Supporting Preschool Children with Developmental Concerns: Effects of the Getting Ready

Intervention on School-Based Social Competencies and Relationships

Susan M. Sheridan

Lisa L. Knoche

Courtney E. Boise

Amanda L. Moen

Houston Lester

Carolyn Pope Edwards

Rachel Schumacher

Katherine Cheng

Nebraska Center for Research on Children, Youth, Families and Schools

University of Nebraska-Lincoln

Abstract

The current study reports the results of a randomized controlled trial examining the impact of the Getting Ready parent engagement intervention on young children's social-emotional competencies and the quality of the student–teacher and parent–teacher relationships. Participants were 267 preschool-aged children and their parents, as well as 97 preschool teachers. All children attended publicly funded preschool programs and were low income. In addition, all were considered educationally at risk due to developmental concerns in the areas of language, cognition and/or social-emotional development. Parent and teacher surveys were administered twice per academic year (fall and spring) for two academic years. Findings indicated that children in the treatment group were rated by their teachers to have greater improvement in social skills over two years of preschool as compared to their peers in the comparison condition. Teachers in the treatment condition reported significantly greater increases in their relationships with children as compared to children in the comparison group. Teachers in the intervention group also reported significant increases in their overall relationships with parents. The current findings illustrate the efficacy of Getting Ready at improving the social skills and important relationships for preschool children experiencing developmental risk.

The relationships that children form with significant others (i.e., parents, teachers, peers) early on represent the foundation necessary for healthy development and learning. Through relationships with key adults (i.e., parents and educators) formed early in life, children learn the skills necessary to explore their environments, seek out and engage in learning opportunities, interact prosocially, manage frustration, and solve problems, to name a few (Denham, Bassett, & Wyatt, 2007; Edwards, Sheridan, & Knoche, 2010). As children mature and interact with larger networks of individuals, they develop important social skills (e.g., cooperation, help-giving, sharing, problem-solving) that contribute to immediate and long-term behavioral and academic success (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Additionally, positive relationships among the primary adults within children's social worlds are important for broadening support networks; these relationships are particularly useful when they facilitate seamless and positive transitions (e.g., between home, school, and peer cultures, over developmental periods; Crosnoe et al., 2010).

Children growing up at socioeconomic and developmental disadvantage are at risk for deleterious life outcomes, in part because of the related challenges this creates for the formation of healthy relationships and social skills (Brooks-Gunn & Duncan, 1997; DiPerna & Elliott, 2002). Although recent trends are suggesting a modest improvement in both parent investment and school readiness among low-income families and children (Reardon & Portilla, 2016), a large gap remains relative to other socioeconomic groups (Bassok, Finch, Lee, Reardon, & Waldfogel, 2016). Gaps between children living in poverty and their non-impoverished peers in social-emotional, behavioral, and cognitive functioning appear very early in life and continue throughout school (Duncan, Magnuson, Kalil, & Ziol-Guest, 2012).

Rates of developmental concern are often higher in children experiencing socioeconomic risks (Ramanathan, Balasubramanian, & Faraone, 2017). Children living at or below the poverty line are more than twice as likely to be at high risk for developmental delays as their peers living at more than twice the poverty line (19 and 7%, respectively; Child Trends, 2013). Early educational risks manifested by early delays in language, literacy, and social-emotional/self-regulation skills tend to maintain throughout school, with achievement and social gaps widening over time. Despite the efforts of early intervention programs to bolster readiness, inequalities tend to be reduced but not eliminated, especially for children at greatest risk due to developmental delays (Magnuson & Votruba-Drzal, 2009). Programs that aim to promote early readiness skills among children experiencing the cumulative risk of developmental concern and low income are necessary.

The prognosis for children's early development is influenced in large part by forms of parental caregiving support (Luby et al., 2013) in the early childhood period. Parental caregiving patterns that are characterized by responsiveness, encouragement, and support are important for fostering children's feelings of safety and security (Edwards et al., 2010), which are prerequisite to their capacity to interact effectively in school and other learning environments. Early, positive interactions between parents and young children that are stimulating and nurturing promote neural connections essential for young children's academic success and emotional competence (Landry, Smith, & Swank, 2003; Shonkoff & Phillips, 2000).

Interventions promoting parent engagement and relationships are grounded in ecological theory (Bronfenbrenner, 1977, 1992), which views children's learning as a result of the child/family system interacting in reciprocal fashion with the school/schooling system (educational childcare and preschool services). Accordingly, a child's learning experiences are

highly responsive to the quality of the microsystem of home and preschool, and the interactions that occur between children and the adults in those systems. Beyond sole consideration of the immediate setting, however, relationships of individuals and supports across social contexts (i.e., teachers and parents; homes and schools), are also strong predictors of subsequent school success. Thus, the mesosystem of home and school in relationship to one another is recognized as a significant influence on early learning. Parental engagement in the context of the mesosystem has been found to be motivated primarily by features of the social context, especially parents' interpersonal relationships with children and early childhood educators (ECEs). Furthermore, specific ECE invitations significantly predict parents' engagement in learning at home (Green, Walker, Hoover-Dempsey & Sandler, 2007), highlighting the unique and important role of educators in establishing and promoting parent–child relationships. By extension, ECEs' perspectives of relationships within and outside of the classroom are important to explore.

School-based Social Competencies and Relationships

        In addition to interactions children experience in their homes, schools represent a primary context for developing social competencies. Social competencies in the preschool environment involve the display of prosocial behaviors and restraint around disruptive and antisocial behaviors, and are positively related to peer acceptance, achievement motivation, and academic success (Wentzel, 2009). Social and behavioral skills are widely considered precursors to achievement (DiPerna & Elliott, 2002; Kwon, Kim, & Sheridan, 2012); they enable young students to interact prosocially in classrooms and other social settings, engage adaptively in academic environments, and respond appropriately to ECE instruction.

Not all children develop basic social and emotional competencies prior to school entry (Rimm-Kaufman, Pianta, & Cox, 2000). Young children with delayed development manifest heightened social-behavioral problems as young as age 3 (Baker, Blacher, Crnic, & Edelbrock, 2002) and behavioral concerns that emerge in early childhood tend to be stable over time (Shaw, Lacourse, & Nagin, 2005). Poor children are more likely than other children to score very low in the areas of learning-related and externalizing behaviors (Isaacs, 2012). Findings from the Head Start Impact Study (Administration for Children & Families, 2010) reported limited impact of Head Start on children's social-emotional development, highlighting the need for interventions that can positively affect social-emotional competence in young children, especially those who are low income and enter school at risk for educational delays.

Comprehensive school readiness interventions including attention to social-emotional development have found significant effects on children's problem-solving and emotional understanding (Bierman et al., 2008) and self-regulation and conduct problems (Webster-Stratton, Reid & Stoolmiller, 2008). Many of these interventions include manualized parenting interventions focused on families as recipients of services. Two examples include the Research-based Developmentally Informed Parent Program (REDI-P; Bierman, Welsh, Heinrichs, Nix & Mathis, 2015) and ParentCorps (Brotman et al., 2011); both demonstrate immediate benefits across a host of school readiness domains, including social competence (Bierman et al., 2015) and problem behaviors (Brotman et al., 2011). In both cases, program delivery is the responsibility of intervention staff primarily (e.g., community- or university-based mental health professionals), and intentional connections between home and school are not prioritized. REDI-P uses a 10-week program for preschool children, wherein home visitors deliver a carefully specified curriculum, followed by six home-based sessions during kindergarten. Bierman et al.

(2015) found significant improvements in child literacy skills, academic performance, self-directed leaning, and social competence. Studies exploring the efficacy and maintenance effects of ParentCorps, a 13-week universal intervention have reported that the culturally responsive, structured group sessions with families resulted in significant positive behavioral outcomes for prekindergarten students (Brotman et al., 2011; 2013). Whereas these interventions are focused on families, they are scripted and require professionals to implement the curricula in a standardized way. Furthermore, the home visitor-parent working alliance was found to be a strong predictor of REDI's long-term growth (Nix, Bierman, Motamedi, Heinrichs, & Gill, 2018), pointing to the importance of parent-ECE relationships.

Also influential to children's development are student–ECE interactions and relationships. Empirical support documents the benefits of positive student–teacher relationships on young children's social and emotional development (Denham, Bassett, & Zinsser, 2012; Hamre & Pianta, 2001). Work by Hughes and colleagues demonstrates the benefits of positive student-teacher relationships on a number of outcomes including peer relationships (Hughes & Im, 2016) and achievement (Split, Hughes, Wu, & Kwok, 2012). Benefits related to classroom engagement (Lee & Bierman, 2015) and language and literacy skills (Schmitt, Pentimonti & Justice, 2012) are also evident. For children experiencing early developmental vulnerabilities or behavioral concerns, the student–ECE relationship may be particularly important for facilitating positive outcomes and can moderate the effect of child characteristics on school outcomes (Hamre & Pianta, 2001).

In addition to interactions in which children have a direct part, ecological theory (Bronfenbrenner, 1977) posits that relationships among significant individuals across systems or settings (i.e., at the level of the mesosystem) are positively related to student achievement and

behavior (Patrikakou & Weissberg, 1999). ECEs are often the first professional providing formal instructional and developmental support to children, and as such are uniquely positioned to establish constructive roles and relationships with parents. Specifically, positive and constructive parent-ECE relationships characterized by mutuality, warmth, and respect are associated with young children's academic performance and social-behavioral outcomes (Elicker et al., 2013). Furthermore, partnerships in early childhood greatly enhance the amount, quality, and scope of services available to assist children in meeting their learning and behavioral goals (Clarke, Sheridan, & Woods, 2009). Such relationships have been found to establish trajectories of early achievement in children living in socioeconomic disadvantage (Crosnoe et al., 2010) and improve developmental trajectories for those showing early signs of educational delay (Jung, 2010). In potentially challenging or high-risk situations, the establishment of positive, constructive relationships among family–school partners provide a "window of opportunity" for dialogue and problem-solving that is not present when home and school systems operate in isolation from or counter to one another.

The importance of partnering with parents as children begin to show developmental delays is acknowledged in federal policy and research. Part B of the Individuals with Disabilities Education Act (IDEA) requires involvement of parents on decision making teams for children as young as 3 years of age with identified disabilities. A number of programs establish meaningful roles and shared responsibilities among professionals and parents, recognizing that partnerships may amplify the benefits of early intervention for children with early signs of developmental delay (Kaczmarek et al., 2004; Weiss et al., 2006). Indeed, collaborative practices between parents and their child's educators (e.g., providing structure for assessing children's needs, setting goals, developing plans across settings, monitoring progress) are useful for targeting the

specific needs of children at educational risk (Buysse & Wesley, 2005). The use of planful,

coordinated practices is particularly salient during the preschool years when parents are forming

roles in their children's education (Raffaele & Knoff, 1999).

The Getting Ready Intervention

The Getting Ready intervention (GR) is a relationally based parent engagement

intervention promoting school readiness for young children from birth to age 5 (Sheridan,

Marvin, Knoche & Edwards, 2008; Sheridan, Knoche, Edwards, Bovaird, & Kupzyk, 2010).

Grounded in ecological theory, it focuses on enhancing relationships within and between systems

(homes, schools) and strengthening collaborative partnerships between ECEs and parents. Rather

than a parenting curriculum or universal parent training program delivered by external research-

based implementers (e.g., Bierman et al., 2015; Brotman et al., 2011), GR is conceptualized as

an individualized approach by which ECEs support parents' engagement in ways that promote

parental warmth, sensitivity, and active participation in supporting children's early learning. GR

is procedurally operationalized via a set of strategies used flexibly and responsively by ECEs in

natural parent–child and parent–educator interactions, including those that are unstructured (e.g.,

drop-off/pick-up times, notes home) and structured (e.g., home visits, parent–ECE conferences)

to establish and strengthen relationships between parents and children, as well as support a

strong partnership between parents and ECEs (McCollum & Yates, 1994). In formal interactions

between ECEs and parents (e.g., home visits), the strategies are implemented in the context of a

structured collaborative planning approach to guide shared goal setting and decision-making and

create consistency for the child across home and school settings. Improvements in child

outcomes are hypothesized to occur via improvements in the parent-ECE partnership, which

ultimately supports effective parenting practices and enhanced parent-child relationships. The GR strategies are in Table 1.

In a previous randomized controlled trial of 220 preschool children, GR yielded positive results on children's social-emotional skills, behavioral competencies, and language and early literacy; parental engagement; and family–school partnerships. Relative to a comparison group of children receiving typical preschool services, children receiving GR were reported to demonstrate increased attachment behaviors with adults, improved initiative, and reduced anxiety/withdrawal behaviors (Sheridan et al., 2010) and observed to show significant decreases in overactive behaviors with parents (Sheridan, Knoche, Edwards, Kupzyk, Clarke, & Kim, 2014). Likewise, relative to the comparison group, children in the GR intervention group demonstrated significantly improved rates of change in their language and literacy skills: oral language, early reading, and early writing. Language and literacy outcomes were moderated by ECE- or parent-reported developmental concerns upon preschool entry; when concerns were noted by parents or ECEs, the effects of the intervention on direct language assessments and ECE reports of language and literacy were greater than for their peers without concerns, and for the comparison group (Sheridan, Knoche, Kupzyk, Edwards, & Marvin, 2011).

Previous research with the GR intervention tested its effects on a general sample of low-income children attending publicly funded preschool programs, but not children exclusively at educational risk, defined by measured delays in performance. Whereas previous studies found moderated effects for children whose parents or ECEs expressed developmental concern, the direct effect of GR with a sample of children with observed delays has not been tested. The current study is a replication of previous research and aims to determine whether the GR intervention is effective as an intervention for children at socioeconomic disadvantage who are

entering preschool with additional educational risk due to early signs of developmental delay. Relative to previous research, this study explores the efficacy of GR with children who, upon entry into preschool, are at educational risk due to measured delays in language, cognitive, or social-emotional domains. This study is concerned with social-emotional functioning and relationships; thus, we explored the efficacy of GR on growth in (a) children's social competencies (including increases in social skills and decreases in problem behaviors), (b) student–ECE relationships, and (c) parent–ECE relationships. We expect the individualized and targeted GR approach that addresses simultaneously both parent–child interactions and parent–ECE connections will be effective for strengthening social competencies and relationships for children who are doubly disadvantaged due to low income and developmental delays.

Methods

Setting

The study took place in 94 public preschool classrooms operated through 13 public school systems or Head Start agencies in a rural Midwestern state. Classrooms were housed in 62 school/agency sites located in communities ranging in population from 269 to 258,379. Classrooms averaged between 18 and 20 children, ranging in age from 3 to 5 years and operated during the academic year for 4 or 5 days each week, for 4 hours each day. Children were in the same classroom with the same ECE for the two years of preschool. Each preschool program provided four structured parent–ECE contacts during each academic year; these contacts included home visits and parent–ECE conferences in family homes or school settings.

Participants

Participants in this study were 267 families of preschool children who were eligible for two years of publicly funded preschool in a Midwestern state, and 97 ECEs. Children qualified for programming based on low family income, special education status, and/or family receipt of

public assistance. Three cohorts of participants (Cohort 1 = 2012 - 2014; Cohort 2 = 2013 - 2015; and Cohort 3 = 2014 - 2016) were enrolled in the study; each participant was involved for two years (i.e., the entire period during which children were enrolled in the respective early childhood program).

Initially, 113 ECEs were approached to participate in this study; seven declined participation and nine were ineligible because no students in their classrooms met eligibility after screening. This resulted in a sample of 97 ECEs for the current study (33, 50 and 14 in Cohorts 1, 2 and 3, respectively). A total of 540 children and their families from the classrooms of participating ECEs were eligible for completion of the screening measure. Of this group, 83 families declined to participate; 457 children completed the Developmental Indicators for the Assessment of Learning, Fourth Edition (DIAL-4; Mardell-Czudnowski & Goldenberg, 2011) screening measure. Children were eligible for participation if they received a standard score of 90 or below in cognition, language, and/or social skills on the DIAL-4. A total of 267 children screened in to this study (89, 141 and 37 across Cohorts 1, 2 and 3, respectively). Table 2 summarizes child and parent demographic information at the time of the baseline assessments.

Child participants. Children ranged in age from 39 to 54 months at baseline (mean age = 46.01 months; *SD* = 3.67). Slightly more than half were boys, and the majority were White/non-Hispanic. For 44.9% of children, a parent, educator, or other adult has expressed concern about the child having a developmental delay; 29.8% had an Individualized Education Program (IEP) at baseline.

Parent participants. Two hundred sixty-seven parents or individuals serving in a parenting role (referred to as "parents" herein) participated in the study. The majority were

female, White/non-Hispanic, married or partnered, and reported receiving public assistance (e.g.

welfare, food stamps, WIC) in the last 12 months.

Early childhood educators. Demographic information on ECEs is in Table 3. Of the

ECEs participating in the study, 48 were assigned to the treatment group and 49 to the

comparison group. ECEs were not replaced if they left their position, or if all participating

children left their classroom. Over the course of the project, 17 treatment and 19 comparison

ECEs were lost due to mobility of the ECE or child.

Procedures

Recruitment of participants and assignment to experimental conditions. Individual

or small group meetings were held with ECEs in the weeks preceding the start of the school year

to inform them of the general goals and expectations of the study, answer procedural questions,

and obtain signed informed consent. Participation was voluntary; ECEs were free to withdraw at

any time without negative consequences. Research team leaders randomly generated assignments

of ECE to experimental condition using a random number generator in Microsoft Excel.

Eligible parents in both the treatment and comparison groups received an overview of the

study information by their child's ECE or research staff at family open house events. Children

who were 3 years of age and eligible for two academic years of preschool program services were

invited to participate in a screening for potential inclusion in the study. Only families who could

speak English, Spanish, or both were recruited for study participation to ensure successful

administration of assessments, surveys, and coding of data. Parents were assured that their

participation was voluntary and that their agreement to participate or decision to withdraw would

not affect their preschool program services.

Family assignment to treatment or comparison condition was dependent on the condition

to which their child's ECE was assigned. All children and families with the same ECE were

assigned to the same experimental condition, resulting in a hierarchically nested design. Parents

were not made aware of their condition assignment. From the perspective of the parent, the

requirements for participation in the treatment and comparison groups were identical. Following

the overview, a member of the research team gathered informed consent. The informed consent

included permission for screening (see procedures below) as well as full participation in the

study should the child meet eligibility criteria.

Screening procedures. Screening data were collected from all eligible child participants.

Research assistants were trained to administer the DIAL-4, which was conducted in English or

Spanish depending on the child's home language. ECEs also completed the social-emotional

development questionnaire from the DIAL-4. To be selected for participation, children scored

two thirds of a standard deviation or more below the mean (≤ 90) on the DIAL-4 Concept,

Language/Communication and/or Social-Emotional domains. If more than five children were

eligible in a single classroom following screening, research team members selected a random

sample of four families within each classroom whose children met the inclusion criteria to obtain

their informed consent for participation in the study. If any of these families declined

participation, another child was randomly sampled from the remaining pool of eligible children.

This process continued until a sample of three to five children per classroom was obtained.

Data collection. Data were collected over a two-year period for all participants,

representing their entire experience in preschool. Baseline or preintervention data were collected

at the point at which the parent and child were first enrolled in preschool and collected in the fall

and spring for two consecutive years. Parents completed a questionnaire (including demographic

child and family information) at each data collection point lasting 40 minutes. Bilingual

English/Spanish-speaking data collectors administered assessments with Spanish-speaking

families. At each assessment occasion, families received a $50 monetary incentive. Demographic

data from the parent questionnaire are used in the current investigation.

At the time of each family assessment, ECEs were provided with a questionnaire to

complete on each child/family. ECEs completed the questionnaires independently using a secure

web-based interface. Completion time for the ECE questionnaire was approximately 20 minutes

per child. ECEs were compensated for their time in the form of a monetary stipend.

Getting Ready (GR) intervention procedures. The strategies comprising the GR

intervention are listed and defined in Table 1. Specifically, ECEs used a series of intentional

interaction strategies with parents to support parent–child connections that were warm and

sensitive, encouraged the child's autonomy, and enhanced the child's learning. The strategies

both validated parents' contributions in their child's learning and development (e.g.,

communicate openly, affirm parents' competencies), and supported parents' acquisition of new

skills to encourage their child's learning in daily routines (e.g., focus parents' attention, model

and suggest). In addition, structured collaborative planning procedures (including data review,

parent–child observations, and the creation of partnership plans) were incorporated into home

visits and conferences to promote shared responsibility between parents and ECEs for children's

school readiness (Sheridan et al., 2010). This planning procedure included data-based decision-

making wherein observations and other information from parents and ECE were discussed, plans

for monitoring data were developed, and child progress on the indicators was monitored over

time to help guide ongoing decisions about goals and next steps.

The primary context for ECEs' use of the GR strategies was in 60-minute home visits and parent–ECE conferences conducted with at least one parent, the ECE, and the child during 12 contacts over two study years (i.e., six contacts annually). Annually, four visits were part of regularly scheduled programmatic activities and two contacts were added. The process used by ECEs in home visits and parent–ECE conferences was consistent regardless of setting (home or school). On average, families completed 13 structured contacts with the ECE across the two years of the study. Interpreters accompanied ECEs and provided translational services when a language other than English was spoken by the family. ECEs were also encouraged to use these strategies during all interactions with parents (e.g., family events at school, drop-off and pick-up times, regular classroom newsletters, and occasional informal notes, emails, text messages or telephone calls). Though the sample of children included in study demonstrated developmental concerns upon preschool entry, no systematic modifications to the intervention was required for this sample. Thus, the intervention approach was consistent with that used in past trials.

Comparison group procedures. Standard services for parents included a total of four parent–ECE contacts. These included two 60-minute home visits each academic year, and two parent–ECE conferences each year for a total of four, structured parent–ECE contacts annually. As part of the present study, two additional structured contacts were planned with families each year to ensure equivalence in time ECEs spent with parents across treatment and comparison conditions, resulting in a total of six structured parent–ECE contacts annually, or 12 contacts over the two study years. On average, families in the comparison group completed 11 structured contacts with the ECE across the two years of the study. The additional contacts took place at home or school based on family preference. The agenda for these contacts varied by

agency/school setting but generally included a review of child progress, data sharing and a discussion of goals. Children were typically not present during these contacts.

Training and professional support. ECEs in the treatment condition participated in a one-day training institute at the onset of their participation. This institute provided an introduction to the GR strategies and collaborative planning process. Following the training institute, they were supported in their delivery of the GR intervention through 90-minute individualized and small group coaching delivered bimonthly by an early childhood coach, resulting in approximately 32 coaching contacts over the two-year study. Getting Ready coaches had extensive experience in early childhood settings, and a minimum of a bachelor's degree in Early Childhood Education or related field. The coaches were trained to fidelity in the GR intervention by the PI, Co-PI and research team. All coaching sessions were audio recorded and monitored for fidelity.

 Coaching sessions followed a format that included initiation, observation/action, joint planning, reflection, and evaluation (Rush & Shelden, 2011). The agenda for each session focused primarily on a specific GR strategy and its use with individual families and ECEs. Coaches used reflective questions, focused on ECE strengths, and developed action plans for ECE activities between sessions. ECEs in the comparison group continued to receive supervision and professional development through standard program/district methods; no additional coaching activities were implemented with the comparison group.

Fidelity of intervention implementation. Adherence to the general strategies of the GR intervention and quality with which ECEs promoted parent engagement were coded objectively by trained research staff. Specifically, ECEs' use of GR strategies during two home visits per participating child (one in the spring of the child's first and second year of preschool,

respectively) were coded from digital video records. For each ECE, home visits for one to five families ($M = 2.39$; $SD = 1.26$) were captured via video and coded using the Home Visit Coding Guide (Knoche, Sheridan, Edwards, & Osborn, 2010). The Home Visit Coding Guide uses a partial interval recording procedure; trained research staff recorded the various GR strategies demonstrated by the ECE in successive one-minute intervals. It yields information on the rate at which the strategies were used over the course of an entire home visit. Interrater agreement across codes for GR strategies ranged from 84.4% to 100%, with a Cohen's kappa for exact agreement of .80. Data were collected on treatment and comparison participants to differentiate between groups (Dane & Schneider, 1998).

On average, ECEs in the treatment group were observed using (i.e., adhering to) GR strategies over an average of 51.9% of intervals during home visits (versus 39.7% for ECEs in the comparison group; $t[92] = 3.10$; $p = .003$). This between-group difference of 12 percentage points is highly consistent with our previous research reporting an 11 percent difference in favor of the treatment group ECEs (Knoche et al., 2010). Not surprisingly, treatment group ECEs in the current study used more advanced partnership strategies (i.e., affirm parents' competencies; make mutual, joint decisions) than those in the comparison group ($F[92]=26.80$; $p<.001$), reflecting highly unique elements of the intervention relative to traditional, teacher-directed strategies.

Measurement of Study Variables

Screening assessment. Children were selected for the GR study based on their score on the DIAL-4 (Mardell-Czudnowski & Goldenberg, 2011). Children completed the Concepts (i.e., understanding of body parts, colors, counting, shapes, and naming) and Language (i.e., articulation, expressive and receptive skills, letter naming, and other indications of early literacy)

subscales. ECEs completed the DIAL-4 Social-Emotional Development subscale, a 34-item measure examining children's usual behavior at school on a 3-point Likert scale (1 = *always* or *almost always*; 3 = *rarely* or *never*). Raw scores were converted to standard scores based on age at time of assessments. Children scoring ≤90 on any of the subscales were eligible for study.

Demographic information. Parents and ECEs completed demographic surveys at the beginning of their participation in the GR study. Items included gender, ethnicity/race, language, education, and other family and educator characteristics.

Dependent variables and measures. The Social Skills Improvement System (SSIS; Gresham & Elliott, 2008), Student-Teacher Relationship Scale (STRS; Pianta, 2001), and Parent-Teacher Relationship Scale (PTRS; Vickers & Minke, 1995) were completed by ECEs to evaluate the effects of the intervention.

The SSIS Social Skills subscale (46 items; $\alpha = .97$) assessed children's social-emotional skills such as communication, cooperation, empathy, and self-control as rated by ECEs. The Problem Behaviors subscale (29 items; $\alpha = .94$) of the SSIS assessed children's internalizing, externalizing, hyperactivity/inattention, and bullying behaviors. Items are rated on a 4-point Likert scale (0 = *never;* 3 = *almost always*). Standard scores ($M = 100$; $SD = 15$) were calculated based on the age of the child. Test-retest reliability coefficients for the Social Skills and Problem Behaviors subscales range from .74 to .86 (Gresham & Elliott, 2008). There is strong evidence for convergent validity between the SSIS and its predecessor, the Social Skills Rating System (SSRS; Gresham & Elliott, 1990; Gresham, Elliott, Vance, & Cook, 2011), and analysis indicates the SSIS has superior internal consistency estimates when compared to the SSRS (Gresham et al., 2011).

The STRS was used to assess the ECE's rating of the student-ECE relationship. The

measure contains 28 items which are rated on a 5-point Likert scale (1 = *definitely does not*

apply; 5 = *definitely applies*). Key constructs evaluated by the STRS are Conflict (12 items),

Closeness (11 items), and Dependency (5 items). For the purposes of these analyses, subscale

raw scores were combined to form an Overall Relationship score (28 items, α = .89, summed

score range 28 to 140). Higher total scores reflect a lack of conflict, lower dependency, and

higher closeness. Adequate test-retest reliability was demonstrated over a 4-week period, with

correlations ranging from .88 to .92 (Pianta, 2001). Validity studies also indicate strong evidence

for concurrent, predictive, and discriminant validity (Pianta, 2001).

The PTRS is a 24-item measure designed to evaluate the ECE's rating of the parent-ECE

relationship. Items are rated on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*).

The Overall Relationship (24 items, α = .89) was used for this study to reflect the degree to

which parents and ECEs feel an interpersonal connection (e.g., demonstrate dependability,

support and shared expectations) and communicate effectively with each other. Responses were

summed and range from 24 to 120. The PTRS has been shown to effectively differentiate

between participants receiving a family–school partnership intervention and those in a control

group (e.g., Sheridan, Witte, Holmes, Coutts, et al., 2017), suggesting evidence for criterion-

related validity.

Analytic Strategy

Hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) was used to test whether

the GR intervention was effective at improving preschool children's social skills, student–ECE

relationships, and parent–ECE relationships. The study design is a 4-level complex sampling

design (repeated observations [level 1] nested within children [level 2], children nested within

ECEs or classrooms [level 3], and classrooms nested within schools [level 4]). For all outcomes,

models included fixed contrast effects for treatment group and preferred language, a linear effect

of time, and a group by time interaction effect. Random child- and ECE-level intercept effects

were included to account for nesting within individuals and classrooms. School-level variability

was nonsignificant, so random school effects were removed, resulting in a 3-level model. Time

was centered at the baseline measurement occasion; thus, the simple effect of treatment assesses

treatment/comparison groups at baseline. The model is presented in equation form below

$$Y_{tij} = \gamma_{000} + \gamma_{100}(\text{Time}_{tij} - 1) + \gamma_{001}\text{Group}_j + \gamma_{101}\text{Group}_j(\text{Time}_{tij} - 1) + \gamma_{010}\text{HomeLanguage}_{ij} + u_{00j} + r_{0ij} + e_{tij} \quad (1)$$

where the parameter of interest, γ_{101} (the group by time interaction) represents the difference in

slopes between the intervention and comparison groups. Random residual (e_{tij}) and child- (r_{0ij})

and ECE-level (u_{00j}) intercept effects capture the remaining variability at each level. Analyses

were conducted with SAS PROC MIXED (Version 9.4) using restricted maximum likelihood

(REML) with Satterthwaite degrees of freedom.

This study used an Intent-to-Treat (ITT) strategy to ensure that the analytic models

reflected the real-world application of the GR intervention. In the HLM framework, all

participants with at least one measurement occasion were retained in the analysis, as long as data

on the time-invariant predictors (e.g., preferred language) were not missing. Missing data were

handled via full information maximum likelihood (FIML; Enders, 2001). Using FIML,

individuals with missing data at later time points contributed by providing information for the

estimation of model parameters. According to Little's MCAR test, no significant associations

between key variables of this study and missingness were found ($\chi^2(N = 267, df = 272) = 311.29$,

$p > .05$). Participants withdrew from the study only when they withdrew from the preschool

program; likewise, families were removed when their assigned ECE left their position. The

difference in attrition rates between the treatment (54.7%) and comparison (45.3%) groups was

not statistically significant ($\chi^2(N = 267, df = 1) = .339, p = .56$). Participants who left the

program, and thus the study, did not differ significantly from those that remained in the study on

key demographic characteristics (see Appendix A, Table A1 and A2 for details). Additionally,

there were no significant differences in attrition rates between treatment and comparison ECEs

who left and those who remained in the program ($\chi^2(N = 97, df = 1) = .117, p = .73$). Finally, we

used SAS PROC MULTTEST to obtain false discovery rates as a recommended method to

assess and adjust for study-wide familywise error (Osborne, 2006; Verhoeven, Simonsen, &

McIntyre, 2005).

Results

Baseline equivalence between treatment and comparison groups and results addressing

each of our research questions are reported next.

Baseline Equivalence

There were no mean baseline differences between treatment and comparison participants

for any of the outcomes of interest (all ps >.05), and for demographic variables (ranges of effect

sizes were measured with Cramer's V [0.001, 0.21] and Cohen's d [0.003, 0.16], indicating small

effect for baseline differences, except for parent education level, in which the treatment group

showed higher levels of education; Cohen, 1988). This largely validates the randomization

process and suggests that both groups were equal prior to the treatment condition receiving the

GR intervention. We included parent level of education as covariate to ensure that it did not

confound our results; because it did not significantly contribute to final estimates, it was

removed from our models for parsimony. Of all demographics, ECE race was marginally to

significantly associated with the baseline of outcome variables of interest; thus, it was included

as a covariate as well, but again because it did not significantly contribute to the final estimates it was also removed from models for parsimony.

Analyses of School-Based Social Competencies and Relationships

ECE perceptions of participating children's social-emotional competencies (social skills and problem behaviors) and the ECE's perception of his/her relationship with the child and with the parent were assessed with the SSIS, STRS, and PTRS. Descriptive statistics for all relevant variables are provided in Table 4. Parameter estimates for the condition X time interaction effect, condition and time main effects, as well as standardized effect sizes are presented in Table 5; Figure 1 depicts rates of change on outcomes for which significant effects were found. The figures represent the growth of the treatment and comparison groups on the outcomes of interest for those children who are identified as English-speaking; the same pattern over time was identified for children from Spanish-speaking households. To capture the treatment effect over the course of the study, the standardized regression coefficients for the treatment by time interaction were multiplied by three to reflect the three time intervals between baseline and the final measurement occasion. The resulting effect sizes were 0.03 for SSIS Problem Behaviors, 0.24 for SSIS Social Skills, 0.33 for STRS Overall, and .36 for PTRS Overall.

Significant differences were observed between treatment and comparison participants in the rate of change over time on ECE reports of children's social skills. The effect size of 0.24 suggests the GR intervention had a small impact on ECE-reported social skills (Cohen, 1988). The comparison group showed some evidence of improvement (as might be expected given their enrollment in a preschool program). However, when interpreting the parameter estimate for the condition X time interaction as the difference in the per-time point growth rate between the intervention and comparison groups, it appears that the intervention group gained, on average,

1.15 points more from fall to spring each year (approximately 3.5 points over the full two-year

intervention period or slightly over one fourth of a standard deviation) than comparison children

on the SSIS Social Skills subscale. No significant differences were observed between treatment

and comparison participants in the rate of change over time in ECE reports of children's problem

behaviors.

Intervention effects were also identified in ECE's reports of relationships they have with

individual children. The effect size of 0.33 from the intervention over time approached a

moderate impact (Cohen, 1988). ECEs in the treatment group reported an average improvement

of 4.77 points more than comparison group ECEs in their relationships with students over the

two-year intervention period.

The overall parent–ECE relationship was significantly enhanced over the course of the

two-year preschool period for ECEs and parents involved in the GR intervention, relative to

those not receiving the intervention. The effect size of 0.36 from the intervention over time again

approached a moderate impact (Cohen, 1988). Relative to comparison ECEs, those in the

treatment group reported an average improvement of 5.28 points in their relationships with

parents over two years.

Discussion

Relationships of all kinds are important for children's healthy development and learning.

Children's development occurs across a number of social contexts where interacting and relating

with others is a primary source for learning essential skills. For some children, environmental

and developmental characteristics create challenges to the formation of healthy and stimulating

relationships. In the GR intervention, ECEs engage with parents in a way that is intended to

strengthen the parent–child relationship and parent-ECE partnership and ultimately promote

positive benefits for children. Consistent with ecological theory, the GR intervention creates

consistent opportunities and continuities across a child's primary socializing systems (i.e., home,

school); engages key adults in collaborative, intentional ways; focuses on relationships; and

builds competencies among caregivers who collectively interact with a child over the course of

his or her waking hours.

Teacher invitations toward parents to engage in their child's learning have been identified

as a motivator of parental involvement in school-aged populations (Kohl, Lengua, & McMahon,

2002). ECE invitations are influential in part because they underscore the ECE's valuing of

parent contributions to children's developmental success. Thus, the ECE's reconceptualized role

in this study, focused on working collaboratively with parents to promote parent–child

connections and parent–ECE partnerships, may have been pivotal to strengthening children's

skills and relationships. Without a study aimed specifically at assessing the potential mediating

role of ECE practices on GR's effects, such pathways are still theoretical. Thus, we focused this

study exclusively on the perspective of ECEs.

Main Findings

Within the context of this relationship-based intervention, children were found to

experience improved social skills and relationships with their ECEs at a rate that exceeded

similar peers in a comparison group. Additionally, improvements in relationships between

participating children's parents and ECEs outpaced those for participants in a comparison group.

Relative to other GR studies that explored GR's efficacy for typically developing

children in low-income environments (Sheridan et al., 2010; Sheridan et al., 2011; Sheridan et

al., 2014), this study documented GR's effects for low-income children with developmental

concerns and suggested positive effects across a range of social and relational outcomes.

Although the majority of children who attend publicly-funded inclusive preschool programs

typically qualify for these programs due to poverty, some children also experience

developmental concerns and little is known about their intervention outcomes. In this efficacy

trial, we targeted children who showed early signs of educational risk as measured by

socioeconomic disadvantage *and* low performance on standardized tests of cognition,

language/communication, or social-emotional skills upon preschool entry in an effort to

intervene before the gaps between themselves and their typically-developing peers become

magnified. Because different measures to assess social-emotional competence were used across

Getting Ready efficacy studies, direct comparisons are not possible. However, it appears that our

effects on children's social skills in the present study are larger than the intervention effect on

social competence in the previous study, and comparable to that study's effects on attachment

and anxiety-withdrawal (Sheridan et al., 2010). Thus, this study replicates and extends findings

that have indicated the effectiveness of GR for improving children's social-emotional skills and

supports the notion that this intervention is appropriate across children and families with various

needs and circumstances, including children with developmental concerns.

This study contributes to the broader parent engagement literature in important ways. It

demonstrates the efficacy of a school readiness intervention on several important early

relationships that influence a child's development and well-being. Past research has explored the

effects of interventions on separate or distinctive relationships such as children's peer relations

(Stanton-Chapman, Walker, & Jamison, 2014) or student–teacher ECE relationships

(Vancraeyveldt et al., 2015). Our finding of consistent effects of a parent engagement

intervention on a host of social and relational outcomes (i.e., social skills, and student–ECE and

parent–ECE relationships) is consistent with other parent interventions, such as REDI-P which

yielded similar low to medium effect sizes (Bierman et al., 2015) on a typically-developing

sample of children. The current outcomes for social skills are especially encouraging given that

they represent a substantial boost for preschool-aged children with developmental concerns.

Despite the significant effects found over time for children's social behaviors, similar to

other GR research with typically developing preschoolers, there were no differences between

groups over time in the area of problem behaviors. Parent-ECE interactions were structured to

focus on strengths in children, and goals set in the collaborative planning meetings were defined

in ways that built prosocial competencies. This is in contrast to other interventions that

effectively address behavioral problems through a number of strategies, including redirection and

consequences for misbehavior (e.g., Brotman et al., 2011). It is also noteworthy that similar rates

of improvement in challenging behaviors were noted across intervention and comparison groups,

likely due to the structure and guidance offered in early childhood classroom settings that

effectively minimized the demonstration of challenging behaviors across groups.

Unique Nature of Getting Ready Intervention

Relative to many other programs intended to promote parents' engagement and

competencies (cf. Bierman et al., 2015; Brotman et al., 2011; Webster-Stratton et al., 2008), GR

is unique in its philosophy and approach. It is not a scripted curriculum or packaged program;

rather the strategies and collaborative process skills are integrated into the natural course of an

ECE's practice as they interact with parents of children in their care. Thus, ECEs are trained and

supported to modify their approach to working with families, thereby changing their own

"business as usual" to embrace and encourage parents as partners in the socialization and

education of children.

An emphasis on data-based decision-making in the collaborative GR process allows ECEs to hone on children's progress, identify their strengths and difficulties, set goals and establish home–school plans, and monitor how the child is progressing on important developmental skills. The intentional and data-based approach to planning for and supporting children is novel in early childhood contexts, and it is especially novel to do so in collaboration with parents. Although we were not able to examine whether this or other elements of the GR intervention were responsible for change in children's skills and relationships, it could be beneficial in promoting skill development for children who enter preschool with delays in social, cognitive, and/or language skills.

The strengths-based nature of GR is one of the intervention's defining features and may be another element partly responsible for its positive effects on school-based social competencies and relationships. Under most circumstances, children who are experiencing delays require significant attention and remedial efforts on behalf of the ECE. Starting preschool well behind peers in critical developmental domains presents difficulties for individual children as well as challenges for ECEs responsible for providing instruction and support to groups of students. The solution-oriented approach of GR, wherein ECEs regularly connect with families for plan development, receive coaching and feedback, and are recognized and acknowledged for their efforts, may promote ECEs' positive affect and connection to the students who previously presented concerns.

Limitations and Future Research Needs

Despite the positive outcomes and implications of the present study, certain limitations warrant consideration. First, the present study relied on one source and one method to measure outcomes (i.e., ECE reports of children's social skills and relationships with students and

parents). This issue is compounded by the fact that ECEs were aware of the condition to which they and their students were assigned. Although the measures used are common to the early childhood literature and yield strong psychometric properties, the lack of observational data collected by individuals blind to treatment condition raises potential concern about bias in responses. Multiple methods and sources of measurement are needed to assess the constructs of interest. Future research should collect reports of relationship from parents as well as direct observations of children's social skills in classroom settings.

Second, the current sample was comprised of students who were socioeconomically disadvantaged, and who scored close to or more than one standard deviation below the mean on screening measures of cognitive, language, or social-emotional skills. These conditions were established as inclusionary criteria given that our interest was to study the efficacy of GR for students who are at cumulative risk, and not to conduct comparative evaluations of outcomes for these versus typically developing (albeit low income) students. The narrow selection criteria and design features of our study, focusing on young children who are low income and display developmental concerns, preclude our ability to draw conclusions regarding the differential impact of GR for this subpopulation of students.

A third limitation concerns the lack of information on parents' behaviors at home as a function of ECEs use of GR strategies. The GR intervention targets ECEs and encourages them to alter the way they connect and communicate with parents; thus, our primary concern was on fidelity of their practices. A previous trial has demonstrated positive parental change as a function of the GR intervention (Knoche, Edwards, Sheridan, Kupzyk, Marvin, Cline, & Clarke, 2012); similar investigations are necessary with this high-risk sample.

Fourth, the study was conducted in one geographic setting (i.e., Midwest state), which limits the generalizability of findings. Additional research that replicates these methods and findings in other parts of the country, or within different geographic contexts (e.g., densely populated urban settings), would be very beneficial in determining the degree to which contextual variation may impact the intervention's effects. By extension, our sample reflects the demographic composition of the state in which it was conducted. Whereas 30% of the children in the study were identified by their parents as Latinx/Hispanic, the racial composition lacked significant diversity. Given that some publicly-funded early childhood programs are comprised of a large proportion of children and families of color, it is important that future research focus on efficacy and implications of interventions for children representing racial, ethnic, and other forms of diversity.

A fifth limitation concerns the sample restriction by the time of the intervention's end. Specifically, attrition occurred at a relatively high rate, in part because of the length of study participation spanning two years. The majority of sample attrition occurred during the transition from children's first to second preschool years, when families left the early childhood preschool setting (not the study per se). The use of an ITT strategy circumvents the loss of participants in our final analyses and provides a conservative estimate of treatment effects (Lachin, 2000); thus, the present analyses may be an underestimate of the full degree of intervention efficacy.

Sixth, the present study monitored children's growth over their preschool years, without attention to maintenance of GR's effects as they transitioned to kindergarten or beyond. It is unknown if the students continued to demonstrate improved social skills, or if their future relationships were improved as a function of the preschool intervention. Future research could monitor GR's long-term effects on children's social skills and relationships over time.

Finally, research is needed to explore the "active ingredients" of GR. Despite replicated effects on children's social-emotional outcomes (Sheridan et al., 2010) and preliminary evidence for improvements in language (Sheridan et al., 2011), the mechanisms for change are still unknown. We speculate that both improvements in the parent-ECE relationship and parenting practices supported via strengthened parent-educator partnerships relate to its efficacy for producing change in children's performance. Other research has demonstrated that therapeutic alliance during home visits is related to long-term outcomes (Nix et al., 2018). Family-school partnership research conducted with school-age samples has found that the quality of parent-teacher relationships mediates positive social-behavioral intervention effects at home and school (Sheridan et al., 2017a, b). In the case of GR, we expect that relationships between ECEs and parents (shown in the present study to improve as a function of the intervention) provides a pathway for parents to develop, test, and utilize effective parenting practices to ultimately support their child's learning. This complex model, whereby the effects of GR on child outcomes is mediated by both parent-ECE relationships and parenting practices is yet to be tested. Greater understanding of how the GR intervention targets (i.e. relationships, parenting practices) produce particular effects will contribute to our ability to hone and improve the intervention and enhance professional development opportunities.

Conclusions

The present study builds upon the existing literature that demonstrates the GR intervention is effective at supporting young children and their families. Getting Ready is an empirically based intervention that supports the development of young children, particularly those with developmental concerns within the context of early childhood education settings. Cost to agencies or publicly funded programs for GR is minimal; its implementation approach

requires simply altering the manner in which ECEs interact with parents in the course of their

programmatic requirements and existing opportunities rather than new curricula or training

programs. The intervention creates continuity and consistent experiences across home and

preschool settings that enable healthy development for young children via ECE use of

relationship-building and joint (parent–ECE) problem-solving strategies. Such an approach puts

children and families on a trajectory for academic and social success. The current findings

illustrate the efficacy of GR at improving the social skills and important relationships of young

children who are at socioeconomic and developmental risk above and beyond the standard

services offered in preschool settings.

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Table 1

Getting Ready Intervention Components and Definitions

Getting Ready Strategies	Definition
Establish Parent Child Interaction	• Arrange the environment to support the interaction • Set up the interaction to match the developmental needs of the child • Ensure the interaction is mutually enjoyable for the parent and child
Communicate Openly	• Ask open-ended questions that cannot be answered with a "yes" or "no" • Actively listen by using eye contact, head nods, encouraging gestures that demonstrate empathy, engagement, and validation • Communicate understanding by paraphrasing, summarizing, checking for understanding
Affirm Competencies	• Strengths within the parent–child relationship and parent–teacher partnership are identified and built upon • Ideas, previous and current efforts and progress are affirmed and validated • Roles and responsibilities exercised on behalf of the child's learning are recognized and reinforced • Positive and effective strategies are noted and utilized
Focus Attention	• Strengths and needs of the child are identified as the focus of all interactions • Discussions proceed in a manner that is both structured toward meeting objectives and responsive to the needs of the child and parent–child relationship
Share Information and Resources	• Relevant developmental information, observations, and data are shared • The expertise of all parties is important and necessary to helping child attain goals
Use Observations and Data to Guide Decisions	• Observations/data are especially important to help determine goals and expectations for children who are experiencing delays • Observations/data keep attention focused on objective measures of child performance/progress • Observations/data should be gathered across home and school to allow parents to be part of decision-making
Make Mutual/Joint Decisions	• Use observations and data to guide decisions • Establish agreement about the developmental goals for child's learning/problem-solving • Home and school strategies and plans for supporting child's

	learning are co-created
Model and Suggest	• Demonstrate how to use a specific strategy with the child and provide practice opportunity for parent • Provide specific suggestions for something to try with the child • Check for understanding

Collaborative Planning Process	Definition
Share Observations About the Child's Strengths and Needs	• Identify aspects of the child's performance (cognitive, behavioral, social) that are strengths and those with which the child is struggling • Discuss/observe the child's skills or performance that are behind relative to other children of the same age • Determine the general needs that require individualized attention
Establish Goal and Immediate Targets	• Determine a specific target in need of individualized attention to support the child's development • Explore current level of skill performance in relation to desired levels of performance • Discuss what is needed for the child to demonstrate the desired level of skill performance and define steps to meet the goal • Select an immediate goal and set an appropriate time frame for meeting the immediate goal
Share Ideas and Develop a Plan for Home and School	• Decide on the function of the behavior or skill. • Discuss general practices that have worked or not worked with the child before • Determine practices that have been successful or not successful in supporting the child's learning related to the target • Explore specific considerations (preferences, challenges) at home and in the classroom that may affect plan implementation • Generate a specific combination of plan steps and specific methods for implementing them across settings • Discuss details for the plan, including "what, how, who, where and when" the plan will be implemented across settings • Establish means to communicate between home and school
Monitor Progress Toward Goal/Modify, Continue, or Establish New Plan	• Discuss/observe the child's skills/performance in relation to the goal • Determine whether the child has met the identified goal • Revise goal or plan, as needed • Discuss additional aspects of the child's performance or specific goals in need of attention • Establish next goal and plan

Table 2

Child and Parent Demographics at Baseline by Group

	Child			Parent		
	Comparison (*n* = 121)	Treatment (*n*= 146)	All (*N* = 267)	Comparison (*n* = 121)	Treatment (*n* = 146)	All (*N* = 267)
Mean Age	46.33 months (*SD* = 3.39) (range = 39-52)	45.75 months (*SD* = 3.88) (range = 39-54)	46.02 months (*SD* = 3.67) (range = 39-54)	29.5 years (*SD* = 5.9) (range = 19-47)	29.8 years (*SD* = 6.0) (range = 20-49)	29.6 years (*SD* = 5.9) (range = 19-49)
Gender						
Male	52.6%	59.0%	56.1%	12.7%	12.8%	12.8%
Female	47.4%	41.0%	43.9%	87.3%	87.2%	87.2%
Race						
White	78.4%	63.9%	70.5%	83.5%	77.5%	80.3%
Black	4.5%	3.8%	4.1%	3.7%	3.1%	3.4%
American Indian/Native Alaskan	.9%	2.3%	1.6%	1.8%	4.7%	3.4%
Asian	.0%	.8%	.4%	.9%	.8%	.8%
Two or more races	9.9%	14.3%	12.3%	3.7%	3.1%	3.4%
Other	6.3%	15.0%	11.1%	6.4%	10.9%	8.8%
Ethnicity						
Latino/Hispanic	31.3%	29.1%	30.1%	24.8%	22.8%	23.7%
Preferred Parent Language						
Spanish				19.0%	15.8%	17.6%
English				81.0%	84.2%	82.4%
Parent/Other Adult Concern with Developmental Delay	42.6%	47.8%	44.9%			
Individualized Education Program	28.4%	31.0%	29.8%			

Table 2 (continued)

Marital Status			
Single	31.9%	31.1%	32.0%
Partnered	68.1%	67.9%	68.0%
Highest Level of Education			
< High school diploma	27.9%	18.5%	23.0%
High school diploma/GED	33.3%	24.2%	28.5%
Some training beyond HS/no degree	23.4%	27.4%	25.5%
Two-year degree	9.9%	15.3%	12.8%
Four-year or more degree	5.4%	14.5%	10.2%
Parent Employment			
Both parents in household employed	6.1%	8.1%	7.2%
One parent in household employed	59.6%	69.6%	65.1%
No parent in household employed	34.2%	22.2%	27.7%
Received Public Assistance (last 12 months)	77.9%	77.3%	77.6%

Table 3

Demographic Information of Early Childhood Educators by Group

	Comparison (N = 49)	Treatment (N = 48)	Overall (N = 97)
Mean Age (*SD*)	37.09 (11.78)	38.20 (9.78)	37.35 (10.81)
Mean Length of Employment (in months)	75.8 (84.8)	73.2 (78.3)	74.2 (80.3)
Mean Classroom Teaching Experience (in months)	104.9 (107.1)	105.2 (84.2)	105.1 (94.1)
Mean Early Childhood Teaching Experience (in months)	103.3 (81.8)	91.3 (75.1)	95.9 (77.3)
Mean Home Visiting Services Experience (in months)	67.0 (83.3)	51.8 (50.6)	58.2 (66.1)
Gender: Female	100.0%	97.9%	98.9%
Race			
White	97.8%	95.8%	96.9%
American Indian/ Native Alaskan	.0%	2.1%	1.0%
Asian	2.2%	2.1%	2.1%
Ethnicity			
Hispanic/Latino	2.2%	4.3%	3.2%
Level of Education			
Some Training beyond High School; no degree	2.2%	.0%	1.1%
Two-Year College Degree	19.1%	8.7%	14.0%
Four-Year College Degree	51.1%	54.3%	52.7%
Some Graduate College Coursework	19.1%	21.7%	20.4%
Graduate Degree	8.5%	15.2%	11.8%
Early Childhood Teaching Endorsement/Certificate	70.2%	71.7%	71.0%
Another Type of Endorsement or Certification	57.1%	46.7%	51.7%
Child Development Associate Credential	25.0%	17.8%	21.3%

Table 4

Descriptive Statistics for Student–Student, Student–Teacher, and Parent–Teacher Relationships Over Time Across Treatment and Comparison Conditions

	Time 1 Fall Year 1 Mean *(SD)*	Time 2 Spring Year 1 Mean *(SD)*	Time 3 Fall Year 2 Mean *(SD)*	Time 4 Spring Year 2 Mean *(SD)*
Student Social Skills				
Problem Behaviors[a]				
Treatment	105.20 (14.75)	103.72 (15.50)	99.54 (15.33)	96. 81 (13.83)
Comparison	107.59 (16.64)	105.93 (16.07)	102.81(14.75)	100.31 (14.91)
Social Skills[a]				
Treatment	87.16 (11.77)	92.29 (12.96)	98.65 (13.87)	105.51 (14.48)
Comparison	86.86 (12.34)	91.96 (13.22)	97.00 (12.39)	100.66 (12.83)
Student–ECE Relationship				
Overall[b]				
Treatment	111.55 (14.23)	115.76 (15.44)	121.74 (12.58)	125.99 (11.45)
Comparison	112.46 (13.97)	115.99 (14.24)	119.21 (13.15)	120.34 (12.66)
Parent–ECE Relationship				
Overall[c]				
Treatment	100.06 (14.44)	103.10 (13.71)	107.18 (11.92)	108.50 (13.38)
Comparison	98.19 (14.98)	100.93 (14.88)	103.28 (11.28)	104.11 (12.75)

[a] Scores are standardized; $M = 100$; $SD = 15$

[b] Raw score ranging from 28 to 140; mean for norming group = 114.2

[c] Raw score ranging from 24 to 120

Table 5

Experimental Condition X Time Interaction and Main Effects of the Getting Ready Intervention

Effect	γ	SE	df	t	p-value	β [a]	R^2
Student Social Skills							
SSIS Problem Behavior							
Intercept (C)	100.98	2.57	202	39.32	<0.001	0.16	
Condition (ΔT-C)	-3.08	2.54	97.3	-1.21	0.23	-0.2	
Time (C)	-1.95	0.38	527	-5.1	<0.001	-0.13	
Preferred Language	8.82	2.24	253	3.95	<0.001	0.57	
Cond. X Time (ΔT-C)	0.14	0.52	528	0.26	0.79	0.01[b]	0.07
SSIS Social Skills							
Intercept (C)	89.56	2.08	202	43.16	<0.001	-0.27	
Condition (ΔT-C)	1.14	1.89	98.6	0.6	0.55	0.08	
Time (C)	4.63	0.38	542	12.35	<0.001	0.33	
Preferred Language	-4.13	1.93	254	-2.14	0.03	-0.29	
Cond. X Time (ΔT-C)	1.15	0.51	543	2.26	0.02	0.08[b]	0.18
Student-ECE Relationship							
STRS Overall							
Intercept (C)	117.26	2.28	201	51.39	<0.001	0.04	
Condition (ΔT-C)	-0.3	2.32	100	-0.13	0.9	-0.02	
Time (C)	2.42	0.4	537	5.99	<0.001	0.17	
Preferred Language	-5.72	1.94	242	-2.94	0.004	-0.4	
Cond. X Time (ΔT-C)	1.59	0.55	538	2.9	0.004	0.11[b]	0.10
Parent-ECE Relationship							
PTRS Overall							
Intercept (C)	103.71	2.26	194	45.91	<0.001	0.09	
Condition (ΔT-C)	0.82	2.09	101	0.39	0.7	0.06	
Time (C)	0.86	0.48	536	1.77	0.08	0.06	

Preferred Language	-5.71	2.07	235	-2.76	0.006	-0.41	
Cond. X Time (ΔT-C)	1.76	0.66	538	2.69	0.007	0.12[b]	0.05

Notes. C = Comparison Group; T = Treatment Group. Preferred parent language (English = 1, Spanish = 0) of the parent/family reports was included as a covariate to adjust for measurement bias due to language of the assessment. False discovery rates were computed but did not change the significance of any outcome variables (indicating that familywise error was negligible); thus, original p values are reported. R^2 = the proportion of variability in the dependent variable accounted for by this model; small = .01; medium = .06; large = .15; Cohen, 1988).
[a]The standardized beta weights (β) were calculated with standardized dependent variables (DV) only (equivalent to StdY) to allow for proper interpretation of effect sizes (i.e., in full units and not standard deviation units of independent variables per standard deviation unit of DV, as predictors were binary, categorical, or the effect of time; *cf.* Muthén, Muthén, & Asparouhov, 2016). [b]Effect sizes for time by condition interactions were calculated by multiplying the standardized beta weights (β) times three (for the three time intervals over four time points) to capture intervention effects over the course of the study, yielding .03, .24, .33, and .36 for each of the outcomes.

Panel A

Social Skills

Panel B

Overall Student–ECE Relationship
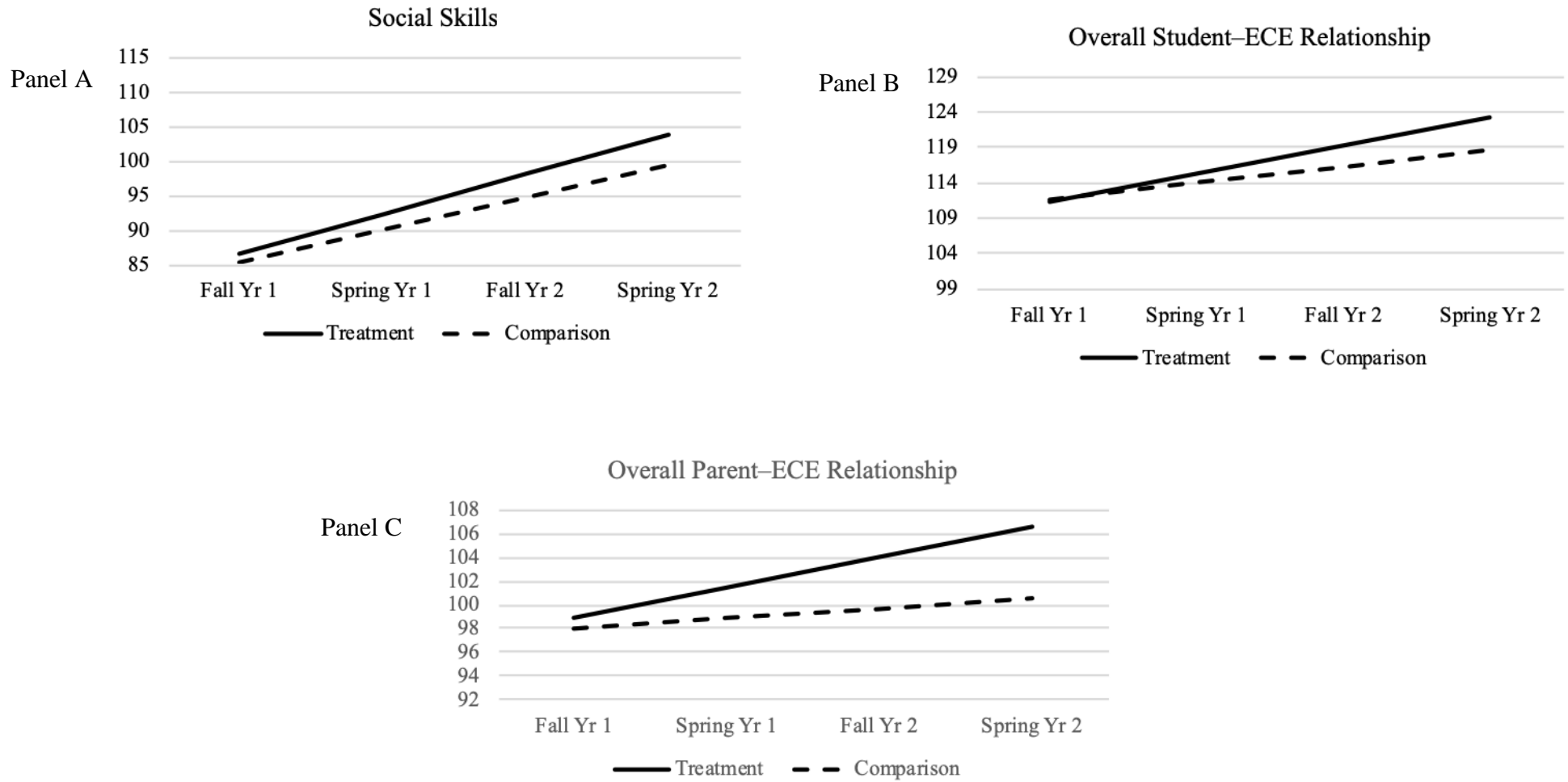
Panel C

Overall Parent–ECE Relationship

Figure 1. Getting Ready intervention effects on ECEs' reports of children's social skills (Panel A), student-teacher relationship (Panel B), and parent-ECE relationship (Panel C) for those who speak English in the home.

Appendix A

Associations between key demographic variables and attrition over the study period were examined. Nonsignificant chi-square tests and *t*-tests indicate that those participants who left the program, and thus the study, did not differ significantly from those that remained in the study on key demographic characteristics. Table A1 shows chi-square results of attrition on intervention condition, child's gender, race, ethnicity, individual education plan, existence of developmental concern, home language, parent gender, parent education, parent race, parent ethnicity, and parent level of employment. Table A2 shows *t*-test results of attrition on child age, parent age, and total number of people in home.

Table A1

Attrition Analyses: Chi-square Results on Key Variables

Variable	$N_{baseline}$	Attrited		χ^2	df	p
		n	(%)			
Child Intervention Condition	267	131	0.49			
Treatment	146	74	0.51	0.34	1	0.56
Comparison	121	57	0.47			
Child Gender	255	121	0.47			
Male	143	71	0.50	0.63	1	0.43
Female	112	50	0.45			
Child Race	244	118	0.48			
White	172	79	0.46			
Black	10	4	0.40			
Native American	4	4	1.00	7.52	5	0.19
Asian	1	0	0.00			
Mixed Race	30	18	0.60			
Other	27	13	0.48			
Child Ethnicity	249	118	0.47			
Non-Hispanic	174	82	0.47	0.02	1	0.90
Hispanic	75	36	0.48			
Individual Education Plan	238	105	0.44			
No	167	74	0.44	0.01	1	0.93
Yes	71	31	0.44			
Concern for Developmental Delay	247	115	0.47			
No	136	59	0.43	1.23	1	0.27
Yes	111	56	0.50			
Home Language	264	113	0.43			
English	219	113	0.52	2.01	1	0.16
Spanish	45	18	0.40			
Parent Gender	243	116	0.48			
Male	31	15	0.48	0.01	1	0.94
Female	212	101	0.48			
Parent Race	238	112	0.47			
White	191	91	0.48			
Black	8	2	0.25			
Native American	8	6	0.75	4.81	5	0.44
Asian	2	1	0.50			
Mixed Race	8	4	0.50			
Other	21	8	0.38			

Table A1 (continued)

Variable	$N_{baseline}$	Attrited		χ^2	df	p
		n	(%)			
Parent Ethnicity	249	119	0.48	0.43	1	0.51
Non-Hispanic	190	93	0.49			
Hispanic	59	26	0.44			
Parent Level of Education	235	112	0.48			
Less than high school diploma	54	24	0.44			
High school diploma/GED	67	32	0.48	5.16	4	0.27
Some training beyond HS; no degree	60	35	0.58			
Two-year degree	30	13	0.43			
Four-year degree and beyond	24	8	0.33			
Parent level of employment	221	104	0.47			
Working full time, no school	83	36	0.43			
Working part time, no school	44	26	0.59			
Unemployed, no school	59	28	0.47	3.89	5	0.57
Working full time, in school	9	4	0.44			
Working part time, in school	6	2	0.33			
Unemployed, in school	20	8	0.40			
Teacher Intervention Condition	97	36	0.37			
Treatment	48	17	0.35	0.12	1	0.73
Comparison	49	19	0.39			

Note: Pearson chi-square tests were used, and 2-sided asymptotic significance was tested for.

Table A2

Attrition Analyses: t-test Results on Key Demographic Variables

Variable	$N_{baseline}$	Attrited			Completed			t	df	p
		n	M	SD	n	M	SD			
Child age	254	121	46.07	3.84	133	45.97	3.52	0.21	252	0.83
Parent age	251	120	29.12	5.75	131	30.15	6.18	-1.35	249	0.18
Total number of people in household	242	114	4.90	1.82	128	4.98	2.15	-0.28	240	0.78

Note: *p*-value was assessed using two-tailed test. According to Levene's tests, equal variances were assumed for all *t*-tests.