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Enhancing the Transition to Kindergarten: A Randomized Trial to Test the Efficacy of the “Stars” Summer Kindergarten Orientation Program

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Abstract

This randomized trial tested the efficacy of an intensive, four-week summer program designed to enhance low-income children's transition to kindergarten (n 's = 60 program children, 40 controls). Administered in four public schools, the program focused on social competence, pre-literacy and pre-numeracy skills, school routines, and parental involvement. Hierarchical linear modeling indicated that the program significantly improved teachers' ratings of (a) the transition to the social aspect of kindergarten for girls (but not boys); and (b) the transition to kindergarten routines for the subgroup of children who had the same teacher for kindergarten as for the summer program. Findings are discussed in terms of practices and policies for supporting children's transition to school.

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The transition to formal schooling challenges young children to adapt rapidly to new physical and social environments, new academic demands, and new routines (Kraft-Sayre & Pianta, 2000; Ladd, Buhs, & Seid, 2000; Ladd & Price, 1987). Positive transition experiences are associated with more favorable academic and social outcomes (Dockett & Perry, 2001; Pianta & Kraft-Sayre, 2003; Schulting, Malone, & Dodge, 2005). Children who adapt more easily to new school routines are also more likely to participate in class activities and to enjoy school (Ladd, Birch & Buhs, 1999; Ladd & Price, 1987; Ladd et al., 2000). Many children have trouble making the transition to school, however. A national survey of 3,595 kindergarten teachers found that they considered just 50% of their students to have made a successful transition to school (Rimm-Kaufman, Pianta, & Cox, 2000). Better programs and policies to enhance children's transition to school are required. This paper contributes to the small body of empirical literature on the transition to kindergarten by employing a randomized controlled trial to test the efficacy of a new, intensive summer program designed to enhance low-income kindergarteners' transition to school.

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Children's Transition to School

The dominant theoretical framework for understanding the transition to school emphasizes children's multiple environments and the interactions among them (Bohan-Baker & Little, 2004; Kraft-Sayre & Pianta, 2000; Pianta, Rimm-Kaufmann, & Cox, 1999; Ramey & Ramey, 1999). This framework highlights the need to prepare children not only for the cognitive demands of school work but also for the social demands such as peer relationships and the need to follow classroom routines. Research has begun to address not only children's readiness for school but also children's experience of the transition itself (e.g., initial adjustment and acclimation) and the means by which families and schools can collaborate to smooth the transition from home, child care, and/or preschool to the typically more formal and demanding kindergarten environment (Rimm-Kaufman & Pianta, 2000).

Children at risk of a difficult transition share many of the same characteristics as children at risk of poor performance in school. Risk factors are both individual and contextual (Sameroff, Bartko, Baldwin, Baldwin, & Seifer, 1998). Children's access to sufficient economic and social resources, including family income, social support, and health care has been linked to early school performance (Huston et al., 2001). The risk context for low-income children's development extends to the schools they attend, which are typically less prepared to receive children than schools that serve higher-income children (Rimm-Kaufman et al., 2000). In addition to general school resources, there is evidence that teachers' perceptions of children from low-income families are more negative than their perceptions of children from higher-income families, regardless of children's cognitive abilities (Alvidrez & Weinstein, 1999). Thus, teachers' perceptions of children's abilities can themselves be considered resources that are distributed unequally, and that influence children's school performance. The early sorting and categorizing of children that takes place in kindergarten establishes achievement trajectories that persist throughout the school career (Entwisle & Alexander, 1993; Lee & Burkham, 2002; Ramey & Ramey, 1999), making the transition period a vitally important time, especially for children with multiple risk factors.

Programmatic Approaches to Enhancing Children's Transition to School

Services to support children's transition to school are unsystematic and limited to community- and school-specific practices, rather than programs, *per se*. The most common strategies for enhancing children's transition to school include mailing information to parents before school begins, inviting parents to visit the classroom early in the school year, and staggering entry of children into the classroom (Pianta, Cox, Taylor, & Early, 1999). A recent survey indicated that families welcome overtures from schools, with most parents eager to be more involved in their children's transition to kindergarten (McIntyre, Eckert, Fiese, DiGennaro, & Wildenger, 2007). Greater parental involvement in children's schooling is in turn linked to children's higher grades, better school attendance, more positive attitudes and behaviors, higher graduation rates, and greater enrollment in higher education (Dearing, Kreider, & Weiss, 2008; Henderson & Berla, 1994). Collaboration between parents and teachers is associated with improved communication and greater trust that in turn supports children's transition to school (Child Trends, 2001; Dockett & Perry, 2001; Kraft-Sayre & Pianta, 2000; Pianta, Kraft-Sayre, Rimm-Kaufman, Gercke, & Higgins, 2001).

Children and families are especially likely to benefit from personalized, proactive, and intensive practices, such as home visits by teachers, communication between preschool and kindergarten teachers, and personalized interaction in the kindergarten classroom among the teacher, parent, and child prior to the beginning of kindergarten (Schulting et al., 2005). For example, one study found that kindergarten children whose preschool and kindergarten teachers had talked to one another about curricula or specific child characteristics were later

viewed as more socially competent by their kindergarten teachers (LoCasale-Crouch, Mashburn, Downer, & Pianta, 2008). In another study, children who attended preschool programs located within their elementary school were found to have fewer behavior problems than those who attended preschool off site, suggesting that stability in location plays a role in facilitating children's transitions to formal schooling (Magnuson, Ruhm, & Waldfogel, 2007). Other transition practices, especially those that engage parents, are particularly effective for children from families of low socioeconomic status (those most at risk for transition difficulties) (LoCasale et al., 2008; Schulting et al., 2005). The most frequently used transition practices, however, are those that take place after school begins and involve low-intensity, generic contact such as flyers, brochures and open houses (LoCasale et al., 2008; Pianta et al., 2001). Moreover, at-risk children who could – and, in fact, do – benefit the most from personalized and intensive practices (e.g., low-income, minority children living in metropolitan areas), are those least likely to receive them (Pianta, Cox, et al., 1999; Rimm-Kaufmann et al., 2000; Schulting et al., 2005).

The “Stars” program, which emphasizes social and behavioral skills, was originally conceived and implemented by a kindergarten teacher and a parent. Subsequently, it was expanded, drawing on both prior informal evaluations and developmental theory and research on the transition to kindergarten, as well as pilot-tested, by the authors. On the basis of pilot results, the program was further adapted and implemented in four local public elementary schools and evaluated through the current randomized trial. To our knowledge, there are no other theory- and research-based kindergarten orientation programs, comparable to the Stars program, that have been rigorously evaluated or disseminated.

The Current Study

The current study employed a randomized controlled trial to test the efficacy of the Stars program. We examine the extent to which children randomly assigned to the program (a) experienced an easier transition to kindergarten than control children, according to ratings made by their kindergarten teachers and by their mothers; and (b) reported liking school more than control children. Given some evidence in the literature that the effects of both early interventions and school transition practices can vary by such factors as child sex and family SES (e.g., Anderson, 2008; Crockenberg, 2003; Schulting et al., 2005), we also explore whether program effects hold across participant groups defined by child sex, race/ethnicity, prior child care experience, baseline behavior problems, and maternal education and marital status. Finally, we examine the effect of the child having had the same classroom teacher for Stars and for kindergarten.

Method

Participants

Participants were students entering kindergarten at four public elementary schools in a small southeastern city. The schools, each serving grades K-5, ranged in size from 380 to 642 students and were considered by the district administration to serve a high proportion of children at risk for academic failure. Three of the four schools enrolled over 85% low-income students (defined as those eligible for free or reduced-price lunch). The fourth enrolled approximately 50% low-income students. All schools had experienced inadequate performance on state end-of-grade tests.

In response to initial, positive experiences with the program during its development and pilot-test phase, all of the schools' principals welcomed the implementation of the Stars program at their schools. Principals further welcomed our hiring some of their teaching staff, most of whom had worked in prior iterations of the program, to serve as Stars program

providers. The principals also allowed our research team to recruit children entering kindergarten at their schools for random assignment into the program/control groups and for participation in the research.

Research staff members recruited 103 children and their mothers during school registration in the spring preceding kindergarten matriculation. Mothers agreed, through standard informed consent procedures (approved by the University Institutional Review Board), that they and their child would take part in the study and would attend the Stars program if randomly assigned to do so. Of the original 103 participants, three moved prior to beginning kindergarten and thus were eliminated from the study. Table 1 provides descriptive statistics for the remaining 100 participants. Children (57% female, 43% male) ranged in age from four to six years and were predominantly Latino (48%) or African American (32%). Twenty percent were White, Asian, or another race/ethnicity. Forty percent of the children's mothers identified Spanish as their primary language. Seventy-nine percent of the children had received non-parental child care or preschool services for at least eight months in the year prior to random assignment.

Forty-five percent of mothers had not completed high school, 28% had completed high school or a General Equivalency Diploma (GED), and 27% had at least some college. Forty-two percent of the mothers were married, 20% were divorced or separated, and the remainder (38%) had never married.

Data on annual family income were collected using a 10-category prompt, with responses ranging from 1 (\$0 - \$5000 per year) to 10 (\$50,000+ per year). Forty-nine percent of the mothers responded, with the average response corresponding to an annual family income of \$15,000-\$20,000 per year ($M = 3.84$, $SD = 3.20$). Because of the low response rate, we use mother's education as a proxy for socioeconomic status.

Random Assignment to Program or Control Group

Within each of the four schools, children were assigned randomly to the program or control group at approximately a 3:2 ratio. (There were more program than control children in order to use available resources to maximize service provision while maintaining the rigor of random assignment.) There were 60 program recipients (11 to 13 children per class) and 40 control children. There were no significant differences between program and control children for any demographic characteristics, with the exception of a higher percentage of Latino students in the program group (55%) than in the control group (35%) ($\chi^2 [1] = 5.81$, $p < .05$). The control group was a baseline/no-intervention group. Due to limited research resources, data on summer activities and services partaken by control group families were not collected.

In the fall following the summer program, the 100 program and control children attended kindergarten in one of 20 classrooms in the four elementary schools. Assignment of children to kindergarten classroom teachers was made independently of involvement in the Stars program. Twenty-eight of the 60 children who attended the program (48%) became kindergarteners in the classrooms of their Stars teachers. Twenty-seven (43%) remained in the same school but were assigned to a different kindergarten teacher. Five (9%) moved to a different school with a different teacher.

The “Stars” Program

The Stars program was developed in response to (a) the significant need to improve the transition to school, especially for low-income, minority, urban children and (b) the research indicating the most promising school transition practices. The Stars program was proactive and intensive, provided through half-day (5.25 hours), classroom-based sessions for four

consecutive weeks (19 days) during the summer prior to kindergarten, concluding approximately five weeks before school began, at each of the four schools where children had been enrolled in April to begin attending kindergarten that August.

There were five Stars classes, with one of the four schools hosting two classrooms. There were 11 to 13 children per class. Transportation to the program was provided by public school buses. Breakfast and lunch were also provided. Classroom activities were led by a kindergarten teacher and one teaching assistant, both of whom were regular employees of the school. Teaching staff, who were predominantly female and African American, varied in age and teaching seniority.

The program protocol focused on promoting (a) social competence, including problem-solving, awareness of emotions, and self-control, using the Committee for Children *Second Step* curriculum (Committee for Children, 1989; 2003); (b) pre-literacy and pre-numeracy skills; and (c) school routines, including circle time, lining up, taking turns, and the use of cubbies for personal items. To facilitate teachers' communication with monolingual Spanish students and their mothers, two interpreters worked across the five classrooms.

In order to personalize services and promote parental involvement, one Bachelors-level or Masters-level "family-school specialist," hired specifically for this project, was assigned to each of the five Stars classrooms. Four of the five specialists were female and one was male. Two of the five specialists were Latino, two were White, and one was African American. Both Latino specialists were bilingual/bicultural native Spanish speakers. Prior to the beginning of the program, the family-school specialists provided the teachers and their assistants with approximately four days of training in the *Second Step* curriculum. Specialists also served as family-school liaisons. They visited each child's home at least once during the course of the program in order to assess family social service needs, make referrals as necessary, and facilitate the child's and parent's participation in the program. Specialists also conducted one home visit with each family just after kindergarten began, to "check in" on the child's transition, facilitate the parents' communication with the child's teacher or school administration, and make referrals as needed.

Also to promote parental involvement, the program offered four weekly parent group meetings, co-led by family-school specialists and teachers. The meetings were provided one evening per week for each of the first three weeks of the program, with each meeting devoted to a specific topic (the importance of reading with children, key developmental milestones, and the daily routines and expectations in kindergarten). All written materials distributed to parents were provided in English and Spanish. The final meeting, on the last day of the program, was dedicated to a graduation ceremony for the children.

Procedure and Measures

Baseline demographics and ratings of children's behavior problems—Baseline demographic data and ratings of each child's baseline behavior problems were collected via maternal reports during recruitment at school registration. Mothers rated children's behavior problems according to an abbreviated version of the Swanson, Nolan, and Pelham ("SNAP") rating scale, addressing attentional, oppositional, and conduct problems (Swanson & Pelham, 1988). Mothers rated the frequency of 29 child behaviors on a 4-point scale (1 = *never*, 2 = *hardly ever*, 3 = *sometimes*, 4 = *most of the time*). Responses were summed to create a 116-point scale ($\alpha = .90$), and scores ranged from 29 to 116 (see Table 1).

Children's transition to school: teachers' and mothers' ratings—Within the first three weeks of kindergarten, teachers completed three items developed by the authors for the purposes of the current study. Specifically, teachers rated children on the ease of their

transition to school in terms of three aspects of school functioning: the social aspect (e.g., getting along with classmates, beginning to make friends), the academic aspect (e.g., skill development and mastery, effort, focus on tasks), and daily routines (e.g., following directions and routines). For each aspect, teachers rated children's transition on a 5-point scale (1 [*very difficult*] to 5 [*very easy*]) and scores for each of the three items ranged from 1 to 5.

Also within the first three weeks of kindergarten, mothers rated their child's overall transition to kindergarten by responding to the following single-item assessment (also developed by the authors for the purposes of this study): "How would you describe [child's] transition to kindergarten?" Mothers responded to the same 5-point scale as teachers (1 [*very difficult*] to 5 [*very easy*]). Scores ranged from 1 to 5.

School Liking and Avoidance Scale—Within one month of the beginning of the kindergarten year, research staff members administered the 14-item *School Liking and Avoidance Scale* to each child. This scale has previously demonstrated adequate internal consistency reliability and construct validity (Ladd & Price, 1987). The items in this scale refer to liking school (e.g., "When you get up in the morning, do you feel happy to be going to school?") disliking school (e.g., "Do you hate school?") and avoiding school (e.g., "Do you wish you could stay home from school"). Children responded on a 3-point scale (2 = *yes*, 1 = *sometimes*, 0 = *no*). A total "school liking" score was created by subtracting the responses to the (8) school disliking and avoidance items from the sum of the (6) school liking items ($\alpha = .80$); scores ranged from -12 to 12.

Results

Analytic Strategy and Preliminary Analyses

Because outcome data for all children were clustered at two levels, the classroom level and the school level, hierarchical linear modeling (HLM) was used to evaluate program effects. One advantage of HLM is correction of the underestimation of standard errors that result from clustering (Raudenbush & Bryk, 2002; Snijders & Bosker, 1999). Use of hierarchical modeling thus helps to ensure accurate inferences for predictor variables.

We began with an analysis of intraclass correlations, in order to evaluate classroom-level and school-level variance for the five outcomes. For teachers' ratings, 25% to 28% of the variance was attributable to differences between classrooms, and less than 1% to differences between schools. For mothers' ratings, 32% of the variance was due to differences between classrooms, and 3% to differences between schools. For children's ratings, less than 1% of the variance was due to either between-classroom or between-school differences. Because we found substantial classroom-level variance but little school-level variance, we used a two-level hierarchical model with individual students clustered within kindergarten classrooms to analyze program effects on teachers', mothers', and children's ratings. This two-level HLM model controls for unmeasured classroom-level effects.¹

We also tested moderated program effects, to examine variation in program effects according to participants' baseline characteristics. Following Aiken and West (1991), a series of interaction terms was created with each of the baseline variables (child sex, child African American, child Latino, months in childcare in the prior 12 months, behavior

¹Because teachers' and mothers' ratings were based on ordered (1-5) scales, we also conducted hierarchical logistical regression models. The findings were substantively equivalent to the findings based on hierarchical linear regression models. For ease of interpretation, we present the findings for the teachers' and mothers' ratings using hierarchical linear regression models with continuous outcome scores.

problems, mother's education, mother's marital status) mean-centered and multiplied by the program/control group variable. The moderating effect of each of these variables was evaluated by examining the significance of each interaction term added individually to each main effect model.

To evaluate the effect of the child having had the same classroom teacher for the Stars program and for kindergarten, two new binary (0/1) variables were created. The first variable contrasted control children with program children who had the same teacher for Stars and kindergarten. The second variable contrasted control children with program children who had a different teacher for Stars and kindergarten. The effect of the child having had the same teacher for Stars and for kindergarten was evaluated by examining the significance of the "same teacher" and "different teacher" variables added to each main effect model (without including the program/control group variable).

The rate of missing data was less than 3% for any of the demographic variables. The behavior problem scores were missing 12% of the data. Missing data were handled through multiple imputation. Table 2 depicts bivariate correlations among all independent and dependent variables.

Stars Program Attendance

Attendance by both children and parents in the Stars program was high. Of 19 possible program days, children attended a mean of 17 days ($SD = 2.76$). Of the four parent group meetings, parents attended a mean of 3.7 meetings ($SD = 1.26$).

Effects of the Stars Program on Teachers' Ratings

Tables 3, 4, and 5 illustrate the results of up to four nested models each. Model 1 tested the main effect of the program. Model 2 incorporated baseline demographic characteristics and child behavior problem scores. Model 3 tested any significant moderated effects, which are reported if present. Model 4 (or, Model 3, if no moderated effects are reported) tested the effect of program children having had the same teacher for Stars and kindergarten.

Table 3 depicts the effect of the program on teachers' ratings of children's transition to the social aspect of kindergarten. Model 1 indicated a positive and statistically significant main effect of random assignment to the program, indicating that kindergarten teachers rated program children as having made a more favorable transition to kindergarten—socially—than control children. Addition of the baseline controls in Model 2 indicated that the main effect of the program was robust when controls were added, and none of the controls contributed significantly to these teacher ratings. Having the same teacher for the program and for kindergarten had no significant impact.

The analysis revealed a significant interaction between child sex and program status, however (Table 3, Model 3). Teachers rated program girls as having made an easier social transition than control girls, with an effect size of .44 standard deviation. The main effect of the intervention was in the same direction but not significant for boys. A comparison of simple group means further illustrates this difference: the unadjusted mean teacher rating of the social transition for girls who had been randomly assigned to participate in the program was 3.97 ($SD = 1.03$), compared to 2.96 ($SD = 1.00$) for girls randomly assigned to the control group. For boys, the unadjusted mean scores were 3.84 ($SD = 1.05$) and 3.67 ($SD = 1.03$) for program and control groups, respectively.

The second set of models, presented in Table 4, evaluated the effect of the program on teachers' ratings of children's transition to the academic aspect of kindergarten. We found no main effect of the program either without baseline control variables (Model 1) or with

controls included (Model 2). As indicated in Model 2, African American children, Latino children, and children with higher baseline behavior problems were rated as having had a more difficult transition to the academic aspect of kindergarten. No interaction effects were significant, nor was there any effect of having the same teacher.

Table 5 reports the effect of the program on teachers' ratings of children's ease in adapting to kindergarten routines. Model 1 indicated a significant main effect of the program indicating that program children were rated as adapting more favorably to kindergarten routines than control children. The effect size was .27. This effect was shown to be robust when baseline controls were included in Model 2, with no evidence that the child's race/ethnicity, sex, child care experience, behavior problems, or maternal education or marital status affected the impact of Stars on this teacher rating. Model 3 incorporated variables to differentiate program children who had the same or a different teacher for Stars and for kindergarten, in comparison to control children. Results indicated that teacher ratings for children's adaptation to kindergarten routines were higher only for those children who had the same teacher for the program and kindergarten. Comparison of simple group means further illustrates these differences: the unadjusted mean teacher rating for adaptation to kindergarten routines was 3.40 ($SD = 1.06$) for children who were not assigned to the program; 3.73 ($SD = 0.95$) for program participants who had a different teacher for kindergarten; and 4.68 ($SD = 0.67$) for program participants who had the same teacher for Stars as they had for kindergarten.

Effects of the Stars Program on Mothers' Ratings

Hierarchical linear regression models indicated no significant main effect or interaction effects of the program on mothers' evaluations of the ease of their children's overall transition to kindergarten. Additionally, scores did not differ significantly for program children who had the same teacher or a different teacher for the program and for kindergarten, compared to control children.

Effect of the Stars Program on Children's School Liking

Table 6 illustrates the effect of the program on children's school liking assessed within the first three weeks of school. Neither Model 1 nor Model 2 indicated a main effect of the program. Model 2 indicated that African American children and children who had higher baseline behavior problems scores reported liking school significantly less than their peers. We found no evidence that the child's sex, child care experience, or maternal education or marital status moderated the impact of the program on children's school liking. Additionally, scores did not differ significantly for program children who had the same teacher or a different teacher for the program and for kindergarten, compared to control children.

Discussion

Using a randomized design, the current study provides modest support for the efficacy of an intensive summer program designed to enhance low-income children's transition to school. The Stars program was theory- and research-based and characterized by several unique features. First, it was intensive, providing a full month of half-day (5.25 hours) classroom services prior to kindergarten entry. Second, classroom teachers were aided by family-school specialists and roving bilingual Spanish/English interpreters who engaged parents in weekly meetings. Third, the family-school specialists (and interpreters, if needed) visited families at least twice at home, once prior to and once shortly after kindergarten began. In addition to these unique programmatic characteristics, the program design allowed for random assignment of program and control groups, thus permitting a rigorous empirical comparison of outcomes between those who did and did not access the program. Our

evaluation of the program's efficacy adds to the empirical literature on the transition to kindergarten and to the few studies evaluating programs to enhance children's transition to school.

We found that participation in the Stars program eased children's social transition as judged by kindergarten teachers. The effect was statistically significant for girls and in the same direction but not significant for boys. It is unclear why boys did not experience the positive impact in this domain that girls did. The pattern of a positive effect for girls that is not generalized to boys has been found in other early intervention studies. For example, a recent re-analysis of data from the Perry Preschool Project, Abecedarian, and Early Training Project, three well-known and well-regarded preschool programs targeting at-risk children prior to school entry, revealed positive long-term effects for girls, but no consistently positive effects for boys, (Anderson, 2008). Neither the large-scale randomized evaluation of the Early Head Start program nor the major NICHD Study of Early Child Care, however, has found differences by gender in the effects of the Early Head Start program or early child care, respectively, on children's cognitive and language development and behavior problems (e.g., Love et al., 2005; NICHD Early Child Care Research Network, 2005). Our findings, which await replication, may reflect greater male vulnerability to the stressors inherent in low-income family life (e.g., Zaslow & Haynes, 1986), teachers' differential relationships with preschool-aged girls and boys, and/or unmeasured processes. For example, a recent study of Head Start children found that teacher-child closeness was more predictive of school competence for girls than for boys (Ewing & Taylor, 2009). Another possibility is that girls are more responsive than boys to interventions that emphasize social competence, as the Stars program did.

In addition to children's transition to the social aspect of kindergarten, we evaluated the efficacy of the program for children's adaptation to the academic aspect of kindergarten and adaptation to school routines, both as rated by children's kindergarten teachers. We found no significant effect of the intervention on children's transition to the academic aspect of kindergarten, likely a reflection of the program's emphasis on the social and behavioral orientation to kindergarten as opposed to academic skill development per se.

With regard to children's transition to school routines, we found that children who were randomly assigned to participate in the Stars program had a more successful adaptation than their peers. This effect was especially pronounced for children who were placed in a kindergarten classroom led by their summer Stars teacher. The direction of effect was also positive for children who were placed with a different teacher, but it was not significant. This effect generalized across race/ethnicity, socioeconomic status, and child sex, indicating that transition programs like Stars are likely to yield positive impacts in this domain for children from diverse social backgrounds. The finding that a positive impact on routines was evident only for those having the same teacher for the program and kindergarten can be interpreted in at least two ways. First, teachers who taught children for both the Stars program and kindergarten may be giving positively biased responses, since their ratings of the children could be considered a measure of their own effectiveness as Stars teachers. Alternatively, higher transition scores for these children may reflect the positive effect of teacher continuity on children's transition to kindergarten. Although the first possibility might be operating and might not be harmful to the child's adaptation, we believe the data support the latter interpretation for two reasons. First, if the difference is due solely to teacher bias, we would expect this bias to be present in scoring for social and academic outcomes, as well as for routines (which it was not). Second, it makes theoretical sense that children who learn kindergarten routines in a transition program under the tutelage of their future kindergarten teachers will adapt to this same set of routines more effectively than children who either did not participate in a transition program or were instructed in a

different set of routines by a different teacher. This finding suggests that summer transition programs will be relatively more effective if the child's upcoming kindergarten teacher participates. Even if no formal transition practices are in place, it seems that any efforts by kindergarten teachers to meet their incoming students and their families and to orient them to the classroom and its expectations can only be helpful for facilitating children's transition to school.

We found no significant effect of the program on mothers' ratings of children's transition to kindergarten. We also found no significant effect of the program on children's self-reported school liking. This was somewhat surprising, especially in light of some evidence of the Stars program easing children's (girls') social transition to school. At the same time, ease of transition and school liking were not significantly correlated in the current sample, at least at the beginning of the school year. It may be that Stars children's school liking increased as the school year progressed. It may also be that the program's effects simply did not translate to children's expressed perceptions about going to school. One striking finding concerning school liking is the strong association between being African American and (not) liking school. Given the considerable evidence of African American children being viewed as both less ready for school and less academically successful than White children (e.g., Lee & Burkham, 2002), this finding raises the possibility that school transition programs may need to provide some additional supports to African American children, to ease their transition to school and to help increase their positive feelings about being at school. Given the evidence of some teacher bias toward low-income children (e.g., Rimm-Kaufman et al., 2000), who are often disproportionately African American children, such supports might well take the form of teacher trainings designed to increase cultural sensitivity and reduce bias.

Thus, we found that the Stars summer transition program has modest positive effects on children's transition to kindergarten. Further refinements in the program might yield stronger and broader effects. Given that positive effects were stronger for children who were placed in kindergarten with their Stars teacher than for children who were placed with a different teacher, we believe the Stars program should include all kindergarten teachers in order to ensure continuity in student-teacher relationships. The Stars program should also attend to the particular needs of boys in order to maximize impacts on them.

The most significant limitations of the current evaluation were methodological. The study was constrained by a relatively small sample size and somewhat limited battery of assessments. A larger sample size and more pre-program assessments would have allowed us to explore a wider range of moderated program effects, such as the role of children's baseline cognitive development and social skills, factors unmeasured in the current study. In addition, observational measures of children's behavior during the early days of school would have strengthened our outcome assessments. Moreover, more detailed tracking of the summer activities and services partaken by the control group would have been valuable, although, given the general paucity school transition services, even if control children participated in summer preschool or preschool-like services, it is unlikely that such services would have supported the transition to school to near the same degree as the Stars program did. Another recommendation for future research is the incorporation of a qualitative research component. Interviews with parents and teachers during transition programs and during the actual transition to school could provide more detailed information about how programs may alter interactions between parents, teachers, and children. Direct observation of children as they participate in a transition program and then move into the kindergarten classroom could also provide greater insight into how programs do and do not "work."

The goal of the Stars program was broad—to acclimate children to the new ecology of formal schooling. From a developmental perspective, the transition to kindergarten is an

important event that has a long-term influence on children's academic and social functioning (Pianta & Kraft-Sayre, 2003; Schulting et al., 2005). The Stars program was much more personalized and proactive than typical transition efforts made by schools (Pianta et al., 2001). Our study indicated some positive –albeit specific– program impacts on children's transition to school. These findings, of course, must be replicated in order to understand if and to what extent to which they may be more broadly generalized. On balance, however, we view the findings as a positive first step. We suggest that this and similar programs continue to be implemented and rigorously evaluated.

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Table 1

Descriptive Statistics for All Variables by Program/Control Status

	Full Sample (n = 100)	Control (n = 40)	Program (n = 60)
Child sex (% female)	56%	55%	57%
Child age in months	65.26 (4.33)	65.28 (3.24)	65.00 (4.88)
Child African American	32%	38%	28%
Child Latino	48%	38% _a	55% _b
Months in childcare in prior 12 months	8.85 (4.36)	9.35 (4.10)	8.51 (4.48)
Behavior problems (29 -116-pt. scale)	56.70 (12.38)	56.15 (11.54)	57.07(12.99)
Mother's marital status (% married)	43%	35%	48%
Mother's education (% HS grad)	50%	58%	45%
Teacher rating of child's transition (1 -5 scale)			
Social aspect	3.66 (1.09)	3.28 (1.06) _a	3.92 (1.03) _b
Academic aspect	3.16 (1.07)	3.10 (1.06)	3.20 (1.09)
Routines	3.60 (1.17)	3.28 (1.20) _a	3.82 (1.11) _b
Mother rating (1 -5 scale)	4.10 (0.91)	3.98 (0.80)	4.18 (0.97)
School liking (range = -12 - 12)	5.97 (4.45)	5.93 (4.20)	6.00 (4.64)

Note. Means with different subscripts differ significantly at $p < .05$. Standard deviations are in parentheses.

Table 2

Bivariate Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Child sex (1 = F)	—												
2 Child age	-.09												
3 Child African-Am.	-.13	.11											
4 Child Latino	.09	-.11	-.66*										
5 Child care	-.01	.01	.16	-.19									
6 Behavior problems	-.06	-.02	.21*	-.30	.02								
7 Mother married	-.04	.08	-.38*	.34*	-.22*	-.31*							
8 Mother education	-.11	-.06	-.09	-.33*	.23*	-.02	.23*						
9 Program	-.02	-.00	-.10	.17	-.09	.04	.13	-.13					
10 Teacher: social	-.09	-.05	.10	-.09	.04	.01	-.08	.07	.29*				
11 Teacher: academic	.10	.12	-.00	-.30*	.11	.15	-.13	.23	.05	.47*			
12 Teacher: routines	-.01	-.08	-.02	-.10	-.04	-.04	-.05	.14	.23	.79*	.58		
13 Mother rating	.01	.02	-.12	.16	.07	-.11	-.05	-.09	.11	.18	.14	.31*	
14 School liking	.10	.07	-.61*	.41*	-.14	-.35*	.36*	-.18	.00	-.01	.09	.07	.09

*
 $p < .05$

Table 3

Results of Hierarchical Linear Model Testing Program Effects on Teachers' Ratings of Children's Transition to Kindergarten – Social Aspect

Models	1 Main Effect of the Program	2 Program Effect w/Controls Added	3 Moderated Program Effect
Program	0.61 (0.17)***	0.69 (0.20)***	0.25 (0.29)
Child sex (1 = female)		0.07 (0.20)	-0.43 (0.32)
Child age in months		0.00 (0.02)	0.00 (0.02)
Child African-American		0.09 (0.28)	0.12 (0.28)
Child Latino		-0.06 (0.32)	-0.11 (0.31)
Months in child care in prior 12 months		-0.20 (0.24)	0.02 (0.03)
Behavior problems		-0.01 (0.01)	-0.01 (0.00)
Mother's marital status (1 = married)		-0.20 (0.24)	-0.23 (0.23)
Mother's education (1 = HS grad)		0.07 (0.25)	0.09 (0.25)
Child Sex × Program			0.81 (0.40)*
Constant	3.29 (0.18)***	3.24 (0.37)***	3.53 (0.39)***

Note. Unstandardized HLM coefficients. Standard errors are in parentheses.

** $p < .01$

* $p < .05$

*** $p < .001$

Table 4

Results of Hierarchical Linear Model Testing Program Effects on Teachers' Ratings of Children's Transition to Kindergarten –Academic Aspect

Models	1 Main Effect of the Program	2 Program Effect w/Controls Added
Program	0.09 (0.43)	0.34 (0.20)
Child sex (1 = female)		0.34 (0.20)
Child age in months		0.04 (0.02)
Child African American		-0.87 (0.28)**
Child Latino		-1.08 (0.31)***
Months in child care in prior 12 months		0.00 (0.02)
Behavior Problems		-0.03 (0.01)***
Mother's marital status (1 = married)		-0.51 (0.23)*
Mother's education (1 = HS grad)		0.31 (0.25)
Constant	3.11 (0.17)***	3.62 (0.35)***

Note. Unstandardized HLM coefficients. Standard errors are in parentheses.

*
 $p < .05$

**
 $p < .01$

 $p < .001$

Table 5

Results of Hierarchical Linear Model Testing Program Effects on Teachers' Ratings of Children's Adaptation to Kindergarten Routines

Models	1 Main Effect of the Program	2 Program Effect w/ Controls Added	3 Same or Different Teacher
Program	0.50 (0.21) **	0.63 (0.22) ***	
Child sex (1 = female)		0.17 (0.23)	0.20 (0.22)
Child age in months		-0.00 (0.03)	-0.01 (0.03)
Child African American		-0.40 (0.32)	-0.32 (0.32)
Child Latino		-0.35 (0.36)	-0.29 (0.35)
Months in child care in prior 12 months		-0.00 (0.03)	-0.00 (0.00)
Behavior problems		-0.02 (0.01)	-0.02 (0.01)
Mother's marital status (1 = married)		-0.26 (0.27)	-0.26 (0.27)
Mother's education (1 = HS grad)		0.33 (0.29)	0.34 (0.28)
Same teacher			1.17 (0.31) ***
Different teacher			0.37 (0.25)
Constant	3.26 (0.20) ***	3.31 (0.42) ***	3.28 (0.41) ***

Note. Unstandardized HLM coefficients. Standard errors are in parentheses.

* $p < .05$

** $p < .01$

*** $p < .001$

Table 6

Results of Hierarchical Linear Model Testing Program Effects on Children's School Liking

Models	1 Main Effect of the Program	2 Program Effect w/Controls Added
Program	0.09 (0.89)	-0.36 (0.72)
Child sex (1 = female)		0.44 (0.73)
Child age in months		0.12 (0.08)
Child African American		-5.29 (1.03) ***
Child Latino		-0.33 (1.15)
Months in child care in prior 12 months		-0.04 (0.09)
Behavior problems		-0.08 (0.03) **
Mother's marital status (1 = married)		0.61 (0.84)
Mother's education (1 = HS grad)		-0.03 (0.94)
Constant	5.84 (0.73) ***	7.50 (1.30) ***

Note. Unstandardized HLM coefficients. Standard errors are in parentheses.

* $p < .05$

**
 $p < .01$

 $p < .001$