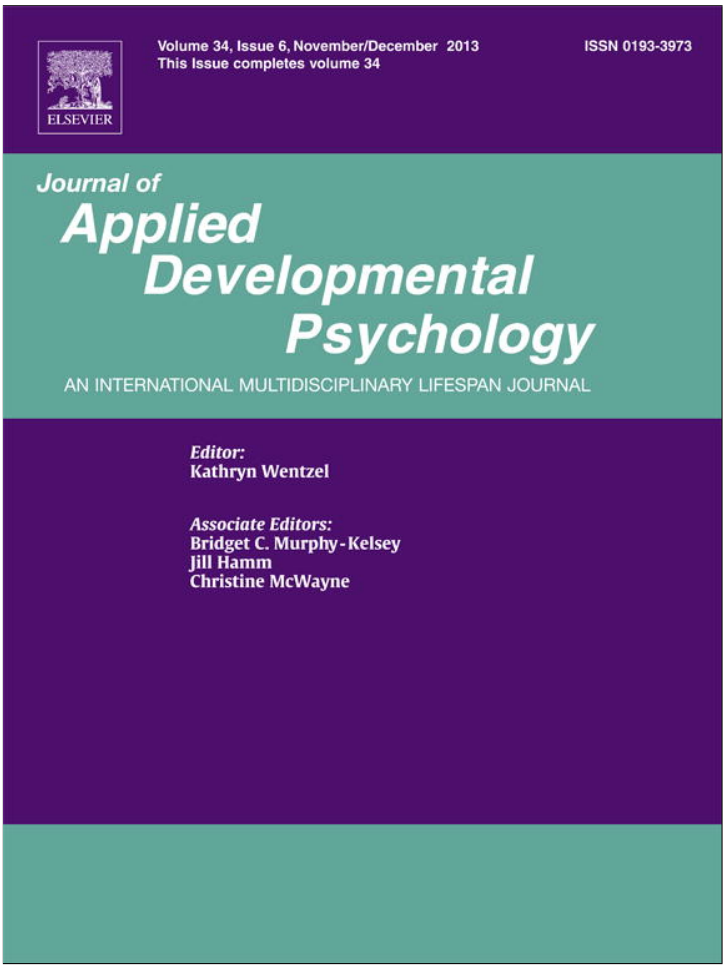

Journal of Applied Developmental Psychology 34 (2013) 336–345

Contents lists available at ScienceDirect

Journal of Applied Developmental Psychology

Parent predictors of changes in child behavior problems

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ARTICLE INFO

Article history:
Received 2 May 2013
Received in revised form 4 September 2013
Accepted 5 September 2013
Available online 13 October 2013

Keywords:
Behavior problems
Parenting
Ethnic differences
Preschoolers

ABSTRACT

The present study examined whether ineffective discipline, single parent status, social support, parent involvement, and parent depression predicted changes in preschoolers' ($N = 129$) behavior problems. This study also evaluated whether child sex and ethnicity moderated the relations between these variables and changes in problem behavior. Parents completed questionnaires at the beginning of the study, and parent, teacher, and observational ratings of children's behavior problems were collected twice during the school year. Parents' own social support predicted improvement for boys and parent depression was associated with worsening symptoms for girls. Single parenthood and parent involvement predicted changes in behavior problems for the sample as a whole. Several significant ethnic differences emerged, highlighting the importance of considering cultural context in studies of parenting and child externalizing behavior.

Behavior problems, including aggression, acting out, and noncompliance, are relatively common in toddlers and preschoolers, and are often not thought to be cause for alarm (Campbell, Shaw, & Gilliom, 2000). However, research has shown that while approximately half of the children exhibiting behavioral problems in preschool will outgrow them, the other half will continue to have substantial difficulties (Campbell, Breaux, Ewing, & Szumowski, 1986; Harvey, Youngwirth, Thakar, & Errazuriz, 2009). Although researchers have begun to examine the stability of behavior problems and patterns of change over time (e.g., Schaeffer et al., 2006; Shaw, Owens, Giovannelli, & Winslow, 2001), we still know too little about what predicts these different behavior trajectories. Being able to distinguish children who are likely to have transient behavioral issues from those at high risk to continue to have serious problems is important for both theoretical and practical reasons. Such knowledge will contribute to theory regarding what exacerbates problem behavior, guide the development of more effective interventions, and allow more efficient targeting of resources towards those who most need help.

The preschool years represent an important window of opportunity for dealing with negative child behavior. Compared to grade school, preschool offers a flexible, less structured environment where teachers can spend time trying to address children's problematic behaviors. Parents are also typically more involved with school during this time period (e.g., Rimm-Kaufman & Pianta, 1999) and there is more potential for them to work together with teachers to address their children's behavioral difficulties. Once children enter elementary school, demands on children increase, child/teacher ratios increase, and the focus on academic development may lead to less flexibility. In addition, children typically remain in the same school and peer group for several years, so any negative impressions of teachers and peers may be difficult to change, with broad and lasting effects (Hinnant, O'Brien, & Ghazarian, 2009). Children's behavior problems at school entry are associated with increased risk for a host of other difficulties, including poor social skills, peer rejection, and academic problems (e.g., Loeber & Farrington, 2000). Additional knowledge about the window of time prior to school entry could help us better understand, predict, and remedy potential problems before formal schooling.

Cross-sectional versus longitudinal findings

Many cross-sectional studies have identified a variety of factors that are associated with child behavior problems; child characteristics such as temperament and negative emotionality (Owens & Shaw, 2003) and parent characteristics such as maternal depression, decreased social support, and single parent status (Campbell, 1995) have all been implicated. Various aspects of parenting, including harsh and permissive discipline, are also related to behavior problems (Arnold, O'Leary, Wolff, & Acker, 1993). However, few studies have examined whether these factors predict changes in problems over time. Cross-sectional data leave causal pathways unclear and provide insufficient evidence that these variables relate to behavior changes. Longitudinal studies are crucial to identifying factors that predict whether problems worsen or improve over time.

Importance of examining sex and ethnicity

In investigating predictors of behavior change, child sex needs to be considered. Numerous studies have shown that boys are at increased

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0193-3973/$ – see front matter © 2013 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.appdev.2013.09.001

risk for behavior problems compared to girls (e.g., Spieker, Larson, Lewis, Keller, & Gilchrist, 1999). Unfortunately, this has led many researchers to focus on boys in studies of externalizing behavior, making it difficult to determine whether findings apply equally to girls. Although there are more boys than girls with behavior problems, there are still many girls who show consistently high levels of externalizing behavior and negative outcomes (Schaeffer et al., 2006). Miller, Loeber, and Hipwell (2009) found that harsh parenting and low parental warmth concurrently predicted behavior problems in girls, mirroring associations found in boys, but additional research is needed to replicate these findings and determine whether relations between parenting and changes in problem behavior differ for boys versus girls.

Researchers also need to more closely examine ethnic differences in these relations. Much research has focused on European American, middle-class families. Some studies focusing on African American families have found differential effects of parenting as a function of ethnicity (Deater-Deckard & Dodge, 1997; Polaha, Larzelere, Shapiro, & Pettit, 2004), but there is a paucity of research dealing with Latino families.

Discipline

Many researchers have found a link between discipline practices and behavior problems in young children (Del Vecchio & O'Leary, 2006; Miller-Lewis et al., 2006; Snyder, Cramer, Afrank, & Patterson, 2005). Overreactivity (i.e., harsh, coercive discipline) and laxness (otherwise referred to as permissive or inconsistent parenting) are two specific discipline styles that have frequently been associated with externalizing problems (Arnold et al., 1993). Social learning theory suggests that children may learn to behave aggressively through interactions with harsh, aggressive caregivers (Deater-Deckard & Dodge, 1997). Patterson (1982) emphasizes the role of "coercive cycles" in the development and maintenance of problem behavior. He proposes that harsh, inconsistent parenting and noncompliant, aggressive child behavior become mutually reinforcing over time, which serves to solidify a coercive interaction pattern and worsen problem behaviors. Although some studies with older children have found that harsh discipline predicts changes in externalizing behavior over time (Grogan-Kaylor, 2005), other studies examining much younger children (such as toddlers) have not (O'Leary, Slep, & Reid, 1999). In one of the few empirical studies that has specifically examined discipline and changes in preschoolers' behavior problems, Spieker et al. (1999) found that mothers' use of negative control tactics (such as yelling and spanking) predicted increases in problem behavior.

There is some evidence to suggest that the association between discipline and child behavior problems differs depending on ethnicity. Deater-Deckard and Dodge (1997) found that mothers' harsh discipline in kindergarten was associated with higher teacher-reported externalizing problems for European American children in every year of their study, from kindergarten through 6th grade. By contrast, there were no significant associations between harsh discipline at age 5 and later problems for African American children. Polaha et al. (2004) found that mothers' physical discipline was associated with lower levels of teacher-reported problems, but only for African American boys. Other researchers have not found any differences between these two ethnic groups, with both showing similar positive associations between physical discipline and child behavior problems (e.g., Amato & Fowler, 2002; Spieker et al., 1999).

Single parent status

Single parenthood is frequently associated with fewer financial resources, increased life stress, and more chaotic home environments (Cairney, Boyle, Offord, & Racine, 2003). Several researchers have found that children in single parent households are more likely to exhibit behavioral problems than those living in two parent families (Boyle & Lipman, 2002; Dodge, Pettit, & Bates, 1994; Moore, Vandivere, & Redd, 2006). Although a number of researchers have included single parents in their studies of child externalizing behavior (Heller, Baker, Henker, & Hinshaw, 1996; Shaw et al., 2001), to our knowledge none have examined whether single parent status is a predictor of changes in preschool behavior problems. Several researchers have found that the cross-sectional relation between single parent status and child externalizing problems differs depending on ethnicity. Although single parenthood has frequently been associated with behavior problems in European American families, findings for African American families have been mixed (Shaw, Winslow, & Flanagan, 1999). Few studies have examined single parenthood and child behavior problems in Latino families.

Social support

Social support can refer to emotional support from friends and family or instrumental support such as assistance with childcare or transportation. Different studies have focused on different aspects of social support, and findings have been mixed. Although some researchers have found that higher levels of social support were related to fewer child behavior problems (Dodge et al., 1994; Leadbeater & Bishop, 1994), others have found no relation (Oravecz, Koblinsky, & Randolph, 2008). Most of these studies have been cross-sectional and focused on European American or African American families. The current study assessed parents' perceived emotional support and whether it predicts changes in behavior problems over time.

Parent involvement

Parents' involvement in their children's education is generally thought to affect children's academic outcomes. More recently, researchers have found that parent involvement also relates to children's externalizing behavior (e.g., Domina, 2005; El Nokali, Bachman, & Votruba-Drzal, 2010). The association between parent involvement and behavior problems could be negative or positive. When parents are more involved in their children's education, those children may exhibit fewer behavior problems. On the other hand, when children are exhibiting behavior problems, parents may become more involved in response. In several cross-sectional studies, researchers have found that higher levels of parent involvement were associated with lower levels of behavior problems in elementary school children (e.g., Domina, 2005; Powell, Son, File, & San Juan, 2010). In two recent longitudinal studies, one with elementary school students (El Nokali et al., 2010) and one with preschoolers (Powell et al., 2010), higher levels of parent involvement predicted decreases in problem behavior over time. Some researchers have noted ethnic differences in the level of parent involvement; for example, African American families have been found to experience more barriers to involvement (McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004).

Parent depression

Parent depression is associated with externalizing problems in childhood (Miner & Clarke-Stewart, 2008; O'Leary et al., 1999; Spieker et al., 1999), but it is unclear whether parental depression predicts changes in externalizing behavior over time. Although many of the studies dealing with maternal depression have focused on European American families, a few have included substantial numbers of African American and Latino families. In two cross-sectional studies, maternal depression was found to be associated with higher levels of child behavior problems in both African American and Latino families (Leadbeater & Bishop, 1994; Riley et al., 2009). Thus, cross-sectional data appears to suggest similar relations between parent depression and behavior problems for families of different ethnic groups.

Measuring behavior problems

Most studies of childhood behavior problems have relied on one assessment approach, typically parent report (Dulcan et al., 1997). Although there are certainly advantages to parents' reports, some data suggest that teachers might have a better sense of whether behavior is age-appropriate given their experience working with many children (Kerr, Lunkenheimer, & Olson, 2007). Observational approaches have not been widely used in this research area, but provide the advantage of a potentially more objective account of children's behavior. Using multiple assessment strategies is likely to produce the most accurate picture of children's behavioral problems (Doctoroff & Arnold, 2004; Kerr et al., 2007). The current study used all three approaches (parent report, teacher report, and coding of observational data) to measure children's behavior problems. Each type of rating was evaluated independently, as a composite measure may have masked differing perceptions among reporters and/or potential differences in child behavior across contexts.

The current study

In sum, we know a fair amount about parenting and parent factors that are associated with concurrent child behavior problems. If we are able to determine whether these variables predict the longitudinal unfolding of these problems, this information will help further theory and help identify those children and families that might benefit most from intervention. Learning more about ethnic differences in this area will help determine whether we need to modify theory and adjust interventions to meet the needs of families from diverse backgrounds.

The current study examined several predictors because of indirect evidence that they may be important factors in the trajectory of children's behavior problems. Lax and overreactive discipline, single parent status, social support, parent involvement, and parent depression near the beginning of children's last year of preschool were examined as predictors of changes in behavior problems over the course of the school year before kindergarten entry, one critical period for understanding and preventing problems. We evaluated whether child sex moderated these relations and whether these relations differed depending on families' ethnicity.

It was hypothesized that parents who showed higher levels of laxness and overreactivity would have children whose behavior problems got worse over this time period. Single parents, who are presumably under more stress and have less time to deal with their children's behavioral difficulties, were expected to have children with persisting externalizing problems. Parents with higher levels of social support and involvement in their child's schooling were expected to have children whose behavior problems decreased over the course of the school year. It was hypothesized that parents with more depressive symptoms would be more likely to have children who continued to exhibit behavior problems. Given the lack of research focused on girls, we made no specific hypotheses regarding sex as a moderator. Hypotheses were expected to hold across ethnic groups, except that in African American families, overreactive discipline was predicted to be associated with decreases in behavior problems.

Method

Participants

One hundred and twenty nine preschool children (69 girls and 60 boys), their parents (123 mothers and 6 fathers), and their 36 teachers participated in this study as part of a larger project examining an intervention for children's behavioral and academic difficulties (see Arnold et al., 2006, for a detailed description of the intervention). Families were recruited from seven childcare centers in two urban New England areas. The centers were a convenience sample of interested centers within a primarily low-SES community. Within centers, all classrooms with 4-year-old children were randomly assigned to a behavioral intervention group or control group; parents of all students in those classrooms were invited to participate in the study. Five of the centers served economically disadvantaged families from ethnically diverse backgrounds, and two served predominantly European American families of higher SES. Approximately 27% of the families were of higher SES. Families from the economically disadvantaged sample reported a median income of $28,250, whereas the more affluent sample reported a median family income of $61,000. The mean age of the children was 4.4 years (*range* = 3.2 to 5.4 years) at the initial assessment. Approximately 26% of the children were African American, 32% were Puerto Rican, 34% were European American, and the remaining 8% were of mixed ethnicity. Almost all of the children from the economically advantaged preschools were European American. Thus, SES and ethnicity are unfortunately confounded.

Procedure

Letters were sent to all families from participating centers inviting them to take part in a study of child development. All families who agreed to participate were enrolled in the study. The same percentage of invited families agreed to participate from centers serving low- versus high-SES families (62%). Approximately 2 months into the school year, parents attended a 2-hour meeting during which they provided informed consent and completed questionnaires, structured interviews, and other pretest measures. Clinical psychology graduate students with extensive training administered the measures. In addition, teachers completed child behavior ratings for each participating child in their class. In most cases, two teachers worked with each child, and the average teacher score was used. After the initial data collection, research assistants videotaped children in their classrooms during both free play and structured learning activities. Research assistants were instructed to focus the camera on one group of children for 3 min, scan clockwise for 30 s, and then focus on the next group of children for 3 min, and so forth. If all of the children were assembled in one location, the research assistant focused the camera on the entire class. On average, parent, teacher, and classroom assessments were repeated 5.32 months later (*SD* = 1.09, *range* = 4 to 7 months).

The participants represent 66.5% of the original study participants. Pretest scores of study dropouts and participants were compared on all study variables. Dropout rates were significantly higher from the lower-SES than higher-SES centers (38% versus 17%, $p = .01$). Parents who dropped out were rated by teachers as slightly less involved (mean involvement ratings of 1.76 versus 2.03, $p = .09$). No significant differences were found on any other study variables. We did not formally collect data on the reasons for attrition, but in the majority of cases children had left the center.

Measures

Parent discipline

Parents completed the Parenting Scale (PS; Arnold et al., 1993), a 30-item self-report scale that measures the effectiveness of parents' discipline strategies. Each item describes an ineffective discipline strategy that is paired with its more effective counterpart (e.g., "I always coax or beg my child to stop" with the counterpart of "I always firmly tell my child to stop"; "I raise my voice or yell" with the counterpart of "I speak to my child calmly"). Scores can range from 1 to 7, with higher scores indicating less effective discipline. The PS assesses parental laxness (i.e., parents' tendency to give in, allow rules to go unenforced, or provide positive consequences for misbehavior) and overreactivity (i.e., parents' displays of anger, meanness, or irritability). The PS has adequate reliability and validity and has been widely used with both community and clinical samples across a range of SES and ethnic groups (Arnold et al., 1993; Harvey, Danforth, Ulaszek, &

Eberhardt, 2001; Irvine, Biglan, Smolkowski, & Ary, 1999). The alphas for laxness and overreactivity in this sample were .93 and .87, respectively.

Single parent status

Parents completed a demographic questionnaire at the beginning of the study, which included questions about marital status and current living arrangements. Parents who were not married or living with a significant other who was involved in childrearing were classified as single parents.

Parent social support

During the first wave of data collection, 49 parents completed the Social Support Appraisals Scale (SSAS; Vaux et al., 1986). The SSAS is a 23-item self-report instrument that measures individuals' perceptions of emotional and psychological support from friends, family, and other significant people in their lives. Respondents rate items (such as "I can rely on my friends" and "My family cares for me very much") on a four-point Likert scale ranging from *strongly agree* to *strongly disagree*. The SSAS has adequate reliability and validity (Vaux et al., 1986). In subsequent data collection waves, 56 parents completed the shorter, Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS is a 12-item self-report questionnaire that also assesses perceived emotional and psychological support from friends, family, and significant others. The MSPSS includes items like "I can count on my friends when things go wrong" and "My family really tries to help me" and utilizes a seven-point Likert scale ranging from *very strongly disagree* to *very strongly agree*. The MSPSS has adequate reliability and validity (Dahlem, Zimet, & Walker, 1991; Stanley, Beck, & Zebb, 1998). In this sample, alpha was .83 for the SSAS and .96 for the MSPSS. Participants' scores on the SSAS and MSPSS were standardized (i.e., transformed to *z*-scores) to create comparable social support scores across the waves of data collection.

Parent involvement

Teachers completed a revised version of the Parent–Teacher Involvement Questionnaire (Reid, Webster-Stratton, & Beauchaine, 2001; Webster-Stratton, 1998). The 10 items that directly measure parents' involvement in school activities and communication with teachers were used (e.g., "How involved is this parent in his/her child's education and the classroom?" and "Has this child's parent called you in the past 2-3 months?"). Scores on these items, which could range from 1 to 5, were averaged to create an overall involvement score. Higher scores indicate more involvement. This measure has demonstrated adequate reliability and validity and has been used with diverse samples (Arnold, Zeljo, Doctoroff, & Ortiz, 2008; Reid et al., 2001; Webster-Stratton, 1998). Alpha was .89 for the present sample.

Parent depression symptoms

Parents completed the Brief Symptom Inventory (BSI; Derogatis, 1993), which includes an assessment of depressive symptoms. The depression subscale is comprised of six items, including "Feeling blue" and "Feeling no interest in things." Scores for each item range from 0 (*not at all*) to 4 (*extremely*), and raw scores were computed by averaging scores across the six depression items. Raw scores were used in all analyses, and *T*-scores are presented in Table 1 for descriptive purposes. The BSI has strong internal consistency and excellent validity data (Boulet & Boss, 1991; Derogatis, 1993; Morlan & Tan, 1998). The BSI has been used across a wide variety of ethnic groups, including African–Americans and Latinos in both clinic and community samples (Coelho, Strauss, & Jenkins, 1998; Dilworth-Anderson, Williams, & Cooper, 1999). In this sample, alpha was .96.

Parent ratings of child behavior problems

Parents completed the Eyberg Child Behavior Inventory (ECBI), a 36-item inventory of externalizing behaviors (Eyberg & Pincus, 1999). Sample items include: "Acts defiant when told to do something" and "Physically fights with friends his/her own age." Scores range from 1 (*the behavior never occurs*) to 7 (*the behavior always occurs*). The Eyberg Intensity factor, a measure of how frequently problem behaviors occur, was used. An overall score was calculated by averaging Intensity scores across all 36 items. This measure has strong reliability and validity in young children. The ECBI internal consistency for the current sample was $\alpha = .93$.

Table 1
Means and standard deviations for predictor variables for the entire sample and by ethnicity.

	Time 1 (T1)		
Predictor variables	*n*	*M*	*SD*
Laxness			
Entire sample	108	2.76	0.95
African American	28	2.73	1.12
Puerto Rican	28	2.85	1.02
European American	42	2.60	0.76
Overreactivity			
Entire sample	108	2.80	0.95
African American	28	2.53	1.00
Puerto Rican	28	2.77	1.05
European American	42	2.89	0.82
Single parenthood (% single)			
Entire sample	127	37%	
African American	32	$50\%_a$	
Puerto Rican	41	$44\%_a$	
European American	43	$14\%_b$	
Social support (*z*-score)			
Entire sample	105	0.01	1.01
African American	28	−0.15	0.99
Puerto Rican	25	−0.21	1.03
European American	42	0.18	0.93
Parent involvement			
Entire sample	122	2.03	0.89
African American	31	1.69_a	0.81
Puerto Rican	40	1.93_a	0.88
European American	41	2.51_b	0.67
Parent depression (*T*-score)			
Entire sample	108	50.18	9.74
African American	27	50.07	9.75
Puerto Rican	28	50.89	10.49
European American	42	48.83	8.93

Note. The entire sample includes African American, Puerto Rican, and European American children as well as children of mixed ethnicity. Parent depression scores are presented as *T*-scores for descriptive purposes. Independent-samples *t*-tests were used to compare means for the different ethnic groups on each variable. Means with different subscripts are significantly different from each other.

Teacher ratings of child behavior problems

Teachers completed the Teacher Report Form (TRF) of the Child Behavior Profile, a 113-item scale that measures a wide range of children's problem behaviors (Achenbach, 1991). The externalizing subscale, comprised of items related to aggressive and delinquent behavior (e.g., "Gets in many fights," "Argues a lot," and "Cruelty, bullying, or meanness to others"), was used for the present study. Scores for each item range from 0 (*not true*) to 2 (*very true*). Raw scores were computed by summing scores for each item in the subscale. Raw scores were used in analyses, but *T*-scores are presented in Table 2 for descriptive purposes. Strong reliability and validity data have been established for this scale, and the internal consistency of the externalizing subscale has been estimated at .92 (Achenbach, 1991). In this sample, test–retest reliability for the externalizing subscale was .79.

Classroom observations of behavior problems

Videotapes of each participating child were coded by research assistants using a system that had been adapted from existing coding

Table 2
Means and standard deviations for outcome variables for the entire sample and by ethnicity.

	Time 1 (T1)			Time 2 (T2)		
Outcome variables	*n*	*M*	*SD*	*n*	*M*	*SD*
Eyberg (Parent)						
Entire sample	115	2.94	0.85	87	2.84	0.77
African American	27	2.85	0.85	18	2.86	0.84
Puerto Rican	35	2.75	0.96	29	2.74	0.96
European American	42	3.05	0.69	33	2.82	0.56
TRF (*T*-score)						
Entire sample	124	54.11	9.25	111	54.23	9.41
African American	30	57.86_a	11.05	29	58.98_a	10.54
Puerto Rican	41	51.06_b	7.21	39	51.14_b	7.04
European American	42	53.62_b	8.42	32	51.33_b	8.36
Observed problem behavior						
Entire sample	118	.05	.07	90	.05	.05
African American	30	$.10_a$	.09	22	$.07_a$	.05
Puerto Rican	39	$.03_b$	.04	30	$.04_b$	.04
European American	41	$.05_b$	.05	30	$.04_b$	.05

Note. Eyberg scores represent the average Intensity score (which can range from 1 to 7) across all 36-items in this measure. TRF = Teacher Report Form (Externalizing subscale). TRF scores are presented as *T*-scores for descriptive purposes. The Observed Problem Behavior scores represent the percentage of intervals in which children exhibited any misbehavior during the observation period. Independent-samples *t*-tests were used to compare means for the different ethnic groups on each variable. Means with different subscripts (within the same cell) are significantly different from each other.

schemes (e.g., Robinson & Eyberg, 1981). Each child was coded individually and was on camera for an average of 41 minutes. Behaviors were rated as present or absent during 15-second intervals. *Misbehavior* was defined as physically aggressive or threatening acts toward people or objects, noncompliance, verbal aggression, disruptive behavior, and any other violation of classroom rules. Scores represent the percentage of intervals in which the child exhibited misbehavior. Sixty-five percent of the videotapes were independently coded by two coders. Interrater agreement using an intraclass correlation coefficient was .66. This relatively low reliability is primarily due to difficulties in seeing, and particularly hearing, children on the tapes; recognizing their limitations, we decided to use these data, despite the low reliability, because of the dearth of observational classroom data in this literature and previous evidence that these observations predict later child behavior.

Analyses

Two sets of analyses were carried out to examine the study hypotheses. In the first set, changes in each of the three measures of behavior problems were predicted from laxness, overreactivity, single parenthood, social support, parent involvement, and parent depression. Given the lack of previous research on the relations between these variables and behavior changes, separate regressions were estimated between each predictor and each measure of behavior change, for a total of 18 analyses. These analyses initially included child sex as a moderator; if the sex interaction term was not significant, it was dropped from the model, and the relations between these variables and behavior change were examined for the sample as a whole. In the second set, the above analyses were repeated, with child ethnicity (rather than child sex) included as a potential moderator. Approximately half of the children in this study received an intervention designed to reduce behavior problems. Although this program had minimal effect, we controlled for intervention status in all analyses. All analyses were conducted using Hierarchical Linear Modeling (HLM) for two reasons. First, HLM accounts for the nesting of children within classrooms. Second, HLM provides improved estimates of true changes in behavior problems compared to the use of change scores (Raudenbush & Bryk, 2002). Within each analysis, missing data were deleted casewise; that is, children were included who had complete data for the variables of that analysis.

Results

Descriptive statistics

Means and standard deviations for all predictor variables (for the whole sample and by ethnicity) are presented in Table 1. On average, laxness and overreactivity scores were similar to those found in previous studies, and generally fell between clinic and non-clinic groups (Arnold et al., 1993; Freeman & DeCourcey, 2007; Harvey et al., 2001). Thirty-seven percent of the children came from single parent households, and most of these children were from the low-SES, African American or Puerto Rican communities. There were no significant differences between ethnic groups in social support. Overall, African American and Puerto Rican parents had similar levels of involvement, which were significantly lower than the involvement of the higher-SES European American parents. Parents from all ethnic groups generally exhibited average levels of depression relative to normative samples.

Means and standard deviations for the outcome variables are presented in Table 2, for the whole sample and by ethnicity. Children exhibited average to slightly elevated levels of behavior problems compared to normative groups (see Achenbach & Rescorla, 2000; Eyberg & Pincus, 1999). There were no significant ethnic differences in parent-reported behavior problems, although some differences were observed for teacher ratings and observational measures (see Table 2). Children generally showed similar levels of parent-reported, teacher-reported, and observed behavior problems at the two time points.

Intercorrelations among predictor variables are presented in Table 3. When examined for each ethnic group separately, there were few significant correlations or differences among ethnic groups. However, African American families showed an unexpected positive relation between social support and depression, $r(24) = .42$, $p = .04$. Intercorrelations among behavior ratings at Time 1 (T1) and Time 2 (T2) are presented in Table 4.

Concurrent correlations between predictor variables and behavioral ratings at T1 are presented in Table 5. For the sample as a whole, overreactivity, single parenthood, and parent depression were significantly correlated with parent-reported behavior problems at T1, whereas the correlation between laxness and parent-reported problems approached significance. Higher levels of laxness, overreactivity, and depression were associated with higher levels of parent-reported behavior problems, whereas single parenthood was associated with fewer parent-reported behavior problems. Correlations differed by ethnicity. For example, higher levels of laxness were significantly associated with higher levels of parent-reported behavior problems, and higher levels of parent involvement were significantly associated with lower levels of observed problem behavior in African American families only.

Before running the inferential analyses, literal change scores were examined to learn more about individual patterns of behavior change, for descriptive purposes. Most children's behavior problems changed little over the course of the study; however, between 12 and 29% of the children showed meaningful changes in behavior problems, as defined by changes of at least one standard deviation. Of the 78 children for whom parent-reports of behavior problems were obtained at both

Table 3
Intercorrelations among predictor variables for the entire sample at Time 1.

Variable	1	2	3	4	5	6
1. Laxness		.33***	−.02	−.01	−.05	.10
2. Overreactivity			.05	.10	−.09	.15
3. Single parenthood				.08	−.36***	.18
4. Social support					.10	.00
5. Parent involvement						−.13
6. Parent depression						

*** $p < .001$.

Table 4
Intercorrelations among behavioral ratings at Time 1 (T1) and Time 2 (T2).

Variable	1	2	3	4	5	6
1. Eyberg (Parent)–T1		.73***	.20*	.19†	.01	.02
2. Eyberg (Parent)–T2			.31**	.33**	.07	.16
3. TRF–T1				.79***	.34***	.02
4. TRF–T2					.31**	.24*
5. Observed–T1						.24*
6. Observed–T2						

Note. TRF = Teacher Report Form (Externalizing subscale). Observed = Observed Problem Behavior.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

time points, seven had scores that increased by at least one standard deviation, whereas ten had scores that decreased by at least one standard deviation. Eight out of 107 children had teacher-rated externalizing behavior *T*-scores that increased by at least one standard deviation, whereas five had *T*-scores that decreased by at least one standard deviation. Finally, for observed behavior problems ($n = 85$), thirteen children had scores that increased by at least one standard deviation, whereas twelve had scores that decreased by at least one standard deviation.

Predictors of change in behavior problems

Primary study analyses were run by evaluating 3-level HLM models. This approach is recommended as the ideal method for data such as these; rather than using literal change scores, change is estimated using all available information, including the measures' reliability, limiting some of the problems associated with the use of direct change scores (e.g., Raudenbush & Bryk, 2002). Furthermore, this approach accounts for the nesting of children within classrooms, avoiding violations of independence of error and allowing for unbiased *p*-values. As recommended, before examining specific predictor variables, unconditional linear growth models were fit for each type of behavior rating; these models are used to confirm that there is significant variability in initial behavior problems and in the change in behavior problems over time (see Raudenbush & Bryk, 2002). In all cases, this variability was significant ($p < .001$). Thus, we proceeded to conduct 18 separate HLM analyses to evaluate whether laxness, overreactivity, single parenthood, social support, parent involvement, and parent depression predicted changes in each of the three measures of behavior problems, controlling for child age and intervention status. To determine whether these relationships differed for boys versus girls, sex × predictor interaction terms were created for all predictors and were included in the models. Boys were dummy coded as "1" and girls were dummy coded as "0." If these interaction terms were not significant, they were dropped from the models to examine whether the variables predicted behavior change for the sample as a whole.

Table 5
Correlations between predictor variables and behavior ratings at Time 1 for the entire sample and by ethnicity.

Predictor variables	Eyberg (Parent)	TRF	Observed
Laxness			
Entire sample	.17†	−.04	−.02
African American	.41*	−.16	−.06
Puerto Rican	.06	−.17	.11
European American	−.00	−.09	−.02
Overreactivity			
Entire sample	.20*	−.02	−.01
African American	.14	.02	.25
Puerto Rican	.22	−.15	−.12
European American	.10	.04	−.11
Single parent			
Entire sample	−.29**	.01	.04
African American	−.25	−.15	.06
Puerto Rican	−.44**	−.17	−.11
European American	−.01	.18	.01
Social support			
Entire sample	−.05	.04	.10
African American	−.17	.13	.39*
Puerto Rican	−.07	.03	.23
European American	−.21	−.02	−.19
Parent involvement			
Entire sample	−.04	−.03	−.15
African American	−.08	.03	−.39*
Puerto Rican	−.04	.10	−.02
European American	−.19	−.03	.08
Parent depression			
Entire sample	.21*	.04	.03
African American	.18	−.09	.26
Puerto Rican	.18	−.18	−.24
European American	.16	.09	.12

Note. The entire sample includes African American, Puerto Rican, and European American children as well as children of mixed ethnicity. TRF = Teacher Report Form (Externalizing subscale). Observed = Observed Problem Behavior.
† $p < .10$. * $p < .05$. ** $p < .01$.

Discipline

Neither laxness nor overreactivity significantly predicted changes in behavior problems for boys, girls, or the sample as a whole.

Single parenthood

The relation between behavior problems and single parenthood was not significantly different for boys versus girls. For the sample as a whole, single parenthood predicted changes in parent-reported behavior problems. Children of single parents showed a smaller decrease in behavior problems than children of partnered parents. Specifically, the decrease was .37 points smaller for single than partnered parents, $t(123) = 2.85$, $p = .006$.

Social support

In regard to the relation between social support and changes in teacher-reported behavior problems, there was a significant difference in slope for boys versus girls, $b = -2.65$, $SE = 1.28$, $t(100) = -2.08$, $p = .04$. For every 1-point increase in social support at pretest, there was a 1.99 decrease in teacher-reported externalizing problems for boys, $p = .02$, and a .66 increase for girls, $p = .50$.

Parent involvement

The relation between behavior problems and parent involvement was not significantly different for boys versus girls. For the sample as a whole, parent involvement was a significant predictor of the change in parent-reported problem behavior. On average, for each 1-point increase in pretest parent involvement, children's behavior problems decreased by .14, $t(118) = -1.96$, $p = .05$.

Parent depression

The relation between parent depression and changes in parent-reported behavior problems was significantly different for boys versus girls, $b = -.40$, $SE = .20$, $t(103) = -2.04$, $p = .04$, such that higher levels of initial depressive symptoms predicted increases in parent-reported behavior problems for girls, $b = .35$, $p = .02$, but not for boys, $b = -.05$, $p = .68$.

Differences across ethnic groups

To examine differences across ethnic groups, two sets of HLM analyses were run. These analyses are considered exploratory, given the small sample size of the ethnic groups. In the first set, ethnicity was dummy coded using European American children as the comparison group. Then, two new interaction terms were created for each predictor (one for African American children and one for Puerto Rican children)

and were added to the models. The second set of analyses was carried out in the same way, with Puerto Rican children used as the comparison group and interaction terms created for African American and European American children, to allow for comparisons between Puerto Rican and African American children. Due to their small number ($n = 10$), children of mixed ethnicity were excluded from these analyses. All analyses were run controlling for age, sex, and intervention status. A number of significant differences between ethnic groups were found. See Table 6 for a complete summary of the interaction results. Table 7 includes the coefficients for each ethnic group, so relation between each predictor and behavior change can be more readily compared.

Discipline

Ethnicity and discipline interacted in predicting behavior problem changes. Higher levels of laxness were associated with increases in teacher-reported behavior problems for Puerto Rican children and decreases in teacher-reported behavior problems for European American children. Laxness was not a significant predictor for African American children. As hypothesized, higher levels of overreactivity were associated with decreases in teacher-reported and observed behavior problems in African American children. For Puerto Rican children, higher levels of overreactivity were associated with increases in teacher-reported problem behavior.

Single parenthood

For Puerto Rican children, single parenthood was associated with significant increases in parent-reported behavior problems. For African American children, single parenthood was associated with a marginally significant increase in parent-reported problem behavior.

Table 6
Summary of HLM analyses examining differences between ethnic groups.

	Eyberg (Parent)	TRF	Observed
Predictors	B (SE)	B (SE)	B (SE)
Laxness			
AA versus EA	−.19 (.19)	2.72 (1.60) †	−.03 (.02)
EA versus PR	.14 (.20)	−5.68 (1.62) ***	.02 (.02)
AA versus PR	−.05 (.19)	−2.96 (1.47) *	−.01 (.02)
Overreactivity			
AA versus EA	.24 (.19)	−1.75 (1.75)	−.04 (.02) *
EA versus PR	−.23 (.17)	−4.05 (1.75) *	−.01 (.02)
AA versus PR	.01 (.19)	−5.80 (1.68) ***	−.06 (.02) **
Single parent			
AA versus EA	.52 (.40)	.57 (3.67)	.01 (.05)
EA versus PR	−.57 (.35)	−3.01 (3.39)	−.01 (.05)
AA versus PR	−.05 (.36)	−2.44 (2.76)	.00 (.03)
Social support			
AA versus EA	.08 (.18)	−.47 (1.59)	−.04 (.02) *
EA versus PR	.06 (.17)	.48 (1.61)	.03 (.02)
AA versus PR	.15 (.20)	.01 (1.70)	−.01 (.02)
Parent involvement			
AA versus EA	−.17 (.22)	−1.68 (2.09)	.02 (.03)
EA versus PR	.27 (.21)	1.77 (1.86)	.01 (.02)
AA versus PR	.11 (.24)	.09 (1.82)	.03 (.02)
Parent depression			
AA versus EA	−.03 (.31)	−.01 (2.56)	−.03 (.03)
EA versus PR	−.47 (.23) *	−1.34 (2.40)	−.04 (.03)
AA versus PR	−.50 (.30)	−1.35 (2.33)	−.07 (.03) *

Note. AA = African American. EA = European American. PR = Puerto Rican. TRF = Teacher Report Form (Externalizing subscale). Observed = Observed Problem Behavior. The coefficients in this table are interaction coefficients. Positive values indicate that the first ethnic group in the comparison has a more positive slope than the second ethnic group. For example, a positive value in the AA versus EA row indicates that the AA slope is more positive than the EA slope.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 7
Relationships between predictors and outcomes by ethnic group.

	Eyberg (Parent)	TRF	Observed
Predictors	B (SE)	B (SE)	B (SE)
Laxness			
AA	−.13 (.13)	−.14 (1.00)	−.02 (.01)
PR	−.08 (.14)	2.83 (1.07) **	−.01 (.01)
EA	.06 (.14)	−2.85 (1.23) *	.01 (.01)
Overreactivity			
AA	.03 (.14)	−2.74 (1.17) *	−.04 (.01) **
PR	.02 (.12)	3.05 (1.22) *	.02 (.01)
EA	−.22 (.12) †	−.99 (1.31)	.00 (.01)
Single parent			
AA	.47 (.28) †	−.44 (2.16)	.02 (.03)
PR	.52 (.22) *	2.00 (1.74)	.02 (.02)
EA	−.05 (.28)	−1.01 (2.91)	.01 (.04)
Social support			
AA	.14 (.14)	−1.52 (1.14)	−.04 (.01) **
PR	−.01 (.14)	−1.53 (1.20)	−.03 (.01) *
EA	.06 (.10)	−1.05 (1.10)	−.01 (.01)
Parent involvement			
AA	−.13 (.17)	−1.25 (1.48)	.03 (.02)
PR	−.24 (.16)	−1.34 (1.07)	.00 (.01)
EA	.03 (.15)	.43 (1.52)	.01 (.02)
Parent depression			
AA	−.02 (.27)	−.52 (1.78)	−.03 (.02)
PR	.48 (.16) **	.83 (1.51)	.04 (.02) *
EA	.01 (.16)	−.51 (1.80)	.00 (.02)

Note. This table contains the slopes for each separate ethnic group. AA = African American. EA = European American. PR = Puerto Rican. TRF = Teacher Report Form (Externalizing subscale). Observed = Observed Problem Behavior.
† $p < .10$. * $p < .05$. ** $p < .01$.

Social support

For African American and Puerto Rican children, higher levels of social support were associated with decreases in observed behavior problems across time. Social support was not a significant predictor of behavior change for European American children.

Parent involvement

Ethnicity did not moderate the relationship between parent involvement and changes in behavior problems.

Parent depression

Ethnicity and depression interacted in predicting parent-reported and observed changes in problem behavior. For Puerto Rican children, higher levels of parent depression were associated with increases in parent-reported and observed behavior problems. Parent depression was not a significant predictor for African American or European American children.

Discussion

Behavior problems are quite common during early childhood, and although many children seem to grow out of them, others do not. Enduring externalizing behavior is associated with a variety of negative outcomes, and interventions should target those who are most at-risk for continued problem behaviors. Preschool provides a unique opportunity to both identify and address enduring behavior problems, thus potentially mitigating some of the social and academic consequences associated with these behavior problems at school entry (e.g., Loeber & Farrington, 2000). Unfortunately, few studies have examined variables that may predict changes in externalizing behavior over time for preschoolers. Even fewer have investigated the role of important child and family context variables like sex and ethnicity in these longitudinal relations. In an effort to fill this gap, this study examined whether parenting and parent factors predicted changes in preschoolers' problem behavior

over the course of the school year, in general and as a function of child sex and ethnicity.

In terms of sex differences, higher levels of parental social support during the preschool year were associated with decreases in teacher-reported behavior problems for boys and relatively little change in girls. It is unclear why social support would predict for boys but not girls. Additional research should explore potential reasons for this difference. There was also a significant sex difference in the relation between parent depression and parent-reported behavior problems. Specifically, in this preschool sample, parents who reported having more depressive symptoms rated their daughters, but not their sons, as displaying increases in behavior problems over the course of the study. These results are consistent with previous studies including both preschool- and elementary school-aged children, which found that maternal depression was more strongly associated with girls' concurrent externalizing behavior than boys' (Briggs-Gowan, Carter, & Schwab-Stone, 1996; Stacks & Goff, 2006). It could be that girls are more affected by their parents' depression because they are more relationally or emotionally-oriented (see Cross & Madson, 1997). Alternatively, depressed mothers' perceptions may differ depending on their children's sex. There is some evidence with older children that depressed mothers tend to perceive their girls as exhibiting more behavior problems than their boys, and that these perceptions are not accounted for by actual differences in child behavior (Briggs-Gowan et al., 1996). Observational data from the homes of preschool-aged children and fathers' reports of child behavior would help address these possibilities.

As hypothesized, single parenthood and parent involvement were significant predictors of changes in parent-reported problem behavior for the sample as a whole. Preschool children of single parents exhibited significantly smaller decreases in parent-reported behavior problems than preschoolers living with two parental figures. One explanation for this finding could be that single parenthood is associated with a variety of challenges, including increased life stress and fewer financial resources (Cairney et al., 2003). Indeed, in this sample, the vast majority of single parents (91%) came from lower SES groups. Decreased financial resources and the lack of a parenting partner likely make parenting a child, particularly one with behavior problems, even more difficult. The good news is that despite these challenges, children of single parents still generally showed a reduction in problem behavior over the course of the study. As expected, and consistent with some previous studies (e.g., Powell et al., 2010), higher levels of parent involvement predicted decreases in parent-reported behavior problems. Additional research is needed to examine potential mechanisms through which parent involvement affects problem behavior, particularly in the context of early childhood education, when parent involvement in school may be greater than in later years (Rimm-Kaufman & Pianta, 1999).

Discipline did not significantly predict changes in behavior problems for boys, girls, or the preschool sample as a whole. This was somewhat surprising considering the cross-sectional literature that has consistently shown associations between harsh and inconsistent discipline and children's behavior problems (e.g., Arnold et al., 1993; Duncombe, Havighurst, Holland, & Frankling, 2012; Stormshak, Bierman, McMahon, & Lengua, 2000). We believe that this indicates that cross-sectional predictors may not be the same as longitudinal ones. At the same time, our differing patterns by ethnicity point to the need to consider contextual factors in these relations.

When the sample was broken down by ethnicity for exploratory analyses, significant differences in relations began to emerge, particularly in regard to parental discipline. Results for African American and Puerto Rican families tended to be in the hypothesized directions, whereas results for European American children typically were not. In this preschool sample, African American children showed significant decreases in teacher-reported externalizing behavior and observed behavior problems when their parents were more overreactive. These findings are similar to those found in previous studies, where physical discipline was related to lower levels of teacher-reported behavior problems for preschool-aged African American boys (Polaha et al., 2004). By contrast, and as expected, Puerto Rican preschoolers showed significant increases in teacher-reported externalizing problems when their parents were more overreactive. Puerto Rican preschoolers seemed to be the most affected by parental laxness, with higher levels of laxness predicting increases in teacher-reported externalizing behavior over the 6-month period. Surprisingly, increased parental laxness was associated with decreases in teacher-reported externalizing problems for European American preschoolers. It is difficult to explain this finding, given consistent cross-sectional findings that lax and overreactive discipline are related to behavior problems in this group (e.g., Arnold et al., 1993; Del Vecchio & O'Leary, 2006). The European American families were predominately higher-income, had two parents, and likely experienced fewer life stressors than other families in this study. It could be that ineffective discipline is relatively less harmful when families have more resources and experience fewer stressors.

There were also some significant ethnic differences related to single parent status, social support, and parent depression. First, single parenthood was associated with significant increases in parent-reported behavior problems for Puerto Rican preschoolers and marginally significant increases in parent-reported behavior problems for African American preschoolers. Single parent status was not a significant predictor of the change in behavior problems for European American preschoolers; however, there were only six single European American parents and half of them were of higher SES. Thus, the significant increases in problem behavior associated with single parent status may have more to do with SES than ethnicity.

Second, higher levels of social support were related to decreases in observed behavior problems for both African American and Puerto Rican preschoolers. These findings underscore the importance of collecting longitudinal data and looking at change over time rather than simply investigating cross-sectional relations between variables. Although social support was initially related to higher levels of behavior problems in African American families, it ultimately predicted a decrease in problem behavior. One possibility is that these families sought additional support when their children were exhibiting problems, and this support may have helped parents deal more effectively with their children's behavioral difficulties.

Finally, parent depression was associated with increases in parent-reported and observed behavior problems for Puerto Rican preschoolers, but was unrelated to behavior change in African American and European American preschoolers. The findings for Puerto Rican families were consistent with previous studies (e.g., Leadbeater & Bishop, 1994; Riley et al., 2009). Perhaps if more parents had clinically significant levels of depression, we may have seen stronger associations between depression and children's changes in behavior problems across all ethnic groups.

There are several limitations to this study, including the inclusion of only two time points. Though five months is a relatively short period of time, we did find significant variability in change in behavior problems over this period. In addition, the two time points included in this study did span a period of time critical to children's development: the final year of preschool before beginning formal schooling. Reliability of the observational data was middling. Low reliability does not typically cause Type I errors, and our significant observational results provided convergent evidence with other findings, giving us greater confidence in their validity. However, the reliability issue could cause significant relations to be missed, and it will certainly be important for future work to replicate these results. More generally, given the number of analyses run in the current study, replication will be important to rule out Type I error. In particular, we regard the ethnicity analyses as exploratory, given the small sample sizes within ethnic groups, and the lack of clear *a priori* predictions in this area. Another important limitation is that SES and ethnicity were confounded, with all Puerto Rican and African American families coming from lower SES groups. Thus, differences between European American families and Puerto Rican or African

American families could be attributable to SES rather than ethnicity. Puerto Rican and African American families can be more readily compared in this study, given their similar SES, but additional research is needed. Regardless of whether differences were driven by ethnicity or SES, these differences highlight the need to consider cultural context in this research area.

Additional studies should explore potential teacher and observer biases in the behavioral ratings of young ethnic minority children, as well as preschool classroom and teacher characteristics that may influence student behavior. African American children were rated by their teachers and by observers as exhibiting significantly more problem behavior than European American and Puerto Rican children. It is difficult to tell whether these findings reflect real behavioral differences or biased perceptions. Even true differences in behavior may be due to characteristics of teachers or classrooms. For example, compared to European American and Puerto Rican children, African American children in this study generally attended preschools that had fewer resources and teachers with less education and training. This may have affected teachers' ability to manage their classrooms, in turn contributing to increased problem behavior in their African American students. Future studies should also examine children at especially high risk for continuing to exhibit behavior difficulties, including those with high levels of initial behavior problems and those with multiple risk factors. Unfortunately, the sample size in this study was not large enough to examine these higher-risk children.

Despite this study's limitations, it has a number of strengths. The study focused on early childhood, included diverse families, used multiple strategies for assessing child behavior problems, and used HLM to account for nesting within individuals and classrooms as well as the longitudinal data structure. Findings contribute to our understanding of parent variables that predict the trajectory of children's early behavior problems. Namely, this study demonstrates the importance of looking at predictors of behavior change rather than only cross-sectional associations — different patterns emerge when looking at changes across time compared to concurrent relations. In addition, results indicate that parent effects may differ depending on child sex and ethnicity, pointing to the need to consider contextual factors. Although additional research is needed to replicate and extend these findings, it is clear that multiple factors play a role in the trajectory of problem behavior during preschool; this knowledge can help in our efforts to identify those most at risk, develop and implement interventions, and ensure that young children can develop the behavioral, social, and academic skills they need to be ready for school.

Acknowledgements

This study was supported by grants from the National Institute of Mental Health (R29 MH55088) and from the William T. Grant Foundation. We would like to thank the children, parents, and teachers who participated in this project.

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