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A Cross-Domain Growth Analysis: Externalizing and Internalizing Behaviors During 8 Years of Childhood

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Abstract

In a sample of 405 children assessed in kindergarten through the seventh grade, we determined the basic developmental trajectories of mother-reported and teacher-reported externalizing and internalizing behaviors using cross-domain latent growth modeling techniques. We also investigated the effects of race, socioeconomic level, gender, and sociometric peer-rejection status in kindergarten on these trajectories. The results indicated that, on average, the development of these behaviors was different depending upon the source of the data. We found evidence of the codevelopment of externalizing and internalizing behaviors within and across reporters. In addition, we found that African-American children had lower levels of externalizing behavior in kindergarten as reported by mothers than did European-American children but they had greater increases in these behaviors when reported by teachers. Children from homes with lower SES levels had higher initial levels of externalizing behaviors and teacher-reported internalizing behaviors. Males showed greater increases in teacher-reported externalizing behavior over time than did the females. Rejected children had trajectories of mother-reported externalizing and internalizing behavior that began at higher levels and either remained stable or increased more rapidly than did the trajectories for non-rejected children which decreased over time.

Keywords

Externalizing behavior; internalizing behavior; growth analysis; cross-domain

The deleterious effects of externalizing and internalizing disorders on children, families, and communities have been well-documented (Kazdin, 1993; Loeber & Keenan, 1994). In order to understand more fully the stability, growth, and continuity of externalizing and internalizing behaviors, researchers need to investigate the trajectories of these behaviors over time (Dodge, 1993; Loeber & Farrington, 1994; Willett, Singer, & Martin, 1998). Modeling the growth of externalizing and internalizing behavior will provide information about sequential patterns such as escalations, diminutions, or other changes in these behaviors, making possible the development of more effective and timely interventions. Lahey *et al.* (1995) have suggested that longitudinal analysis of externalizing or internalizing scores is necessary for understanding the development of adjustment, whether they have reached diagnostic thresholds or not.

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Recently, researchers have begun to analyze longitudinal data using techniques uniquely suited to answering the questions about onset, stability, and change over time in these behaviors. In particular, latent growth modeling (Willett, 1994; Willett & Sayer, 1994), and hierarchical linear modeling (Bryk & Raudenbush, 1992), among other techniques, can be used to determine both initial status and rate of change in children's externalizing or internalizing behaviors. In general, these types of analyses have been restricted to examining change in only one domain at a time. However, advances in latent growth modeling (Willett & Sayer, 1996) now allow researchers to estimate the initial status and rate of change in several domains simultaneously, as well as to model how the changes in these domains relate to one another.

In this study we used latent growth modeling to examine the development of children's externalizing and internalizing behaviors as reported by teachers and mothers over an 8-year period from kindergarten to seventh grade. We also investigated whether the estimated initial status in kindergarten and rate of growth in each domain were related to the child's race, socioeconomic status, gender, and peer status in kindergarten. More importantly, by modeling children's growth simultaneously in these four closely related domains (mother-reported externalizing, mother-reported internalizing, teacher-reported externalizing, and teacher-reported internalizing behaviors), we were able to evaluate not only whether individual change in each domain was related to our predictors, but also whether the changes themselves were related to each other. This multivariate approach provided important information about the relationships between the trajectories of growth in these four domains that would not have been possible had we investigated growth in each domain separately. We are not aware of any other study that has investigated these particular cross-domain connections.

Data Source

In many studies, externalizing and internalizing scores are collected from both parents and teachers. The ratings from the two sources are then combined into a composite before any statistical analysis. However, evidence exists that would recommend separate consideration: First, correlations between teachers' and mothers' ratings are only moderate at best (Achenbach, McConaughy, & Howell, 1987; Bates, Pettit, Dodge, & Ridge, 1998) suggesting the situational specificity of disorders. Second, Dishion, Patterson, and Kavanagh (1992) found that parent and teacher ratings of the child's externalizing behavior were affected differently by type of therapeutic intervention. Third, in their study of externalizing and internalizing behaviors in children from the age of 3 to 6, Hinshaw, Han, Erhardt, and Huber (1992) found different patterns in parents' and teachers' reports. Only teachers' ratings of externalizing behaviors predicted observed noncompliance and aggression in the children, while only parents' reports of internalizing behaviors predicted observed isolation and withdrawal. In response to this evidence, we examined mothers' and teachers' reports separately, but in a multivariate multiple-domain growth model that would allow us to investigate their separate trajectories and the relationships among them simultaneously. We expected that internalizing and externalizing trajectories might differ according to reporter—teacher or mother.

Race and SES

Two other issues considered in the present study were race and socioeconomic status (SES). These covariates are often confounded, and teasing apart their separate effects on externalizing and internalizing behaviors has been difficult. Dodge, Pettit, and Bates (1994), in an analysis of the Child Development Project (CDP) data, found that African-American boys and girls were rated higher in externalizing behaviors by both teachers and peers in kindergarten through third grade, but that those effects were accounted for by SES. When SES was controlled, the effects of race vanished. Loeber, Green, Keenan, and Lahey (1995) also found that children from lower socioeconomic levels showed more symptoms of conduct disorder than did their

counterparts at higher levels of SES. In summary, the literature supports our hypothesis that African-American children and/or children from lower SES homes might have higher levels of externalizing behaviors than their counterparts at each age, although the effects of SES and race might be confounded.

Because stress is a major predictor of the onset of depression and anxiety (Garber & Hilsman, 1992), and stress is often associated with lower SES (Conger *et al.*, 1992; McLoyd, 1990; Patterson, Reid, & Dishion, 1992), internalizing behaviors might be expected to be higher in children from lower SES backgrounds. Dodge *et al.* (1994), in an analysis of the CDP data, found that third grade internalizing symptoms as reported by teachers were predicted by SES, but when the analysis controlled for concurrent externalizing symptoms, the relationship with internalizing outcomes disappeared. The opposite was not true; that is, externalizing symptoms continued to be associated with SES when the analysis controlled for concurrent internalizing symptoms. In our further analyses of this same data, we expected the trajectories of internalizing behaviors of children from lower SES backgrounds or from African-American families to begin at higher levels and to increase or remain fairly stable over time.

Gender

Another issue we considered was child gender. Relatively little is known about the development of girl's disruptive behaviors (Kazdin, 1993; Loeber, Lahey, & Thomas, 1991). Girls may tend to become somewhat less aggressive or competitive in their preschool years (Loeber & Hay, 1994) and have a lower incidence of the diagnoses of Oppositional Defiant Disorder and Conduct Disorder than do boys (Loeber & Keenan, 1994). The reaction of teachers and peers to aggression by boys appears to be more positive than their reaction to aggression by girls (Dishion *et al.*, 1994) and mothers have been found to endorse aggressive values more strongly for their sons than for their daughters (Dodge *et al.*, 1994). Beyers *et al.* (1998), in an analysis of the CDP data, found that boys had higher initial levels of externalizing behavior as reported by teachers but not by mothers.

We also asked about gender differences in the development of externalizing behaviors. According to previous studies (Loeber *et al.*, 1993; Patterson, 1994) the trajectories of boys' externalizing behaviors tend to increase or remain fairly stable through the period from kindergarten to seventh grade, but little is known about the trajectories of girls (Kazdin, 1993). In an analysis of the CDP data, McFadyen-Ketchum, Bates, Dodge, and Pettit (1996) reported that boys who had mothers who were observed to be highly controlling and low in warmth increased in aggressiveness at school from kindergarten to third grade. However, girls who had similar mothers decreased in aggressiveness over these four years. From this evidence, we hypothesized that boys' externalizing behaviors would increase or remain stable from kindergarten to seventh grade while girls' trajectories might begin at a lower level than the boys and decrease over time.

Although little is known about the development of internalizing disorders in children, gender differences in the rates of depression and other internalizing disorders have been shown to emerge in early adolescence (Cohen *et al.*, 1993; Fleming & Offord, 1990; Rutter, 1986; Walden & Garber, 1994). Loeber, Russo, and Stouthamer-Loeber (1994) have found that boys in early adolescence who were reported to have a high level of externalizing behaviors also showed a somewhat stable depressive mood, suggesting a possible linkage between internalizing and externalizing behaviors. Given these findings, we would hypothesize that the trajectories of internalizing behaviors for boys and girls might begin in kindergarten at comparable levels and remain similar throughout childhood, but diverge in adolescence.

Peer Rejection

A final factor we considered in the growth of children's adjustment was peer rejection. Children who are rejected by their peers show more aggressive behavior than those who are not rejected (Dodge, Coie, & Brakle, 1982; Dodge, Price, Coie, & Christopoulos, 1990). In fact, 40% of peer-rejected children are seen as more aggressive than other children (Offord & Bennett, 1994). In a sample of predominantly African-American children, followed from third grade to early adolescence, Coie, Lochman, Terry, and Hyman (1992) found that children who were *both* rejected by their peers and highly aggressive in third grade had higher scores on the parent ratings of externalizing behaviors at ages 12 and 13 than all of the other children in the study. Lochman and Wayland (1994), in a mixed-race sample of boys assessed in late elementary school and in high school, found that early peer rejection was associated with later externalizing behavior as rated by teachers. In summary, the association between early peer-rejection and externalizing symptoms has been well-documented (De Rosier, Kupersmidt, & Patterson, 1994; Gottman, 1977; Ollendick, Weist, Bordon, & Greene, 1992; Parker & Asher, 1987; Vuchinich, Bank, & Patterson, 1992). What has not been made clear, however, is whether children are rejected because they are aggressive or they become aggressive because they are rejected. In a step toward answering this question, it would be useful to consider the relationship between early peer rejection and the trajectory of externalizing problems over years of development, as we planned to do in the present study. We hypothesized that children who had been rejected in kindergarten would be more externalizing than those who had not been rejected and their trajectories would increase or remain stable over time compared to nonrejected children.

Similarly, children who are rejected by their peers have been found to have more internalizing symptoms than their nonrejected peers (De Rosier *et al.*, 1994; Coie *et al.*, 1992; Hilsman & Garber, 1995; Metalsky, Halberstadt, & Abramson, 1987; Panek & Garber, 1992). In the Coie *et al.* (1992) study reported above, children who were rejected by peers in third grade had higher scores on parent-rated internalizing symptoms at ages 12 and 13. Lochman and Wayland (1994) reported that children rejected in late elementary school had higher scores on teacher-rated internalizing symptoms in high school. As with externalizing symptoms, some question exists about the direction of this relationship (Little & Garber, 1995; Parker & Asher, 1987). Based on this literature, we hypothesized that children who had been rejected in kindergarten would have higher initial levels of internalizing symptoms than their nonrejected counterparts and that their internalizing trajectories would increase or remain stable over time.

Peer Rejection, Race, and Gender

A further complication we considered was the possibility that background characteristics might moderate peer rejection effects on growth. Some evidence exists for an interaction between peer-rejection and race in the prediction of externalizing behaviors. Kupersmidt and Coie (1990), in a mixed-race sample of fifth graders followed for 7 years, found that when early aggression and peer rejection were both entered into a regression analysis predicting later externalizing behavior, rejection status did not have an effect. When they reanalyzed their data for the white sample alone, both early rejection and aggression predicted later externalizing symptoms.

Coie, Terry, Lenox, Lochman, and Hyman (1995) assessed early peer-rejection and aggression in a sample of African-American children in third grade. Later they collected parent-reports and child-reports of externalizing and internalizing behaviors when the child was in sixth, eighth, and tenth grade. They found that the trajectories of parent-reported externalizing behavior from sixth to tenth grade were quite different for the children, particularly the males, who were aggressive and had been rejected in third grade by their peers. The trajectory for the

aggressive and rejected males began in sixth grade at a higher level than the trajectory for any of the other children and remained very stable over time. The trajectories for the aggressive but nonrejected and nonaggressive children showed a slight decrease in externalizing problems. For females, only early rejection had an effect on the trajectory of parent-reported externalizing behavior. Early-rejected girls had increasing trajectories. In this same study (Coie *et al.*, 1995), the trajectory of parent-reported internalizing behavior for the males was predicted only by early rejection in third grade and not by early aggression. The males who were rejected in childhood were seen by their parents as becoming more internalizing than the males who were not rejected. This increasing trajectory did begin to decrease a bit during adolescence. This pattern was similar for the females in the sample. The parent-reported internalizing trajectories of early-rejected females also increased over time.

Somewhat different results were reported by Burks, Dodge, and Price (1995). In a mixed-race sample of children followed from first to third grade, they found that boys who were subjected to chronic rejection were more at risk for developing internalizing problems as reported by teachers. However, third grade teacher-reported internalizing problem scores for the early peer-rejected girls did not differ from the scores for the nonrejected girls.

In summary, the literature supports our hypotheses that males who were rejected early in their lives would have higher levels of externalizing behaviors and more stable trajectories than would nonrejected males. Rejected females' trajectories also would increase, but they would begin at a lower level. Males who had been rejected early would show increasing internalizing symptoms whether reported by mothers or teachers, but the females who had been rejected early would have either increasing or nonincreasing trajectories over time depending upon the source of the data. Based on the evidence, overall, we would predict that the trajectories of externalizing and internalizing behaviors for children who had been rejected in kindergarten would begin at a higher level and increase more rapidly than those for children who had not been rejected.

We examined initial status and changes in externalizing and internalizing behaviors as reported by mothers and teachers for children across 8 years, from kindergarten to seventh grade. We also investigated how the development of these externalizing and internalizing behaviors was related to characteristics of the child (the child's race and gender) and his/her family (socioeconomic status) and one dimension of the child's socialization process, the child's peer status in kindergarten. We evaluated the trajectories of growth in these four closely-related domains and the interrelationships among them. Ours is the first study to investigate these particular cross-domain relationships. We hypothesized, not only that development in mother-reported externalizing or internalizing behavior might be related to development in similar teacher-reported behaviors, but that children's development in externalizing behavior (mother- or teacher-reported) might be linked to their development in internalizing behavior (mother- or teacher-reported.)

Method

Sample

The Child Development Project (CDP; Dodge *et al.*, 1994) is a three-site longitudinal study of 585 families who had 5-year-old children entering kindergarten in 1987 and 1988. Data were collected each year for 8 years (kindergarten to seventh grade). Because the number and spacing of assessments were the same across individuals, we had time-structured data, which are ideal for covariance structure analysis of change over time.

As in many longitudinal studies, data were missing at different time points for different children. The 15 families for whom no SES information was available were dropped from the

analysis. We examined the patterns of missing data for the remaining 570 families. We kept a family in the data set if they were not missing any data (n = 201), were missing only one time point at any time during data collection (n = 109), had dropped out of the study (n = 82), or if they were missing only two time points at the end of data collection (n = 13). This left us with a sample of 405 respondents.[6] Because we were including families who completed the study or only had minimal missing data along with all of the drop-outs, we felt we had a representative subsample of the original sample. No differences existed in the univariate statistics of our subsample (n = 405) for the variables of the analysis when compared to the full sample (n = 585) using t-tests and chi-square statistics. Of these 405 children, 82% were European-American and 18% were African-American, 48% were female and 52% were male, and 13% were rejected by their peers in kindergarten. The mean level of Hollingshead SES (Hollingshead, 1975) was 39.6. The demographics for the subsample chosen for this analysis are shown in Table I.

Measures

Outcome Variables—The outcome variables for this cross-domain growth analysis were mother- and teacher-reported externalizing and internalizing behavior scale scores from the 112-item Child Behavior Checklist (CBCL; Achenbach, 1991a) and the 112-item Teacher Report Form (TRF; Achenbach, 1991b) at kindergarten through seventh grade. Mothers completed the questionnaires in the summer or early fall of the school year; teachers did so in the winter or early spring of the same year. Externalizing behaviors are those considered to be aggressive, disruptive, or delinquent; internalizing behaviors are those considered to be withdrawn, anxious, somatic, or depressed. At each of the eight assessments, mothers and teachers indicated if the 112 problem behaviors listed on the CBCL and TRF were observed by them “often” (2), “sometimes” (1), or “rarely/never” (0). The externalizing behavior scale is composed of 33 items in the CBCL and 34 items in the TRF, so the maximum scores possible are 66 on the CBCL and 68 on the TRF. The internalizing behavior scale is composed of 31 items on the CBCL and 35 items on the TRF, yielding maximum possible scores of 62 on the CBCL and 70 on the TRF. Because the CBCL and TRF scores for both externalizing and internalizing behaviors were highly skewed toward the low end of the scales, we transformed the scores by adding one and taking the natural logarithm before further analysis. After analysis, we transformed back to the original metric in order to present the trajectories for average or prototypical children.

Between-Individual/Level-2 Predictors—Family SES (Hollingshead, 1975) was calculated according to the Hollingshead Four-Factor Index, combining mother's and father's years of education and occupation. When no father lived at home, the mother's data were double-weighted to score status. When entered into the cross-domain growth model, SES was centered at its mean level across the 405 children in the sample (39.6). Gender was represented by a dummy variable, coded “1” for females and “0” for males. Race was represented by a dummy variable, coded “1” for European-American and “0” for African-American. During peer sociometric interviews in kindergarten, children were shown pictures of all classmates and asked to rate how much he or she liked that classmate on a 5-point scale. Next, the child was asked to nominate up to three peers as especially liked and three peers as especially disliked. A mean popularity rating was calculated as the mean rating received from all classmates (scale = 1 to 5). Frequencies of liking and disliking nominations were summed and standardized within classrooms. A social preference score was calculated by subtracting the disliking score from the liking score and then standardizing within classrooms. Children who received a social preference score below −1, a liking score below 0, and a disliking score above 0 were classified as rejected by their peers. Peer-rejection in kindergarten was represented as

[6]Although we have included only 71% of the respondents, we have included over 78% of the total data available for inclusion.

a dummy variable, coded "1" for rejected and "0" for nonrejected. Gender, race, and rejection status in kindergarten were all centered at their mean levels across the 405 children before being entered into the growth model.

Analysis

Using the data analytic techniques of cross-domain growth analysis (Willett & Sayer, 1994, 1996), we investigated the growth of internalizing and externalizing behaviors in children as rated by mothers and by teachers over 8 years—kindergarten to seventh grade. In this analysis, we used a multiple-group approach (McArdle & Hamagami, 1991; Willett, personal communication) to deal with the missing data characteristics of longitudinal studies.[7] We began by determining the individual growth model ("within person" or "level-1" model) that best represented the change in these behaviors. After examining the individual growth curves of a representative sample of respondents—African-American and European-American, from varying levels of SES, males and females, rejected and nonrejected—we determined that the individual growth trajectory for these behaviors was basically linear.[8] That is, we decided that the most applicable model of individual change in these domains was a straight line over time; thus, the level-1 growth model contained two individual growth parameters: (1) an intercept parameter representing initial status, and (2) a slope parameter representing rate of change. Each child's intercept and slope terms would be estimated.

We fit a baseline model with time centered at kindergarten (intercept) in which the measurement error variances of the outcome variables were hypothesized to be heteroscedastic (varying across time periods and raters). In our hypothesized baseline model we also allowed the measurement error variances within raters to covary within each time period.[9] We fit all of our models using LISREL. This fitted baseline model, before adding predictors, is Model I in Table II.

This baseline "no predictors of change" model fit the data well (Goodness of Fit Index, GFI = .99; Standardized Root Mean Square Residual, Standardized RMSR = .03).[10] We then asked whether the between-person variation in the growth parameters in this baseline model was related to variation in the chosen predictors. The hypothesized link between the individual growth parameters from "level-1" and the predictors of change gave us our "between-person" or "level-2" statistical models. See Table II for the series of nested models that we fit (Willett; & Sayer, 1994,1996). As we added our predictors to the baseline model, one at a time, we were able to determine if that predictor was significantly predicting the growth parameters by fitting a reduced model in which that predictor's effects on these parameters were constrained to be zero and conducting the appropriate $\Delta\chi^2$ test. A path model of our latent growth model with predictors is presented in Fig. 1.

[7]In the multiple-group approach to handling missing data, we formed 15 groups of respondents with different patterns of missing data. One of the groups had no missing data, the rest were missing data in one or more waves. We then estimated the models using the data that was available in each group, constraining the estimation of missing paths to be the same as those in the group with no missing data. In this manner, the information from the 14 groups with missing data could help in the estimation of the model parameters for the entire sample of 405. The first author may be contacted for further information about the multigroup aspect of this analysis.

[8]We tested this assumption by adding a quadratic term to our initial baseline model and conducting a $\Delta\chi^2$ test. This test indicated that the quadratic term was not significant. Growth was linear.

[9]We allowed the measurement error variances of mothers' rating of externalizing behaviors to covary with the measurement error variances of mothers' rating of internalizing behaviors at each time point. The measurement error variances of teachers' ratings were also allowed to covary across the two types of behaviors. Our assumption was that the measurement errors that each mother or teacher made when assessing the child's behavior, either internalizing or externalizing, were related.

[10]A model with a GFI index above 0.90 and a Standardized RMSR of less than 0.05 is considered to have adequate fit (Bollen, 1989).

Results

As we added the predictors of interest to the baseline model one at a time, we tested whether adding that predictor helped us to predict the growth parameters. The delta chi-square statistics (with their associated change in degrees of freedom) indicated that the changes in externalizing and internalizing behaviors as reported by mothers and teachers did depend upon race, SES, gender, and rejection status. The final model (Model V-a) fit the data well (GFI = .95; Standardized RMSR = .04). Table III presents the estimated average growth parameters for (logged) externalizing and internalizing behaviors as rated by mothers and teachers, controlling for race, SES, gender, and rejection status in kindergarten.

Most of the estimated parameters for the mean level of "true"[11] initial status (intercept at kindergarten) and the average rate of "true" change per year (slope) were different from zero. The estimates for the average rates of change for mothers' and teachers' reports of internalizing symptoms were not different from zero. Little change existed in internalizing behaviors.

Figure 2 illustrates the fitted average growth trajectories for externalizing (Fig. 2a) and internalizing behaviors (Fig. 2b), rated by mothers and teachers, between kindergarten and seventh grade in the original metric of those scores, controlling for SES, race, gender, and rejection status in kindergarten. This is, the children represented in these figures are of average race, SES, gender, and rejection status. In this sample this represented an average European-American male from a family with an SES score of about 40 who had not been rejected in kindergarten. These trajectories were all well within normal ranges. The estimated true logged score of mother-rated externalizing behavior in kindergarten (Intercept = 2.2455, $p < .001$, from Table III) was significantly higher than the estimated true logged score for teacher-rated externalizing behavior (Intercept = 1.2502, $p < .001$).[12] Over time, mothers reported that the externalizing behaviors of their children significantly decreased (Slope = −.0492, $p < .001$), while teachers reported that the externalizing behaviors of the children significantly increased (Slope = .0195, $p < .01$). For internalizing behavior, over time the mothers and teachers rated the children as being fairly stable in their internalizing behaviors (slope for mother-rated = −.0016, p = ns; for teacher-rated = .0100, p = ns). The estimated rates of change for these behaviors were zero. At kindergarten, the estimated score of mother-rated internalizing behavior (Intercept = 1.6845, $p < .001$) was significantly higher than the estimated score of teacher-rated internalizing behavior (Intercept = 1.3588, $p < .001$).

To determine how well the predictors explained growth in each of the adjustment domains we calculated a pseudo-R^2 statistic ($[\sigma^2_{\text{baseline}} - \sigma^2_{\text{final}}]/\sigma^2_{\text{baseline}}$) for each growth parameter. These statistics indicated the proportional reduction in variance achieved by adding the four predictors (Bollen, 1989). For mother-reported externalizing behavior, race, SES, gender, and rejection status reduced the variance in the intercepts by 19.8% and the slopes by 11.1%; for teacher-reported externalizing the four predictors reduced the amount of predictable variance in the intercepts by 26.9% and in the slopes by 8.9%; for internalizing behaviors, the four predictors reduced the variance in mother-reported intercepts by 17% and in the teacher-reported

[11] In classical test theory, when describing the psychometric properties of scores, a distinction is made between the "observed" score and "true" score. In latent growth modeling, we continue to do this because we are interested in changes in the underlying "true" score, not the "observed" score. Consequently, for each of the four domains, we estimated the "true" initial level at kindergarten (intercept) and the rate of "true" change (slope). It is important to keep in mind that the "true" initial level at kindergarten, the intercept, is not the "observed" score the child obtained in kindergarten, but an estimate of where his/her estimated trajectory intersects the axis when time is zero, which is kindergarten (Willett, 1994).

[12] To test whether the intercepts for mother-reported and teacher-reported externalizing behaviors were significantly different, we fit a model constraining these two parameter estimates to be equal and conducting a $\Delta\chi^2$ test. For both mother-reported and teacher-reported externalizing and internalizing behavior, we were able to reject the null hypothesis chat these estimates were equal.

intercepts by 25.9%. The four predictors explained none of the predictable variance in the slope parameters for teacher-reported internalizing behaviors.

Predictors of the Estimated Average Growth Parameters

Figure 3 (a–d) illustrates the effects of the predictors on the estimated average growth parameters by showing fitted growth trajectories for each domain of interest—mother- and teacher-rated externalizing and internalizing behaviors—for specific types of children. These fitted trajectories have been calculated from the estimates presented in Table III.[13] The fitted trajectories represent typical rejected and nonrejected males and females at high (75%) and low (25%) levels of SES, controlling for race. These fitted trajectories have been transformed from the logged estimates back into the original metric of the CBCL and the TRF. We will describe the results in detail for the first domain, mother-reported externalizing behaviors, but in the remaining domains we will describe the results more briefly. For all of the results presented, the effects of any one predictor is controlled for the other predictors in the model.

Externalizing Behaviors—Mother Reported—Race had an effect on the mean level of initial status in mother-reported externalizing behaviors over and above the effect of SES on the mean level (see Table III). African-American children had initial status scores on mother-reported externalizing behaviors at kindergarten that were lower, on average, than those of European-American children.

SES was related both to the initial level and to the rate of change in this domain. Children from higher SES homes had lower initial status on mother-reported externalizing behaviors than did children from lower SES homes. In Fig. 3a, we can see the effect of SES on initial level and slope. Children with higher SES levels had lower initial levels of mother-reported externalizing behaviors than did children with lower SES levels. Moreover, children who were from higher SES homes had trajectories of mother-reported externalizing behaviors that were decreasing more rapidly at a borderline-significant degree than were those of children from lower SES homes, Because this effect on the slope was small, it is difficult to see in Fig. 3a, except for the prototypical rejected males. A prototypical male from a high SES home who was rejected in kindergarten had a fitted trajectory for mother-reported externalizing that was decreasing over the 8 years, while a prototypical male from a lower SES home who was rejected had a fitted trajectory of mother-reported externalizing that actually was increasing, approaching the clinical range for these scores. For each type of child represented in this plot, the fitted trajectory for the higher SES children began at a lower level and decreased more rapidly than did the fitted trajectory for the children from lower SES homes.

Gender, although a significant predictor when added to the model (see $\Delta\chi^2$ test in Table II), was not significantly related to the estimates of initial level or rate of change in the domain of mother-reported externalizing behaviors. Rejection status in kindergarten, however, had an effect on both the initial level of mother-reported externalizing behaviors and the rate of change. Children who were rejected in kindergarten had higher initial levels of mother-reported externalizing symptoms than children who were not rejected. The trajectories for children who were rejected in kindergarten, although beginning at a higher level, decreased less rapidly than did those for children who were not rejected. In Fig. 3a, a prototypical female from a low SES home who had been rejected had a fitted trajectory that began at a higher level than did the fitted trajectory for a prototypical female from a similar SES home who had not been rejected in kindergarten. However, the female who had been rejected had a less steeply decreasing trajectory than did the female who had not been rejected. The effect of rejection status on the

[13]The estimates in Table III are not standardized, and they have been estimated for the effects of centered variables, therefore, they are not directly interpretable.

slope was particularly apparent in the fitted trajectory for a prototypical rejected male from a low SES home. His trajectory actually was increasing toward clinical levels, while the fitted trajectory for a nonrejected male from a similar home was decreasing. For each type of child represented in this plot, the fitted trajectory for the rejected children began at a higher level and was decreasing at a slower pace than was the fitted trajectory for the nonrejected children.

Externalizing Behaviors—Teacher Reported—In this domain, race had an effect on the rate of change. The rate of change in externalizing behavior as assessed by teachers increased less rapidly for European-Americans than for African-Americans. This effect cannot be seen in Fig. 3b because it controls for race by holding it at its mean. In Fig. 4a, however, where SES is held at its mean and race is varied, we can see that teachers reported African-American children as increasing in externalizing behaviors, while they reported European-American children as decreasing these behaviors. When we include the fact that teachers reported rejected children as more externalizing on entry to kindergarten than the nonrejected children, we can see the combined effects of rejection status and race on the fitted trajectories. The fitted trajectory for a prototypical African-American male who was rejected in kindergarten was very steep, approaching clinical levels, while the fitted trajectory for a European-American male who was similarly rejected was actually decreasing. For each type of child represented in this figure, the African-American child's trajectory was increasing, while the trajectory for a similar European-American child was decreasing. SES only had an effect on initial status. As shown in Fig. 3b, children from lower SES homes showed higher true initial levels of teacher-reported externalizing behavior in kindergarten than did those children from higher SES homes.

Gender had an effect on the initial status and the rate of change of teacher-reported externalizing behavior. In Fig. 3b, for each type of child, the fitted trajectory for females showed a lower initial level of teacher-reported externalizing behaviors in kindergarten than the corresponding trajectory for that type of male. Also, the fitted trajectory for each type of female decreased, while the corresponding trajectory for a male of that type increased.

Children who were rejected in kindergarten had higher initial levels of teacher-reported externalizing behavior in kindergarten than did the children who were not rejected. In Fig. 3b, an average rejected female from a low SES home had a higher initial level of teacher-reported externalizing symptoms than did a female from a similar home who had not been rejected.

Internalizing Behaviors—Mother Reported—African-American children had lower initial levels of mother-reported internalizing symptoms in kindergarten than did the European-American children. In Fig. 4b, in which SES is held at its mean and race is varied, for each type of child represented, the African-American children had a lower initial level than did similar European-American children.

Rejection status had an effect on the slope of mother-reported internalizing behaviors. As shown in Fig. 3c, children rejected in kindergarten tended to be seen by their mothers as increasing in internalizing symptoms, while those who were not rejected tended to be seen as becoming less internalizing. These trajectories for rejected children approached clinical levels.

Internalizing Behaviors—Teacher Reported—As shown in Fig. 3d, for each type of child, the initial level of internalizing symptoms reported by teachers was higher for children from lower SES homes than for those from higher SES homes. Rejection status also had an effect on initial levels of teacher-reported internalizing symptoms in kindergarten. Fig. 3d shows that children who were rejected in kindergarten had higher initial levels of teacher-reported internalizing behaviors in kindergarten than did those who had not been rejected.

Within Domain Relationships

Overall, we found that initial status in mother-reported externalizing behaviors was not related to the later development of those behaviors, but initial status of mother-reported internalizing behavior was related to later growth in that domain. In contrast, initial status in teacher-reported externalizing behaviors was related to the later development of those behaviors, while initial status of teacher-reported internalizing behaviors was not related to later growth in that domain.

Specifically, the correlation between the estimated slope and intercept for mothers' reports of externalizing behaviors was nearly zero (r = .04, p = ns) (see Table IV) but the correlation between the slope and intercept for mothers' reports of internalizing behaviors was significant (r = −.24, p < .01). The slope and intercept for teachers' reports of externalizing behaviors were significantly correlated (r = −.22, p < .01), but not for teachers' reports of internalizing (r = −.18, p = ns). Children's mother-reported externalizing trajectories were not related to where the children began on those behaviors, but their mother-reported internalizing trajectories were related to their initial levels. In contrast, children's teacher-rated externalizing trajectories were related to where the children began in kindergarten while their teacher-reported internalizing trajectories were not related to initial levels.

Across-Domain Relationships

To determine how growth in one domain was related to growth in another domain, we examined the estimated correlations among the growth parameters, controlling for the predictors (Table IV). All of the correlations presented in this section were controlled for race, SES, gender, and rejection status.

Relationships Across Raters Within Domains—Overall, we found that the trajectories of mother-reported externalizing and internalizing behaviors were related to the corresponding teacher-reported trajectories. The initial levels of mother-rated and teacher-rated externalizing behavior (r = .39, p < .001) were correlated, as were initial levels of mother- and teacher-rated internalizing behaviors (r = .28, p < .01). Children's initial levels on mother-reported adjustment scores were similar but far from identical to their initial levels of corresponding teacher-reported scores. Children's changes in levels of externalizing symptoms over time were rated similarly by the mothers and teachers (r = .29, p < .05). A similar relationship existed, but to a greater extent, for internalizing behaviors (r = .45. p < .01). In other words, on average, children who were seen by their mothers as increasingly externalizing or internalizing over the 8 years were seen similarly by their teachers. Also, children whose initial status on teacher-rated externalizing behavior in kindergarten was high tended to develop a bit more rapidly in their mother-reported externalizing behaviors (r = .30, p < .10), and vice versa. Some concordance existed across raters within behavior domains.

Relationships Within Raters Across Domains—Some concordance existed within raters across behavior domains. The trajectories of mother-reported externalizing and internalizing behaviors were related in a similar pattern to the one across raters discussed above, but for teacher-reported behaviors the findings were somewhat different. Specifically, initial status of mother-reported externalizing behaviors in kindergarten was related to initial status of mother-reported internalizing behaviors at kindergarten (r = .60, p < .001). If children's initial status on externalizing symptoms in kindergarten was high their initial status on internalizing symptoms was also high and vice versa. The correlation between initial levels of teacher-reported internalizing and externalizing behaviors in kindergarten was not significant (r = .1.3, p = ns).

Mothers who rated their children as increasingly externalizing, also reported that their children were increasingly internalizing (r = .61, p < .001). Alternatively stated, children rated by their

mothers as decreasing in externalizing symptoms also decreased their internalizing symptoms. However, children's rates of change in internalizing and externalizing behavior as seen by teachers at school were not related to each other (r = .02, p = ns).

Children with high initial status on teacher-reported externalizing behaviors in kindergarten were seen by later teachers as becoming increasingly internalizing (r = .43, p < .001). This relationship also meant that those children who had low initial levels of externalizing behavior in kindergarten were rated as showing fewer internalizing symptoms over time.

Relationships Across Raters and Across Domains—Similarities in trajectories also existed across raters and across behavior domains. Initial status in externalizing behavior as reported by mothers was related to the rate of change in internalizing behavior as rated by the teacher (.25, p < .05). Children whose initial status on mother-reported externalizing behaviors in kindergarten was high tended to be seen by their teachers as developing more rapidly in their internalizing behaviors over time than those children with lower initial levels, and vice versa. This rate of change in internalizing behavior as seen by teachers was also related to the rate of change in externalizing behavior as reported by mothers (.33, p < .05). Children who were seen by their teachers as developing more rapidly in their internalizing behaviors were rated by their mothers as developing more rapidly in their externalizing behaviors. Again, it appeared that children who were becoming more externalizing were also becoming more internalizing. Also, children with high initial status on teacher-reported externalizing were seen by their mothers as increasingly internalizing over time (.24, p < .05) and vice versa.

In the only notable, although marginally significant, negative cross-domain correlation, children with high initial status on mother-reported internalizing symptoms in kindergarten tended to have low initial status on teacher-reported externalizing symptoms (r = −.09, p < .10), and vice versa. This could reflect a slight inhibitory effect of anxiety tendencies at home upon aggression at school.

Discussion

We are struck by the fascinating patterns in the development of internalizing and externalizing behavior that emerged in this study. In this discussion, we will focus first on the effects that the demographic and peer status variables had on initial levels of externalizing and internalizing behavior in kindergarten and on how they changed over time. Second, we will also address the issue of what are the differences across our informants—mothers and teachers. Third, we will focus on how the development of internalizing and externalizing behaviors, as reported by mothers and teachers, is different within and across these four domains. Finally, we will address the limitations and strengths of this study.

Predictors of Initial Levels of Adjustment

To focus first on initial levels of adjustment, mothers and teachers both reported wide variations in their children's externalizing behavior at kindergarten age, with levels differing according to child peer rejection status in kindergarten and family SES. In general, children who turned out to be rejected by their kindergarten peers showed the highest levels of externalizing as reported by mothers upon entry to kindergarten and by teachers later in the year. Moreover, lower SES children were seen by both mothers and teachers as having higher initial levels of externalizing behavior problems than higher SES children. Previous literature suggests that children in poverty are more at risk for psychopathololgy (Duncan, Brooks-Gunn, & Klebanov, 1994; McLoyd, 1990). Mothers and teachers differed in how they saw externalizing behavior relating to gender, with teachers reporting significantly more externalizing behavior in boys than girls, but mothers not doing so. This may reflect a higher level of opportunity for boys to conflict with demands for restraint at school than at home. Mothers and teachers also differed

in how ethnic group moderated behavior, with mothers seeing African-American children as lower in initial levels of externalizing than European-American children and, to a borderline-significant degree, lower in internalizing behaviors, but teachers not seeing such differences. African-American families' cohesiveness and resilience might protect their children against the development of externalizing and internalizing behaviors prior to entry into kindergarten (Spencer & Dupree, 1996). Alternatively, African-American and European-American mothers may ascribe different meanings to the internalizing symptoms listed on the CBCL. Mothers and teachers also differed in how child rejection status affected initial levels of perceived internalizing behavior, with teachers, but not mothers, reporting significantly higher levels of internalizing symptoms in children rejected in kindergarten and those from lower SES homes.

Predictors of Adjustment Over Time

To consider patterns over time, the most important predictor of later mother-reported externalizing behavior was rejection status. The children who were rejected in kindergarten had trajectories of mother-reported externalizing symptoms that began high in kindergarten and remained fairly stable over these 8 years, while the nonrejected children's trajectories began at a lower level and decreased over time. These findings replicate those of several other researchers that children who are rejected at entry into kindergarten are at risk for the development of externalizing difficulties (Coie *et al.*, 1992; Coie *et al.*, 1995; DeRosier *et al.*, 1994; Dodge *et al.*, 1990; Offord & Bennett, 1994). Unlike Lochman and Wayland (1994), however, we did not find that early peer rejection was associated with significant development of externalizing behavior as rated by teachers. Rejected children were seen by teachers as more externalizing upon entry into kindergarten, but the slight increases in their trajectories were not significantly different from those for the nonrejected children.

As others have found, rejection status in kindergarten also had an effect on the development of mother-reported internalizing symptoms (Coie *et al.*, 1992; Lochman & Wayland, 1994). Although teachers reported higher initial levels of internalizing symptoms for rejected children, only the mothers reported increasing levels of symptoms over time for these children. Perhaps the first effects of children rejected in kindergarten are more noticeable to teachers than to mothers. Teachers have the opportunity to watch children in interaction with a great many other children, which may provide evidence that mothers may not have about the process of rejection by peers. Alternatively, high levels of internalizing in school may lead to increased risk of peer rejection (e.g., because of behaviors such as irritability and social withdrawal). The pattern of mothers, but not teachers, reporting increasing internalizing symptoms over time may reflect children expressing their distress in the form of increasing internalizing symptoms in the safer situation of home, rather than in school.

While race had no effect on mother reports of externalizing over time, the teachers reported that the African-American children had increasingly poor adjustment over these 8 years. We are intrigued by these findings. Teachers reported African-American children as being increasingly externalizing in their behavior, while they reported European-American children as actually decreasing. SES had no effect on this slope parameter. How can these ethnic differences be explained?[14] We do not have a good explanation of this pattern. However, one speculation is that it describes a progressive alienation from the schools of African-American children across the elementary grades in our sample.

Gender had no effect on mother-reported externalizing behavior at kindergarten or over time. Given the research that indicates mothers may endorse aggression more for boys than for girls,

[14]Beyers *et al.* (1998) did find this same effect analyzing an overlapping CDP data set but with different predictors and methods (hierarchical linear modeling).

this was a bit surprising (Dishion *et al.*, 1994; Dodge *et al.*, 1994). For teachers, however, the story was quite different. Teachers reported girls as lower than boys in initial levels of externalizing behaviors and as becoming less externalizing over time. This finding is in line with the basic research on gender differences in externalizing behaviors in children and preadolescents (Loeber & Hay, 1994; Loeber & Keenan, 1994).

Not only did children from lower SES homes have higher initial levels of externalizing symptoms, whether reported by mothers or teachers, but SES also had a slight effect on the development of mother-reported externalizing behaviors. Children from lower SES homes exhibited greater acting-out behavior over time than did the children from higher SES homes, according to their mothers. These findings are further evidence that children from lower SES families may be at greater risk for psychopathology (Dodge *et al.*, 1994; Duncan, Brooks-Gunn, & Klebanov, 1994; McLoyd, 1990).

Informant Differences

Externalizing behaviors have shown stability over time in many studies, particularly when data from several informants have been combined into a composite (Conduct Problems Prevention Research Group, 1992; Loeber *et al.*, 1993; Patterson, 1994). In this study, the trajectory of mother-reported externalizing behavior for an average child in this sample, holding race, SES, gender, and rejection status at their means, decreased over time, while the trajectory of teacher-reported externalizing behavior for this same child began at a lower initial level than reported by mothers, but increased slightly. These findings suggest that the development of externalizing traits differ according to domain, supporting previous observations (e.g., Achenbach *et al.*, 1987; Dishion *et al.*, 1992). Kindergarten teachers may be less likely to expect their pupils to behave properly than teachers in the later grades and mothers may become rather inured to their children's externalizing behaviors over time. An alternative scenario is that, in fact, as the average child is decreasing his or her externalizing behaviors at home, he or she is increasing them at school. On the basis of our results, we would suggest that the development of externalizing behaviors is a complex process and while combining scores across informants may augment detection of continuity, it may also obscure the detection of differing trajectories in different domains.

The initial level of mother-reported internalizing behavior in kindergarten for the average child in this sample was at a significantly higher level than the initial level of the same behavior reported by teachers. Perhaps, as has been suggested, mothers are better reporters of internalizing symptoms than are teachers (Coie *et al.*, 1992; Hinshaw *et al.*, 1992). Because many internalizing behaviors are relatively subtle and private, mothers may have more opportunity to observe situations in which these behaviors occur. The trajectory of internalizing symptoms over time for an average child in this sample was quite stable, varying only slightly from the estimated initial level in kindergarten. This finding may reflect the stability of internalizing behaviors during preadolescence as suggested by the literature (Garber & Hilsman, 1992; Rutter, 1986), or if children are actually changing, measurement insensitivity.

Within-Domain Relationships

In this study, the intercepts and slopes of mother-reported externalizing behavior were not related while the intercepts and slopes for teacher-reported externalizing behavior were. These relationships suggest that children showing high levels of externalizing behavior in kindergarten are more likely to be seen by later teachers as increasing in externalizing behavior, although children rated initially as externalizing by their mothers were seen as much more variable over time—increasing, decreasing, or remaining stable in those behaviors. Perhaps early externalizing behaviors are seen differently in the home and school environments or the implications of these behaviors are different in the two settings. As some disruptive children

become more independent in middle childhood, mothers may cease to have as many discipline conflicts with them, reporting fewer externalizing symptoms, while other disruptive children do not become more independent and their mothers may have as many or more conflicts with them, reporting more symptoms. Concomitantly, teachers may be increasingly sensitive to failures to modulate disruptive behaviors, expecting children to improve their performance, so a child who initially lags behind in compliance may be seen as increasing in salient behaviors over the years of middle childhood. From an alternative perspective, perhaps teacher expectations provide a continuing point of conflict, and many children with conduct problems become increasingly angry and defiant.

In contrast to the noncorrelation between initial levels and slope of mother-rated externalizing, there was a correlation between initial level and slope of mother-rated internalizing. Children seen by mothers as high on internalizing at kindergarten entry were seen as increasing in those behaviors. On the other hand, teachers saw the children's internalizing as more variable through the 8 years. Again, perhaps children are behaving differently in these different domains. Alternatively, perhaps mothers are more observant of internalizing behavior than are teachers, or children are more likely to show anxiety-type symptoms to their parents rather than their teachers.

Across-Domain Relationships

Despite our argument for separate analysis of mother and teacher perceptions, we also note from the between-domain relationships among the estimated growth parameters that some concordance does exist between mothers' and teachers' reports for individual children. These findings support previous observations that children who exhibit externalizing or internalizing behaviors at home often have difficulty with these behaviors at school both on entry into kindergarten and in the years following (Hinshaw, Lahey, & Hart, 1993). In addition, we found that children who had high initial levels of teacher-reported externalizing symptoms were reported to be increasingly externalizing by their mothers. Perhaps poorly regulated or aggressive children have trouble in kindergarten, experiencing difficulty with stressors and negative learning events, which they transfer eventually to the home domain.

As has often been found, children's initial levels of mother-reported externalizing behaviors were moderately correlated with initial levels of mother-reported internalizing behaviors (Hinshaw *et al.*, 1993). Beyond this, children with increases in mother-reported externalizing behavior also showed increases in mother-reported internalizing behaviors, and vice versa (Hinshaw *et al.*, 1993). This finding suggests that mothers who see their children as aggressive and delinquent also may see them as experiencing some internal discomfort about their inability to behave appropriately. Alternatively, children with difficulty managing negative emotions, as seen in the fearful and dysphoric symptoms of the internalizing scale, may also have difficulty managing their behavior, becoming more aggressive and disruptive.

The pattern for teacher-reported behaviors was somewhat different. Teachers did not report any coherence between increases in externalizing and internalizing problems. However, they did report that children who exhibited externalizing difficulties in kindergarten tended to have increasing internalizing problems. These cross-domain results support Loeber *et al.* (1994) and Patterson *et al.* (1992) who found that older children high on externalizing also tended to be depressed. One possible explanation of the fact that mothers saw more concurrence of internalizing and externalizing symptoms in their children than did the teachers is that teachers often note relatively few internalizing problems (Coie *et al.*, 1992; Hinshaw *et al.*, 1992). Alternatively, children may not have as many opportunities to express internalizing behaviors in the quasi-public situations of school as they do at home.

Children seen by their mothers as having more externalizing behaviors at entry into kindergarten and developing more of these behaviors during the next 8 years were seen by teachers as increasing in the number of internalizing symptoms they exhibited. Given how difficult it often is for teachers to detect internalizing symptoms, children seen as increasingly internalizing might have been the ones who had already developed a serious externalizing problem before starting school. On the other hand, children whom teachers felt were showing high initial levels of externalizing symptoms in kindergarten appeared to show an increase in internalizing symptoms at home. This finding suggests that the difficulty a child encounters on entry to kindergarten in learning appropriate behavior might result in that child being seen by his or her mother as becoming more withdrawn, anxious, depressed, and somaticizing at home because of his or her social conflicts at school. Taken together, these cross-domain results are evidence that the relationship between externalizing and internalizing behaviors might be more complex than we had supposed.

Conclusions

The basic limitations of this analysis are several. Although we were able to include a large number of respondents, we did omit about 29% because of the proliferation of missing data. We did predict some of the variance in most of the growth parameters, but much of the variance is left to be explained by other predictors. Despite these limitations, having a picture of the basic developmental trajectories of these externalizing and internalizing behaviors and how they are affected by race, SES, gender, and rejection status may ultimately aid in the construction and implementation of prevention and intervention programs. Our study is the first to examine differences in the relationships between the slopes and intercepts of externalizing and internalizing behaviors across reporters and within reporters. This kind of information is unique to cross-domain growth modeling. From this analysis, a more complex picture emerged about the “co-development” of these behaviors. This new knowledge may help in the generation of unique interventions focused on combinations of symptomatic patterns at specific points in time. Interventions that are more focused on particular patterns of behavior at particular time points may prove more effective than global ones.

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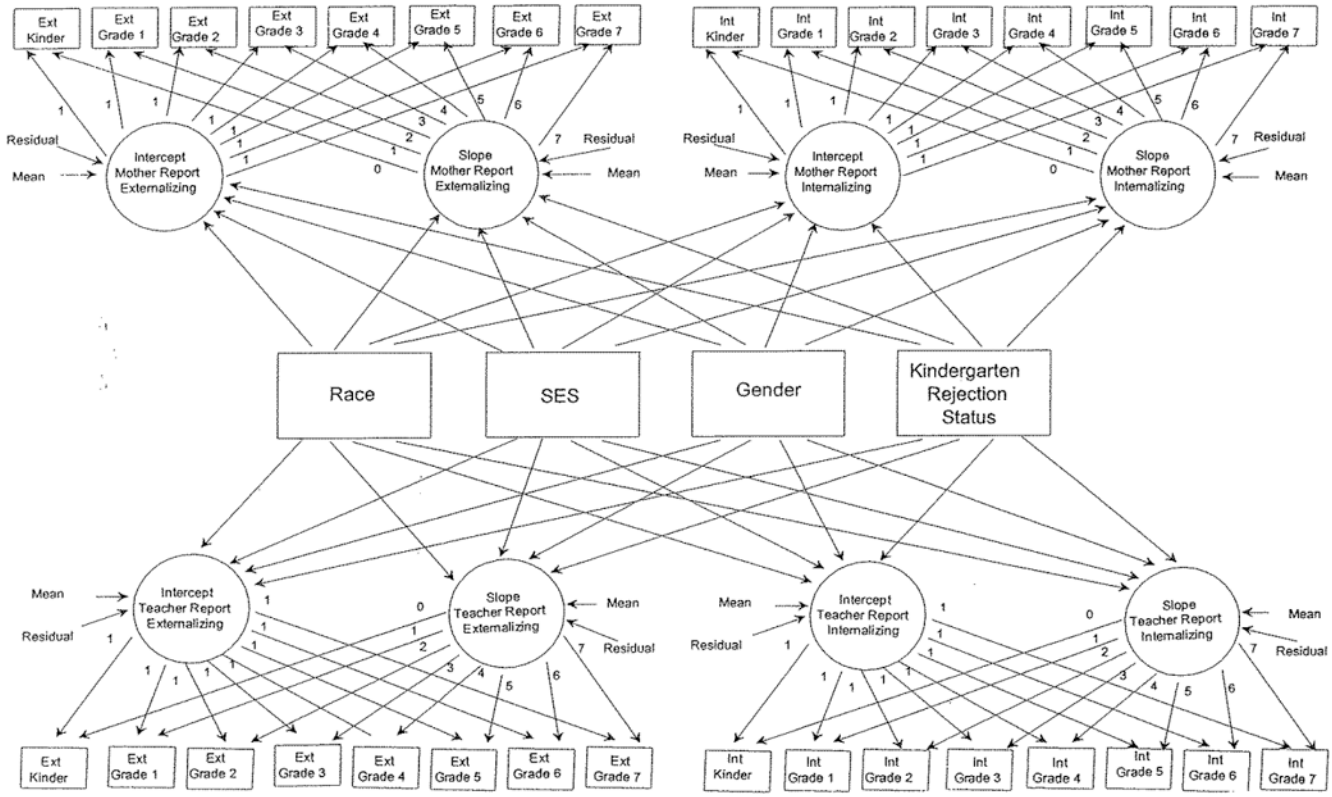

Fig. 1.
Path model of the cross-domain latent growth model.

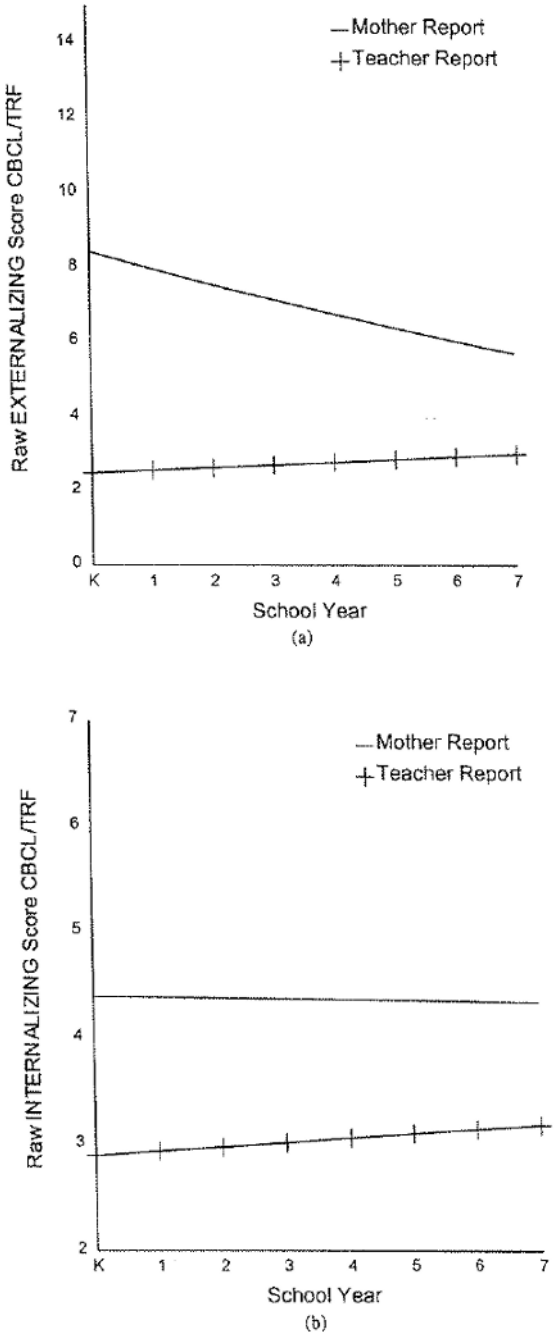

Fig. 2.

Fitted trajectories of externalizing and internalizing behaviors as reported by mothers (2a) and teachers (2b) from kindergarten to seventh grade for prototypical children, controlling for SES, race, gender, and peer status in kindergarten.

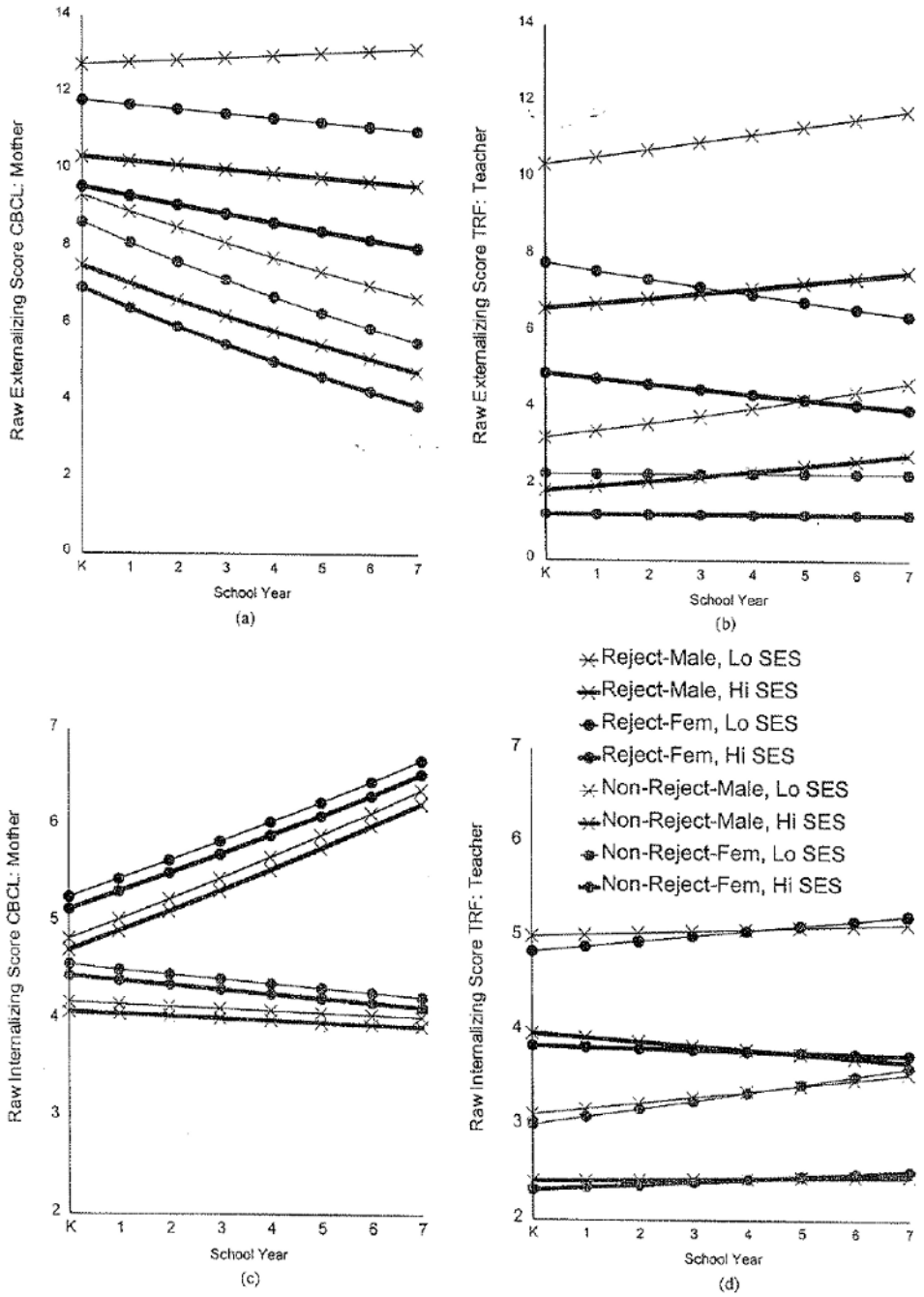

Fig. 3.

Fitted trajectories of mother-reported (3a) and teacher-reported (3b) externalizing behaviors, and mother-reported (3c) and teacher-reported (3d) internalizing behaviors over 8 years for prototypical rejected and nonrejected male and female children with differing levels of SES, controlling for race.

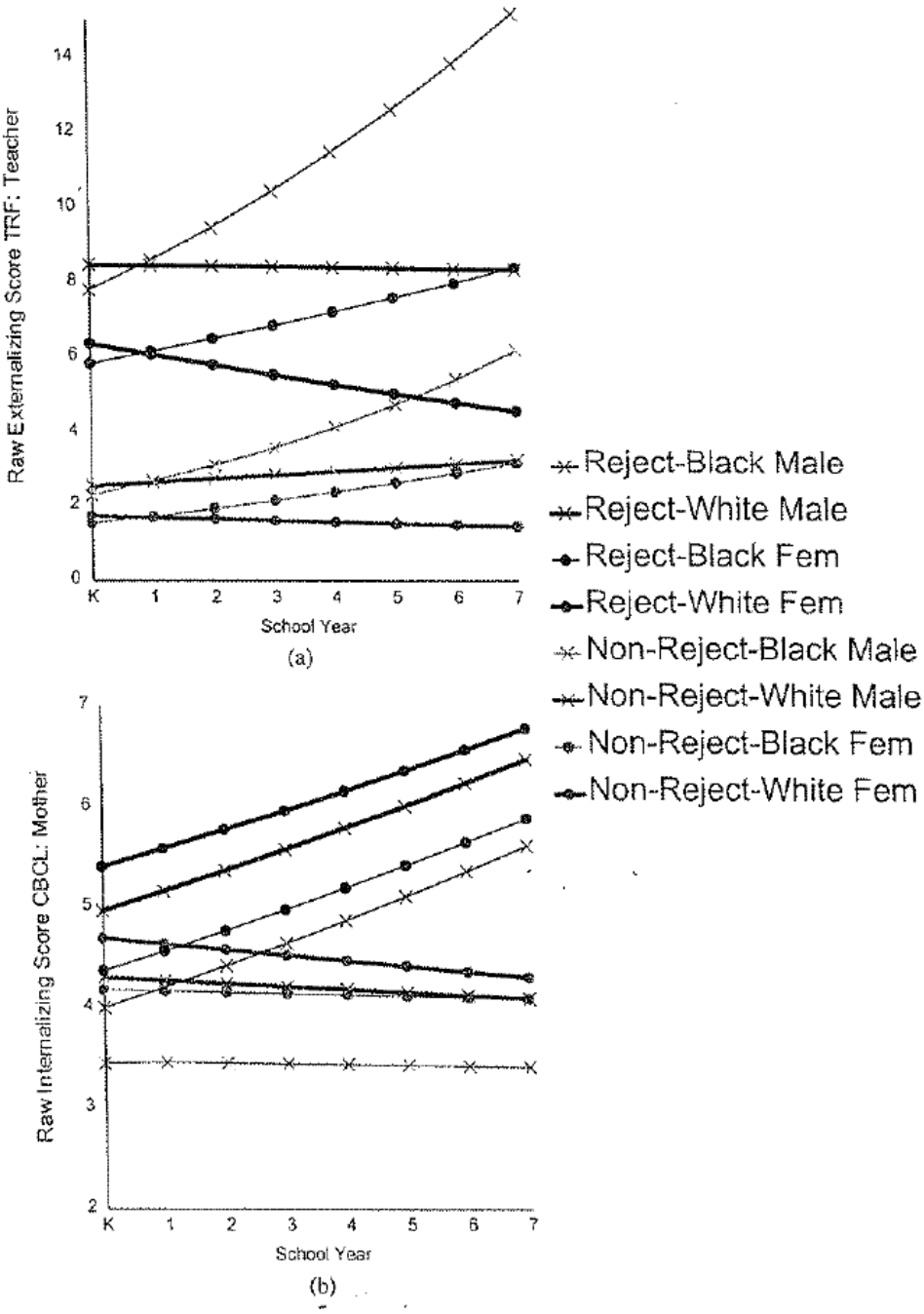

Fig. 4.

Fitted trajectories of teacher-reported (4a) externalizing behavior and mother-reported (4b) internalizing behavior over 8 years for prototypical rejected and nonrejected male and female children of differing races (African-American, European-American), controlling for level of SES.

Table I

Sample for the Cross-Domain Growth Analysis (n = 405)

Variable	Number	Percent
Gender		
Female	193	48%
Male	212	52%
Race		
European-American	331	82%
African-American	79	18%
Rejection status		
Rejected	51	13%
Non-Rejected	354	87%

Table II

Fitted Models Demonstrating Inter-Individual Differences in Change in Log-Externalizing and Log-internalizing Behaviors Reported by Mothers and by Teachers (4 domains) (n = 405). Model I—Linear Change, Heteroscedastic Errors, Errors Correlated Within Raters (Errors of Mothers' Externalizing Scores Covary with Errors of Mothers' Internalizing Scores; Similarly for Errors of Teachers' Scores), Model II (a and b)—Race as Predictor, Model III (a and b)—Race and SES as Predictors, Model IV (a and b)—Race, SES, and Gender as Predictors, Model V (a and b)—Race, SES, Gender, and Rejections Status as Predictors

Model	χ^2	df	GFI[a]	Std RMSR[b]	$\Delta\chi^2$	Δdf
I. Baseline: errors heteroscedastic and correlated across raters	10107	3840	.99	.03		
II-a. Add Race to I	10816	4374	.98	.03		
II-b. Race in the model, but parameter for Race set to zero	10997	4382	.98	.03	181*** (II-b to II-a)	8
III-a. Add SES to II-a	11563	4923	.96	.03		
III-b. Race and SES in the model, but parameter for SES set to zero	11629	4931	.96	.03	66*** (III-b to III-a)	8
IV-a. Add Gender to III-a	11861	5487	.96	.04		
IV-b. Race, SES, and Gender in the model, but parameter for Gender set to zero	11897	5495	.96	.03	36*** (VI-b to VI-a)	8
V-a. Add Reject to IV-a	12001	6066	.95	.04		
V-b. Race, SES, Gender, and Reject in the model, but parameter for Reject set to zero	12062	6074	.95	.04	61*** (V-b to V-a)	8

[a] GFI = Goodness of Fit Index.

[b] Std RMSR = Standardized Root Mean Square Residual.

*** $p < .001$.

Table III

Estimated Nonstandardized Growth Parameters from the Final Fitted Model of the Four-Domain Growth Analysis of Mother's and Teacher's Reports of Logged Externalizing and Internalizing Behaviors, Controlling for Race, SES, Gender, and Rejection Status in Kindergarten (n = 405)

	Mother externalizing (logged)	Teacher externalizing (logged)	Mother internalizing (logged)	Teacher internalizing (logged)
Mean level of true initial status (Intercept—Kindergarten)	2.2455***	1.2502***	1.6845***	1.3588***
Increments to mean level:				
Race ($\bar{x}$ = .817)	.2208*	.0742	.1756~	−.0338
SES ($\bar{x}$ = 39.6)	−.0096***	−.0200***	−.0010	−.0094***
Gender ($\bar{x}$ = .477)	−.0704	−.2549**	.0707	−.0270
Rejection status ($\bar{x}$ = .126)	.2830**	.9877***	.1173	.3774***
Estimated average rate of true change per year (slope):	−.0492***	.0195**	−.0016	.0100
Increments to rate of true change:				
Race ($\bar{x}$ = .817)	−.0162	−.0854***	−.0075	−.0093
SES ($\bar{x}$ = 39.6)	−.0007~	.0000	.0000	−.0006
Gender ($\bar{x}$ = .477)	−.0134	−.0410**	−.0043	.0060
Rejection status ($\bar{x}$ = .126)	.0466**	−.0249	.0381*	−.0111

~ $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table IV

Estimated Within- and Cross-Domain Relationships Among the Individual Growth Parameters in Externalizing and Internalizing Behaviors as Rated by Mothers and Teachers, Controlling for Race, SES, Gender, and Rejection Status

Domain	Intercept: Ext (log): Mother	Slope: Ext (log): Mother	Intercept: Ext (log): Teacher	Slope: Ext (log): Teacher	Intercept: Int (log): Mother	Slope: Int (log): Mother	Intercept: Int (log): Teacher
Slope: Ext (log): Mother	.04						
Intercept: Ext (log): Teacher	.39***	.30~					
Slope: Ext (log): Teacher	−.04	.29*	−.22**				
Intercept: Int (log): Mother	.60***	−.10	−.09~	.03			
Slope: Int (log): Mother	−.00	.61***	.24*	.03	−.24**		
Intercept: Int (log): Teacher	.08	.15	.13	.14	.28**	.03	
Slope: Int (log): Teacher	.25*	.33*	.43***	.02	−.09	.45**	−.18

~ $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.