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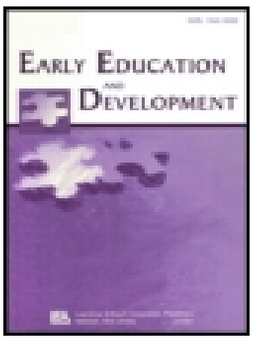

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Predicting first graders' social competence from their preschool classroom interpersonal context

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ABSTRACT

Research Findings: This study investigates contributions of the preschool classroom interpersonal environment to students' social competence in 1st grade. Participants were 862 ethnically/racially diverse children who attended public preschool classrooms serving low-income families. Systematic observations of 60 classrooms occurred across the preschool year and quantified teacher and student behaviors. Preschool and 1st-grade teachers provided reports of children's social behavior. First-grade teachers also assessed children's problem behaviors. Multilevel analyses indicated that at the end of 1st grade, students who experienced preschool settings with teachers who displayed more approving behavior, less disapproving behavior, and more positive emotional tone showed significant gains in positive social behavior and lower rates of problem behavior, even after students' social skills at preschool entry were controlled. Greater gains in positive social behavior and fewer problem behaviors in 1st grade were also predicted by immersion in preschool classrooms that had more positive and cooperative interactions among peers. *Practice or Policy*: Universal preschool is a policy under consideration nationally and locally, with social competence often listed as an important goal. This study indicates that even in the absence of a particular social-emotional curriculum, preschool teachers' behaviors and interactions among their students may have lasting implications for children's social development.

Recently, there has been resurgent interest in clarifying the approaches that nurture children's social skills learning and development within schools. One avenue that has shown a promising longer term impact on children's social skills is the use of some school-based social-emotional learning programs (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Yet limited research has examined longer term change in children's social competence in relation to what teachers and peers do on a daily basis in classrooms. It is vital to empirically identify actionable techniques that educators can routinely integrate within the natural flow of classroom interaction. Practice-friendly social skills–building techniques delivered over time are likely to create strong learning in students (Roediger, Finn, & Weinstein, 2012), facilitate teachers' adoption and implementation, and offer students continuity and reinforcement across grade levels and different subjects (Embry & Biglan, 2008; S. M. Jones & Bouffard, 2012; Rogers, 1995).

The present study takes a close look at everyday teacher practices and interpersonal exchanges among teachers and peers inside preschool classrooms and investigates whether they predict low-income children's social competence across a 2-year major socioeducational transition period. In a broad sense, social competence reflects children's abilities to form positive relationships and adaptively navigate social situations, but there is ongoing debate about how to precisely define and

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measure social competence (Fabes, Gaertner, & Popp, 2006). Social competence as referred to in this article is characterized by positive interpersonal behavior and few problem behaviors.

It is significant that early social competence may lead to better social and academic outcomes, particularly for low-income children who disproportionately lag behind their economically advantaged peers in social skills (Wertheimer, Croan, Moore, & Hair, 2003). Research suggests that young children with more positive interpersonal skills fare better years later in domains of education, employment, mental health, and social adjustment (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000; Crick, 1996; D. E. Jones, Greenberg, & Crowley, 2015). There is also mounting evidence that early conduct problems place children at greater risk for academic failure and peer rejection (Bub, McCartney, & Willett, 2007; Lansford, Malone, Dodge, Pettit, & Bates, 2010).

From many vantage points, preschool settings likely serve as prime socializing arenas for young children. Preschool affords many young children the first context outside the home where they are in the position to learn to navigate a social world with unfamiliar adults and large numbers of peers for extended periods. It may be a pivotal transitional period that frames expectations of what behaviors are acceptable and unacceptable in formal school environments and may provide children with opportunities to learn foundational social skills necessary for social competence in later grades.

Core principles derived from several theories illuminate how underlying processes in preschool classrooms may serve as socializing agents. Through the lens of social cognitive theory, how adults and peers relate, model social and emotional constructs, set behavioral expectations, and reinforce behaviors all influence children's internalized models and motivation for how to behave toward others. Repeated exposure to certain behavioral patterns and expectations is expected to be a prominent socializing influence. At the same time, determinants of behavior are shaped by interactions among personal factors (e.g., biology, social cognition, self-regulation, self-efficacy) and environment (Bandura, 1986). Sociocultural theory emphasizes that learning is affected by language-mediated interactions with adults and more competent peers, especially by interactions with opportunities to make connections between old and new knowledge, problem solve, collaborate in shared knowledge construction, reflect on new information, and construct new understanding (Vygotsky, 1978). The broaden-and-build theory of positive emotions holds that cultivating a positive atmosphere can lead to more positive emotional states that broaden awareness, supporting the discovery of new knowledge and skills (Fredrickson, 2004). This broadened awareness over time is expected to build individuals' intellectual, social, and psychological resources and prompt their social connectedness and pleasurable engagement with their environment. Positive emotions may also help individuals cope with negative emotions and experiences that may limit their capacity for learning (Fredrickson, 2004; Fredrickson, Mancuso, Branigan, & Tugade, 2000). Taken together, these theories suggest that observing the history of the frequency, complexity, and emotional valence of teachers' and peers' routine social exchanges inside preschool environments will help pinpoint factors that affect social development and that have direct implications for preschool pedagogy.

The available evidence on the interpersonal arena of the preschool classroom suggests that teacher and peer behavior and interactions have implications for promoting or hindering children's social competence in the short term (e.g., Brophy-Herb, Lee, Nievar, & Stollak, 2007; Downer, Booren, Lima, Luckner, & Pianta, 2010; Fuhs, Farran, & Nesbitt, 2013; Mashburn et al., 2008). Yet there are gaps in the literature regarding whether interpersonal processes in preschools may have a durable influence on social competence as children make the transition from preschool to more formal schooling in first grade or beyond. To maximize improvements to schools serving low-income children, it is important to have practical knowledge of the essential teaching scaffolds needed for creating positive, sustained student outcomes. We turn next to the research that suggests a contribution of specific, routine interpersonal processes in classrooms to children's burgeoning social skills.

The importance of teachers' approving behavior, disapproving behavior, and emotional tone

We focus on three aspects of teachers' behavior and interaction in preschool classrooms: approving behavior, disapproving behavior, and emotional tone. It is surprising that the literature lacks information on whether teachers' routine approving and disapproving behaviors are either short- or long-term predictors of children's behavioral adjustment. In this study, teachers' approving behavior is indicated by verbal praise and/or physical displays of approval in response to students' behavior and contributions that they want to reinforce. This contingent positive reinforcement when desired behaviors occur is expected to provide children with clear ideas of what behaviors are expected of them (Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008). Experimental research demonstrates that in the short term contingent positive reinforcement elicits children's prosocial and on-task behavior and reduces their disruptive behavior in the classroom (Doland & Adelberg, 1967; Ferguson & Houghton, 1992; Pisacreta, Tincani, Connell, & Axelrod, 2011).

In contrast, teachers' disapproving behavior, characterized by disapproving facial expressions, tone of voice, and/or physical contact that are used to change children's behavior, has been linked in the short term to negative student outcomes such as higher rates of disruptive behavior and lower rates of on-task behavior (Nafpaktitis, Mayer, & Butterworth, 1985; Thomas, Becker, & Armstrong, 1968). Unfortunately, teachers tend to deliver more reprimands than praise (Gable, Hester, Rock, & Hughes, 2009) and rarely reinforce positive behaviors of their students (Eisenberg, Cameron, Tryon, & Dodez, 1981). Failure to reinforce instances of desired behaviors in the classroom may communicate to students that these behaviors are not valued (Skinner, Cashwell, & Skinner, 2000).

Teachers' emotional tone captures the degree to which they exhibit positive affect and interactions with students. Research has documented that in early education settings when teachers display more positive emotional tone, students tend to display better social skills and fewer problem behaviors (Bub, 2009; Pianta, La Paro, Payne, Cox, & Bradley, 2002). Some research even suggests that the behaviors of early childhood teachers carry long-lasting effects. For example, Pianta, Steinberg, and Rollins (1995) found that teacher sensitivity and positive teacher–student interrelations in kindergarten were related to children's better social adjustment in second grade. Social cognitive theory suggests that teachers who successfully model positive affect and interactions provide examples of behavior for students to observe and imitate (Bandura, 1986). However, educators serving young children from low-income backgrounds seem more likely to be insensitive and harsh than educators serving children from more advantaged backgrounds (Phillips, Voran, Kisker, Howes, & Whitebrook, 1994).

The importance of classroom-level positive, cooperative, and associative peer interactions

A classroom peer ecology characterized by more positive behaviors likely has the potential for ripple effects on students' developing social competence. Research suggests that simply interacting with more socially well-adjusted children boosts the positive behaviors of less socially skilled children (Wentzel, Barry, & Caldwell, 2004). Studies that have focused on student-level positive peer interactions suggest that these interactions longitudinally predict multiple dimensions of students' social competence (e.g., National Institute of Child Health and Human Development Early Child Care Research Network, 2008). In one of the few studies to examine the potential influence of aggregate levels of positive behaviors of peers in the classroom, Hoglund and Leadbeater (2004) found that higher concentrations of positive behaviors of peers within first-grade classrooms were related to increases in first graders' social competence. Collectively, this research suggests that within classrooms with more socially competent peers, individual children may learn to engage in more socially competent behavior.

In early childhood classrooms, peer interactions of a cooperative and associative nature, defined and adapted from Parten's (1932) social play categories, may also scaffold social competence. Cooperative interactions are exchanges in which children work together and follow predetermined rules that govern the steps or sequence of behavior (e.g., playing games with formal turns). Associative interactions involve exchanges with peers in the context of an activity that does not have predetermined goals or rules (Farran, Son-Yarbrough, Silveri, & Culp, 1993). There are theoretical bases for children's learning as a result of the increasingly complex demands placed on them by peer interactions and as result of observational learning and modeling (Bandura, 1986; Vygotsky, 1978). In early childhood classrooms serving children from low-income backgrounds, cooperative and associative peer interactions may potentially be particularly salient because low-income preschoolers appear to engage in fewer of these interactive states compared to their more affluent counterparts (Farran & Son-Yarbrough, 2001).

There is reason to further postulate that classrooms with higher proportions of cooperative interactions might provide particularly stimulating learning experiences. These complex rule-governed interactions are likely to support the transfer of social and cognitive skills among peers via opportunities to learn social norms, engage in collaborative activities that support language development, negotiate problems, and observe models of social skills (Bandura, 1986; Vygotsky, 1978). Empirical studies suggest that different forms of paired or group cooperative learning activities have meaningful effects on children's cognitive growth (Johnson, Johnson, & Stanne, 2000). On a different note, early childhood classrooms with more cooperative interactions may be more likely to include children who are more sociocognitively mature and better equipped to scaffold peer learning. Having classmates with better language and cognitive skills has been shown to uniquely predict young children's academic gains over a school year (Henry & Rickman, 2007; Mashburn, Justice, Downer, & Pianta, 2009).

The social-cognitive complexities that delineate cooperative peer interactions in this study are also synonymous with how complex social pretend play has been defined in some literature, but these interactions are not limited to pretend play or play exchanges. "Because [pretend] play continually requires children to overcome impulse in favor of rule-governed behavior—to wait, share, cooperate, and abide by social conventions—the child, according to Vygotsky (1978) achieves her 'maximum display of willpower,' her greatest self-control during pretense" (Berk & Meyers, 2013, pp. 99–100). Vygotsky (1978) argued that skills developed in social pretend play gradually transfer to children's ongoing social interactions. In line with Vygotsky's view of the role of social pretend play in child development, navigating broader, complex cooperative peer interactions may, by the same token, help children learn self-restraint and social rules for behavior. Examining the link between the social-cognitive complexity of children's peer interactions and their developing social competence, a handful of studies have found that young children's engagement in more complex forms of social pretend play predicts positive behavior and less aggression toward peers, even years later (Howes & Matheson, 1992; Howes & Phillipsen, 1998; Spivak & Howes, 2011). However, associative interactions, which would be considered less complex forms of interpersonal exchange (Howes & Phillipsen, 1998), might provide a less valuable developmental context for social learning.

In sum, evidence suggests components of classroom interactions that may be related to growth in children's social skills. Still unknown is how young children may be socially influenced by features at the level of the entire classroom. Research has traditionally focused on correlates of individual children's social interactions. Knowing which of these candidate classroom-level influences are in fact related to children's growth is important, as the number of children involved in preschool classroom settings grows every year.

Study aims

The present study addressed how first graders' social competence is linked to aspects of their preschool interpersonal context. In line with the theoretical and empirical work reviewed, we

hypothesized that higher levels of educators' approving behavior and positive emotional tone and overall positive, cooperative, associative interactions among classmates would provide support for social learning in preschool that contributes to children's later social competence. Conversely, we expected that higher levels of early educators' disapproving behavior would exacerbate problem behavior and hinder positive behavior. Another objective was to examine the hypothesis that more socially cognitively complex cooperative peer interactions might provide more scaffolding for peer-mediated longer term social learning than associative interactions.

To examine our objectives, we analyzed data from a randomized controlled trial of the Tools of the Mind curriculum. The evaluation showed no immediate or long-term effects of the Tools curriculum on children's social competence compared to business as usual (Farran & Wilson, 2015). Data collected in the project included systematic observations of interpersonal processes from a large number of preschool classrooms (both treatment and control). Furthermore, we collected preschool and first-grade teacher assessments of children's social competence. These data afforded us the advantage of being able to look closely at interpersonal happenings inside the preschool context and to examine whether they predicted low-income children's social competence over a 2-year interval. The unique contribution of this study is that the classroom predictors that we examined have not, for the most part, previously been investigated empirically for their long-lasting influences on children's social competence.

The data also supported a robust exploration of the understudied link between the classroom peer ecology and children's social competence. We used aggregate measures of observational assessments of all students per classroom to estimate peer context effects, whereas generally studies have used a composite measure of observations of only a small proportion of students in a classroom, a limitation that could create measurement error and attenuate patterns of association. It is significant that well-designed classroom observations may reveal essential scaffolds and socialization approaches compatible with existing teaching practices, which likely will receive the most buy-in from teachers (Rogers, 1995).

Method

Sample description

The present study used data from Cohort 1 of a randomized controlled trial testing the efficacy of the Tools of the Mind curriculum. Data were from 60 preschool classrooms (32 experimental, 28 comparison) in 45 public schools located in two southeastern U.S. states. The preschool programs were funded through grants from Title I and/or their states, and the primary criterion for student enrollment was that families met the income guidelines for free or reduced-price lunch.

For our inquiry, we restricted the analytic sample to the 862 children whose preschool teachers completed an assessment of their positive social behavior. Less than 2% of the original sample did not have these data at the beginning of preschool. The children were on average 54 months old (SD = 4 months) at pretest. Girls made up 45.6% of the sample. The sample was ethnically/racially diverse (40% White, 26% African American, 24.2% Latino, 6.1% Asian, 3.7% other ethnic/racial background) and included 29.4% English language learners (ELLs). At the end of Grade 1, first-grade teacher–report data were collected on 769 of the children in 345 classrooms in 138 schools.

Preschool teachers reported an average of 12.04 years (SD = 8.15) of teaching experience; 100% of teachers reported obtaining at least a bachelor's degree, and 25% had graduate degrees. All but one of the teachers were female. Class sizes ranged from 14 to 20 students (M = 17.80, SD = 1.93).

Measures and procedures

Children's social competence

Preschool teachers reported on children's social behavior in Fall 2010 after 6 weeks of school. First-grade teachers assessed children's social behavior and problem behavior in Spring 2013 (Grade 1).

Social behavior. Students' social behaviors toward peers and teachers in the classroom were measured using the Interpersonal Skills Subscale of the Cooper-Farran Behavior Rating Scale (Cooper & Farran, 1991). This scale is composed of 21 behaviorally anchored items rated on a 1–7 scale with descriptive phrases for anchor points 1, 3, 5, and 7. This scale includes teacher reports of children's conflict resolution skills, empathic behavior, turn-taking behavior, and respectful behavior toward teachers and peers. Higher scores on this measure indicate more positive social behavior exhibited in the classroom. The reliability and construct validity of the Cooper-Farran Behavior Rating Scale have been supported (Cooper & Farran, 1991). Within this sample, the Cronbach's alpha reliability coefficients for the subscale were .90 and .94 at preschool and first grade, respectively.

Problem behavior. Students' problem behavior in the classroom was assessed using the Problem Behavior Subscale from the Academic Classroom Behavior Record (Farran, Bilbrey, & Lipsey, 2003). The Problem Behavior Subscale is a 9-item checklist for teachers to indicate whether a child has shown any behavior problems that the teacher feels are cause for concern from a checklist including physical aggression, relational aggression, overactive behaviors (e.g., acts impulsively without thinking), attention problems, and the like. Scores reflect the sum of the checked items, with higher scores indicating more problem behavior. The internal consistency for the scale was .66 at first grade (calculated with Kuder–Richardson formula 20 for binary items).

Classroom interpersonal process measures

Preschool classroom observations were conducted for three full school days throughout the year (fall, midyear, spring). The three time points for each measure were averaged to create more stable estimates of interpersonal processes in classrooms.

Teacher behavior and classroom-level cooperative and associative peer interactions. Using a snapshot measurement approach across the day, observers used the Teacher Observation in Preschool (TOP; Bilbrey, Vorhaus, Farran, & Shufelt, 2010) to collect information on teachers' behavior and interactions and the Child Observation in Preschool (COP; Farran & Son-Yarbrough, 2001) to collect information about individual children's cooperative and associative interactions that was then aggregated to the classroom level. During observations, the teacher was observed once, followed by each child in the classroom, and then the cycle would begin anew. Observations were not conducted when class was not in session (e.g., at naptime, recess, meals).

Teachers and children were each observed a maximum of 20 separate instances, or sweeps, per observation day. Each individual was observed for 3 s, after which the observer immediately coded. All but one of the TOP and COP variables were computed as the proportion of sweeps in which a particular behavior occurred to the total number of sweeps across three full-day observations. In contrast, teacher emotional tone was measured at each sweep using a 5-point rating scale. Across the three observations on average 53 sweeps (SD = 5) were coded for each teacher and 47 sweeps (SD = 6) were coded for each child. Across the observations, TOP interrater reliability (Cohen's kappa coefficients) ranged from .82 to .86. COP kappa coefficients ranged from .82 to .87.

As described in the TOP manual, details of the variables used in this study are as follows. Approving behavior was the proportion of sweeps in which a teacher used verbal comments, facial expressions, or a physical contact with a child/children to reinforce a particular behavior (e.g., the teacher says "I like the way you have worked hard this morning," or the teacher pats a child on the back for assisting another child with her puzzle). Disapproving behavior was the proportion of sweeps in which a teacher used disapproving facial expressions, verbal comments, tone of voice, and/or physical contact with a child/children to communicate that a behavior should be changed (e.g., if/then statements threatening to take away a privilege or issue a punishment, grimacing to discourage a child's behavior, suggesting a different choice of activities from the one the child chose). Emotional tone reflected the positive or negative affect of a teacher's behavior or interaction with a child/

children during the 3-s observation (i.e., 1 = *very negative*: Teacher uses sarcasm toward a child, yells at children, or insults them; 3 = *flat*: Teacher is neutral and shows no expression; 5 = *vibrant*: Teacher appears excited, showing high levels of appreciation).

The COP variables were defined as follows. Cooperative interaction was the proportion of sweeps in which children were involved in social activities that had predetermined rules that governed the steps or sequence of a child's behavior (e.g., children worked together and took formal turns acting out a story). Associative interaction was the proportion of sweeps in which children interacted with peers in the context of an activity or task that did not have predetermined rules (e.g., building a block fortress).

Summary ratings of positive interaction among peers. Three summary items from the Prekindergarten Classroom Dynamics Rating Scale (Yun, Farran, Lipsey, Vorhaus, & Meador, 2010) were used to capture the degree to which interactions among children in the classroom were positive. This scale is a 5-point Likert-type scale for rating classroom-level characteristics. It is completed following a full-day observation. Two items were selected: "Sharing among children occurred" and "Cooperative behavior among children occurred." Each item asked observers to rate the frequency with which each of the prosocial behaviors occurred throughout the observation (i.e., 1 = *never*, 3 = *a few times*, 5 = *very often*). Another item required observers to rate the overall quality of peer interactions while considering children's behavior and language in the classroom (i.e., "Peer interactions in the classroom across the observation were …" with anchors 1 = *highly negative*, 3 = *mixed*, 5 = *highly positive*). The average internal consistency (i.e., Cronbach's alpha) of the three items was .69 across the three observations. Test–retest reliability was evaluated by the consistency of judgments made by independent raters who observed the same classroom 1 to 10 days apart (M = 3.41, SD = 2.53). Test–retest reliability was calculated using the intraclass correlation coefficient (ICC) with data collected from 27 pairs of observations (54 observations total) in 25 classrooms. For the three selected Prekindergarten Classroom Dynamics Rating Scale items, the ICC using a two-way random effects model with absolute agreement was .68, indicating that there was adequate test–retest reliability over a period of several days.

Results

Descriptive analysis

Descriptive statistics of the indices of interpersonal processes in preschool classrooms and children's social competence are reported in Table 1. Further data inspection indicated that dependent and independent variables had skewness and kurtosis statistics in the accepted range (Kline, 2011).

The distributions of interpersonal processes across classrooms provide a descriptive view of the preschool contexts that children experienced. Across three full-day observations, teachers were on average less frequently observed demonstrating approving behavior than disapproving behavior (4% vs. 6% of the observational sweeps, respectively). The variation among the 60 teachers was notable. Across the observations, 12 teachers were observed disapproving in 10% or more of the observational sweeps, but 12 different teachers were never observed disapproving. With respect to teachers' approving behavior, three teachers were observed approving of children's behavior in 10% or more of the observational sweeps, but 11 teachers were never observed using approving behavior. In general, teachers' emotional tone was between flat and pleasant, but teachers were rarely observed with a vibrant emotional tone: Hence, teachers were seldom seen having a strong positive interaction (e.g., smiling or laughing) with students or exhibiting genuine excitement about teaching. Classroom-level summary ratings indicated that children's peer interactions included positive behavior as well as a few instances of negative interaction (e.g., aggression, arguing). Across the 60 classrooms, children spent an average of 1% of the observational sweeps in cooperative interaction and 7% of the observational sweeps in associative interaction.

Table 1. Descriptive Statistics for Measures of Preschool Classroom Interpersonal Processes and Children's Social Competence.

Measure	*M*	*SD*	Min	Max
Preschool classroom predictors				
Teacher behavior and interactions				
Approving	0.04	0.03	0.0	0.12
Disapproving	0.06	0.05	0.0	0.21
Emotional tone	3.41	0.18	3.4	3.80
Summary ratings of peer interaction				
Positive interaction	2.83	0.51	1.9	4.11
Behavioral count proportions				
Cooperative	0.01	0.01	0.0	0.08
Associative	0.07	0.03	0.1	0.21
Teacher ratings of social competence				
Preschool positive social behavior	5.26	1.07	1.38	7.00
First-grade positive social behavior	5.65	1.05	1.71	7.00
First-grade problem behavior	1.04	1.44	0.00	7.00

Note. Classroom interpersonal processes (aside from emotional tone and positive interaction) were the proportion of observed sweeps characterized by the given behavior to the total number of sweeps collected at the three observational periods. Emotional tone and classroom-level positive interactions were Likert-type scale ratings (1–5 rating scale). Preschool and first-grade positive behaviors were rated on a 1–7 rating scale. Problem behavior used a 9-item checklist.

Because these data were from a randomized controlled trial testing the Tools curriculum, we explored whether the curriculum may have influenced classroom processes, thus contributing to differences in children's social competence. One-way between-groups analyses of variance revealed no significant differences between Tools and control classrooms in teachers' approving behavior, disapproving behavior, or emotional tone: approving behavior, $F(1, 58) = 2.49$, $p = .12$, a nonsignificant difference favoring the control condition; disapproving behavior, $F(1, 58) = 0.01$, $p = .95$; emotional tone, $F(1, 58) = 1.52$, $p = .22$. Yet Tools classrooms tended to have higher ratings of peer positive interactions and more instances of observed cooperative and associative interactions: peer positive interactions, $F(1, 58) = 4.09$, $p = .05$; cooperative interactions, $F(1, 58) = 11.54$, $p = .01$; associative interactions, $F(1, 58) = 3.33$, $p = .07$. It is not surprising that the peer ecology of Tools classrooms included more of these types of peer interactions given that the Tools of the Mind curriculum provides structured time blocks for peer interaction and embeds the scaffolding of sociodramatic play and behavioral self-regulation into many of its activities. However, in the present study, our interest was in exploring associations between aspects of the preschool interpersonal environment and first graders' social competence above and beyond effects attributable to preschool classroom treatment condition. We included treatment condition as a covariate in analyses to control for any effects on children's social competence attributable to Tools.

Correlations among classroom-level processes are reported in Table 2. As one might expect, several classroom processes had low to modest correlations with one another. For example, teachers who demonstrated more approving behavior were observed having a more positive emotional tone, and teachers with a more positive emotional tone were less likely to use disapproval.

We also examined the nature of children's social adjustment in the sample. On average, first-grade teachers reported children's behavior toward teachers and peers as more positive than the preschool teachers had, $t(768) = -10.15$, $p < .01$ (paired-samples t test). First-grade teachers generally reported that their students had few problem behaviors, but some children were rated as having as many as seven problem behaviors that teachers had concerns about out of a possible nine. Preschool teacher ratings of social behavior were related to first-grade teacher ratings of social behavior and problem behaviors: social behavior, $r(767) = .46$, $p < .01$; problem behaviors, $r(767) = -.34$, $p < .01$. First-grade teacher ratings of children's positive behavior and problem behavior were also interrelated, $r(767) = -.69$, $p < .01$.

Table 2. Pearson Product–Moment Correlations Between Preschool Classroom Interpersonal Processes.

Variable	1	2	3	4	5	6
Teacher behavior and interactions						
1. Approving	—					
2. Disapproving	−.07	—				
3. Emotional tone	.27*	−.54**	—			
Classroom-level peer interactions						
4. Positive	−.07	−.47**	.42**	—		
5. Cooperative	.20	−.32*	.19	.31*	—	
6. Associative	−.23	−.20	.21	.35*	.13	—

*$p < .05$. **$p < .01$ (two-tailed tests).

Multilevel analysis of the role of preschool classroom processes in students' social adjustment

To examine the hypothesized associations, we ran a series of multilevel models in HLM 7.0 (Raudenbush, Bryk, & Congdon, 2011). Models were fit using full information maximum likelihood estimation with robust standard errors. In an analysis with missing data (11% missing data from preschool entry to the end of first grade on our outcome variables, but no missing data on classroom predictors), full information maximum likelihood estimation was shown to have advantages of reducing bias of estimates and standard errors and loss of information and power (Schlomer, Bauman, & Card, 2010). A post hoc adjustment was made on the unstandardized coefficients to produce standardized coefficients in order to compare the contribution of the classroom predictors in terms of magnitude. The standardized coefficient was created by multiplying the unstandardized coefficient by the ratio of the standard deviations of the independent and dependent variables.

Fully unconditional models were examined to determine how much of the variance in social competence could be accounted for by between-preschool-classroom differences. Results indicated that 2.2% (ICC = .022) of the variance in first graders' positive social behavior was accounted for by their previous preschool classroom, $\chi^2 = 77.23$, $p < .05$, $N_{student} = 862$, $N_{classroom} = 60$. Moreover, 2.7% (ICC = .027) of the variance in first graders' problem behavior was attributed to between-preschool-classroom differences, $\chi^2 = 79.53$, $p < .05$, $N_{student} = 862$, $N_{classroom} = 60$. Because children's first-grade behaviors were assessed 2 years following preschool, we expected that there would be a relatively small amount of variation in first graders' behaviors attributable to preschool classrooms. Nevertheless, identifying long-term contextual effects while controlling for students' social skills at preschool entry may suggest targets for classroom intervention that could produce meaningful differences in the social adjustment of students.

We also ran a covariates-only model. Covariates of curriculum condition, gender, ELL status, and positive social behavior at preschool entry were selected based on their potential to confound or modify the association between classroom processes and children's social competence. The curriculum condition (control = 0, Tools = 1) of the classrooms was entered at Level 2 and not centered in the model. Gender (male = 0, female = 1), ELL status (non-ELL = 0, ELL = 1), and positive social behavior at preschool entry were centered on their group mean and entered as fixed effects at Level 1. Pretest scores on positive social behavior accounted for much of the variance in first graders' positive social behavior ($\beta = .53$, $p < .01$) and problem behavior ($\beta = -.38$, $p < .01$). Gender predicted first graders' positive behavior ($\beta = .08$, $p < .05$) and problem behavior ($\beta = -.10$, $p < .01$), with teachers rating girls higher in positive social behavior and lower in problem behavior than boys. At Grade 1, ELL status also predicted positive behavior ($\beta = .14$, $p < .01$) and problem behavior ($\beta = -.19$, $p < .01$), with teachers rating ELL students as higher in positive social behavior and lower in problem behavior than non-ELL students.

A series of conditional models was run to examine the relative contributions of each preschool classroom interpersonal process to ratings of children's positive social behavior and problem behavior at Grade 1. The standardized estimates of the classroom predictor variables could be

compared across models because the classroom predictors were entered individually into separate models. These models testing the effects of each interpersonal process included covariates of classroom curriculum condition (which was entered at Level 2 and not centered in the model) and gender, ELL status, and positive social behavior at preschool entry (which were group mean centered and entered as fixed effects). Each Level 2 classroom predictor variable was grand mean centered and its intercept was free to vary between classrooms. For these analyses, the combined model that incorporated the Level 1 and Level 2 predictors was expressed by the following equation: Y_{ij} [first-grade positive social behavior *or* problem behavior] = γ_{00} + γ_{01} (condition) + γ_{02} (classroom predictor) + γ_{10} (ELL status) + γ_{20} (gender) + γ_{30} (positive social behavior at preschool entry) + $u_{0j} + r_{ij}$.

Table 3 presents the results of the multilevel models examining the associations of preschool classroom interpersonal processes with children's positive social behavior and problem behavior at first grade (controlling for child attributes also associated with children's social skills). We found partial empirical support for our hypotheses. Our results indicated that by the end of first grade, independent of their initial skill levels, gender, or ELL status, students showed significant, albeit small, gains in positive social behavior when they experienced preschool settings with teachers who displayed more approving, less disapproving, and more positive emotional tone and with more peer interactions of a positive and cooperative nature. Lower rates of problem behavior at first grade were similarly predicted by this same configuration of interpersonal dynamics in preschool classrooms. However, contrary to expectations, we did not find evidence of a relationship between preschool associative peer interactions and indices of first graders' social competence.

Discussion

In the preschool classroom community, children may acquire social skills and knowledge that affects how they navigate group-oriented situations within classrooms for years to come (Corsaro & Rizzo, 1988). The present study took advantage of naturally occurring variations among preschool classrooms to provide a picture of the interpersonal conditions that may aid or hinder low-income children in the transition to formal schooling in first grade. Our results suggested that preschool settings with teachers who displayed more approving behavior, less disapproving behavior, and more positive emotional tone had effects as far as first grade. Children from classrooms with those characteristics showed gains in positive social behavior and lower rates of problem behavior in analyses controlling for social skills at preschool entry as well as child demographic characteristics. It is important to emphasize that by controlling for children's social skills as rated at the beginning of their preschool year, we were able to examine *gains* in social adeptness from preschool to the end of

Table 3. Preschool Classroom Interpersonal Processes as Predictors of Children's Positive Social Behavior and Problem Behavior in First Grade.

	First-Grade Teacher Ratings of Children's Social Competence			
	Positive Social Behavior		Problem Behaviors	
Preschool Dynamics	*β*	t *Ratio*	*β*	t *Ratio*
Teacher behavior and interactions				
Approving	0.10	2.30*	−0.07	−1.69†
Disapproving	−0.09	−2.63*	0.11	2.93**
Emotional tone	0.10	2.86**	−0.09	−2.08*
Classroom-level peer interactions				
Positive	0.09	2.29**	−0.11	−3.04**
Cooperative	0.10	2.55**	−0.12	−3.43**
Associative	−0.01	−0.15	−0.02	−0.35

Note. The estimates are adjusted for covariates: The models included curriculum condition, child gender, English language learner status, and preschool teacher ratings of children's positive social behavior at entry into preschool.
†$p < .10$. *$p < .05$. **$p < .01$.

first grade. Our findings also add to the limited body of research suggesting longer term influences of a preschool classroom peer ecology characterized by positive and cooperative interactions.

The social landscape of the 60 sampled preschool classrooms serving primarily children from low-income and diverse backgrounds merits comment. Snapshots of these classrooms across the year generally showed mildly positive behaviors of teachers and children, more teacher disapproving than approving, and few cooperative interactions. This picture of low-income children's experiences in preschool does not seem to be anomalous. A study of 692 classrooms in 11 states found that the poorest quality preschool classrooms in terms of social-emotional and instructional climate were serving the highest proportions of children in poverty (LoCasale-Crouch et al., 2007). It is a critical public health issue that at-risk students face substandard school quality, or more impoverished classroom social-emotional and instructional climates, at preschool. To begin to resolve the failure of the educational system to be more responsive to at-risk students, targeted research and investments are needed to help teachers serving low-income students understand what works to strengthen their students' social-emotional learning and how to apply it.

This study's findings align well with those of prior research suggesting that teachers can leverage their emotional tone and use of approving behavior to enrich children's social competence (e.g., Bub, 2009; Pisacreta et al., 2011). However, teachers might struggle to find a balance between intervening to manage inappropriate behaviors and communicating responsiveness and nurturance to students. The relatively large negative correlation between teachers' positive emotional tone and disapproving behavior revealed by our results supports this idea. Teachers' reinforcement of appropriate behavior was also markedly less frequent than their conveyance of disapproval. Application of the broaden-and-build theory of positive emotions within classrooms would suggest that a higher ratio of teacher feedback of positive valence to feedback of negative valence is important for engendering student well-being (Fredrickson & Losada, 2005). This suggests that teachers should be taught to express joy and warmth and refocus their feedback to positively highlight what children are doing constructively in classrooms. Findings from a small-scale evaluation indicate that teachers can be taught to use more praise and fewer reprimands and that this training decreases classroom disruptive behavior (Reinke, Lewis-Palmer, & Merrell, 2008).

Preservice teacher education and in-service professional development programs clearly need to help teachers improve the social-emotional conditions of their classrooms. However, in a recent national survey, 73% of preschool to high school educators reported both limited knowledge and professional training as barriers to supporting students' social-emotional learning (Bridgeland, Bruce, & Hariharan, 2013). In line with recent recommendations, improving educator practice should involve training teachers in how to enhance their teaching style and routines in order to facilitate the teaching and learning of socially competent behavior (S. M. Jones & Bouffard, 2012). To meet this need, it is critical to prudently investigate what best teaching practices and training should entail. A recent study provided nuanced results that suggested that teachers' warmth, kind words, and positive behavioral management may not be sufficient to increase young students' positive behavior toward peers, but instead it may be valuable for teachers to directly encourage prosocial behavior and empathy (Spivak & Farran, 2012). It is also worthwhile noting that research suggests that students' social adjustment may be adversely impacted by their teachers' relational difficulties and mental health (Jeon, Buettner, & Snyder, 2014; Pianta et al., 1995). As Jennings and Greenberg (2009) highlighted, it is important to attend to the development of teachers' own social-emotional competence in expressing positive emotion, building supportive relationships with students, self-managing stress and emotional expressions, and setting limits respectfully for student behavior.

The research here suggests that peer effects have implications for young children's social adjustment. We found evidence that children in preschool classrooms with more positive peer interactions were better prepared to adaptively navigate social situations in first grade. Our findings align well with a cognitive social learning perspective, suggesting that having socially well-adjusted peers who

engage in positive exchanges in preschool classrooms helps children model, learn, and progressively internalize socially competent behavior (Bandura, 1986).

Another important finding is that prior exposure to preschool classrooms with greater concentrations of cooperative interactions (i.e., interactions wherein peers work together and follow predetermined rules that govern the steps or sequence of behavior) was associated with first graders' social competence. Our finding that associative peer interactions were not related to social competence supports the idea that there is something unique about cooperative peer interaction. Perhaps associative interactions do not emphasize new forms of learning or the practice of more complex skills (e.g., language skills, self-regulation, collaboration) that social cognitive theory suggests support development (Vygotsky, 1978). Our findings might instead have been the result of unmeasured factors. For example, cooperative interactions may suggest more sociocognitive sophistication within a classroom, which might in turn affect classroom processes or activities that shape child development (e.g., teaching time allotted to stimulate learning vs. handle behavioral challenges). Future research will have to provide a more robust understanding of the role of peer ecologies in learning. From an educational perspective, if cooperative contexts develop youngsters' social skills, it should be noted that adult direction has been found to impede the complexity and quantity of young children's social pretend play (Berk & Meyers, 2013), but it remains unclear whether the same might apply to other types of cooperative interaction. Moreover, although this study cannot offer causal evidence, a potential takeaway message is that play and peer interactions should not be deprioritized in early education.

After a discussion of potential peer context influences on children's social competence, it is important to acknowledge that teachers likely influence peer interactions in the classroom to the extent that they create opportunities for children to become acquainted with peer groups, practice social skills and spontaneous social engagements, model how to interact positively with others, and so on. This study suggests that teachers would do well to use activities that provide opportunities for positive and cooperative interactions in the broader preschool classroom. Leveraging the classroom peer ecology for educational purposes could involve a complex set of school reform decisions such as those related to how to create mixed-ability early childhood classroom contexts. Currently, however, there is simply a need for further research on how classroom peer ecologies influence individual children and how teachers may promote peer learning communities. The egalitarian structure of children's peer relations offers a unique context for children to learn other-oriented behaviors compared to hierarchical social relations such as those involving teachers, which may invoke more compliance-oriented behavior (Youniss, 1980).

Several study limitations need to be considered. Our correlational analyses limit claims of causality. Given that research remains sparse on most of the associations found between classroom processes and students' social competence, and associations were small, the results need to be interpreted with caution. That said, our results suggests that the small effects represented a sustained impact on children's socially competent behavior, evident 2 years after exposure to preschool classrooms with more positive and complex social dynamics. It is possible that the small associations found may have been an artifact of the preschool classrooms sampled, which on average were not especially positive or socially interactive. By far the largest correlates of children's social development were the characteristics they brought into the classrooms (e.g., entering social skills, gender, and ELL status). Intervention leading to a strong impact on the preschool interpersonal processes that we investigated might produce larger effects.

The present findings raise additional issues that should be considered in subsequent investigations. As participants were primarily low income, our findings may not generalize to children from higher socioeconomic strata. Children from more affluent homes may be less influenced by classroom social dynamics because they tend to enter school with better social skills, or alternatively they may already be in classrooms with more ideal interpersonal conditions. Also, measuring prior levels of problem behavior would help to clarify whether children entering preschool with more problem behaviors are more likely to elicit teacher disapproval. Assessing candidate mediators through which

classroom interpersonal processes affect children's social competence will be a challenge for future research. A possible mediator is self-regulation, which is implicated in underlying socially competence (Eisenberg, Fabes, & Spinrad, 2006). Findings of a recent investigation were that in classrooms in which teachers exhibited more approving behavior, less disapproving, and more positive emotional tone, preschoolers made gains in self-regulation at the end of the preschool year (Fuhs et al., 2013). Furthermore, accounting for the shared variance among classroom processes may provide a more fine-grained understanding of key socialization mechanisms; this study was designed to begin to shed light on the multiple ways to support children's future social competence through early education. Another major limitation is that this study did not collect information about social dynamics in children's kindergarten or first-grade classrooms, which could have obscured links between preschool classroom processes and first graders' social competence. It may be important for the field to construe a young child's school experience in a more complex manner to reflect cumulative influences over the early school years.

Moving forward, there are a few directions that the field of early childhood education might profitably take. One reform to research that appears to be gaining traction is identifying effective practices, and optimal combinations of practices, that can be flexibly integrated into the daily fabric of classrooms and schools. As a starting point, the field could undertake small but rigorous control group evaluations to test the effectiveness of training teachers to use instructional strategies that research suggests build and reinforce long-term social competence in children. Despite the buzz around the concept of evidence-based practice, translating research into classroom practices remains elusive. Yet Embry and Biglan (2008) incisively illustrated how the application of simple evidence-based procedures can produce significant and lasting behavioral change. This paradigm shift in early childhood intervention, from packaged programs to the use of simpler proven strategies, may sustainably and inexpensively increase the prevalence of classroom environments that nurture children's enduring capacities to constructively get along with their fellow human beings.

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