	0.66	-0.17	—	—	—
Effects on the slope						
Family income	0.09	0.07	1.34	-0.31*	0.15	-2.04
Impulsivity	0.33	0.37	0.89	0.62	0.55	1.12
Fear/shyness	0.17	0.15	1.12	0.34	0.33	1.04
Harsh discipline	0.14	0.20	0.71	0.14	0.42	0.33
Maternal depressive symptoms	-0.01	0.02	-0.84	0.83*	0.37	2.25
Marital adjustment	0.04	0.52	0.07	2.60	1.52	1.71
Impulsivity x Marital Adjustment	-0.10	0.25	-0.42	—	—	—
Residual variances						
Intercept	5.01*	1.26	3.98	5.81*	1.65	3.53
Slope	0.72	0.61	1.18	0.00	0.00	0.00
Factor correlations	1.02	0.78	1.31	2.14	1.32	1.61

\* p &lt; .05.

Table 4

Multivariate Model of Externalizing Behavior for Boys and Girls

Variable	Boys			Girls		
	Estimates	Standard error	Critical ratio	Estimates	Standard error	Critical ratio
Effects on the intercept						
Family income	-0.17	0.27	-0.63	-0.71*	0.29	-2.48
Impulsivity	4.19*	1.67	2.51	48.95*	18.23	2.69
Fear/shyness	-0.66	1.20	-0.55	-16.73*	6.36	-2.63
Harsh discipline	2.50*	1.19	2.10	-8.28	13.66	-0.61
Maternal depressive symptoms	8.44	7.22	1.17	-5.16	5.66	-0.91
Marital adjustment	-2.78	2.74	-1.01	62.71	52.16	1.20
Impulsivity x Maternal Depressive Symptoms	-3.63*	1.54	-2.36	—	—	—
Fear/shyness x Maternal Depressive Symptoms	2.37	1.21	1.95	—	—	—
Impulsivity x Harsh Discipline	—	—	—	7.15*	2.62	2.74
Impulsivity x Marital Adjustment	—	—	—	-19.18	14.23	-1.35
Fear/Shyness x Harsh Discipline	—	—	—	-4.65*	1.82	-2.55
Effects on the slope						
Family income	0.02	0.02	0.73	-0.06*	0.03	-2.54
Impulsivity	0.09	0.14	0.66	3.69*	1.58	2.33
Fear/shyness	-0.14	0.10	-1.35	-1.52*	0.55	-2.78
Harsh discipline	0.02	0.10	0.19	-0.41	1.18	-0.35
Maternal depressive symptoms	0.92	0.62	1.49	-0.02	0.49	-0.05
Marital adjustment	-0.30	0.25	-1.21	5.75	4.54	1.27
Impulsivity x Maternal Depressive Symptoms	-0.38	0.13	-2.85	—	—	—
Fear/Shyness x Maternal Depressive Symptoms	0.17	0.10	1.61	—	—	—
Impulsivity x Harsh Discipline	—	—	—	0.50*	0.22	2.23
Impulsivity x Marital Adjustment	—	—	—	-1.78	1.24	-1.44
Fear/Shyness x Harsh Discipline	—	—	—	-0.40*	0.16	-2.57
Residual variances						
Intercept	32.93*	5.35	6.15	25.28*	4.82	5.22
Slope	0.17*	0.05	3.40	0.12*	0.04	2.86
Factor correlations	1.88*	0.43	4.35	1.44*	0.40	3.62

\* p &lt; .05.