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Abstract

The impact of the Family Check-Up (FCU) on family-school engagement was tested in a randomized, controlled trial. Participants were primary caregivers of 321 children. Approximately 87% of families randomly assigned to the intervention agreed to participate and received the intervention. Caregivers in the FCU condition outperformed caregivers in the school-as-usual condition on family-school engagement at home. In addition to outcomes, implementation of the FCU during kindergarten was examined, including family participation in the FCU, dosage, consumer satisfaction, and content of the follow-up sessions when delivered by FCU therapists. Children's baseline behavior and caregiver perception of the FCU significantly predicted participation in the FCU. Implications for family-centered interventions are discussed.

*Keywords:* family engagement, home–school collaboration

## Impact and Implications

Study findings suggest that a family-centered intervention improved caregivers' engagement at and support for learning at home. In addition, caregiver acceptability and child behavior predicted family participation in treatment.

# Examining Family-School Engagement in a Randomized Controlled Trial of the Family Check-Up

In early elementary school, children develop academic skills and social–emotional competencies that promote later academic achievement and set the stage for lifelong social and behavioral success (Masten & Cicchetti, 2010). Families and the home environment affect child development and are key components of early intervention (Christenson & Sheridan, 2001). Family support at home and collaboration with teachers, that is, *family-school engagement* (Garbacz, Herman, Thompson, & Reinke, 2017), may be especially important for students transitioning to elementary school. The kindergarten transition is considered to be a sensitive period necessary to establish positive academic and social trajectories in a child's educational experience (McIntyre et al., 2014; Rimm-Kaufman & Pianta, 2000). Family-school engagement promotes child development and sets a foundation for learning and home–school collaboration (Englund, Luckner, Whaley, & Egeland, 2004), which establishes positive outcomes from early elementary school through adolescence (Garbacz, Zerr, Dishion, Seeley, & Stormshak, 2018).

## Theoretical Foundation

Considerable research supports a developmental–ecological model in which family-school engagement and parenting skills support learning across a variety of systems (Conduct Problems Prevention Research Group [CPPRG], 1992). Ecological systems theory posits that children develop in the context of concentric systems, each influencing the other in dynamic ways (Bronfenbrenner, 1979). Proximal developmental systems, such as home and school, are microsystems, and the mesosystem consists of connections between microsystems, such as home–school collaboration. Social services and cultural ideologies occur in the exosystem and macrosystem. Grounded in this developmental-ecological model, family-school engagement is

multidirectional and transactional (Bowen, Rose, Powers, & Glennie, 2008), including a set of practices whereby families, educators, and other key stakeholders interact to support children's development.

**Family-School Engagement**

Family-school engagement includes four primary dimensions: family-school engagement at home, family-school engagement at school, family-school collaboration, and family-school communication. (Christenson & Sheridan, 2001; Manz, Fantuzzo, & Power, 2004). Family-school engagement at home consists of family support for home-school behavior and learning, such as parent–child shared book reading and help with homework. Family-school engagement at school consists of family support at school or in collaboration with a child's teacher, such as attending school events. Family-school collaboration and communication are related, but distinct. Whereas family-school collaboration refers to caregivers and educators joining together to support children, family-school communication includes caregivers and educators sharing information back-and-forth to support children's behavior and learning (Vikers & Minke, 1995). Other aspects of family-school engagement encompass neighborhood and community supports (Taylor & Biglan, 1998) as well as academic expectations and socialization (Hill & Tyson, 2009).

Extant literature is replete with studies examining the influence parenting and home factors have on children's academic achievement, social skills, and behavior competencies (Pomerantz, Kim, & Cheung, 2011). Findings from correlational studies indicate that family-school engagement is positively associated with child behavior (Fantuzzo, McWayne, Perry, & Childs, 2004). Longitudinal studies have demonstrated an association between dynamic improvements in family-school engagement and children's literacy over time (Dearing, Kreider,

Simpkins, & Weiss, 2006). Results from meta-analyses depict the positive influence family-school engagement has on children's academic achievement (Fan & Chen, 2001). Although promising, this line of inquiry has several limitations. A primary limitation is that many of the studies examining family-school engagement have been cross-sectional and correlational. (Garbacz et al., 2017). Thus, directionality of relations between family-school engagement and student learning and behavior have often not been clear.

In contrast to correlational designs, randomized, controlled trials (RCTs) establish causal links. Family-school engagement interventions have been tested in RCTs. Results from RCTs at the kindergarten transition and in early elementary school show effects on children's behavior, home–school communication (Sheridan, Ryoo, Garbacz, Kunz, & Chumney, 2013), and academic performance (Bierman, Welsh, Heinrichs, Nix, & Mathis, 2015). Although ecological theory suggests impacts of family-school engagement interventions on family-school engagement at home and at school, these impacts have been tested in the context of a study testing the efficacy of a family-school partnership intervention, but those tests were not statistically significant (Sheridan et al., 2013).

Research has confirmed that parents often decline to participate in interventions (Spoth & Redmond, 2000). To improve the public health impact of family-school engagement interventions, research is needed that describes how families participate in the intervention process and what predicts participation (Garbacz et al., in press; Winslow, Bonds, Wolchik, Sandler, & Braver, 2009). Leveraging the health belief model (Rosenstock, 1966), Winslow et al. (2009) provided a conceptual organization for factors that may influence family participation in interventions. Three conceptual and research supported factors include (a) perceived need, (b) perceived benefits, and (c) perceived barriers (Janz & Becker, 1984). Caregivers' perceived need

includes perception of the severity of child behavior problems at baseline (Stormshak, Connell, & Dishion, 2009; Stormshak, Dishion, Light, & Yasui, 2005) with studies suggesting caregivers of children with more symptoms of hyperactivity are more likely to participate in intervention (Barkley et al., 2000; Mash & Johnston, 1983). Perceived benefits include caregivers' beliefs about whether an intervention will address their needs and be appropriate and acceptable (Janz & Becker, 1984; Taylor & Biglan, 1998). In addition, barriers, such as family financial need may influence family participation in interventions with studies suggesting families with higher incomes are more likely to participate in intervention (Haggerty et al., 2002; Rohrbach et al., 1994).

**Family Check-Up**

The Family Check-Up (FCU; Dishion & Stormshak, 2007) is an ecological, school-based, family-centered intervention. The FCU includes an initial interview and ecological assessment, followed by a feedback session. The FCU embeds motivational interviewing throughout the intervention as a key avenue to promote motivation to change (Miller & Rollnick, 1991). The FCU improves parenting skills and family-school engagement, which in turn reduces child and adolescent behavior problems and supports positive development. The FCU includes tailored support to families, based on their needs and risk, including support for parenting, home-to-school planning, family-school communication, and academic and behavior support at home and school (Stormshak, Dishion, & Falkenstein, 2010).

The FCU has been tested across several efficacy trials to reduce the risk of problem behavior, academic failure, and a variety of other risk outcomes that impair healthy development across the lifespan. Study results have shown that when the FCU is delivered during the middle school years, it reduces problem behavior, aggression, family conflict, depression, substance use,

affiliation with deviant peers, and risky sexual behavior throughout adolescence (Fosco, Frank, Stormshak, & Dishion, 2013; Stormshak et al., 2011; Stormshak, DeGarmo, Chronister, & Caruthers, in press; Van Ryzin, Stormshak, & Dishion, 2012). When the FCU was tested as an early childhood intervention with parents and toddlers, starting at age 2, it enhanced and supported parenting skills and thus precipitated reductions in later risk behavior, positive school achievement, improved self-regulation, and reductions in maternal depression (Chang, Shaw, Dishion, Gardner, & Wilson, 2014; Reuben, Shaw, Brennan, Dishion, & Wilson, 2015). As such, this evidence-based intervention has been shown to successfully treat aggression and related problem behaviors across multiple efficacy trials and developmental periods.

Although the FCU was adapted for early childhood, until recently it had not been adapted for kindergarten and early elementary school. Our adaptation of the FCU for kindergarten expanded on the early childhood and middle school versions in several ways. First, the FCU was delivered as a school-based model, and parents were invited to participate in the FCU as they registered their child for the kindergarten year. Families received a home visit, assessment with videotaped observation, and a feedback session in the home with a trained behavioral consultant. Second, the assessment protocol for the kindergarten version integrated several domains of functioning that are salient to the school transition, including reading and math assessments, teacher reports of behavior and learning, and parent–child observations of reading and homework support. Last, these domains allowed for feedback and support to parents focused on these critical areas of development during kindergarten, including the development of parenting skills to facilitate family-school engagement at home and school.

The FCU has been rigorously examined in a series of efficacy trials in early childhood and adolescence. However, recent adaptations to the FCU for kindergarten have not been

examined. There are two pressing areas to investigate. First, the impact of the FCU on family-school engagement, a key proximal impact should be assessed. Impact assessments of family-school engagement is a key area of need in the family-school engagement literature (Sheridan et al., 2013) and not examined to date in research examining the FCU. Second, family participation in the FCU in early elementary school should be investigated to understand how families participate and what predicts their participation. Prior studies of the FCU in middle school have reported on family participation and found that families with the highest risk are most likely to participate (Stormshak et al., 2009). However, family participation in the FCU in early elementary school has not been examined. Findings about family participation in the FCU will inform future research on the FCU as well as the broader line of inquiry examining factors that impede and promote family participation in interventions (Winslow et al., 2009).

**Study Purpose and Research Questions**

Family-school engagement in early elementary school can promote children's academic performance and behavior. However, the impact of family-school engagement interventions on family-school engagement at home and school is unclear. In addition, more research is needed to understand how families participate in the FCU to support their children. Gaining clarity about how families participate in the FCU can maximize the effectiveness of the FCU for improving family-school engagement. The purpose of our study was to examine the impact of the FCU on family-school engagement at home and school. A secondary focus of the study was to investigate family participation in the FCU and test predictors of participation. Three research questions guided the study:

1. What is the efficacy of the FCU for family-school engagement at home and at school? We hypothesized that caregivers in the FCU condition would outperform caregivers in the

school-as-usual control condition on family-school engagement at home and school (Bronfenbrenner, 1979; Dishion et al., 2008). Specifically, we hypothesized that caregivers in the FCU condition would maintain or improve their family-school engagement at home and school whereas family-school engagement at home and school for caregivers in the school-as-usual control condition would decrease.

2. To what extent do families participate in the FCU? We hypothesized that the majority of families randomized to the FCU condition would participate in the FCU, but that there would be a range of participation (Spoth & Redmond, 2000), and caregivers would favorably perceive the FCU strategies (Taylor & Biglan, 1998).
3. Does caregiver perception of FCU strategies and child hyperactivity behavior at baseline predict participation in the FCU? If so, to what extent does family financial need influence predictions of participation? We hypothesized that caregiver perception of the FCU and child hyperactivity behavior would significantly predict participation in the FCU (Stormshak et al., 2005; Taylor & Biglan, 1998). In particular, we hypothesized that caregivers of children who exhibit elevated hyperactivity behavior would participate in more treatment relative to families of children who exhibited less hyperactivity behavior. In addition, we hypothesized that families with more financial need would participate in less treatment time relative to families with less financial need (Winslow et al., 2009).

## Method

### Participants and Setting

This study received approval from the authors' institutional review board and research compliance office. All kindergarten families across five elementary schools were contacted and invited to participate as they registered their child for kindergarten, and primary caregivers of

321 children gave consent. We targeted Title I schools and conceptualized that all families were eligible. Across the five schools, 648 families had the opportunity to consent. Families who consented ($N$ = 321) were randomly assigned after the baseline assessment to receive the FCU or a school-as-usual control condition. Children and caregivers lived in an urban city or surrounding suburban area in the Pacific Northwest region of the United States. Table 1 presents demographic characteristics of participating children.

Approximately 54% of children were identified by their caregiver as male with a mean age of 5.45 years. About 81% of caregivers reported that their child was White, and an estimated 9% identified their child as African American. Eighty-nine percent of children were reported by their caregivers to speak English at home. Approximately 65% of caregivers reported that their child attended preschool.

On average, caregivers were age 33.90 years ($SD$ = 6.32), and approximately 89% of caregivers were female. Thirteen percent did not have at least a high school degree, 25% had a high school degree, 25% completed some college coursework, 11% had a junior college or associate's degree, 17% had at 4-year college degree, and 9% had graduate professional training or a graduate degree. Approximately 80% of caregivers identified as White, 17% as Hispanic or Latino, and 3% as African American. Approximately 79% of caregivers reported that they lived with a spouse or partner.

**Measures**

After the invitation to participate, participants provided consent primarily during the middle of fall and winter. Caregivers completed family-school engagement measures during their child's kindergarten year (baseline) and one year later, in first grade. We used seven items from the home-based involvement dimension of the Family Involvement Questionnaire-Elementary

Version (FIQ-E; Manz et al., 2004) to examine family-school engagement at home. Home-based involvement items (rated from 0 = *not at all* to 4 = *always*) examined how often caregivers engage in family-school behaviors at home (e.g., I help my child with homework). The FIQ-E has acceptable psychometric properties (Manz et al., 2004). Internal consistency reliability for our study sample was good (α = .814). An average score was used in the analysis for Research Question 1.

Six items from the Parent-Teacher Involvement Questionnaire (PTIQ; CPPRG, 1991) were used to measure family-school engagement at school. PTIQ items (rated from 0 = *rarely or never* to 3 = *daily*) examine the frequency of caregiver engagement at school and with their child's teacher (e.g., During the school year, how often have you stopped by to talk to your child's teacher?). The PTIQ has good psychometric properties (CPPRG, 1991). Internal consistency reliability for the sample was acceptable (α = .624). An average score was used in the analysis for Research Question 1.

Family participation in the FCU was examined using items from the parent consultant log (PACL) data system (Stormshak, McIntyre, Garbacz, & Caruthers, 2015). Following contacts with families, consultants used the PACL to record completion of the initial meeting, the feedback session, treatment visits after the feedback session, total number of contacts with caregivers, and the duration of treatment time. Finally, consultants noted the topics discussed during treatment sessions. For the purposes of Research Questions 3, we used the duration of treatment time to measure family participation in the FCU.

Caregiver acceptability of the FCU was measured using an 8-item scale developed for the present project (Stormshak, Caruthers, Garbacz, & McIntyre, 2014). On a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), items examine the extent to which caregivers disagreed

or agreed with statements about aspects of their family therapist's use of FCU strategies (e.g., My family consultant helped me set goals I could reach). Internal consistency reliability with the sample was good (α = .858). An average score from the 8-item acceptability scale was used in the analysis for Research Questions 2 and 3.

Child hyperactivity behavior at baseline was measured using caregiver report on the Hyperactivity subscale of the Strengths and Difficulties Questionnaire (Goodman, 2001). The Hyperactivity subscale had acceptable internal consistency reliability (sample α = .84) and included five items (e.g., constantly fidgeting or squirming) measured on a three-point scale ranging from 0 (*not true*) to 2 (*certainly true*). An average score was used in the analysis for Research Question 3.

Family financial need was measured by a single item completed by caregivers at baseline. The item was rated on a 4-point scale and asked, "In terms of income, does your family: Not have enough to get by? Just enough to get by? Only have to worry about money for fun or extras? Never have to worry about money? Family financial need was included in the analysis for Research Question 3.

**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 kindergarten children (Stormshak & Dishion, 2010). After training, therapists were required to observe three complete live FCUs 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 fidelity rating system (Smith, Dishion, Shaw, & Wilson, 2013). The COACH assesses the extent to which therapists implement core components of the FCU. Ratings are provided in five categories: conceptual accuracy and adherence, observant and responsive to client needs, actively structures sessions, careful and appropriate teaching, and hope and motivation. The COACH rating system is grounded in a competent adherence paradigm that assesses clinical and teaching skills as well as promoting behavior change (Forgatch, Patterson, & DeGarmo, 2005). Ratings on the COACH in each category are on a 9-point scale: *needs work* (1–3), *acceptable work* (4–6), and *good work* (7–8). Therapists' COACH ratings had to be within the *acceptable work* range or higher before they were authorized to provide the FCU independently to participants in the study. Once therapists were authorized, they attended weekly clinical supervision meetings led by the second and third authors.

**Intervention delivery.** The FCU was delivered to families in the intervention group who agreed to participate in the intervention. The FCU includes three steps and is tailored to individual families' needs. It follows a tiered service delivery model as described by Dishion and Stormshak (2007) that is based on common tiered systems of behavior support (Walker et al., 1996). Consistent with a multitiered model, intervention services were modified to fit the needs of families on the basis of assessment and risk status. In this study, all intervention families were offered universal support in the form of brochures, educational materials, and information about the transition to kindergarten. Because we targeted Title I schools, all families were considered at risk. Accordingly, all families in the FCU condition were offered 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 kindergarten children and included information about early learning, parenting skills, contextual stressors, home-to-school planning, family-school engagement, and family strengths. Motivational interviewing is integrated throughout the FCU as a method of communication to promote individualized, goal-oriented change (Miller & Rollnick, 1991). For example, during the feedback session, therapists used motivational interviewing to guide parents' decision-making and encourage motivation to change. Follow-up sessions were conducted individually with caregivers or families and guided by caregivers' goal setting to address continued needs (indicated support). Follow-up sessions were collaborative, and provided additional, brief support focused on targeted goals. Common themes addressed during follow-up sessions included behavioral routines in the home, positive parenting, skill building, and home-to-school planning for academic success (Dishion, Stormshak, & Kavanagh, 2011).

**School-as-Usual Condition**

Participants in the school-as-usual control condition had access to common support in schools and in communities, such as behavior plans at school and community mental health support. There was no statistically significant difference between the FCU and school-as-usual conditions on the proportion of children who received mental health services, $\chi^2$ (1) = 1.536, $p >$ 0.05, or the proportion of children who received special services in school, $\chi^2$ (1) = 0.308, $p >$ 0.05.

**Statistical Analysis**

**Intervention impact.** We examined effects of the FCU on family-school engagement at home and at school using a Time × Condition analysis of repeated measures nested within students, the level of assignment to study condition (Research Question 1). The statistical model

accounts for autocorrelation among assessments with individual students and tests for differences between conditions on change in outcome from pretest to posttest. The model included condition, time, and the Condition × Time interaction, with condition coded 0 for control and 1 for treatment and time coded 0 at pretest and 1 at posttest. Hedges' *g* effect sizes (Hedges, 1981) for the Condition × Time effect are reported to ease interpretation of results (0.2, 0.5, and 0.8 correspond to small, medium, and large effects, respectively).

Impact analyses were conducted in SAS PROC MIXED version 9.4 (SAS Institute, 2016) with restricted maximum likelihood estimation and between-within degrees of freedom approximation (Schluchter & Elashoff, 1990). Maximum likelihood estimation uses all available data and produces potentially unbiased results even in the face of substantial missing data, provided the missing data were missing at random (Schafer & Graham, 2002). We considered this assumption tenable based on attrition analyses summarized in the Results section under Intervention Impact suggesting that missing data did not likely depend on unobserved determinants of the outcome (Little & Rubin, 2002). The statistical models also assume independent and normally distributed observations. We addressed the independence assumption by modeling correlated repeated measures. The outcome measure in our study also did not markedly deviate from normality; skewness and kurtosis fell within ± 1.75.

**Program implementation and engagement.** PACL data on caregiver participation in the FCU and caregiver perceptions of the FCU were examined descriptively to address Research Question 2. For Research Questions 3, linear regression was used to examine the prediction of treatment time from caregiver perception of the FCU and caregiver report of child hyperactivity, respectively. Unadjusted and adjusted models were examined to determine the influence of predictors without and with caregiver perceived family financial need.

## Results

### Intervention Impact

**Baseline equivalency and attrition.** Table 2 reports descriptive statistics and bivariate correlations for family-school engagement variables. The FCU and control conditions did not significantly differ on pretest levels of family-school engagement at school ($p = .621$, $g = -0.05$). In contrast, the FCU condition scored 0.20 points lower than the control condition on family-school engagement at home at pretest ($p = .004$, $g = -0.31$). Nonetheless, our analysis of gain scores yields unbiased estimates of intervention effects when baseline differences exist (Maris, 1998; Oakes & Feldman, 2001).

Examination of attrition between pretest and posttest revealed 92% (150/164) of FCU participants completed a posttest assessment compared with 87% (137/157) of control participants ($\chi^2$ [1,321] = 1.50, $p = .221$). We evaluated the extent to which missing data due to attrition threatened the internal validity of this study by using a regression analysis designed to test whether the outcome variable was differentially affected across conditions by attrition. This analysis examined the effects of condition, attrition status, and their interaction on the pretest outcome. We found no statistically significant interaction between attrition and condition predicting baseline outcome ($p$s > .907), suggesting that the effect of attrition on outcomes did not vary by condition.

**Impact estimates.** We tested the hypothesis that participants in the FCU condition experienced greater increases in family-school engagement at home and school than did participants in the control condition. The models summarized in Table 3 tested fixed effects for differences between conditions at pretest (condition effect), gains across time (time effect), and their interaction on each outcome. Impact analyses included all 321 families (164 FCU, 157

control; see Figure 1), as they all provided either pretest or posttest data for each outcome measure.

As previously noted, caregivers in the intervention condition began 0.20 points lower than the control condition on family-school engagement at home. Caregivers in the FCU condition also reported somewhat stable levels of family-school engagement at home from pretest to posttest, whereas parents in the control condition reported decreasing levels of family-school engagement at home from pretest to posttest, indicating an intervention effect for family-school engagement at home ($g = 0.19$, $p = .046$). The intervention effect on family-school engagement at school was not statistically significant ($p = .159$).

**FCU Participation and Acceptability**

Of the 164 families in the FCU condition, 144 (88%) completed the initial meeting, 143 completed a feedback session (87%), and 80 (49%) completed treatment sessions after the feedback session. Families who completed treatment sessions had an average of 1.53 treatment visits after the feedback session (range = 0 to 17.00). Of families who received feedback, 78% received multiple feedbacks and 22% received one feedback. Total treatment time averaged 143.24 minutes (range = 0 to 915). Family therapists had an average of 4.05 contacts with families (range = 0 to 21). Caregivers reported that they found their family therapist's implementation of FCU components acceptable ($M = 4.70$, $SD = 0.31$). The top three topics discussed during the feedback and treatment visits were child behavior, positive parenting, and child academic skills. The regression models summarized in Table 4 predicting total treatment time revealed statistically significant unadjusted effects of pretest caregiver perception of the FCU ($\beta = .233$, $p = .0439$) and child hyperactivity behavior scores ($\beta = .340$, $p < .0001$). When caregiver perceived family financial need was included in the models (adjusted results in Table

4), the effects of caregiver perception of the FCU (β = .207, $p$ =.0499) and caregiver perception of child hyperactivity behavior (β = .291, $p$ = .0002) remained statistically significant.

## Discussion

The FCU is a family-centered intervention that has been tested in several efficacy trials during early childhood and middle school. Our study examined the extent to which the FCU impacts family-school engagement at home and at school in early elementary school. In addition, we examined family participation in the FCU to learn how families are participating and what may predict family participation. Prior studies have demonstrated that improving family participation in family-centered prevention programs maximizes the public health impact (Winslow et al., 2009) and other research describes proximal and distal effects of family-school engagement (Pomerantz et al., 2011). However, predictors of participation in the FCU in early elementary school and the extent to which family-centered interventions in early elementary school effect family-school engagement are understudied.

### Main Findings

Using an intent-to-treat approach, we found that caregivers in the FCU condition outperformed caregivers in the school-as-usual condition on their report of family-school engagement at home. This finding suggests a family-centered intervention in kindergarten can impact family-school engagement at home, which is important for social, behavior, and academic success (Pomerantz et al., 2011). Whereas caregivers in the school-as-usual control condition reported decreases in family-school engagement at home from pretest to posttest, caregivers in the FCU condition reported stable family-school engagement at home across the two time points. This finding is a critical addition to the literature in that other studies have tested, but not found, effects on family-school engagement at home (Sheridan et al., 2013). In

addition, as observed in the present study, families receiving school-as-usual typically report a decrease in family-school engagement at home from kindergarten to first grade (Fantuzzo, Tighe, & Childs, 2000). Indeed, results suggest the FCU may be an avenue to prevent commonly observed declines in family-school engagement as children proceed through elementary school (Manz et al., 2004).

We did not find a statistically significant effect on family-school engagement at school. Family support for home-to-school planning, although described as a goal, was not one of the top three topics covered during FCU sessions. Thus, caregivers received more support for using family-school engagement strategies at home relative to at school, which may have contributed to not finding a statistically significant effect on the one-year follow-up assessment of family-school engagement at school. As we follow these families through third grade, we may find that family-school engagement at school increases. Another important family-school engagement dimension is family-school collaboration. Our theory of change suggests the FCU impacts family-school collaboration as children proceed through elementary school. Thus, we plan to examine family-school collaboration as another important aspect of family-school engagement as children in the present study proceed through elementary school. To encourage change in family-school engagement at school at a one-year follow-up, therapists might promote home-to-school planning and parent-teacher communication during FCU sessions as an avenue to address family goals.

In addition to impacts, we also examined how families participated in the FCU. Although many families completed at least one feedback session, families participated in a range of treatment sessions, which corresponds to a range of treatment time. It is noteworthy that 87% of families participated in the FCU through the feedback session and 49% of families participated

in treatment sessions after feedback. Prior research on the FCU in middle school has reported 42% of families participated in the full FCU, and of those families, 29% received additional follow-up support (Stormshak et al., 2011). The amount or dose of treatment is a key mechanism to intervention effects but is understudied in the context of family-centered interventions (Pomerantz et al., 2011). An important context for participation in the FCU in contrast to other family-centered interventions is the FCU's integration of motivational interviewing. Thus, participation in other family-centered interventions may not match participation as observed in the present study.

Kindergarten is an important period where patterns and interactions are developed that can promote positive trajectories (McIntyre et al., 2014; Rimm-Kaufman & Pianta, 2000). The FCU is tailored to meet individual family needs and makes connections to educators and community stakeholders. Thus, although FCU therapists often collaborated with families in their home (microsystem), their support also included family-school engagement and community connections (mesosystem), which has implications for neighborhood and community social networks (exosystem). Families can leverage social, educational, and community resources established during their participation in the FCU and learn strategies to invoke relevant supports in the future when necessary (Christenson & Sheridan, 2001; Garbacz et al., 2017). These dynamic and transactional ecological implications of the FCU are important during kindergarten and are hypothesized to promote positive outcomes for children and families in middle childhood and adolescence (Bronfenbrenner, 1979; Rimm-Kaufman & Pianta, 2000).

We investigated two variables as predictors of participation in the FCU: caregiver FCU acceptability and child hyperactivity behavior. Prior research suggests these variables may contribute to caregivers' participation in intervention (Mash & Johnston, 1983; Taylor & Biglan,

1998). Both variables were significant predictors of FCU participation, but child hyperactivity accounted for more variance in participation ($R^2$ = .116) than did caregiver acceptability ($R^2$ = .054) in the unadjusted models. These findings are consonant with research that has investigated intervention participation (Englund et al., 2004). In particular, a line of family-centered, school-based research in middle school has shown that children's behavior risk is a significant predictor of family participation in family-centered interventions (Stormshak et al., 2005) and families with the highest need are often those who participate in the FCU (Stormshak & Dishion, 2009). However, children's behavior risk was previously unstudied in the context of the FCU in early elementary school. Based on the health belief model (Rosenstock, 1966) and a conceptual model of family participation in interventions (Winslow et al., 2009), we added caregiver perception of family financial need as a possible perceived barrier to participation. Results from adjusted models with family financial need suggested caregiver FCU acceptability and child hyperactivity behavior were statistically significant predictors of participation, which underscores the importance of these predictors of participation in family-centered interventions in early elementary school.

**Limitations and Future Research Directions**

Several study limitations should be considered when interpreting findings. First, future research should examine family-school engagement and child behavior using other means, such as direct observation and teacher report, to weigh against those used in our study (primary caregivers participated in the FCU, were aware of condition assignment, and completed primary measures used in the analysis). Second, family-school engagement measures were not exhaustive. Future research should include measures that reflect the diversity of approaches families use to support their children's education. For example, family-school collaboration and

communication are important dimensions of family-school engagement (Christenson & Sheridan, 2001; Sheridan et al., 2012), which may explain how FCU impacts certain child outcomes. Family-school collaboration will be important to examine as children in the present sample proceed through their schooling. Third, our study focused on predictors of family participation in the FCU and whether the FCU effected family-school engagement at home and school. Future research could examine mechanisms, such as family-school engagement as a mediator on child social behavior outcomes (Sheridan et al., 2012). Fourth, the majority of participants reported as White and attained at least a high school degree. Future studies should seek to include families with more diversity with regard to demographic characteristics. Fifth, this study was conducted in one region of the United States. Future research should examine similar questions in other regions. Sixth, across elementary schools 648 families had the opportunity to participate and 321 consented. The proportion of families who had the opportunity to participate relative to those who consented is comparable and slightly higher than research with the FCU in early childhood (Dishion et al., 2008). Nevertheless, future studies should consider approaches to increase the proportion of families who consent relative to those who are contacted to improve external validity. Finally, the present study focused on examining impacts of the FCU on family-school engagement at home and school as well as investigating family participation in the FCU. The FCU targets several domains of functioning relevant to early elementary school. When we have additional longitudinal data, we plan to explore whether family-school engagement mediates the effect of the FCU on academic and behavior outcomes.

**Implications**

Main findings from our study suggest important implications in family-centered research that have corresponding practical considerations. Family-school engagement is often associated

with positive student outcomes in correlational studies (Fantuzzo et al., 2004). Although family-school engagement tends to decrease as children proceed through school (Garbacz et al., 2018), family-school engagement remains important throughout children's school-age years (Pomerantz et al., 2011). Our findings suggest that the FCU, when implemented in early elementary school, is associated with improvements in family-school engagement at home. These findings are promising given that early school experiences may set the stage for later learning (McIntyre et al., 2014). Participating in the FCU in early elementary school may be a key avenue for establishing early patterns for family-school engagement. If families can establish patterns for family-school engagement at home early in their child's schooling, they may create the conditions to support other aspects of family-school engagement, such as family-focused discussions at home about academic expectations, a key predictor of academic achievement in middle school (Hill & Tyson, 2009).

Descriptive findings about participation in the FCU address a common and persistent pattern in school approaches to family participation in interventions: School personnel may perceive families to be disinterested in receiving support (Garbacz et al., in press). Families randomly assigned to the intervention condition were offered the FCU but were not required to participate in it. Under those conditions, the majority of families completed a feedback session and many families completed additional treatment sessions. Descriptive findings about FCU participation underscore the importance of schools using proactive outreach with families (Dishion & Stormshak, 2007).

Findings from our study also revealed predictors of participation in the FCU. Caregiver perception of their child's hyperactivity behavior was positively related to FCU participation with and without caregiver perception of family financial need included in the model. These

findings suggest that caregivers of children who exhibit more hyperactive behavior may participate in a higher dose of intervention than families who have a child with less hyperactive behavior. Schools may wish to use flexible and responsive approaches such as the FCU so they can tailor their approach with families (e.g., for families of children with elevated hyperactivity behavior). In addition, treatment acceptability was a significant predictor of FCU participation with and without family financial need included, which underscores the importance of using interventions families find acceptable (Taylor & Biglan, 1998). Schools may find it helpful to seek feedback from families about the nature of interventions they would find useful. Feedback from families could be sought in ways that allow for a back-and-forth dialogue between school personnel and families, such as family focus groups (Sandomierski, Minch, Winneker, & Hall, 2017).

**Conclusion**

Grounded in a developmental-ecological model and family-centered and family-school partnership research, the purpose of this study was to examine (a) the impact of the FCU on family-school engagement at home and school and (b) participation in the FCU. Main findings suggested the FCU impacts family-school engagement at home and caregiver perception of the FCU and child hyperactivity behavior predicted family participation. In comparison to FCU research during middle school, the average family in the present study participated in more treatment through the FCU. Findings underscore the importance of family-school engagement during early elementary school.

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Table 1

*Demographic Characteristics of Children*

| | % Total ($N$ = 321) | % FCU[a] ($n$ = 164) | % Control ($n$ = 157) |
|---|---|---|---|
| Mean (*SD*) child age | 5.45 (0.50) | 5.52 (0.50) | 5.38 (0.49) |
| Child gender | | | |
| Female | 46.1 | 46.3 | 45.9 |
| Male | 53.9 | 53.7 | 54.1 |
| Child race/ethnicity[b] | | | |
| White | 81.0 | 79.9 | 82.2 |
| Hispanic/Latino | 21.5 | 20.7 | 22.3 |
| Asian | 6.9 | 6.1 | 7.6 |
| Black/African American | 9.3 | 8.5 | 10.2 |
| Native American | 3.1 | 3.7 | 2.5 |
| Pacific Islander | 0.9 | 0.6 | 1.3 |
| Other | 1.2 | 1.8 | 0.6 |
| Language child speaks at home | | | |
| English | 88.8 | 90.2 | 87.3 |
| Spanish | 9.0 | 7.9 | 10.2 |
| Other | 2.2 | 1.8 | 2.5 |
| Children received special school services[c] | 16.5 | 17.1 | 15.9 |
| Children who attended preschool | 64.8 | 56.1 | 73.9 |

[a]FCU = Family Check-Up. [b]Caregivers could select all that apply. [c]Special school services may include many services (e.g., behavior support plan).

Table 2

*Descriptive Statistics and Correlations for Family-School Engagement*

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Pretest family-school engagement at school | – | | | |
| 2. Posttest family-school engagement at school | .55** | – | | |
| 3. Pretest family-school engagement at home | .22** | .21** | – | |
| 4. Posttest family-school engagement at home | .21** | .29** | .66** | – |
| *M* | 1.07 | 1.16 | 2.06 | 1.99 |
| *SD* | .54 | .56 | .60 | .64 |

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

Table 3

*Results of a Time × Condition Analyses of Pretest to Posttest Change in Family-School Engagement*

| Model Parameter | | Family-School Engagement at School | Family-School Engagement at Home |
|---|---|---|---|
| Fixed effects | Intercept | 1.08*** (0.04) | 2.16*** (0.05) |
| | Time | 0.14** (0.04) | −0.13** (0.04) |
| | Condition | −0.03 (0.06) | −0.20** (0.07) |
| | Condition × Time | −0.09 (0.06) | 0.12* (0.06) |
| Variances | Subject | 0.17*** (0.02) | 0.25*** (0.03) |
| | Residual | 0.13*** (0.01) | 0.13*** (0.01) |
| Hedges' *g* | Time × Condition | −0.154 | 0.189 |
| *p*-values | Time × Condition | .1591 | .0461 |
| Degrees of freedom | Time × Condition | 283 | 283 |

*Note*. Condition coded 0 for control and 1 for treatment. Table entries show parameter estimates with standard errors in parentheses.

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 4

*Regression of Child Hyperactivity Behavior and Caregiver Perception of the FCU Predicting FCU Participation*

| | Unadjusted | | | | Adjusted | | | |
|---|---|---|---|---|---|---|---|---|
| | *B* | *SE* | β | *t* | *B* | *SE* | β | *t* |
| Model 1 | | | | | | | | |
| Caregiver report of financial need | | | | | -85.590 | 21.334 | -.416 | -4.012** |
| Caregiver perception of FCU strategies | 107.974 | 52.666 | .233 | 2.050* | 95.795 | 48.038 | .207 | 1.994* |
| $R^2$ | .054 | | | | .227 | | | |
| Model 2 | | | | | | | | |
| Caregiver report of financial need | | | | | -30.364 | 13.548 | -.173 | -2.241* |
| Caregiver report of wave 1 child hyperactivity | 18.150 | 3.957 | .340 | 4.587** | 15.524 | 4.118 | .291 | 3.770** |
| $R^2$ | .116 | | | | .144 | | | |

*Note.* Wave 1 caregiver perception of family perceived financial need (1 = *not enough to get by* 4 = *never have to worry about money*) was included as a covariate in the adjusted analysis. $^{*}p < .05$. $^{**}p < .01$.

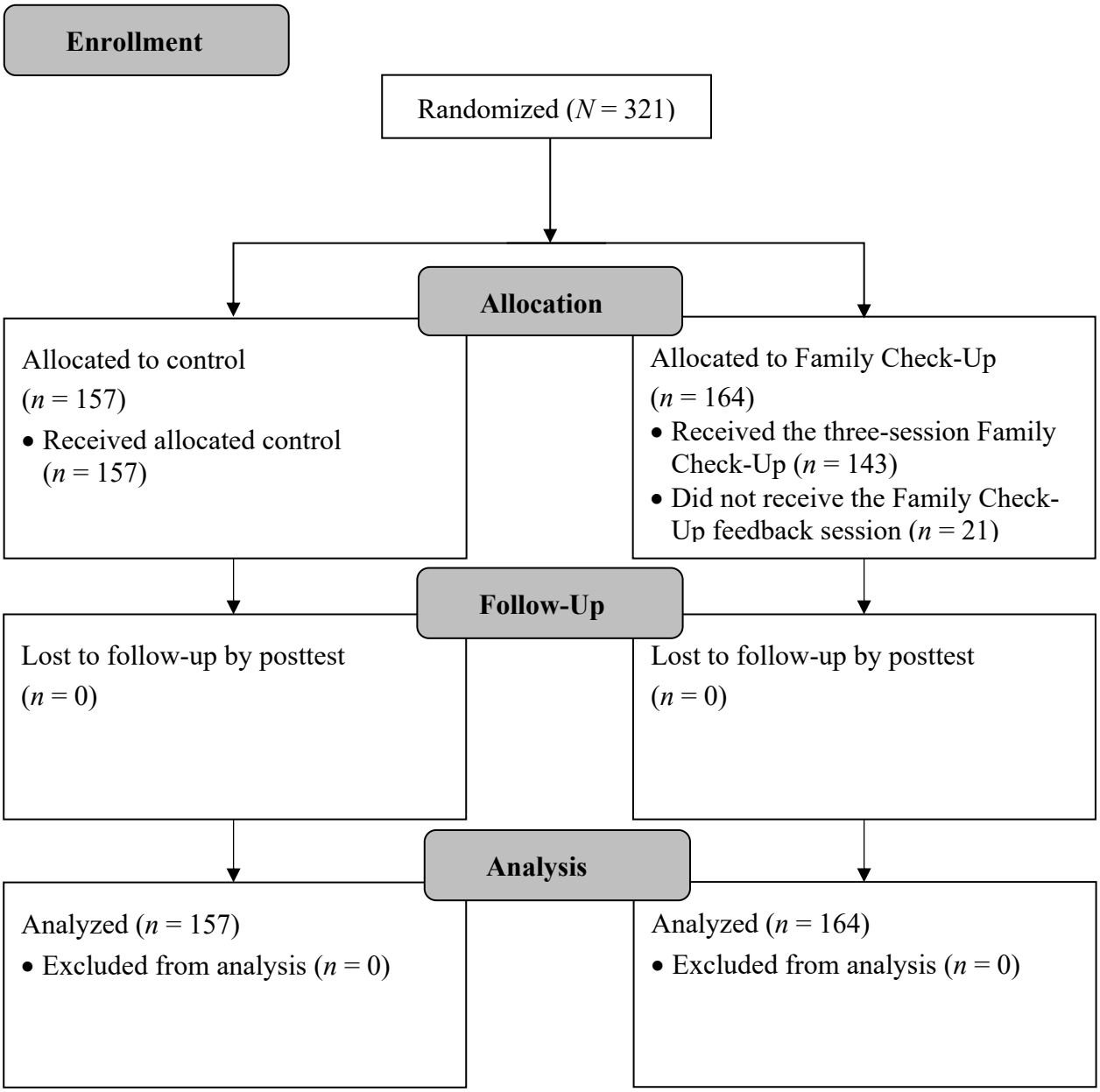


*Figure 1.* Participant enrollment.