

The Efficacy of the Family Check-Up on Children's Emotional and Behavior Problems in Early Elementary School

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Abstract

This study reports results of a randomized, controlled trial examining the efficacy of the Family Check-Up (FCU) initiated during kindergarten on teacher report of children's emotional and behavior problems in first and second grade. Children's emotional and behavior needs and the receipt of special services in school at pretest were examined as moderators. Participants were primary caregivers and teachers of 365 children in early elementary school. Using an intent-to-treat approach, results indicated children in the FCU condition outperformed children in a business-as-usual control condition on teacher report of emotional and behavior problems in first and second grade. Children experiencing higher levels of emotional and behavior problems at pretest benefited from the FCU more than did children who experienced lower levels of problems. There was no evidence of moderation by whether children received special services in school. Implications for family-centered interventions, study limitations, and future research directions are discussed.

Keywords

child behavior, family engagement, home–school collaboration

Emotional and behavior problems in childhood are among the biggest concerns facing children, their parents, and their teachers (Pastor, Reuben, & Duran, 2012). Children who exhibit behavior problems in early elementary school are at risk for developing chronic and intractable problems (Dishion & Patterson, 2006; Masten et al., 2005). Without intervention, emotional and behavior problems in childhood amplify over time and lead to serious consequences (Dodge, Greenberg, & Malone, 2008). Children who exhibit behavior problems in early elementary school are at increased risk for a variety of long-term problems, including academic difficulties, mental health problems (Valdez, Lambert, & Ialongo, 2011), substance abuse (Crum, Storr, Ialongo, & Anthony, 2008), employment difficulties, and violent crime (Moffitt, Caspi, Harrington, & Milne, 2002). Despite the urgent need for early assessment and intervention to address and prevent problems, many children with mental health problems are not identified by those at the front line of service delivery (e.g., teachers, pediatricians; Horwitz, Leaf, Leventhal, Forsyth, & Speechley, 1992; Levitt, Saka, Romanelli, & Hoagwood, 2007), and many children who need support do not receive effective treatment (Kataoka, Zhang, & Wells, 2002).

Kindergarten Transition

The kindergarten year can be a particularly challenging and pivotal time for children and families (Lee & Bierman, 2015; McIntyre, Blacher, & Baker, 2006). Children entering kindergarten are expected to possess certain skills to facilitate their success in elementary school, such as regulation of emotions and behavior (Wesley & Buysse, 2003). Findings from a national survey indicated that up to 46% of kindergarten teachers reported that half or more of students in their class demonstrated difficulties (e.g., following directions, disorganized home environment, social skills; Rimm-Kaufman, Pianta, & Cox, 2000). However, nearly half of a national sample of school psychologists reported no involvement in kindergarten transition programming (McIntyre, Eckert, Arbolino, DiGennaro Reed, & Fiese, 2014).

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Parents also experience problems during their child's transition to kindergarten. Parents have more contact with their child's teacher in early childhood settings than do parents whose child is in kindergarten (Rimm-Kaufman & Pianta, 2005). In addition, behavior problems are among the concerns most frequently reported by parents of kindergarten children (McIntyre, Eckert, Fiese, DiGennaro, & Wildenger, 2007), yet parents report minimal targeted or intensive support (McIntyre et al., 2007; Wildenger & McIntyre, 2011). However, for a variety of reasons, the importance of kindergarten is clear. With an increase in assessments during kindergarten and early elementary school, children are identified earlier for special services in school (Litty & Hatch, 2006). Without effective treatment, behavior problems at school entry have a deleterious impact on later conduct (Okado & Bierman, 2015). Parental expectations for their children and beliefs about their children at school entry predict later academic performance (Davis-Kean, 2005; Loughlin-Presnal & Bierman, 2017). To ameliorate difficulties children and families experience at school entry and to prevent a host of problems and promote adaptive skills, an ecological approach that supports parents and children at home, in concert with kindergarten teachers and other school staff, is essential.

Developmental Ecologies

An ecological theoretical model (Bronfenbrenner, 1977) is a useful approach to conceptualize and organize assessment and intervention for children (Dishion & Stormshak, 2007). An ecological systems approach suggests that proximal systems (e.g., home, school), more distal systems (e.g., neighborhood), connections between systems, and sociocultural factors influence child development (Bronfenbrenner, 1977). Thus, assessment and intervention for children's emotional and behavior problems must be considered within broader ecologies (Garbacz, Herman, Thompson, & Reinke, 2017). To change the trajectory for children with emotional and behavior problems in early elementary school, developmental ecologies must be altered.

Primary ecologies for children are the home and school, as well as connections between them. The home setting and parenting practices are well established as key mechanisms through which children develop behavior problems and more adaptive skills (Dishion & McMahon, 1998; Dishion et al., 2008; Stormshak, Bierman, McMahon, Lengua, & Conduct Problems Prevention Research Group, 2000). Emotional and behavior problems are not isolated to one setting, but rather occur across settings (Achenbach, McConaughy, & Howell, 1987). Connecting home and school to provide consistent and congruent support for children is also a key mechanism to reduce behavior problems,

improve parenting practices, and promote adaptive skills (Garbacz & McIntyre, 2016; Sheridan et al., 2012).

Research Support for an Ecological Approach

Early risk factors, such as poverty and adult mental health problems, can limit parents' ability to use effective parenting practices and engage with teachers to develop consistent cross-setting supports (Macmillan, McMorris, & Kruttschnitt, 2004). Thus, an ecological approach to assessment and intervention for children with emotional and behavior problems can improve parenting practices and cross-setting supports for children, parents, and teachers, which can reduce the influence of early risk factors and improve academic performance and behavior in the short term and life-course outcomes in the long term (Maughan, Christiansen, Jenson, Olympia, & Clark, 2005; Sanders, Markie-Dadds, Tully, & Bor, 2000; Spoth et al., 2015; Stormshak, Connell, & Dishion, 2009; Stormshak et al., 2011; Van Ryzin, Stormshak, & Dishion, 2012). Such an ecological approach at school entry should provide assessment-driven and tailored, evidence-based support for parenting in the home (Dishion & Stormshak, 2007; Stormshak & Dishion, 2002) and support for establishing and sustaining connections to enriching classroom and school environments (Bierman et al., 2008). Despite the clear benefits of an ecological approach, few interventions include parents and family-school connections (Reinke, Splett, Robeson, & Offutt, 2009).

An Ecological Approach for Assessment and Treatment in Kindergarten

The Family Check-Up (FCU) is a family-centered, school-based model for intervening in, and preventing, academic and problem behavior. The intervention is brief and consists of three components: an initial interview, an ecological assessment, and a feedback session. This ecological family intervention model emerged from a series of randomized trials to prevent a range of problem behaviors among adolescents (Dishion & Stormshak, 2007; Stormshak, Dishion, Light, & Yasui, 2005). These research trials with ethnically and socioeconomically diverse youth demonstrated intervention effects on self-regulation, grade point average, attendance, school engagement, and growth of teacher-rated child problem behavior over time (Fosco, Stormshak, Dishion, & Winter, 2012; Stormshak et al., 2005; Stormshak, Fosco, & Dishion, 2010), as well as on a variety of nonacademic outcomes, such as rates of depression, substance use, and high-risk sexual behavior (Connell, Dishion, & Deater-Deckard, 2006; Stormshak

et al., 2010). Early-childhood intervention trials, starting at age 2 years, similarly have demonstrated intervention effects on self-regulation, language skills, and child behavior problems at school entry (Dishion et al., 2008; Lunkenheimer et al., 2008), and effects improved as children received increased dosage over time (Stormshak et al., 2018; Dishion et al., 2014). No research has examined the efficacy of the FCU at kindergarten entry as a preventive approach to reduce problem behavior and enhance the academic success of young children during the transition to school.

Study Purpose and Research Questions

This study was conducted as part of a randomized, controlled trial that examined the FCU in early elementary school. In our study, we sought to examine the efficacy of the FCU initiated during kindergarten on teacher report of children's emotional and behavior problems in first and second grade. We also investigated whether children with elevated emotional and behavior needs at and the receipt of special services in school at baseline benefited from the FCU more or less than did children with lower levels of emotional and behavior needs at baseline and who did not receive special services in school. We tested the following research questions:

Research Question 1: What is the efficacy of the FCU initiated during kindergarten on teacher report of children's emotional and behavior problems in first and second grade? We hypothesized that the children in the FCU condition would outperform children in the business-as-usual control condition on teacher report of emotional and behavior problems in first and second grade (Dishion et al., 2008; Stormshak et al., 2011; Stormshak et al., 2010).

Research Question 2: Does teacher-reported emotional and behavior problems or caregiver report of their child's special services in school at baseline moderate the effect of the FCU at first and second grade? We hypothesized that children with elevated emotional and behavior needs at baseline would have lower levels of emotional and behavior problems at first and second grade than would children without elevated emotional and behavior needs at baseline (Connell, Dishion, Yasui, & Kavanagh, 2007; Dishion et al., 2008; Stormshak et al., 2009). With regard to moderation by special services in school, we hypothesized that the receipt of special services in school would not influence the effect of the FCU on teacher-reported emotional and behavior problems at first and second grade (Kataoka et al., 2002; McIntyre et al., 2007; Wildenger & McIntyre, 2011).

Method

Participants and Setting

This study received approval from the authors' institutional review board and research compliance office. Participants were primary caregivers and teachers of 365 children in early elementary school. All kindergarten families across five elementary schools were contacted and invited to participate at school entry. Families who consented were randomly assigned to an FCU condition or a business-as-usual control condition.

Table 1 reports demographic characteristics of participants for the total sample and for the FCU and business-as-usual control condition. Figure 1 displays allocation to condition. The average age of participating children was 5.45 ($SD = 0.50$). Primary caregivers reported that 59% of children were White. High school was reported to be the highest level of education by 25% of primary caregivers; about 13% reported having completed less than a high school degree and 24% reported having completed some college education. Primary caregivers reported that 60% of children had attended preschool.

Children's kindergarten teachers completed pretest assessments, first-grade teachers completed first-grade assessments, and second-grade teachers completed second-grade assessments. Kindergarten teachers ($N = 16$) primarily reported they were White (69%), female (100%), and completed a master's degree (87%). First-grade teachers ($N = 21$) also reported they were primarily White (95%), female (95%), and completed a master's degree (86%). Second-grade teachers ($N = 24$) were similarly primarily White (79%), female (88%), and completed a master's degree (75%). Kindergarten teachers, first-grade teachers, and second-grade teachers had an average of 10.00 ($SD = 6.57$), 11.14 ($SD = 7.86$), and 11.54 ($SD = 9.34$) years of teaching experience, respectively. Children attended one of five schools in an urban city and surrounding suburban areas in the Pacific Northwest region of the United States. Four of the five schools were Title I schools. Across the five schools, average student enrollment was 442 ($SD = 98.94$). Approximately 65% of students across the five schools were eligible for a free or reduced-price lunch.

Study Variables

Teachers reported about children's emotional and behavior problems by using an elementary version of the Strengths and Needs Survey (SANA; Moore et al., 2016) offered in a paper and pencil form. Kindergarten teachers completed the SANA during children's kindergarten year at baseline (pretest). First-grade teachers completed the SANA in fall of children's first-grade year, and second-grade teachers completed the SANA in fall of children's second-grade year. The SANA

Table 1. Demographic Characteristics of Caregivers and Children.

	% Total (N = 365)	% FCU (n = 190)	% Control (n = 175)
Primary caregiver mean (SD) age	33.89 (6.33)	33.88 (5.83)	33.89 (5.83)
Primary caregiver gender			
Female	89.4	89	89.8
Male	10.6	11	10.2
Primary caregiver highest level of education			
Less than high school	13.4	10.5	16.5
High school	25.3	24.5	26.1
Partial college	24.4	26.4	22.3
Junior college or associate's degree	10.6	12.9	8.3
Four-year college degree	17.5	20.2	14.6
Graduate professional training	8.8	5.5	12.1
Children's mean (SD) age	5.45 (0.50)	5.52 (0.50)	5.38 (0.49)
Children's gender			
Female	45.2	44.7	45.7
Male	54.8	55.3	54.3
Children's race/ethnicity			
White	58.6	59.1	58
Multiple races/ethnicities	22.1	20.7	23.6
Hispanic/Latino	13.4	13.4	13.4
Asian	2.2	1.8	2.5
Black/African American	1.9	2.4	1.3
Unknown	1.6	2.4	0.6
Pacific Islander	0.3	0	0.6
Children who attended preschool	60.3	52.6	68.6
Children who received special services in school			
Yes	14.5	14.7	14.3
No	73.2	71.6	74.9
Unknown	12.3	13.7	10.9

Note. FCU = Family Check-Up.

is a nine-item measure rated on a 4-point scale ranging from 0 (*no concern*) to 3 (*serious concern*). Items are used to assess common areas in which children may need additional support (e.g., behaves well; pays attention, focused; sad, worried, or irritable; aggressive toward others). The SANA has evidenced reliability and validity for the unidimensional assessment (Moore et al., 2016) and demonstrated good internal consistency reliability with the present sample ($\alpha = .94$). A sum score from the SANA was included as a dependent variable in the impact analysis. In addition, the SANA sum score at baseline was examined as a moderator.

Receipt of special services in school was measured based on caregiver report at baseline with a single item, "Is your child receiving special services in school? (On an Individualized Education Program (IEP), 504 plan, behavior intervention plan, etc.)." Caregiver responses were either "Yes" or "No."

Family Check-Up Intervention Protocol

Training of therapists. Therapists in this study were doctoral-level psychologists who had been previously trained in the

FCU through a variety of means, such as attending a training workshop and working on prior projects that used this model. Specific training content included training on the protocol, developmental norms, motivational interviewing techniques, and academic supports for children in kindergarten (Stormshak & Dishion, 2010). After training, therapists were required to observe three live FCUs (all three sessions: initial interview, ecological assessment, and feedback session) and were subsequently observed leading two FCUs. The final step before being authorized to lead the FCU independently was to have the two observed FCUs coded using the COACH rating system (Smith, Dishion, Shaw, & Wilson, 2013). Therapists' COACH ratings had to be within the satisfactory range (minimum score of 5) before they were authorized to provide the FCU independently to participants in the study. Once therapists were authorized to provide the FCU independently, weekly group supervision meetings that emphasized case conceptualization and delivery of feedback were held to maximize treatment fidelity. The second and third authors provided clinical supervision to the FCU therapists.

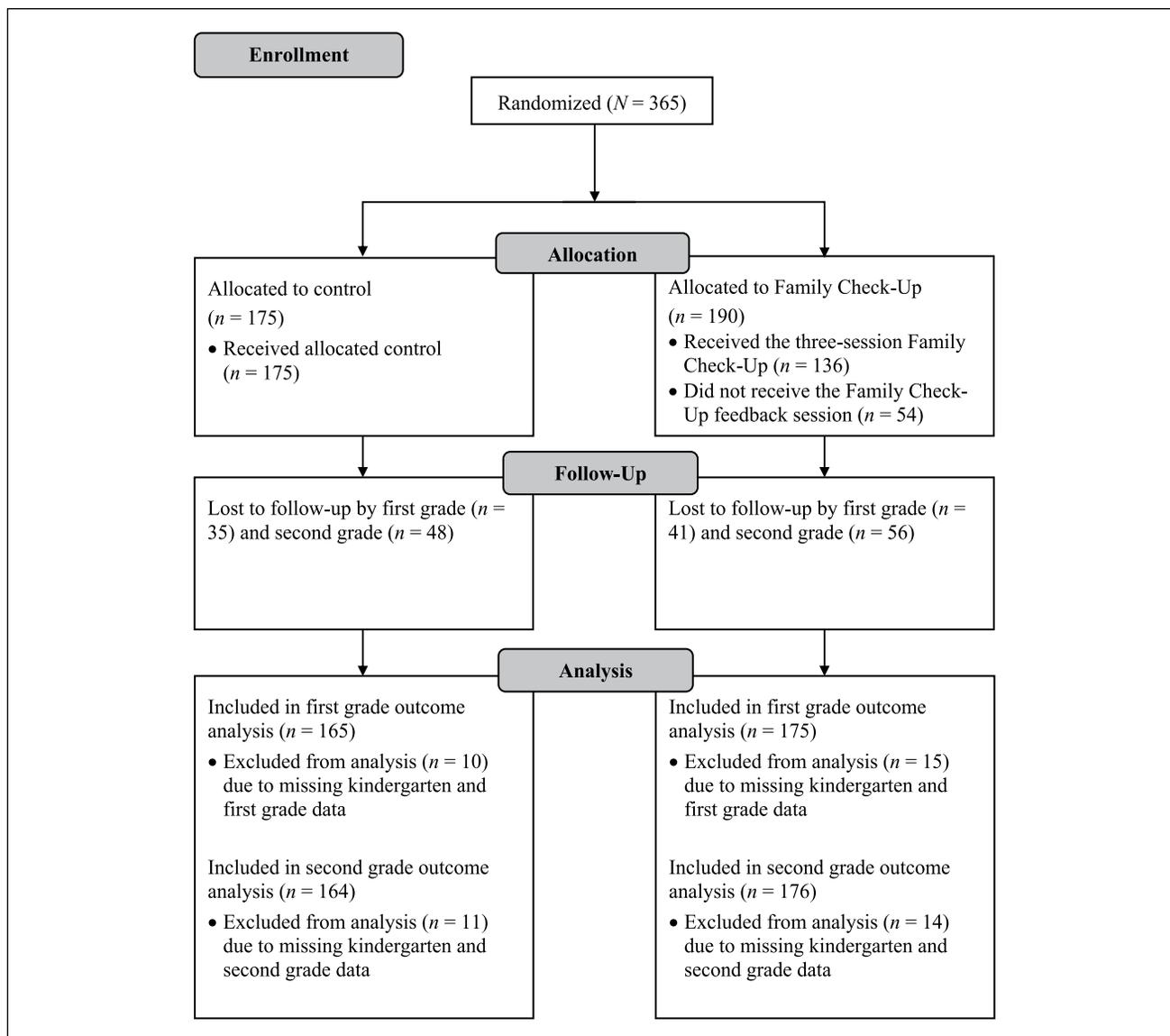


Figure 1. Participant enrollment.

Intervention delivery. The FCU was delivered to families in the intervention group who agreed to participate in the intervention. The majority of families (75%) agreed to participate in the FCU and completed the feedback session. During the feedback session, families are offered a range of follow-up options, including additional sessions. Approximately half (49%) of families received additional sessions related to their goals, parenting skills, and academic support. Total treatment time averaged 204.90 min (range = 30.00 to 945.00) for families in the intervention group. The average family in the intervention group received 4.89 total contacts (range = 0.00 to 22.00). Therapists rated engagement after each contact on a scale ranging from 1 (*weak*) to 3 (*strong*). Therapists rated caregiver engagement at an average of 2.57 ($SD = 0.56$; range = 1 to 3). The FCU model involves three steps and a menu of

intervention services that are adapted and tailored to families' needs. It follows a tiered service delivery model as described by Dishion and Stormshak (2007).

A multitiered model has been applied in many school-based programs (Walker et al., 1996), including school-wide positive behavioral interventions and supports (Sugai & Horner, 2002) and First Step to Success (Walker et al., 2009). Consistent with a multitiered model (e.g., Fuchs & Fuchs, 2006), intervention services are modified to fit the needs of families on the basis of assessment and risk status. In this study, all intervention families were offered basic support in the form of brochures, educational materials, and information about the transition to kindergarten.

Those who engaged in the FCU received an initial interview and ecological assessment during a single visit

(selected intervention). This was followed by a feedback session with goal planning and was typically delivered in the family home. Feedback focused on the targeted intervention areas for children during the school transition and included information about early learning, parenting skills, contextual stressors, home-to-school planning, and family strengths. Home-to-school planning primarily included supporting caregivers, but in some instances also included working directly with teachers to facilitate home-school success when that was consistent with a family's goal. Teachers were involved in 19 meetings and another school staff member was involved in six meetings. Follow-up sessions were guided by parents' goal setting, were collaborative, and provided additional, brief support focused on targeted goals (indicated support). Common themes addressed during these sessions included behavioral routines in the home, positive parenting, and home-to-school planning for academic success (Dishion, Stormshak, & Kavanagh, 2011). In the present study, the top 10 topics covered during meetings were (a) child behavior, (b) child academic skills, (c) positive parenting, (d) child emotional health, (e) child peer relations, (f) home-school connection, (g) family routines, (h) family relationships, (i) parent-child relationships, and (j) limit setting.

The FCU includes several family-centered approaches and behavioral strategies to address family goals. Therapists embed motivational interviewing throughout the FCU intervention to encourage motivation to change (Miller & Rollnick, 1991). The feedback session in particular leans heavily on motivational interviewing to promote parents' goal-oriented decision-making. Based on parents' goals, follow-up sessions included a variety of approaches, including direct skill building to improve family management, academic support with home-to-school planning, and connections to community organizations and resources. Finally, therapists embed cultural responsive approaches throughout the intervention whereby therapists and parents discuss the family's culture and therapists provide tailored support in alignment with the family's culture and preferences (Stormshak & Dishion, 2009).

Business-as-Usual Condition

Participants in the business-as-usual condition received traditional support from schools (e.g., behavior intervention plans) and support outside of school (e.g., mental health support). There were no significant differences between the FCU and business-as-usual conditions on the proportion of children who received special services in school, $\chi^2(1) = 0.308, p > .05$, or the proportion of children who received mental health services, $\chi^2(1) = 1.536, p > .05$.

Statistical Analysis

To address our first research question about the effects of the FCU on teacher report of children's emotional and

behavior problems in first and second grade, we performed two mixed (multilevel) regression models that nested repeated measures within children, the level of assignment to study condition. The two regression models tested for differences between conditions on change in outcome from kindergarten to first and second grades, respectively; accounted for autocorrelation among assessments within individual children; and utilized all available data whether or not a participant has complete data at each grade level. The models included the effects of condition, time, and the Condition \times Time interaction, with condition coded 0 for control and 1 for treatment, and time coded 0 for baseline (kindergarten) and 1 at first or second grade. The effect of *condition* is interpreted as the difference in outcome between the treatment and control conditions at baseline, the effect of *time* is interpreted as the change in outcome from kindergarten to first or second grade among the control condition, and the *Condition* \times *Time* interaction is interpreted as the difference in change in outcome between the treatment and control conditions. Hedges' *g* effect sizes (Hedges, 1981) for the Condition \times Time effect are reported to ease interpretation of results (0.2, 0.5, and 0.8 correspond to small, medium, and large effects, respectively).

For our second research question, we examined whether teacher-reported emotional and behavior problems or caregiver report of children's special services in school at baseline moderated the treatment effect of first- and second-grade outcomes. We extended the regression models used in our first research question to include the moderator and its interaction with condition, time, and the Condition \times Time term, resulting in a three-way interaction, all corresponding two-way interactions, and individual effects. The three-way interaction between the moderator, condition, and time provides evidence of moderation (i.e., the Condition \times Time effect varies by the level of the moderator). To investigate the nature of significant moderation effects, we evaluated regions of significance as recommended by Preacher, Curran, and Bauer (2006).

We fit models to our data with SAS PROC MIXED Version 9.4 (SAS Institute, 2016) using restricted maximum likelihood estimation and between-within degrees of freedom approximation (Schluchter & Elashoff, 1990). The analysis of first-grade outcomes included $N = 340$ children (FCU $n = 175$; control $n = 165$; see Figure 1) with either kindergarten or first-grade outcome scores. The analysis of second-grade outcomes also included $N = 340$ children (FCU $n = 176$; control $n = 164$) with either kindergarten or second-grade outcome scores. We ignored higher levels of nesting (e.g., classroom, school) because randomization and intervention delivery occurred at the child-level. Higher levels of nesting have no effect on the average effect estimator or its standard error for this study design (Raudenbush & Sadoff, 2008), and consequently no effect on the Type I or Type II error rates.

Table 2. Descriptive Statistics and Correlations Among Emotional and Behavior Problem Variables.

	1	2	3
1. Kindergarten (baseline) teacher-reported emotional and behavior problems	—		
2. First-grade teacher-reported emotional and behavior problems	.67**	—	
3. Second-grade teacher-reported emotional and behavior problems	.72**	.70**	—
<i>M</i>	5.60	4.91	5.48
<i>SD</i>	6.80	6.20	6.31

* $p < .05$. ** $p < .01$.

Table 3. Results of a Time \times Condition Analyses of Pretest (Kindergarten) to First- or Second-Grade Change in Teacher Report of Emotional and Behavior Problems.

		Kindergarten to first grade	Kindergarten to second grade
Fixed effects	Intercept	5.01*** (0.56)	5.03*** (0.56)
	Time	0.45 (0.49)	0.97* (0.49)
	Condition	1.28 (0.78)	1.07 (0.78)
	Condition \times Time	-1.71* (0.68)	-1.39* (0.68)
Variances	Subject	30.98*** (3.23)	33.21*** (3.33)
	Residual	12.41*** (1.29)	10.85*** (1.22)
Hedges' <i>g</i>	Time \times Condition	-0.276	-0.221
<i>p</i> values	Time \times Condition	.013	.043

Note. Condition coded 0 for control and 1 for treatment. Time coded 0 for baseline and 1 for first or second grade. Table entries show parameter estimates with standard errors in parentheses except for Hedges' *g* values, *p* values. Tests of fixed effects used 191 degrees of freedom for outcome at first grade and 163 degrees of freedom for outcome at second grade.

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

Maximum likelihood estimation uses all available data (whether or not a participant had data at baseline, first grade, or second grade) and produces unbiased results in the face of substantial missing data, provided the missing data were missing at random (Schafer & Graham, 2002). We considered this assumption tenable, meaning that missing data likely did not depend on unobserved determinants of the outcome (Little & Rubin, 2002). The statistical models also assume independent and normally distributed observations. We addressed the first assumption by modeling correlated repeated measures. The outcome measure in our study also did not markedly deviate from normality; skewness and kurtosis fell within ± 2.1 .

Results

Descriptive Results, Baseline Equivalence, and Attrition

Table 2 reports descriptive statistics and correlations among emotional and behavior problems variables. A large correlation coefficient was observed between kindergarten and first grade as well as kindergarten and second-grade teacher report of children's emotional and behavior problems. A large correlation coefficient was also observed between first-grade and second-grade teacher report of children's

emotional and behavior problems. FCU and control groups did not significantly differ on levels of teacher-reported concern at baseline ($p = .102$).

To evaluate the extent to which attrition threatened the internal validity of this study, we used a regression analysis designed to test whether outcomes were differentially affected across conditions by attrition status at first and second grade. These analyses examined the effects of condition, attrition status, and their interaction on the baseline outcome. Examination of attrition revealed that 149 (78%) and 134 (71%) of the treatment children had first- and second-grade outcome data, respectively, and that 140 (80%) and 127 (73%) of the control children had first- and second-grade outcome data, respectively. We found no statistically significant interactions between attrition and condition predicting baseline outcome ($ps > .792$), suggesting that the effect of attrition on outcomes did not vary by condition.

Efficacy Results

We tested the hypothesis that participants in the FCU condition would experience greater decreases in teacher report of children's emotional and behavior problems, measured in both first and second grades, than would participants in the control condition. The models summarized in Table 3 tested fixed effects for differences between conditions at

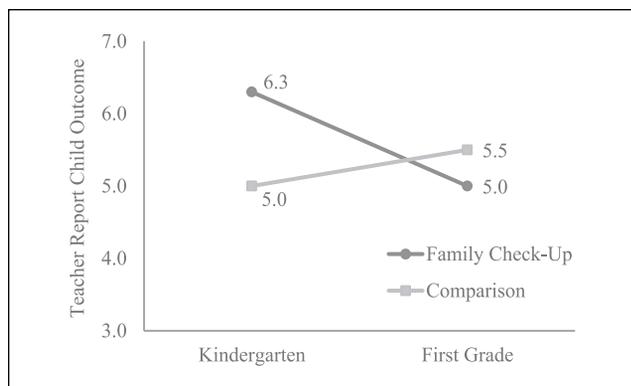


Figure 2. Model-based estimates of kindergarten and first-grade teacher report of children's emotional and behavior problems.

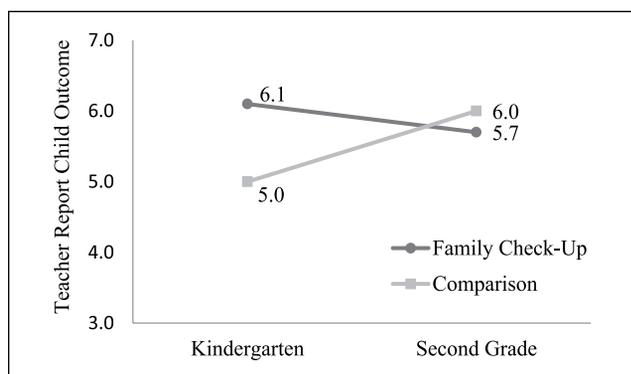


Figure 3. Model-based estimates of kindergarten and second-grade teacher report of children's emotional and behavior problems.

baseline (condition effect), gains from kindergarten to first or second grade (time effect), and the interaction between the two. As shown in the first column of data in Table 3, children in the FCU condition experienced greater decreases in teacher-reported problems from kindergarten to first grade than did children in the control condition ($t = -2.51$, $df = 191$, $p = .013$). The model estimated differences in gains between the FCU and control conditions of -1.71 at first grade (Hedges' $g = -0.28$). As shown in the second column of data in Table 3, the FCU condition also experienced greater decreases from kindergarten to second grade than the control condition ($t = -2.04$, $df = 163$, $p = .043$). The model estimated differences in gains between the FCU and control conditions of -1.39 at second grade (Hedges' $g = -0.22$). Figures 2 and 3 depict model-based estimates of kindergarten and first-grade teacher report of children's emotional and behavior problems by condition and kindergarten and second-grade teacher report of children's emotional and behavior problems by condition, respectively.

Moderation Results

A first-grade outcome moderation analysis revealed a significant three-way interaction between condition, time, and baseline teacher-reported emotional and behavior problems indicating children with greater emotional and behavior problems experienced greater benefit from the intervention than did children with lower levels of emotional and behavior problems ($t = -2.13$, $df = 189$, $p = .035$). Estimated differences between treatment and control conditions in kindergarten to first grade change in the outcome were -0.80 for children at the 25th percentile in teacher-reported emotional and behavior problems at baseline ($p = .250$), -1.34 for children at the 50th percentile at baseline ($p = .021$), and -2.41 for children at the 75th percentile at baseline ($p < .001$). Subgroup analyses based on children at or above the 50th percentile on teacher-reported emotional and behavior problems at baseline generated an effect size of $g = -0.43$ ($p = .035$). A similar statistically significant moderation effect was obtained for the second-grade outcome ($t = -2.03$, $df = 161$, $p = .044$). Estimated differences between treatment and control conditions in kindergarten to second grade change in the outcome were -0.45 for children at the 25th percentile in teacher-reported emotional and behavior problems at baseline ($p = .495$), -1.02 for children at the 50th percentile ($p = .084$), and -2.08 for children at the 75th percentile ($p = .002$). Subgroup analyses based on children at or above the 50th percentile on teacher-reported emotional and behavior problems at baseline generated an effect size of $g = -0.29$ ($p = .130$) for change in outcome from kindergarten to second grade. We observed no evidence of moderation by whether or not special services in school were received ($ps > .548$).

Discussion

The purpose of our study was to examine the efficacy of the FCU initiated during kindergarten relevant to teacher report of children's emotional and behavior problems in first and second grade. We also investigated whether teacher report of emotional and behavior needs and caregiver report of children's special services at baseline moderated the effect of the FCU on children's emotional and behavior problems at first and second grade. This study targeted children's emotional and behavior problems, one of the biggest concerns facing children, parents, and teachers (Pastor et al., 2012). By targeting families of children at school entry, children and families can receive effective treatment before problems amplify or become chronic (Dodge et al., 2008). This research supports the efficacy of the FCU initiated at school entry for reducing risk factors associated with the long-term development of academic and behavior problems.

Study results suggest that children randomly assigned to the FCU experienced greater decreases in emotional and

behavior problems than did controls. Results were obtained by using an Intent-To-Treat (ITT) approach to analyses, which is known to be the most stringent approach to testing results of randomized trials (Lachin, 2000). Second, children experiencing higher levels of emotional and behavior problems at kindergarten entry benefited most from the intervention in comparison with children who were experiencing lower levels of emotional and behavior problems. These results are consistent with FCU effects during middle school (Stormshak et al., 2009) and suggest that family-centered approaches, such as the FCU, have great promise for reducing child risk and promoting positive outcomes when initiated during kindergarten. This study adds substantially to research that has examined the FCU in early childhood (Dishion et al., 2008) and in middle school (Stormshak et al., 2011) by targeting school entry. In addition, there was no evidence that caregiver report of children's special services in school moderated the impact of the FCU on teacher-reported emotional and behavior problems. This suggests the FCU works well for children regardless of whether they receive special services in school.

Of note is that our primary outcome measure was teacher reports of children's emotional and behavior problems. We worked directly with some teachers on home-to-school planning with families, but only when it was a goal for families and done in a limited manner. As a result, not all teachers were aware of which children were in the intervention versus control group or how much intervention had been received, making these reports less susceptible to bias and social desirability that are sometimes present in randomized trials (Jadad et al., 1996).

Implications

Although social, emotional, and behavioral skills have been identified as important kindergarten survival skills (Welchons & McIntyre, 2017) and have been targeted in a range of school interventions (e.g., Nix et al., 2016), few interventions are designed to work directly with families on these important child skills. Moreover, the family interventions that demonstrate significant effects on child behavior, such as behavioral parent training programs, are costly and challenging to implement. The FCU overcomes many of the traditional barriers by delivering interventions that are based on family needs, are tailored to fit family priorities, and are delivered in a manner that capitalizes on family strengths and motivation to change (Dishion & Stormshak, 2007). Beyond behavioral parent training interventions, some interventions have focused on improving academic and social-emotional readiness skills in young children and emphasizing home-to-school planning (e.g., Berlin, Dunning, & Dodge, 2011). These studies, however, have limited focus on parenting skills and support for families during kindergarten transition.

The importance of using an ecological approach to conceptualizing and organizing assessment and intervention for children is well established (Bronfenbrenner, 1977; Stormshak & Dishion, 2002). The FCU is family centered, which distinguishes it from other ecological approaches in early elementary school, such as family-school partnership interventions (Sheridan et al., 2012). In a family-centered approach, families are respected, supported, and empowered to make decisions and use parenting and home-school collaboration strategies that are best for their family (Dunst, Trivette, & Hamby, 2007). The focus on family centeredness within a broader ecological approach targets and mobilizes resources for families and the home environment in ways that may be more likely to sustain over time, relative to approaches that do not have an explicit focus on family support and the home environment (Dunst et al., 2007; Spoth et al., 2015; Stormshak et al., 2010).

In addition to family centeredness, an important aspect of the FCU is its integration of a multitiered framework. This design organizes assessment and intervention through a scope and sequence that provides tailored support (Dishion & Stormshak, 2007; Stormshak & Dishion, 2002). The combined family-centered approach embedded in a broader ecological perspective and the overall multitiered framework can maximize organizational efficiencies (Garbacz et al., 2016) and facilitate family engagement (Stormshak et al., 2005). Two primary barriers to family engagement commonly reported by school staff are a lack of resources and the challenge of facilitating parents' participation in activities and intervention (Garbacz et al., 2018). The FCU specifically focuses on efficiency in the multitiered framework (Dishion & Stormshak, 2007; Horner & Sugai, 2015) and uses approaches such as motivational interviewing to promote engagement (Stormshak & Dishion, 2002).

Findings from our study suggest that an average of 137 min of intervention (through the first-grade assessment) and 204 min of intervention (through the second-grade assessment) produced significant changes in teacher-reported child emotional and behavior outcomes. The effect sizes for teacher report of emotional and behavior problems are comparable to effect sizes for parent-mediated interventions (Maughan et al., 2005). Moreover, the FCU improved children's emotional and behavior problems in first and second grade regardless of whether they received special services in school.

Schools must make choices about services they provide (Belfield & Levin, 2007). When implemented in middle school, the FCU produces intervention effects into high school (Stormshak et al., 2009; Van Ryzin et al., 2012), which suggests the robustness of the FCU and a family-centered approach. Findings from our study in the context of other research on the FCU position the FCU as an efficient approach that aligns with existing school frameworks (Sugai & Horner, 2002). Findings also suggest that when schools use the FCU (Irvine, Biglan, Smolkowski, Metzler,

& Ary, 1999; Smolkowski et al., 2017), there is good potential for substantial return as they invest in this ecological, family-centered approach at kindergarten entry (Crowley, Jones, Greenberg, Feinberg, & Spoth, 2012).

Limitations and Future Research Directions

Although our study fills a gap in current intervention programming for children entering kindergarten, this study is not without limitations. First, our sample is limited to children in five urban elementary schools from primarily lower income backgrounds. Second, our intervention was flexible and based on family need and priorities. Thus, the specific targets of intervention and dosage of intervention varied depending on parents' willingness to engage in follow-up services following the feedback session. Third, this study focused on teacher reports of children's emotional and behavior functioning in school settings. Although teachers were not completely blind to intervention condition, teachers were not targets of our intervention. Fourth, in addition to emotional and behavior functioning, cognitive skills are also important for school readiness at the transition to elementary school (Bierman, Torres, Domitrovich, Welsh, & Gest, 2009). However, cognitive skills were not assessed in the present study.

Findings from this study in the context of these limitations suggest important directions for future research. Because of the location and characteristics of elementary schools, future research should investigate the FCU in different geographic areas, such as rural communities where an efficient and family-centered approach is needed (DeLeon, Wakefield, & Hagglund, 2003; Johnson, Showalter, Klein, & Lester, 2014; Semke & Sheridan, 2012). In addition, FCU effects in early elementary school should be examined on other outcomes, such as home behavior, parenting strategies, and cognitive skills. Having examined the moderation of pretest emotional and behavior problems and receipt of special services in school, this study has begun to address for whom the FCU may be most effective when it is initiated during kindergarten. Future research should examine mechanisms for intervention effects. For example, evidence-based parenting practices in the home may strengthen or explain effects of the FCU on children's emotional, behavior, or social problems (Fosco et al., 2012).

Conclusion

This study fills a substantial gap in school transition intervention programming by demonstrating that a brief intervention focused on parenting can contribute to significantly improved emotional and behavior outcomes into first and second grade. The randomized, controlled

trial, sample size, and ITT analytic strategy all contribute to the multiple methodological strengths. Notably, children with the greatest need improved the most, suggesting that the FCU can be used across various risk groups. Previous studies demonstrating the efficacy of the FCU suggest that families in greatest need choose to receive more follow-up services (Connell et al., 2007; Dishion et al., 2008; Stormshak et al., 2009). In conclusion, study results demonstrate promising new directions for interventions intended to facilitate school transition and improve children's emotional and behavior outcomes.

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