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Bidirectional relations between intrusive caregiving among parents and teachers and children's externalizing behavior problems☆

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ABSTRACT

Informed by the transactional and bioecological theories, this study examined the bidirectional relations between intrusive caregiving and children's externalizing behaviors across the family and school systems during the early elementary school years. Using data from the NICHD Study of Early Child Care (N = 1364), these bidirectional associations were examined from 54 months of age through third grade. Both mothers' and teachers' intrusive caregiving behaviors contributed to the development of children's externalizing behaviors in the first three years of elementary school, and children's externalizing behaviors consistently predicted mothers' intrusive caregiving behaviors. Children's externalizing behaviors mediated the relation between teachers' intrusiveness and mothers' intrusive caregiving. These bidirectional associations did not vary across child gender, but tended to be stronger among non-White children than their White peers. These findings suggest that children's own behaviors can serve as a key connection between the two core institutions of child development—the family and school systems.

Externalizing behaviors refer to a broad set of behaviors that are distressing to others (e.g., over-reactivity, impulsivity, and aggressiveness; O'Connor et al., 2011) and represent one of the most common forms of maladjustment in children (Campbell, 1995). Even though children's externalizing behaviors have long been known to be influenced by the caregiving environment (e.g., Eisenberg, Taylor, Widaman, & Spinrad, 2015; Webster-Stratton and Hammond, 1988), there remain important gaps in the literature that need to be addressed. The current study addresses one of these gaps by considering the associations between children's exposure to intrusive caregiving from their mothers and teachers and their development of externalizing behavior problems between preschool and third grade.

Through the lens of a transactional model (Sameroff, 2009), we consider the dynamic nature of development: children's behaviors and caregiving environments have mutual and bidirectional influences on one another. In other words, children's externalizing behaviors can potentially shape how parents and teachers treat them. We also consider the time dimension of these dynamic interactions by testing interactions between the child and the experiences provided by the social context from preschool to third grade. Consistent with the bioecological (Bronfenbrenner & Morris, 2006) and developmental systems (Lerner, 2006) theories, we consider mesosystems comprising the relationship between the home and school systems by examining child-driven effects as a potential bridge between them. Children may convey the impact of caregiving behaviors at home to teachers' reactions to children in school (and vice versa) via intermediary changes in children's behaviors (see also, Ansari & Crosnoe, 2015). We further situate our study in the tenets of bioecological theory by considering other child characteristics (gender and ethnicity) as factors that may condition these proximal and bidirectional relations.

1. Intrusive caregiving and child externalizing behaviors

Externalizing behavior problems are one of the most common and persistent forms of maladjustment among children (Campbell, 1995). Particularly during the first several years of school when increased demands for conformity and cooperation with others are required, children who exhibit externalizing behavior problems transition more poorly to school and are at heightened risk of performing poorly on multiple domains of school adjustment (Keenan, Shaw, Delliquadri, Giovannelli, & Walsh, 1998). These transitions afford potential opportunities for children's externalizing trajectories to be initiated, sus-

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tained, or acerbated (Silver, Measelle, Armstrong, & Essex, 2005). These externalizing behaviors during early elementary school may also predict pathways of developing internalizing behaviors, poor peer relationships, and other maladjustment problems (Pedersen, Vitaro, Barker, & Borge, 2007). Children's externalizing behavior problems are often promoted by either negative parenting or the absence of positive parenting (Rubin, Burgess, Dwyer, & Hastings, 2003; Serbin, Kingdon, Ruttle, & Stack, 2015; Verhoeven, Junger, van Aken, Deković, & van Aken, 2010). However, such a dichotomy is fairly broad, and specific caregiving behaviors need to be studied in order to provide practical and theoretical recommendations (Eisenberg et al., 2015). Intrusive caregiving behavior may be one of these behaviors that is understudied.

Intrusive parenting is often defined as parents' over-controlling tendencies as means of limiting children' autonomy (e.g., excessive directiveness; Eisenberg et al., 2015). Striving for autonomy is one of the fundamental needs for children's optimal adjustment (Deci & Ryan, 2000). When parents over control, limit children's autonomous needs, and leave no room for children to exert control over their own actions, children may experience aversive and negative affect towards their parents and these undermined parent-child relationships may predict children's externalizing behavior problems over time (Kochanska, Brock, Chen, Aksan, & Anderson, 2015). Relatedly, if parents become excessively controlling, children may lose opportunities to practice emotion regulation, efficient problem-solving, and exhibit externalizing behaviors (Eisenberg et al., 2015; Grolnick, 2003; Rubin, Burgess, & Hastings, 2002). Indeed, there has been accumulating evidence that maternal intrusiveness or excessive controlling behaviors, predict children's externalizing behaviors during early childhood (Campbell, Pierce, Moore, Marakovitz, & Newby, 1996; Eisenberg et al., 2015). However, fewer studies have addressed the relation between teachers' intrusive behaviors and children's externalizing behaviors in the school context (Soenens, Sierens, Vansteenkiste, Goossens, & Dochy, 2012). Derived from the Self-Determination-theory (Deci & Ryan, 2000), these studies have found that when teachers provide an environment that supports children's autonomy then children are more likely to develop self-identified internalization of considerateness towards classmates and exhibit fewer externalizing behaviors. Considering that schools are one of the primary socializing systems that influence children's development (Bronfenbrenner & Morris, 2006), there is a need to better understand the normative contexts and processes within them that may influence children's externalizing behaviors.

2. Children as the critical link in the home-School connections

Consistent with Bronfenbrenner's bioecological model, development is "a function of forces emanating from multiple settings and from the relations among these settings" (Bronfenbrenner & Morris, 2006). Schools and families function as two important proximal settings that shape children's development. The mesosystem comprises the important connection existing between these proximal settings. Child-driven effects may function as one of the key ways in which the family and school contexts are connected (Ansari & Crosnoe, 2015): children's externalizing behaviors influenced by earlier intrusive parenting at home may lead to the elicitation of increased level of teachers' intrusiveness at school; meanwhile, children's externalizing behaviors shaped by teachers' intrusive behaviors at school may impact how parents react to their children at home. These proposals suggest that greater attention must be paid to the connections between different developmental contexts that simultaneously shape children's development. By incorporating data from multiple time points, we test these transactional processes across systems with a specific focus on children's parents and teachers.

Children's externalizing behaviors are often perceived as "hard-to-manage" by caregivers. The aversive affective nature of externalizing behaviors necessitates the study of bidirectional and transactional relations between intrusive caregiving and children's externalizing behaviors. Since Bell's (1968) reinterpretation of the directionality in parent-child relationships, many theorists have endeavored to elucidate the phenomena of these reciprocal relations (Sameroff, 2000). Most scholars suggest that children's aversive behaviors (e.g., aggression, hyperactivity, non-compliance) trigger parents' irritability and harsh and coercive behaviors, such as physical punishment (Belsky, Pasco Fearon, & Bell, 2007; Scaramella, Neppl, Ontai, & Conger, 2008; Serbin et al., 2015). However, children's externalizing problems may also provoke parents' tendencies to react in an intrusive and over-controlling way, which have seldom been studied (Eisenberg et al., 2015). When children are aggressive, defiant, or emotionally unregulated, parents are likely to engage in a series of activities to regulate or monitor children's behaviors in order to "correct" children's behavior problems. These parents may also experience heightened level of child-related stress and are charged with negative emotions (Donenberg & Baker, 1993), which renders them less likely to resort to effective problem-solving techniques and more reliant on directive control of children's actions.

For example, Reitz, Deković, and Meijer (2006) found that adolescents' problem behaviors predicted changes in parents' autonomy granting of children's decision-making and parental involvement. In another adolescent sample, children's externalizing behaviors predicted increases in parents' psychological control (Pettit, Laird, Dodge, Bates, & Criss, 2001). Yet, among younger children, the findings are less consistent. As one example, Verhoeven et al. (2010) demonstrated that the externalizing behavior problems of boys between 2 and 3 years of age predicted parents' psychological controlling behaviors. In contrast, in a sample of children from 2 to 5 years of age, Eisenberg et al. (2015) found no direct relation between children's externalizing behaviors and parents' intrusiveness. It is entirely possible that the transactional relations between parents and their children change as children age. In the current study, we examine these transactional processes during the early elementary school years, an important period for children's long-term developmental trajectories (Duncan et al., 2007; Keenan et al., 1998).

In contrast, the literature on the bidirectional associations between children and teachers' intrusive behaviors is far shallower. As theorized above, children's externalizing behaviors could also evoke teachers' intrusiveness. A few studies have demonstrated that children's aversive characteristics predict increases in teacher-child conflict from preschool to first grade (Doumen et al., 2008; Skalick et al., 2015). Compared with the family context, however, teachers deal with the needs of a large number of children (Snell, Hindman, & Belsky, 2015), which may result in two somewhat orthogonal responses. First, it is possible that in a group setting caregivers may have limited patience and may be more likely to resort to over-controlling and intrusive solutions to manage children's externalizing behaviors. It is equally plausible, however, that any one child's characteristics in a group setting would have a smaller effect than would be the case in the context of a dyadic relationship. Put another way, while we know that children's externalizing behaviors can (and do) shape their parents' behaviors, it is less clear whether these processes play out in the classroom as well. To shed light on this matter, we consider the extent to which children's externalizing behavior elicit intrusive caregiving both at home and school.

3. Groups differences in these transactional effects: child gender and Race/Ethnicity

Informed by the bioecological (Bronfenbrenner & Morris, 2006) and developmental systems theory (Lerner, 2006), we also pay careful attention to the moderating roles of children's own characteristics, including their gender and race/ethnicity, in order to provide a more nuanced understanding of the reciprocal relations between children and their developmental ecologies. First, boys have been consistently found to show more susceptibility to a number of detrimental effects of

environmental adversities from prenatal development through childhood, and the associations between parenting behaviors and children's externalizing behaviors have been shown to be stronger for boys than for girls (Rothbaum & Weisz, 1994; Obradović, Bush, Stamperdahl, Adler, & Boyce, 2010). However, the empirical evidence on gender differences in the relations between children and their caregivers' behaviors is scarce. Two studies are of note: (a) when infants were perceived as difficult, fathers reported more caretaking with sons than with daughters (Lamb, Frodi, Hwang, Forstromm, & Corry, 1982); and (b) when preschool-aged children were perceived as hyperactive, parents were more reactive to their daughter but not sons (Ansari & Crosnoe, 2016).

Second, with respect to the moderating roles of children's race/ethnicity, the bidirectional relations between children and their caregivers should also be contingent upon the degree of susceptibility of behavioral problems in the specific racial/ethnical culture (Ansari & Crosnoe, 2015; Coll & Magnuson, 1999). On the one hand, the cultural normative context in which intrusive caregiving occurs will alter the meaning of these over-controlling behaviors to the child, and it is the meaning that may mediate children's subsequent externalizing behaviors (for similar arguments for discipline and children's behavior problems see: Deater-Deckard and Dodge, 1997). On the other hand, caregivers' attitude toward children's externalizing behaviors may help explain the racial/ethnic differences in how caregivers react to children's externalizing behaviors with intrusiveness. Thus, these transactional processes are embedded within cultural contexts that shape the opportunities that children have and how parents react to and manage them (Ansari & Crosnoe, 2015). For example, work by Ansari and Crosnoe (2015) suggests that children's cognitive skills elicited more changes in parenting behaviors during the transition to school among the children of immigrants and ethnic minorities than they did for native-born Whites. Such research, however, is few and far between. Also to be noted, it is essential to evaluate these differences in the bi-directions between intrusive caregiving and children's externalizing behaviors from a developmental perspective, bearing in mind that these differences may depend on the developmental stage of the child.

4. Hypotheses

With the above literature in mind, we evaluated four hypotheses. First, both mothers' and teachers' intrusive caregiving predicts children's externalizing behaviors. Second, children's externalizing behaviors predict increased levels of intrusive caregiving, but these associations would be stronger at home than in school. Third, the link between teachers' intrusiveness and mothers' intrusive parenting (and vice versa) would function through children's externalizing behaviors. Finally, we expect that these bidirectional relations would vary as a function of child gender and race/ethnicity. Given the mixed finding from prior studies and the complex nature of these moderating effects, we do not make directional hypotheses.

5. Method

5.1. Participants

Instead of using clinical samples, we used a large multi-site longitudinal community sample of children and families, which allows us to consider the implications of normative behavior problems. Mothers and children in the current study were derived from the NICHD Study of Early Child Care. Families were recruited during 1990 and 1991 from hospitals across 10 sites in the U.S. (Little Rock, AR; Irvine, CA; Lawrence, KS; Boston, MA; Philadelphia, PA; Pittsburgh, PA; Charlottesville, VA: Morganton, NC; Seattle, WA; and Madison, WI). Families were eligible for participation if they were over 18 years of age, spoke English, did not have substance abuse problem, and their infant was singleton without any sign of disability. Roughly 5300 families met eligibility requirements. Of these families, 1364 children were randomly sampled and followed from 1 month of age through the end of high school. The current study included the full sample of 1364 children and families and included data from the preschool, first grade, and third grade rounds of data collection.

Our sample had a comparable number of males and females and approximately 80% of children were Caucasian and 20% were from U.S. minority groups (Asian or Pacific Islanders, 2%; Black or African Americans, 13%; American Indian, Eskimo, Aleutian, $< 1\%$; others, 5%). Among each racial/ethnic group, male and female children were equally distributed (White: 575 male, 526 female; non-White: 130 male, 132 female). Mothers averaged 28 years of age ($SD = 5.63$) and had approximately 14 years of education ($SD = 2.51$). Seventy-seven percent of mothers were married and fathers were present in 85% of households. On average, families were of middle-class backgrounds (income-to-needs ratios averaged 3.42). The majority of teachers were female (at 54-months, 92.7%; at 1st Grade, 95.7%; at 3rd Grade, 93.7%), White (at 54-months, 89%; at 1st Grade, 94%; at 3rd Grade, 92%), and had roughly 13 years of teaching experience (at 54-months, $M = 10.9$, $SD = 7.6$; at 1st Grade, $M = 14.5$, $SD = 9.5$; at 3rd Grade, $M = 14.0$, $SD = 10.4$). At 54-months, nine in ten children were in a center-based preschool program and roughly 81% of children attended public school between 1st and 3rd grade.

5.2. Measures

5.2.1. Mothers' intrusiveness

The quality of mother-child interactions was measured at 54 months, first grade, and third grade using video-taped interactions involving 15-min semi-structured tasks at each wave. The interaction was videotaped in a laboratory at 54 months and 1st grade. The interaction consisted of three parts, with two tasks that were too difficult for the child to complete independently and one activity that encouraged free play between the mother and child. The interaction was videotaped at home at 3rd grade. The interaction consisted of two tasks, a discussion task and a planning activity. All videotapes were sent to the same central location for coding. Coders received intensive training and met weekly or biweekly throughout the formal coding processes (Belsky, Vandell et al., 2007). They were all blind to the information about the families in the videotapes. In the coding procedure, intrusive behaviors and autonomy support were viewed as two extremes of one construct. At each assessment, coders provided a 7-point rating that reflected the degree to which the mother respected and supported the children's autonomy, with lower scores indicating mothers imposing her agenda on her child (e.g., physically restraining the child or dominating the interaction with unnecessary verbal direction) and higher scores were indicative of more autonomous-support. These scores were negatively reversed (e.g., 1 and 7 were transformed to -1 and -7, respectively) so that higher scores were indicative of intrusive behaviors. Based on double coding of roughly one fifth of observations (23% at 54-months; 20% at 1st Grade; 20% at 3rd Grade), Winer's (1971) intraclass correlations for assessing the reliability of independent coders was 0.78, 0.81, and 0.73 at 54-months of age, 1st grade, and 3rd grade, respectively.

5.2.2. Teachers' intrusiveness

Teachers' intrusiveness was measured using the Observational Ratings of the Caregiving Environment (ORCE; NICHD Early Child Care Research Network, 1996) at 54-months and the Classroom Observation System (COS-1, COS-3; Hamre & Pianta, 2005) at first and third grade. These rating systems have been found to be successful at obtaining information on the school context at both the individual child- and classroom-level. Trained observers observed the participating child and the quality of their interactions with their teachers in two 44-min cycles in their classrooms at 54-months and approximately 3 h during 1st grade and 6 h during 3rd grade (Pianta, Belsky, Vandergrift,

Houts, & Morrison, 2008). Classroom over-control was rated using different rating scales at different assessments; however, in classrooms that were characterized as overly controlling, teacher exhibited more over-controlling behaviors, the classroom was teacher-driven and rigidly structured, children were not allowed to leave their seat or talk for long periods, children were required to complete uniform assignments with no individuation, and children had no choice of activity. Only one target child was observed in each classroom; when multiple teachers were present in the classroom, the primary teacher's behaviors were coded. He or she was considered the target child's "main teacher" and also completed the Teacher Questionnaire booklet. At 54-months, teachers' intrusiveness was rated on a 4-point scale (1 = *uncharacteristic* to 4 = *extremely characteristic*). At 1st and 3rd grade, teacher intrusiveness at the classroom level was rated on a 7-point scale (1 = *uncharacteristic* to 7 = *extremely characteristic*). These teacher intrusiveness variables aimed to capture the overall climate of the setting and were strongly correlated with teachers' intrusiveness towards the specific child during 1st and 3rd grade when both overall classroom and child-specific interactions were captured (*rs* = 0.82-0.84). Interrater reliabilities were determined by assigning two raters to roughly 20% of the tapes randomly, and all ICCs exceeded 0.80.

5.2.3. Children's externalizing behavior

Children's externalizing behaviors were measured at each wave with the mother rated CBCL/4-18 (Achenbach & Edelbrock, 1986) at home as well as teachers' report on the Teacher's Report Form (TRF; Achenbach & Edelbrock, 1986) at child care centers or schools. These measures assess developmental problems occurring over the last six months. Mothers and teachers rated the externalizing items (e.g., "gets in many fights", "argues a lot", "physically attacks people") as *not true* (0), *somewhat true* (1), or *very true* (2). The reliability and validity of the CBCL and TRF has been widely established (Bérubé & Achenbach, 2001). Raw scores were converted into standard T-scores, based on normative data for children of the same age. The externalizing subscale has good internal consistency (αs ranged from 0.76 to 0.89 for mothers' reports, from 0.92 to 0.95 for teachers' reports). Mothers' and teachers' intrusive caregiving behaviors were positively correlated with children's externalizing behaviors (see Table 1 for correlations among the focal variables of interest). For the purposes of the current study, we used both mother and teacher reports of externalizing behavior (*rs* =0.31-0.41) at each assessment to create a latent construct of children's externalizing behavior.

5.3. Analytic strategy

To address our research objectives, we estimated cross-lag structural equation models with latent factors for children's externalizing behavior problems using the *Mplus* program (Muthén & Muthén, 1998–2013). Model fit was evaluated with the chi-square statistic, comparative fit index (CFI; recommendation, > .90), and root mean square error of approximation (RMSEA; recommendation, < 0.05; Hu & Bentler, 1998). Full information maximum likelihood estimation was used to handle missing data. Finally, to test for indirect effects, we used the INDIRECT command using bootstrapped standard errors, which assesses for mediation by taking the product of coefficients. To reduce the possibility of spurious associations, we controlled for a set of child-,family-, and teacher-level covariates, namely: child gender (0 = *male*, 1 = *female*), child minority status (0 = *non-minority White*, 1 = *minority*), mothers' years of education, mothers' marital status (0 = *no*, 1 = *yes*), whether the child's father lived at home (0 = *no,* 1 = *yes*), income-to-needs ratio, and teachers' race/ethnicity (0 = *non-White,* 1 = *White*).

6. Results

We first tested a single measurement model of children's externalizing behavior at 54 months of age (λ_{mother} = 0.40, $p < 0.001$; $\lambda_{teacher}$ = 0.72, $p < 0.001$), 1st grade (λ_{mother} = 0.47, $p < 0.001$; $\lambda_{teacher}$ = 0.76, $p < 0.001$), and 3rd grade (λ_{mother} = 0.51, $p < 0.001$; $\lambda_{teacher}$ = 0.76, $p < 0.001$), which demonstrated good fit: CFI = 0.997, RMSEA = 0.042, and $x2$ (df = 3) = 9.02, p = 0.029. Having established the measurement model, we proceeded to estimating the focal structural model (see Fig. 1) of the bidirectional relations between the home and school systems, which also demonstrated strong fit: CFI = 0.984, RMSEA = 0.033, and $x2$ (df = 37) = 83.74, $p < 0.001$.

6.1. The effects of parents and teachers on children

As can be seen in Fig. 1, results from the cross-lag model revealed that teachers' intrusiveness when children were 54 months of age (β = 0.09, p = 0.02), but not during the 1st grade year (β = −0.02,

Table 1
Descriptive Statistics and Bivariate Correlations among the Focal Variables.

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Teachers' intrusiveness	1. 54 months	–											
	2. 1st grade	0.12	–										
	3. 3rd grade	**0.10**	**0.08**	–									
Mothers' intrusive parenting	4. 54 months	**0.08**	**0.08**	0.09	–								
	5. 1st grade	**0.10**	**0.11**	0.10	**0.37**	–							
	6. 3rd grade	0.06	0.06	0.09	**0.29**	**0.39**	–						
Children's externalizing behavior problems	7. 54 months: M.R.	−0.00	0.03	**0.08**	**0.12**	**0.16**	**0.09**	–					
	8. 54 months: T.R.	**0.08**	0.06	−0.01	**0.22**	**0.14**	**0.14**	**0.31**	–				
	9. 1st grade: M.R.	0.07	**0.07**	**0.08**	**0.15**	**0.16**	**0.14**	**0.69**	**0.30**	–			
	10. 1st grade: T.R.	**0.09**	0.03	**0.07**	**0.20**	**0.16**	**0.22**	**0.25**	**0.48**	**0.34**	–		
	11. 3rd grade: M.R.	**0.09**	0.05	**0.09**	**0.16**	**0.17**	**0.24**	**0.60**	**0.28**	**0.74**	**0.34**	–	
	12. 3rd grade: T.R.	**0.12**	0.05	0.02	**0.24**	**0.24**	**0.23**	**0.24**	**0.31**	**0.36**	**0.54**	**0.41**	–
M		1.48	2.30	2.58	−5.22	−5.26	−4.89	51.69	50.16	48.64	50.68	47.39	51.51
SD		0.70	1.47	1.38	1.11	1.16	1.02	9.40	9.55	9.79	8.72	9.82	9.36
t-test results by child race/ethnicity	M (Non-White)	1.52	2.53	2.84	−4.55	−4.34	−4.38	52.69	52.29	50.21	54.14	48.99	55.95
	M (White)	1.48	2.26	2.52	−5.36	−5.45	−5.01	51.48	49.77	48.32	49.98	47.05	50.57
	t	0.71	**2.18**	**2.76**	**9.30**	**12.40**	**7.56**	1.58	**2.66**	**2.32**	**5.76**	**2.42**	**7.02**
	df	852	963	968	1038	1001	980	1058	765	1025	1005	1023	980
t-test results by child gender	M (Boys)	1.53	2.34	2.60	−5.18	−5.25	−4.76	50.91	49.91	48.32	50.76	47.05	51.59
	M (Girls)	1.43	2.27	2.57	−5.26	−5.26	−5.02	52.47	50.40	48.96	50.60	47.73	51.47
	t	1.96	0.74	0.33	1.24	0.05	**4.04**	2.71	0.72	1.05	0.30	**1.11**	0.22
	df	852	963	968	1037	1001	979	1058	765	1025	1005	1023	979

Notes. Bolded coefficients were significant at $p < 0.05$. M.R. = mother report. T.R. = teacher report.

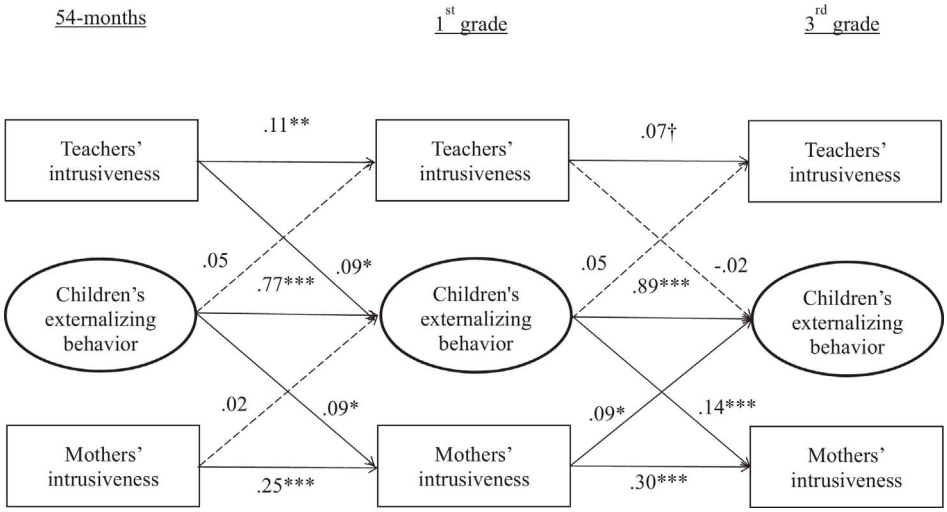

Fig. 1. Standardized path coefficients for the bidirectional relations between the home and school systems.
Notes. Although not shown, the cross lag model included within time correlations across all constructs. The model controlled for the following variables: child gender, child minority status, maternal education, mothers' marital status, whether the child's father lived at home, and the household income-to-needs ratio. Dashed lines = not significant.
*** $p < 0.01$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$

$p = 0.60$), resulted in greater levels of externalizing behavior problems over time. Teachers' intrusiveness when children were 54 months of age also had detrimental implications for children's externalizing behavior problems in 3rd grade via heightened levels of externalizing behavior in 1st grade ($\beta_{indirect} = 0.10$, $p = 0.006$). In contrast, mothers' intrusive parenting at 1st grade resulted in increased levels of externalizing behavior problems at 3rd grade ($\beta = 0.09$, $p = 0.03$), but similar patterns did not emerge during the earlier years ($\beta = 0.02$, $p = 0.60$). However, due to the stability in maternal intrusive parenting from year-to-year, there was evidence for indirect associations: the stability in mothers' intrusiveness between 54 months of age and 1st grade resulted in higher levels of externalizing behavior problems among children in 3rd grade ($\beta_{indirect} = 0.02$, $p = 0.03$). Thus, both mothers' and teachers' intrusiveness had short- and long-term implications for the children's development of externalizing behavior.

6.2. The effects of children on their parents and teachers

Having established the "effects" of both teachers and mothers on children, the next objective was to determine whether there was evidence of child-driven effects. As can be seen in Fig. 1, children's externalizing behavior problems resulted in increased levels of intrusive parenting among mothers (but not teachers) between 54 months of age and 1st grade ($\beta = 0.09$, $p = 0.02$) and between 1st and 3rd grade ($\beta = 0.14$, $p < 0.001$). Children's externalizing behavior problems at 54 months of age also had indirect implications for mothers' intrusive parenting up three years later ($\beta_{totalindirect} = 0.14$, $p < 0.001$), which operated through two primary pathways: (a) children's externalizing behavior problems between 54 months of age and 1st grade resulted in higher levels of intrusiveness caregiving from mothers in 3rd grade ($\beta_{indirect} = 0.10$, $p < 0.001$); and (b) children's externalizing behavior problems at 54 months of age resulted in heighted maternal intrusiveness at 1st grade, which in turn, persisted through 3rd grade ($\beta_{indirect} = 0.03$, $p = 0.02$).

6.3. Children as the critical link in the home-School connections

Tests of indirect effects revealed that teachers' intrusive caregiving behaviors influenced the parent-child dynamic over time. Specifically, teachers' intrusiveness when children were 54 months of age resulted in increased levels of intrusive parenting among mothers in 3rd grade via intermediary increases in children's externalizing behavior ($\beta_{indirect} = 0.02$, $p = 0.03$). Thus, when taken together, not only did parents influence children's development over time, but children's own behaviors also elicited changes in their developmental ecologies.

6.4. Variation by children's Race/Ethnicity and gender

Our final objective was to determine whether these transactional processes were embedded in broader stratification systems. In this study, we considered two potential moderators: (a) children's race/ethnicity (White vs. non-White children) and (b) children's gender. To test for moderation, we estimated an unconstrained model across groups, then each path was constrained sequentially to determine whether constraining each pathway would lead to a significant decrease in the model fit. Before doing so, however, we estimated a series of independent-samples *t*-tests to compare the focal variables for White and non-White children and boys and girls (see Table 1). Generally, non-White children received more intrusive caregiving from both their teachers and mothers than their White peers. They were also rated to exhibit more externalizing behaviors than White children were. With regards to child gender, we found that, compared with girls, boys received more intrusive parenting from their mothers at 3rd Grade and they were rated by mothers to exhibit fewer externalizing behaviors at 3rd Grade (see Table 1).

Moving on to the focal moderation analyses, our multi-group models revealed that although there was no evidence for moderation across child gender, there were some key differences across racial/ethnic group membership. Specifically, although no differences emerged in these transactional processes when looking at the relationships between mothers and their children, we did find that non-White children's externalizing behavior at 1st grade resulted in higher levels of teacher intrusiveness in 3rd grade ($\beta = 0.24$, $p = 0.01$), but this was not the case for White children ($\beta = 0.01$, $p = 0.76$; see Fig. 2). This difference was statistically significant (X^2 (1, $N = 1364$) = 4.93, $p = 0.03$). Relatedly, teachers' intrusiveness at 1st grade resulted in increased levels of externalizing behavior in 3rd grade for non-White children ($\beta = 0.19$, $p = 0.04$), but similar patterns were not present for White children ($\beta = 0.02$, $p = 0.67$; see Fig. 2). This difference was also statistically significant (X^2 (1, $N = 1364$) = 4.13, $p = 0.04$). Thus, transactional effects between children's externalizing behaviors and teachers' (but not mothers') intrusiveness were more prevalent for non-White children than for White children. In order to detect whether these race/ethnicity differences function differently for boys and girls, we

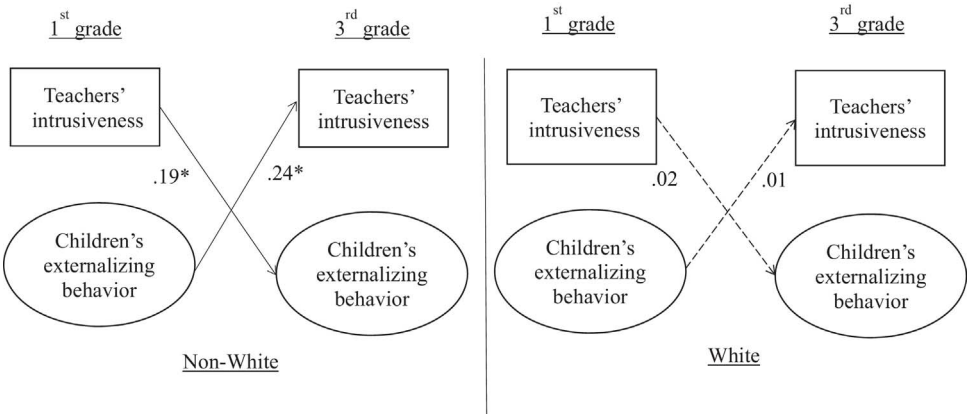

Fig. 2. Standardized path coefficients for the bidirectional relations between the teachers' intrusiveness and children's externalizing behaviors from 1st to 3rd grade for White and non-White children.

Notes. Although not shown, other paths in the original model were all tested for difference significance across race/ethnicity groups and only the pathways that were significantly different across White and non-White children were represented in the figure. Dashed lines = not significant.

*** $p < 0.01$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$

also examined these differences separately for boys and girls as well, but found no further evidence of moderation.

7. Discussion

Guided by both transactional and bioecological theories (Bronfenbrenner & Morris, 2006; Sameroff, 2000), this study considered the bidirectional relations between intrusive caregiving and children's externalizing behaviors across the family and school systems during the elementary school years. The results from this study have three take home messages.

7.1. The effects of parents and teachers on children

Overall, teachers' intrusiveness and mothers' intrusive parenting had implications for children's externalizing behavior. Specifically, mothers' intrusive parenting at 1st grade predicted increases in children's externalizing behavior at 3rd grade, but similar patterns did not emerge during the earlier period. This result may potentially explain the mixed findings from prior studies with respect to the impacts of intrusive parenting on children's externalizing behaviors being more prevalent among older than younger children (Eisenberg et al., 2015; Pettit et al., 2001; Rothbaum & Weis, 1994). Why this is the case, however, is not clear. One possibility is that intrusive parenting may not be resented by children until school age or adolescence when the demand for autonomy increases (see also, Eisenberg et al., 2015). Although the underlying reasons for these patterns are not testable with the data at hand, our results do indicate that the detrimental impact of intrusive parenting on children's externalizing behaviors may be more pronounced during the later elementary school years.

Teachers' intrusiveness when children were 54 months of age, but not at 1st grade, also predicted children's subsequent externalizing behavior problems. These detrimental associations remained until 3rd grade, suggesting that the transition to formal schooling may represent a critical stage of development that affords an opportunity for children's externalizing trajectories to be modified by non-maternal caregiving behaviors (Silver et al., 2005). According to bioecological theory, these transitions involve shifting contexts and opportunities for learning new social standards, disciplines, and rules that shape children's development (Bronfenbrenner & Morris, 2006). As children gradually adjust to the set of new demands in school contexts, their behavior patterns may become more stable once established.

Even though we focused on the developmental period starting from 54-months of age, children's externalizing behaviors are likely to have been shaped by parents' or other caregivers' behaviors before this period. That is, children's histories of externalizing behaviors may affect parents' or other caregivers' appraisal of children's concurrent externalizing behaviors. These appraisals could potentially exacerbate or alleviate adults' intrusive reactions to children's externalizing behaviors over time (Dix, 1991). For these reasons, it is important for future studies to consider how children's earlier histories of behavior problems alter parents' and caregivers' cognitive, affective, and behavioral reactions towards their behavior problems later on.

7.2. The effects of children on their parents and teachers

Children's externalizing behavior problems were also found to consistently predicte increased levels of intrusive parenting among mothers from 54 months of age to 3rd grade. When children repeatedly fail to comply with parents' requests, behave aggressively towards others, and are emotionally unregulated, parents are cognitively and emotionally prompted to behave in an over-controlling and intrusive manner (Dix, 1991; Eisenberg et al., 1999). Cognitively, parents may develop generalized expectations about their children of behaving poorly that have built up over an extended period of time (Denham et al., 2000). Thus, during interactions, they are more likely to physically restrain the child or dominate the interaction with unnecessary direction in order to induce immediate compliance in children. Affectively, these parents may also experience constant high levels of frustration with children and are charged with negative emotions (Donenberg & Baker, 1993). These emotions may occupy their resources for efficient parenting techniques and induce their preference for directive control in response to children's externalizing behaviors (Dix, 1991). Our findings differ from prior studies that have found no direct relation between children's externalizing behaviors and their parents' intrusiveness with younger samples (Eisenberg et al., 2015). Again, compared with these prior studies, this study highlights the importance of the transition to formal schooling for understanding these child-driven effects. This period not only initiates new learning environments for children, but also new expectations and requirements for their parents. They may become increasingly vigilant towards signals of children's externalizing behaviors, emotionally upset by these behaviors, and ultimately, respond intrusively.

It is also important to acknowledge that the results of this study revealed no direct associations between children's externalizing behaviors and their teachers' intrusiveness. These null associations, although in the expected direction, were roughly 45–65% smaller than the effects of children on their mothers ($ES_{child\text{-}teacher}$ = 5% of a standard deviation versus $ES_{child\text{-}parent}$ = 9–14% of a standard deviation), suggesting that any one child's characteristics or behaviors in a group setting (e.g.,

in the classroom) has a smaller effect than in the context of a dyadic relationship (e.g., in the home). Even so, the effects of children's, parents', and teachers' behaviors on one other are remarkably similar in size. Moreover, these mutual influences are even comparable in size with the effects of classroom quality (5% of a standard deviation; Keys et al., 2013), which has been central to the discourse surrounding successful educational programming. Thus, these findings lend support to our general theoretical prediction that development is dynamic in nature: children's behaviors and caregiving environments have mutual and bidirectional influences on one another.

Even though no child-driven effects were documented in the school context, the impact of children's externalizing behaviors on intrusive caregiving did not occur in isolation in the family contexts. Not only did children's externalizing behaviors elicit changes in their parenting environment, these child-driven effects also served as the bridge between family and school systems: intermediary changes in children's externalizing behaviors at 1st grade mediated the impact of teachers' intrusiveness at 54 months on maternal intrusive parenting in 3rd grade. These patterns are consistent with the mesosystem concept in the bioecological theory (Bronfenbrenner & Morris, 2006). They highlight the role of children's own behaviors as a means of stimulating connections and exchanges between the home and school systems.

7.3. *Variation by children's Race/Ethnicity and gender*

Finally, our results revealed that these transactional processes did not vary among boys and girls. Even though this finding differs from prior empirical evidence showing that the correlation between parenting behaviors and externalizing behaviors may be stronger for boys (Rothbaum & Weisz, 1994), this null finding is not surprising given the complex nature of gender differences in these bidirectional relations. First, this null finding may be attributed to the type of caregiving behaviors we examined in the current study. Prior studies that documented stronger associations between parenting and externalizing behaviors among boys have examined parental responsiveness and warmth (Kerr, Lopez, Olson, & Sameroff, 2004; Rothbaum & Weisz, 1994) or hostile and negative parenting (Gordis, Margolin, & John, 2001; Webster-Stratton, 1996). Different parenting behaviors may function differently in terms of affecting or being affected by boys and girls. Second, this null finding should also be interpreted in the context of the studied age of the children. Gender differences are linked to particular developmental periods. Studying maternal depressive symptoms, Blatt-Eisengart, Drabick, Monahan, and Steinberg (2009) found that as children developed, there was a decrease in the effect of maternal depressive symptoms on boys' externalizing symptoms and an increase in these effects among girls. In future work, it would be useful to consider how these gender differences change across longer developmental periods.

Despite the lack of moderation by child gender, we found that the relations between teachers' intrusiveness and child externalizing behaviors were stronger among non-White as compared with White children. First, teachers' intrusiveness predicted externalizing behavior, but this prediction was not present for White students. Prior research has demonstrated that minority children derive greater benefits from positive teacher-child relationships than their White peers (Meehan, Hughes, & Cavell, 2003; Murray, Waas, & Murray, 2008) possibly because these relationships provide these students with a unique opportunity to compensate for their existing risk status. Findings from this study suggest that the compensatory hypothesis may not only hold true for the teacher-child relationship, but also for specific caregiving behaviors, such as teachers' intrusiveness. To this end, we also found that child-driven effects from externalizing behavior at 1st grade to teachers' intrusiveness in 3rd grade were only present for non-White children, which is in line with the literatures on adjustment risk status among minority children (Cosden, Zimmer, Reyes, & del Rosario Gutierrez, 1995; McLoyd, 1990; Pigott & Cowen, 2000).

7.4. *Limitations and conclusions*

Despite these contributions, a number of limitations need to be addressed. First, our measures of intrusive caregiving were solely dependent upon a one item rating scale from a semi-structured laboratory observation and classroom observation. The results may differ when intrusive parenting behaviors are assessed using multiple items or observed across contexts. Second, ideally teachers' specific intrusive behaviors to the targeted child at each assessment should be used to test child-driven effects. However, these codes were not available across assessments in the dataset. In using classroom level behaviors, it may be the case that we are under-estimating child-driven effects in the school context. Third, our sample consisted of children in the United States with non-clinical levels of externalizing behaviors. It has been suggested from prior studies that children at more severe levels of behavioral problems may impose severe parenting stress and very detrimental parenting behaviors, such as physical punishment and even abuse (Cicchetti & Toth, 1995; Hipwell et al., 2008). Thus, using a nonclinical sample in the current study may have, again, resulted in an underestimation of child-driven effects. Thus, results should be generalized to less advantaged populations or clinical samples with caution. Fourth, causal interpretation of these associations should be made cautiously as these data are correlational. However, this concern is somewhat mitigated by the fact that we adjusted for lagged dependent variables, which is recognized as one of the strongest adjustments for omitted variable bias. Finally, because parents and teachers may rely on their repeated and prolonged experience with children, it would be ideal to control for children's previous history of externalizing behavior or their stable temperamental characteristics when considering these bidirectional relations.

With these limitations and future directions in mind, our findings demonstrate the importance of studying the role of children in shaping their developmental ecologies. Not only can parents influence children's development over time, but children's own behaviors also evoke responses in their developmental ecologies that shape their later development. These results also underscore the potential of children's own skills and behaviors in connecting the two core systems of child development and that these child effects in the school context may be more pronounced among non-White children than their White peers. Thus, intervention programs aimed at promoting effective parenting or reducing children's externalizing behaviors need to take a holistic approach and account for the transactional nature of the parent-child dynamics.

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