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The Transition to Kindergarten: Predicting Socio-Behavioral Outcomes for Children With and Without Disabilities

Leah Wildenger Welchons¹ · Laura Lee McIntyre²

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Abstract The transition to kindergarten is regarded as a critical early childhood developmental milestone with important implications for later school outcomes. Little prior research has focused on predictors of socio-behavioral kindergarten outcomes using longitudinal research designs. Further, few studies have examined kindergarten transition using samples of children both with and without disabilities. The goal of the current study was to explore predictors of socio-behavioral kindergarten outcomes in children with and without developmental disabilities over time. Data collection involved parent, preschool teacher, and kindergarten teacher reports of child behavior and involvement in kindergarten transition practices across three time points during transition. Results of hierarchical linear regression analyses demonstrated that preschool child behavioral variables (i.e., adaptive and problem behavior) were stronger predictors of kindergarten outcomes relative to caregiver concerns and involvement in transition preparation. Best practices in kindergarten transition programming for children with and without disabilities are discussed.

Keywords Kindergarten transition · Family involvement · Social skills and behavior problems · Developmental disabilities

Introduction

Significance of Kindergarten Transition

The transition to kindergarten is recognized as an important developmental milestone in early childhood (Eckert et al. 2008) particularly given that successful early school experiences have important implications for later school adjustment and achievement (LaParo et al. 2003; Rimm-Kaufman and Pianta 2000; Rimm-Kaufman et al. 2000). There are significant changes in kindergarten relative to early education, including the beginning of formalized instruction (Rimm-Kaufman et al. 2000), a de-emphasis on developmental and play-based approaches (Carta et al. 1990), and many new social and behavioral demands (Pianta and Kraft-Sayre 2003; Rimm-Kaufman and Pianta 2000) that make the transition to kindergarten both an exciting and challenging period of change for children and families. The kindergarten transition has been found to be challenging for children with or at-risk for disabilities given deficits in important adaptive and socio-behavioral, competencies (McIntyre et al. 2006). In addition, approximately half of all typically developing children encounter difficulties during the transition to kindergarten (Rimm-Kaufman et al. 2000).

The Ecological and Dynamic Model of Transition, proposed by Rimm-Kaufman and Pianta (2000), provides a theoretical framework for conceptualizing the transition to kindergarten that underlies much of the extant literature. A key assumption of this model is that within-child variables do not fully explain transition outcomes. The Dynamic Effects Model instead underscores changing contexts and relationships during the transition process. This model describes how connections among the child and various contexts create a dynamic network of relationships that

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impact children's transition to school in a transactional, reciprocal fashion over time (Rimm-Kaufman and Pianta 2000). In line with the Dynamic Effects Model, an abundance of theoretical literature underscores the importance of transition preparation activities to strengthen connections and create flexibility among the social contexts that support the child, often through high quality communication and contact amongst families, preschools, and elementary schools. Indeed, best practice recommendations for kindergarten transition programming are characterized by strategies to increase communication among home, preschool, and kindergarten contexts and bring discrepant environments into alignment (e.g., Pianta et al. 1999; Pianta and Kraft-Sayre 2003; Pianta et al. 2001). Another important implication of this model that has informed the present research is that transition to kindergarten should be viewed as a dynamic process, which takes place over time. However, the empirical literature lacks longitudinal studies with data collection occurring at multiple time points across the transition period, to capture processes over time. We are aware of only two longitudinal studies, one in the special education literature (i.e., Redden et al. 2001), and the other in the general education literature (i.e., LoCasale-Crouch et al. 2008), which span the entire transition period and follow children from preschool through school entry.

In this study, we investigated if transition to kindergarten preparation activities undertaken by teachers and parents across spring of the preschool year through the fall of the kindergarten year predicted child outcomes in kindergarten. Given their relevance to school adjustment, the child outcomes we focused on included social skills, student-teacher relationships, and problem behavior.

Socio-Behavioral Outcomes during Kindergarten Transition

Research suggests that child social and behavioral competencies are important for achieving a successful kindergarten transition for both children with and without disabilities (McIntyre et al. 2006; Rimm-Kaufman et al. 2000). Some researchers have suggested that socio-emotional and behavioral functioning are just as important, if not *more* critical than academic skills in kindergarten and other educational settings (Fowler et al. 1991; McIntyre et al. 2006; Rimm-Kaufman et al. 2000). Arguably, if children struggle with meeting social and behavioral expectations in kindergarten, they may not be able to fully benefit from academic instruction (LoCasale-Crouch et al. 2008).

Social and behavioral expectations are high for students. For example, beginning kindergarten students are expected to function autonomously, develop relationships with peers and teachers, understand and conform to classroom

routines and rules, and remain on-task for considerably longer periods of time compared with demands in early education classrooms (Rimm-Kaufman and Pianta 2000). Critically, a major national survey of kindergarten teachers regarding the revealed that the most commonly reported problem among incoming kindergarten students was difficulty following directions, which suggests that teachers consider behavioral regulation to be a core aspect of transition success (Rimm-Kaufman et al. 2000). It has been suggested by some research that socio-behavioral kindergarten adaptation can be viewed as an important pre-requisite to child academic development, with behavioral regulation creating the foundation necessary for the acquisition of academic skills (LoCasale-Crouch et al. 2008). Thus, it seems important that any measure of adaptive kindergarten transition would incorporate child social and behavioral skills and competencies.

Transition to Kindergarten Preparation Associated with Child Outcomes

Few empirical studies in the United States have attempted to examine transition preparation activities in relation to child kindergarten outcomes. Those that we are aware of are briefly reviewed here. A study by Schulting et al. (2005) has shown improved academic outcomes in relation to kindergarten teachers' use of transition practices for general education students. Specifically, Schulting and colleagues found that the number of school-based transition practices utilized at the classroom level was associated with higher academic achievement scores at the conclusion of kindergarten, even when controlling for important demographic factors, such as SES. Another study, by LoCasale-Crouch et al. (2008) also within the general education literature, has shown a similar effect for socio-behavioral outcomes. Specifically, pre-kindergarten teachers' use of more transition activities at the classroom level was associated with higher child social competencies and fewer problem behaviors in the beginning of kindergarten, as rated by classroom teachers. In particular, contact between preschool and kindergarten teachers, regarding curricula or specific children, was consistently and positively associated with socio-behavioral adjustment in kindergarten. However, a similar relation was not found between transition practices and child academic outcomes. A more recent study by Wildenger and McIntyre (2012) also investigated the relation between kindergarten transition preparation and typically developing children's socio-behavioral outcomes. Optimal kindergarten transition preparation was conceptualized as high family involvement in transition practices as well as child enrollment in a public school pre-kindergarten program, given the demonstrated benefits of such programs. Wildenger and

McIntyre (2012) demonstrated that kindergarten transition preparation accounted for unique variance in children's socio-behavioral outcomes in kindergarten.

In addition, two kindergarten transition intervention studies have also shown preliminary evidence for improved child outcomes. Redden et al. (2001) examined the impact of a comprehensive kindergarten transition preparation intervention on child outcomes in a national sample of Head Start children, half of whom had been provided with systematic transition programming from kindergarten through third-grade. Some important prevention effects were discerned with regard to special education classification categories such that fewer at-risk children who had received transition programming were identified as having intellectual and emotional disabilities in third grade. Negligible effects were found with regard to child academic and socio-behavioral outcomes measured via psychoeducational assessments. A more recent study by Berlin, Dunning, and Dodge (2011) utilized a randomized controlled trial to assess the efficacy of a comprehensive summer intervention designed to enhance low-income students' transition to kindergarten. Outcome measures included parent and kindergarten teacher ratings of the perceived ease of the child's transition, and child ratings of school liking and avoidance. Results of kindergarten teacher ratings indicated that girls in the intervention group had improved social outcomes and that children with the same teacher in both the intervention program and in kindergarten had improved school routines outcomes. No effects were found for kindergarten teacher reports of academic adjustment or for any parent- or child-reported outcomes. While the existing intervention studies provide some preliminary evidence for improved child outcomes in relation to transition programming, they have primarily examined general education samples at-risk by virtue of low SES. These studies have also found effects for very broad, general outcome measures that do not fully capture child socio-behavioral competencies. Given the importance of such skills for a successful transition to school, it is striking that so few studies, both correlational and experimental in nature, have explicitly examined the association between transition preparation and child socio-behavioral outcomes.

In a different vein, few studies of kindergarten transition to date have bridged the general and special education literature. The only studies that we are aware of to explore the link between transition preparation and social and behavioral kindergarten outcomes have done so using general education samples (e.g., Berlin et al. 2011; LoCassale-Crouch et al. 2008; Redden et al. 2001; Wildenger and McIntyre 2012). To our knowledge, no existing empirical studies have explored predictors of socio-behavioral kindergarten outcomes using a sample comprised of

children with developmental disabilities as well as typically developing children. The present study aims to address these gaps by using a heterogeneous sample of children with and without disabilities to explore predictors of socio-behavioral child outcomes and further inform practice recommendations. The present study also uses a longitudinal design across three time points to capture the dynamic process of the transition to kindergarten.

Study Goals

The primary aim of the study was to examine if transition preparation activities undertaken by teachers and parents in the spring of the preschool year and the fall of the kindergarten year predicted socio-behavioral outcomes in children during kindergarten. Our sample included both children with and without developmental disabilities (DD) to determine if there were differences in transition preparation activities and differences in outcomes between children with and without DD. Kindergarten socio-behavioral outcomes of interest included child social skills, problem behavior, and student-teacher relationship quality.

Methods

The sample included 104 children attending their final year of preschool in a mid-size city in the Northeastern United States, their primary caregivers, preschool teachers, and kindergarten teachers. To be included in the study, children in the typically developing (TD) group ($n = 52$) were receiving general education and not receiving special education or related services, and children in the developmental delay/disabilities (DD) group ($n = 52$) had active Individualized Education Plans (IEPs). In addition, all children were required to be in their final year of attendance in an early education setting and to have lived with their primary caregiver for a minimum of 1 year prior to the beginning of the study. Families were excluded if: (1) the child was not ambulatory, (2) the child had significant sensory impairments such as blindness or deafness, (3) the parent/caregiver did not hold legal guardianship, (4) the parent/caregiver did not hold educational rights for their child receiving special education, or (5) the parent/caregiver was unable to complete measures in English.

Children were drawn from nine early education programs in the region, including one Head Start program and eight community preschool programs. All early childhood education programs were based on inclusion models of education such that students with and without IEPs were supported in the same environment. Table 1 describes demographic characteristics of participating children across data collection periods (Time 1 = spring of

Table 1 Child demographics by group at Time 1 (DD $n = 52$ and TD $n = 52$) and Time 2 (DD $n = 43$ and TD $n = 37$)

Variable	Time 1		t or χ^2	Time 2		t or χ^2
	DD n (%)	TD n (%)		DD n (%)	TD n (%)	
Sex—male	42 (80.8)	29 (55.8)	$\chi^2 = 7.50^{**}$	35 (81.4)	22 (59.5)	$\chi^2 = 4.67^*$
Age in months M (SD)	58.92 (3.76)	59.58 (3.87)	$t = -.87$	63.05 (3.82)	63.65 (4.32)	$t = -.66$
Race—White/Caucasian	33 (63.5)	20 (38.5)	$\chi^2 = 20.41^{**}$	27 (62.8)	17 (46.0)	$\chi^2 = 12.66^*$
Individualized education plan	52 (100.0)	0 (.0)	—	32 (74.4)	1 (2.7)	—
Primary diagnosis						
Developmental delay	17 (32.7)	—	—	7 (16.3)	0 (.0)	—
Speech delay	17 (32.7)	—	—	9 (20.9)	1 (2.7)	—
Autism spectrum disorder	12 (23.1)	—	—	11 (25.6)	0 (.0)	—
Other	6 (11.5)	—	—	5 (11.6)	0 (.0)	—
None	0 (.0)	52 (100.0)	—	10 (23.3)	36 (97.3)	—
Receive related services	52 (100.0)	0 (.0)	—	35 (81.4)	1 (2.7)	—
Number of therapies received M (SD)	2.3 (.9)	0 (.0)	—	1.8 (1.4)	0 (.0)	—
Early education program						
Inclusion preschool	50 (96.2)	26 (50.0)	$\chi^2 = 28.15^{***}$			
Head start						
Kindergarten placement						
General education				7 (16.3)	29 (78.4)	$\chi^2 = 31.91^{***}$
Inclusion classroom				30 (69.8)	8 (21.6)	
Self-contained special education					0 (.0)	

* $p < .05$; ** $p < .01$; *** $p < .001$

preschool year; Time 2 = kindergarten entry) by group (DD or TD). Significant group differences were found for child sex and race. Significantly more children in the DD group were male and significantly fewer children in the TD group were White/Caucasian (see Table 1). Table 2 describes family demographics. No significant group differences were identified.

Preschool teachers ($N = 40$) also served as participants at Time 1. The majority of preschool teachers were White/Caucasian (90.0 %), female (97.5 %), had a master's degree (70.0 %), and were certified in early childhood special education (65.0 %). Teachers reported having taught in their current placement for an average of 5.4 years ($SD = 6.4$), and the majority reported having exclusively taught preschool (57.5 %).

Kindergarten teachers ($N = 49$) served as participants at Time 3. Kindergarten teachers represented 40 different elementary schools in the region. Most teachers (86 %) had only one participating student. All of the teachers were White/Caucasian and the majority was female (95.9 %), had a master's degree (95.9 %), and had a permanent teaching certification (87.8 %). The majority of teachers were certified in elementary education (83.7 %), and about one-third were certified in special education (34.7 %). Kindergarten teachers reported having taught in their current placement for

an average of 10.4 years ($SD = 7.4$), with most having taught other grade levels in the past (81.6 %). More than half (55.1 %) of teachers reported teaching in general education settings, while 40.8 % reported teaching in inclusion classrooms and 4.1 % reported teaching in self-contained special education settings. Overall, the sample of teachers was well-educated and experienced in early childhood and elementary education, respectively.

Given that data were collected across three time points during the transition to kindergarten, attrition occurred among study participants; specifically, 32 families in the DD group (61.5 %) and 25 families in the TD group (48.1 %) completed the entire study. Group differences in study completion were found on several family socio-demographic variables. Specifically, families that did not complete the study had significantly lower incomes, lower levels of education, and were more likely to be of a race other than White/Caucasian. Finally, families of children attending Head Start were less likely to complete the study. No group differences in study completion were found for key child demographic or behavioral variables, or parent or preschool teacher overall involvement. We note that honoraria were modest (\$10 for parents and \$25 for teachers), which may have influenced participants' continued involvement.

Table 2 Family demographics by group at Time 1 (DD $n = 52$ and TD $n = 52$)

Variable	DD n (%)	TD n (%)	t or χ^2
Respondents			$\chi^2 = 5.28$
Biological mother	39 (75.0)	44 (84.6)	
Biological father	4 (7.7)	4 (7.7)	
Adoptive mother	5 (9.6)	0 (.0)	
Other relative	2 (3.9)	2 (3.9)	
Legal guardian	2 (3.9)	2 (3.0)	
Age in years M (SD)	36.3 (7.7)	33.7 (7.4)	$t = 1.76$
Education			$\chi^2 = 3.18$
<High school diploma	7 (13.5)	7 (13.5)	
High school/GED	10 (19.2)	15 (28.9)	
Some college	16 (30.8)	9 (17.3)	
Bachelor's or higher	18 (34.6)	21 (40.4)	
Employed part/full-time	33 (63.5)	36 (69.2)	$\chi^2 = .24$
Lives with spouse/partner	35 (67.3)	30 (57.7)	$\chi^2 = 1.03$
Sole-caregiver household	10 (19.2)	16 (30.8)	$\chi^2 = 1.85$
Annual family income			$\chi^2 = .56$
\$14,999 or less	14 (26.9)	12 (23.1)	
\$15,000–\$54,999	20 (38.5)	22 (42.3)	
\$55,000–\$99,999	8 (15.4)	7 (13.5)	
\$100,000 or more	7 (13.5)	9 (17.3)	
Receive government aid	30 (57.7)	23 (44.2)	$\chi^2 = 2.92$

* $p < .05$; ** $p < .01$; *** $p < .001$

Procedure

Preschool (Time 1)

Directors of all inclusion early childhood special education programs in the region were invited to participate. Inclusion programs included children with and without IEPs together in early childhood classrooms. Once program directors provided consent, brief meetings were arranged with preschool teachers to discuss study procedures, with 100 % agreeing to participate. After consent was obtained from preschool teachers, they were asked to disseminate study materials to families. Parents were asked to provide demographic information and to complete a questionnaire about their concerns and kindergarten transition preparation and a questionnaire about child behavior. Upon receipt of family materials, research assistants contacted participating families and administered a measure of child adaptive behavior over the phone to the primary caregiver. Preschool teachers then completed a demographic form, a questionnaire about concerns and kindergarten transition preparation, and a questionnaire about child behavior for each participating child.

Kindergarten Entry (Time 2)

Upon their child's kindergarten entry, parents were invited to participate in a follow-up assessment through a phone call from a research assistant. During this phone call, the researcher requested information about the child's kindergarten placement, special education programming if applicable, and asked for permission to contact the child's kindergarten teacher to participate in the study. The researcher also conducted an interview focused on concerns and kindergarten transition preparation. Specifically, parents were asked whether they had engaged in any additional transition practices in order to capture their involvement across the transition period.

Kindergarten (Time 3)

Approximately 2 months after the transition to kindergarten, kindergarten teachers of child participants were recruited to participate in the study. Kindergarten teachers completed a demographic form, a questionnaire about concerns and kindergarten transition preparation, a questionnaire about child behavior, and a questionnaire about the student-teacher relationship.

Parent-Reported Measures

Kindergarten Transition Practices

The Family Experiences and Involvement in Transition (FEIT; McIntyre et al. 2007) questionnaire was utilized to assess family involvement in transition preparation activities and transition concerns during preschool (Time 1) and kindergarten entry (Time 2). The FEIT is comprised of 67 items measuring five domains: (1) child educational history (11 items); (2) parent concerns regarding the transition to kindergarten (12 items); (3) identified needs during the transition to kindergarten (14 items); (4) parental involvement in kindergarten transition practices (16 items); and (5) family demographic information (14 items). Parent involvement in kindergarten transition activities was assessed by asking parents to select between three options: whether they "have", "want", or "don't have or want" access to various transition practices. Those items that parents indicated that they "had" reflected their reported engagement in transition practices. Parent concerns were rated on a on a four-point scale (1 = No Concerns; 2 = A Few; 3 = Some; 4 = Many Concerns). The current study used separate Total Family Transition Concerns scores from Time 1 and Time 2, created by summing the 11 items that quantified concerns (possible range 11–44), from the parent concerns domain at Time 1 (11 items; alpha coefficient = .86 for the current sample) and Time 2 (11 items;

alpha coefficient = .83 for the current sample), with higher scores reflecting more concerns. A Total Family Involvement score (14 items; alpha coefficient = .67 for the current sample) was also created by summing the transition practices items that parents indicated to “have” at Time 1 and the additional transition practices items that caregivers reported to “have” during the phone interview at Time 2 (possible range 0–14). The Total Family Involvement score therefore did not differentiate between involvement at Time 1 and Time 2, but instead summed activities across the transition period to more comprehensively capture involvement.

Adaptive Behavior

The survey interview form of the Vineland Adaptive Behavior Scales 2nd edition (Vineland-II; Sparrow et al. 2005) was administered over the phone to caregivers at Time 1 to assess the child's adaptive skills in four domains: (1) Communication, (2) Daily Living Skills, (3) Socialization, and (4) Motor Skills. The domains combine to yield an overall Adaptive Behavior Composite standard score (mean = 100; standard deviation = 15), which was used for the current study.

Problem Behavior

Parents completed the Social Skills Improvement System-Parent Form (SSIS-P; Gresham and Elliott 2008) when their child was in preschool at Time 1. The SSIS include 46 items assessing social skills and 33 items assessing problem behaviors. Only the Problem Behaviors Scale was used in the present study. The Problem Behaviors scale assesses child problem behaviors in five domains: (1) externalizing, (2) bullying, (3) hyperactivity/inattention, (4) internalizing, and (5) autism spectrum. The domains combine to yield an overall Total Problem Behaviors standard score (mean = 100; standard deviation = 15), which was used for the current study.

Teacher-Reported Measures

Demographics

Each participating preschool and kindergarten teacher filled out a brief demographics form developed for the study assessing the teacher's ethnicity, teaching experience and credentials, and classroom setting (e.g., inclusion, general education).

Kindergarten Transition Practices

The Teacher Perceptions on Transitions (TPOT; Quintero and McIntyre 2011) was completed by the preschool and

kindergarten teachers for each participating student in the classroom. The TPOT consists of questions concerning the use of 14 commonly utilized transition preparation activities. The teacher indicated which activities had been used with the student and when they were used (i.e., “Fall,” “Spring,” “Summer,” or “Continual”). Additionally, one item quantified Teacher Concerns on a five-point Likert-type scale (0 = no concerns; 4 = very many concerns), which was used in the current study. The current study also used a Total Teacher Involvement score, created by summing those transition practices items that teachers reported utilizing (possible range 0–14) at Time 1 in preschool (14 items; alpha coefficient = .76 for the current sample) and Time 3 in kindergarten (14 items; alpha coefficient = .78 for the current sample). Two separate Total Teacher Involvement scores were calculated for each child, one reflecting the behavior of the preschool teacher and one reflecting the behavior of the kindergarten teacher. Higher scores indicated more involvement.

Social Skills

The Social Skills Improvement System-Teacher Form (SSIS-T; Gresham and Elliott 2008) was completed by the preschool teacher at Time 1 and the kindergarten teacher at Time 3. The scale contains 46 items assessing social skills in seven domains; (1) communication, (2) cooperation, (3) assertion, (4) responsibility, (5) empathy, (6) engagement, and (7) self-control. The domains combine to yield an overall Total Social Skills standard score (mean = 100; standard deviation = 15), which was used for the current study. Only the kindergarten teacher-reported data on social skills was used in the present study.

Problem Behavior

The Problem Behavior scale of the SSIS-T (Gresham and Elliott 2008) includes 30 items and was used at Time 1 and Time 3 to assess child problem behaviors in five domains: (1) externalizing, (2) bullying, (3) hyperactivity/inattention, (4) internalizing, and (5) autism spectrum. The domains combine to yield an overall Total Problem Behaviors standard score (mean = 100; standard deviation = 15), which was used for the current study.

Student-Teacher Relationship

The Student-Teacher Relationship Scale (STRS; Pianta et al. 2001) was completed by the child's kindergarten teacher at Time 3. The STRS contains 28 items assessing three domains of the student-teacher relationship: conflict, closeness, and dependency. The current study used the

STRS total score, which can range from 28 to 140, with higher scores reflecting a more positive relationship.

Data Analysis

Chi square and independent samples *t* tests were conducted to identify significant group differences (TD vs. DD) on demographic variables, which were used as covariates in subsequent analyses. Bivariate correlations were used to examine relations among key family, child, and transition preparation predictor variables and transition outcomes. Hierarchical linear regression analyses were conducted in order to examine the relative predictive power of child behavior and transition preparation variables with respect to kindergarten transition outcomes.

The rationale for use of hierarchical linear regression analysis was theoretically driven. Although only preliminary empirical evidence (i.e., Berlin et al. 2011; LoCasale-Crouch et al. 2008; Wildenger and McIntyre 2012) exists indicating that transition preparation variables are related to kindergarten socio-behavioral child outcomes, there is ample evidence to suggest that child adaptive and problem behavior both greatly impact transition outcomes (e.g., McIntyre et al. 2006). In addition, although adaptive and problem behavior represent within-child variables, transition practices may be conceptualized as independent of the child and therefore represent an important area of potential intervention for parents and teachers supporting children during transition. The ordering of the variables in the hierarchical regression analysis was thus intended to inform knowledge of effective interventions to improve transition experiences for children as they make this adjustment. Family (e.g., annual income), child (e.g., sex, adaptive and problem behavior), parent and teacher concerns, and parent and teacher involvement variables were all explored as potential predictor variables in the regression models. The selection and order of predictor variables was empirically informed, based on demonstrated relations with early school outcomes in the literature (e.g., McIntyre et al. 2006). Ultimately, variables included in the model were selected based on the strength of correlations with the transition outcomes.

Results

Transition Outcomes Composite

Moderate to high correlations were discerned among socio-behavioral kindergarten outcome variables. That is, total STRS scores were significantly correlated with both Total Social Skills ($r = .66, p < .001$) and Total Problem Behaviors ($r = -.58, p < .001$) as reported by

kindergarten teachers. In addition, Total Social Skills and Total Problem Behaviors scores were significantly correlated, ($r = -.67, p < .001$). Therefore, a Transition Outcomes Composite was developed that combined these scores in order to reduce the number of outcome variables (McIntyre et al. 2006). The composite was developed by transforming the Total Social Skills, Total Problem Behavior, and Total STRS standard scores to *z*-scores, adding them, and dividing the result by three. The sign was reversed on the Total Problem Behavior score to reflect the direction of the Total Social Skills and Total STRS variables. Higher scores on the Transition Outcomes Composite reflect more positive kindergarten outcomes (McIntyre et al. 2006).

Relations among Predictor Variables and Kindergarten Outcomes

Relations among key family, child, and transition preparation predictor variables and the Transition Outcomes Composite were investigated for the entire sample (see Table 3). Key demographic variables, including child sex and family income, were not found to correlate with the Transition Outcomes Composite. However, significant correlations were found between child adaptive behavior, ($r = .53, p < .001$), parent-reported problem behavior ($r = -.28, p = .039$), and preschool teacher-reported problem behavior ($r = -.62, p < .001$) and the Transition Outcomes Composite. With respect to concerns, Total Family Concerns at Time 1 ($r = -.30, p = .023$) but not at Time 2 ($r = -.23, p = .093$) was found to correlate with the Transition Outcomes Composite; however, the correlation between the Transition Outcomes Composite and Total Preschool Teacher Concerns was more robust ($r = -.56, p < .001$). Kindergarten teacher concerns were not included as a predictor given that their measurement was temporally simultaneous with the Transition Outcomes Composite and likely highly related to kindergarten teacher-reported child outcomes. Finally, with respect to involvement in transition practices, while Total Family Involvement ($r = -.08, p = .570$) and Total Kindergarten Teacher Involvement ($r = .06, p = .687$) were not correlated with the Transition Outcomes Composite, Total Preschool Teacher Involvement ($r = -.37, p = .006$) was significantly correlated.

Predicting Kindergarten Transition Outcomes

The following four predictor variables comprised the full hierarchical regression model: child adaptive behavior (VABS-II Adaptive Behavior Composite) was entered first (Step 1), followed by child problem behavior as reported by preschool teachers (SSIS-T Problem Behaviors Total)

Table 3 Overall correlations between predictor variables and transition outcomes (N = 57)

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Transition outcome composite	–											
2. Child sex	.00	–										
3. Total family income	.16	.02	–									
4. Adaptive behavior composite	.53***	.23*	.13	–								
5. Total problem behavior—SSIS-T (preschool)	–.62***	–.19	–.17	–.48***	–							
6. Total problem behavior—SSIS-P	–.28*	–.23*	–.23*	–.42***	.40***	–						
7. Total family concerns (Time 1)	–.30*	–.25**	–.05	–.66***	.44***	.48***	–					
8. Total family concerns (Time 2)	–.23	–.26*	–.04	–.59***	.28*	.59***	.70***	–				
9. Total preschool teacher concerns	–.56***	–.16	–.21*	–.66***	.56***	.35***	.55***	.43***	–			
10. Total family involvement	–.08	.08	.26**	–.14	.05	–.09	.10	.05	.17	–		
11. Total preschool teacher involvement	–.37**	–.15	–.09	–.46***	.42***	.34**	.43***	.27*	.34**	.17	–	
12. Total kindergarten teacher involvement	.06	–.05	.02	.04	.01	–.17	.13	.15	.06	.03	.01	–

* $p < .05$; ** $p < .01$; *** $p < .001$

(Step 2), preschool teacher Total Concerns (Step 3), and finally, Total Preschool Teacher Involvement in transition practices (Step 4) on the Transition Outcomes Composite (i.e., dependent variable). This order of entry allowed the assessment of the independent contributions of each variable, above and beyond the combined effects of the previously entered predictor variables. A hierarchical regression analysis was conducted with the entire sample at Time 3 ($N = 57$) (see Table 4). Child adaptive behavior accounted for 28.6 % of the variance in the Transition Outcomes Composite ($R^2 = .29$, $p < .001$). Preschool teacher-reported problem behavior significantly explained 16.0 % of variance in the Transition Outcomes Composite, above and beyond child adaptive behavior, ($R^2 \Delta = .16$, $p = .001$); however, the inclusion of preschool teacher concerns did not significantly add to the model, ($R^2 \Delta = .02$, $p = .176$). The final predictor of interest, Total Preschool Teacher Involvement, also did not explain unique variance in the Transition Outcomes Composite ($R^2 \Delta = .00$, $p = .780$). The whole model accounted for 47.0 % of the variance in kindergarten outcomes across the entire sample ($R^2 = .47$, $p = .780$).

Discussion

The importance of child social and behavioral competencies for positive early school outcomes for both children with special needs and typically developing peers is established (e.g., Fowler et al. 1991; Rimm-Kaufman et al. 2000). However, few studies have examined predictors of socio-behavioral kindergarten outcomes (e.g., McIntyre et al. 2006). Furthermore, the only studies to link transition involvement with improved social and behavioral kindergarten outcomes have done so using exclusively general education samples (e.g., Berlin et al. 2011; LoCasale-Crouch et al. 2008; Wildenger and McIntyre 2012). Therefore, the current study aimed to explore predictors of socio-behavioral kindergarten outcomes in a sample of children with and without disabilities using a longitudinal research design.

Analyses demonstrated that parent- and teacher-reported child problem behavior in preschool, as well as parent-reported adaptive behavior, was correlated with child social and behavioral outcomes in kindergarten. In addition, the total concerns of families and preschool teachers in the

Table 4 Summary of hierarchical regression analysis for variables predicting the kindergarten transition outcomes composite in the overall sample (n = 57)

Variable	B	SE B	β
Step 1: Adaptive behavior composite (VABS-2)	.01	.01	.11
Step 2: Preschool total problem behavior (SSIS-T)	–.03	.01	–.42
Step 3: Preschool teacher total concerns	–.21	.15	–.23
Step 4: Preschool teacher total involvement	–.01	.04	–.04

$R^2 = .29$ ($p < .001$) for Step 1; $R^2 \Delta = .16$ ($p = .001$) for Step 2; $R^2 \Delta = .02$ ($p = .176$) for Step 3; $R^2 \Delta = .00$ ($p = .780$) for Step 4

spring of preschool were negatively correlated with kindergarten outcomes such that caregivers were more concerned about children with poorer kindergarten outcomes. Finally, the involvement of preschool teachers in transition practices was correlated with kindergarten outcomes. Specifically, a negative correlation between these two variables suggested that preschool teachers had greater involvement for students with poorer overall kindergarten outcomes. Similar relationships were not found between transition outcomes and family and kindergarten teacher involvement. Results of a hierarchical linear regression analysis showed that higher levels of adaptive behavior and fewer problem behaviors in preschool significantly predicted positive kindergarten transition outcomes in our sample of children with and without disabilities. However, total involvement of preschool teachers in transition practices did not predict unique variance in kindergarten outcomes, above and beyond adaptive behavior, problem behavior, and preschool teacher concerns. We note that our regression model utilized preschool variables to predict a kindergarten outcomes composite score; therefore, predictors and outcomes were distinct both theoretically and temporally, which we believe enhances the validity and clarity of the model.

The importance of adaptive behavior as a predictor of early school outcomes is consistent with previous research on socio-behavioral kindergarten adjustment among children with and without disabilities (McIntyre et al. 2006). Additionally, the finding that higher adaptive behavior and lower problem behavior in preschool predicted positive kindergarten outcomes for children in the current sample is consistent with the survival skills literature on kindergarten transition for children with disabilities, which underscores the importance of such competencies for successful school adaptation (e.g., Carta et al. 1990; Rule et al. 1990). The finding that preschool teacher involvement failed to predict unique variance in transition outcomes differs from the results of the LoCasale-Crouch et al. (2008) study, which found that children had more positive social competencies and fewer problem behaviors when they attended pre-kindergarten classrooms in which more transition practices were implemented. In fact, the opposite relationship emerged in the present study, with greater preschool teacher involvement correlated with less optimal kindergarten outcomes. These different patterns may reflect the present heterogeneous sample of children with and without disabilities in contrast to the general education sample used in the LoCasale-Crouch et al. (2008) study. The discrepancies in results may also reflect measurement differences, as transition practices were examined at the level of the individual child and family in the current study, and at the classroom/teacher level in the LoCasale-Crouch et al. (2008) study. Therefore, it is unclear to the extent that a

broader measure of transition practices at the classroom or preschool program level may have been a more meaningful predictor of kindergarten outcomes. Given that the present study is the first to examine this relation among a combined sample of TD and DD children, our findings nonetheless begin to fill an important gap in the research.

Study Limitations

We note that the design of the current investigation was correlational, which precludes drawing conclusions about causal relationships with regard to predictor variables and kindergarten outcomes. Another clear limitation is the participant attrition that occurred over the course of the longitudinal investigation, particularly during the kindergarten wave of data collection. The attrition and associated reduction in sample size led to a corresponding decrease in statistical power. In addition, the attrition was non-random, and associated with several family socio-demographic variables. These findings are consistent with the literature on attrition in longitudinal research involving children and families, which suggests that study non-completion is indeed related to indices of lower family socioeconomic status (e.g., Janus and Goldberg 1997). The nonrandom attrition in this investigation introduces a significant threat to external validity. Additionally, it may be difficult to generalize results involving Time 3 analyses to other populations of children and families, particularly those experiencing risk factors such as low socioeconomic status.

The developmental status groups (i.e., DD and TD) in the current study were unequal on several important dimensions, which reflects the nonrandom sampling methodology utilized. Many of these important group differences were interrelated, for example, several of the typically developing children in the sample were drawn from one Head Start preschool site, therefore, there was a higher proportion of African-American children in the TD group, consistent with the demographics of families served by that agency. Although the group differences represent a methodological limitation, these variables were included as covariates in the analyses involving group comparisons, and in all cases, the effects remained significant after accounting for the group differences. Given that children were drawn from a single type of inclusive preschool program model, it is also possible that parent and teacher involvement for children in our sample does not reflect that of the greater population. Specifically, given that many children in these programs were receiving special education services, it may be the case that the programs had relatively high-quality transition models to appropriately serve children with disabilities. Therefore, the typically developing children that attended these programs may have had parents and teachers with artificially increased involvement.

A final concern is the exclusive use of indirect (parent- and teacher-reported) measures of child social and behavioral functioning in this study. Behavioral research and theory generally emphasize the benefits of direct as compared with indirect measurement, particularly with regard to the assessment of child social skills and behavior (Walker et al. 1992).

Future Research Directions

Currently, very few outcomes studies have begun to demonstrate that involvement in kindergarten transition preparation activities positively impacts child kindergarten outcomes. Additional studies need to explore the relation between transition practices and a range of child outcomes. Research on outcomes will inform our knowledge of the effectiveness of kindergarten transition programming, an area of identified need (Eckert et al. 2008). In addition, future outcomes studies should examine the impact of transition practices among samples of both children with disabilities and typically developing children, preferably conducting analyses by group in order to determine best practices models that maximize the developmental course for children in both groups.

Future research on child outcomes would continue to benefit from utilizing longitudinal designs in which children are followed from preschool to kindergarten and data on transition preparation and child adjustment are collected across the entire transition period. In the current study, a longitudinal design allowed for a more complete documentation of transition preparation activities over the course of the process. Our study, although longitudinal, was relatively brief. The collection of follow-up data at later points in time (e.g., through the early school years) may also inform knowledge of the stability of child kindergarten outcomes. It is also important for future research to assess the involvement of all key groups of stakeholders during transition, including families and educators, as in the current study. The examination of the involvement of only a single group (e.g., kindergarten teachers) may not fully capture the breadth of the transition preparation activities actually utilized. Future research should also use both direct (i.e., observations) and indirect (i.e., behavior rating scales) methods to assess kindergarten outcomes in order to more comprehensively evaluate child adjustment.

Finally, as noted by others (Schulting et al. 2005; McIntyre and Wildenger 2011), there is a need for randomized controlled trials examining kindergarten transition interventions to determine whether transition preparation plays a causal role in improved child outcomes. Experimental intervention studies would help to substantiate correlational research (i.e., LoCasale-Crouch et al. 2008)

suggesting that certain practices, such as communication and collaboration between preschool and kindergarten teachers about particular students or the curriculum, predict positive child outcomes in particular. To date, we are aware of only two such intervention studies (i.e., Berlin et al. 2011; Redden et al. 2001) in the transition literature. Future intervention studies might evaluate various transition practices and their effect on a range of child outcomes.

Implications for Practice

Our findings suggest that child adaptive and problem behavior are important predictors of kindergarten outcomes for children with and without disabilities, consistent with prior research. Therefore, as suggested by others (e.g., McIntyre et al. 2006), early intervention efforts should target increasing adaptive behaviors and social skills and decreasing maladaptive problem behaviors in order to facilitate positive transitions. In particular, important survival skills as noted in the special education transition literature such as compliance and appropriate peer-social behaviors (e.g., sharing, taking turns) could be targeted. This might be accomplished through a combination of intervention efforts directed at children (e.g., individual behavioral therapy) and caregivers (e.g., parent training). These intervention elements could also be conceptualized specifically as part of kindergarten transition programming for children with developmental delays, behavioral concerns, or other risk factors. In summary, the kindergarten transition represents an important early childhood developmental milestone. It is also a unique opportunity for educators and families to partner in order to meet the developmental needs of children and foster early school success.

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