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Exploring the link between principal leadership and family engagement across elementary and middle school

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ABSTRACT

As leaders in the school, principals play an important role in fostering family engagement. Unfortunately, little is known about specific aspects of leadership that promote family engagement. Collegial leadership, an aspect of principal leadership that promotes organizational health via trusting relationships and a sense of community, may be particularly useful to understanding how principals influence family engagement. Drawing on data from two randomized controlled trials evaluating the effects of teacher training in universal classroom management practices, the current study explores the relationship between teacher reports of family engagement and principal collegial leadership. Participants included 3208 students and 207 teachers across 18 elementary and middle schools in the Midwest United States. Utilizing hierarchical linear modeling, results revealed a significant positive relationship between family engagement and overall collegial leadership in addition to specific collegial leadership practices/characteristics. Further, baseline collegial leadership predicted increased end-of-year family engagement when controlling for baseline family engagement, developmental context, intervention status, and student-level characteristics. Overall, results provide empirical evidence for an important link between principal leadership practices and family engagement. Albeit promising, more research is needed to identify and explain the particular mechanisms by which principal collegial leadership may promote family engagement.

1. Introduction

Uniquely and together, families and schools serve as a foundation upon which children build academic, behavioral, and social-emotional skills. When families and schools work together, and families are engaged in their children's education, children benefit academically, socially, and behaviorally (Reinke, Smith, & Herman, 2019). Although the majority of family engagement takes place between parents and teachers, principals appear to play an important role in promoting family engagement (Giles, 2006; Gordon & Louis, 2009; Povey et al., 2016). Principals' influence on family engagement may occur in multiple ways, including setting school policy, communicating expectations, and creating a school culture for promoting family engagement (Auerbach, 2009; Ferguson, 2005; Hiatt-Michael, 2006; Sanders & Sheldon, 2009). Despite the importance of school leadership for positive family engagement, empirical research studying their relationship is limited. The relative lack of studies on leadership and family engagement has restricted our understanding of what specific aspects of leadership practices and characteristics can improve family engagement. In this paper, we propose that collegial leadership is a particularly useful facet of school leadership to study how principals influence family

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engagement (Hoy & Feldman, 1987). Specifically, collegial leadership emphasizes the aspects of leadership that promote overall organizational health by developing trusting and supportive relationships and creating a sense of community (DiPaola & Guy, 2009). Collegial leadership relates well with ecological systems theory (Bronfenbrenner, 1977), which considers the interactions of complex ecosystems, as a useful basis for understanding family engagement in schools. In the current study we examined the association between teacher- reported principal collegial leadership and family engagement drawing on data from two large randomized controlled trials. The following sections provide a review of the literature and our study aims.

1.1. Family engagement

Family engagement includes both isolated efforts by families (i.e., parent involvement; Fantuzzo, Tighe, & Childs, 2000) and interactions between schools and families to support children's academic, behavioral, and social-emotional development (i.e., family-school partnerships; Albright & Weissberg, 2010; Downer & Myers, 2010). Definitions vary and often do not differentiate between family-school partnerships, parent involvement, and family involvement (Sheridan, Holmes, Smith, & Moen, 2016). For purposes of the current study, we broadly define family engagement as inclusive of active, interactive, and dynamic practices and processes used by families and schools to promote children's development (Garbacz, Herman, Thompson, & Reinke, 2017; Sheridan, Knoche, Kupzyk, Edwards, & Marvin, 2011).

Family engagement is associated with a host of academic, behavioral, and social-emotional benefits for children. For example, meta-analyses assessing the relationship between family engagement and academic achievement have found positive associations across diverse student samples (i.e., African American, Asian American, and Latinx students; Jeynes, 2003) and settings (i.e., urban; Jeynes, 2005), in addition to important developmental periods such as adolescence (Hill & Tyson, 2009) and early childhood and elementary (Ma, Shen, Krenn, Hu, & Yuan, 2016). Further, three recently conducted large-scale meta-analyses have showcased additional benefits for children and parents (Sheridan, Smith, Kim, Beretvas, & Park, 2019; Smith, Holmes, et al., 2020; Smith, Sheridan, Kim, Park, & Beretvas, 2020). One meta-analysis synthesized 117 group-design studies with 592 effects and found that family-school interventions (including both parent involvement and family-school partnership) significantly enhanced children's social-behavioral competence and mental health (Sheridan et al., 2019). A second large-scale meta-analysis synthesizing 77 studies of family-school partnership interventions found that interventions significantly improved children's academic achievement and academic behaviors (e.g., task persistence, time spent on homework; Smith, Sheridan, et al., 2020). These positive effects were also consistent for children regardless of race (Smith, Sheridan, et al., 2020). A third meta-analysis, focused on family-school interventions that utilized consultation, additionally revealed that interventions improved parent attitudes (e.g., beliefs about teacher/school), practices (e.g., home-based involvement), and parent-teacher relationships (Smith, Holmes, et al., 2020).

As family engagement involves multi-faceted direct and indirect experiences and contexts, consideration must also be yielded to student- and classroom-level characteristics that are likely impactful. Our previous efforts have determined the influences of developmental context (i.e., elementary or middle school), student race, socioeconomic status (SES), and levels of disruptive behavior on family engagement, whereas family engagement was significantly lower for students who were Black, receiving free/reduced lunch (FRL), in middle school, and/or had higher levels of disruptive behavior (Smith, Reinke, Herman, & Huang, 2019).

Despite positive effects and the importance of student- and classroom-level characteristics highlighted above, some studies have also revealed inconsistencies and highlighted methodological limitations of research in this area. For one, previous meta-analyses have noted minimal academic impact of family engagement on student grades (Fan & Chen, 2001), achievement (Mattingly, Prislin, McKenzie, & Kayzar, 2002), and for students with disabilities (White, Taylor, & Moss, 1992). Explorations of other student- and classroom level characteristics have also indicated conflicting results. For example, previous results have indicated that student gender is significantly associated with family engagement and its effect on student achievement, whereas family engagement was associated with increased benefits for girls (Lee, Kushner, & Cho, 2007). Teachers have also reported lower levels of family engagement and poorer quality interactions with parents of male students (Izzo, Weissberg, Kasprow, & Fendrich, 1999). However, others have found a non-significant relationship between student gender and family engagement (Smith et al., 2019). Previous efforts have also explored the influence of family engagement for students receiving special education services (e.g., Fishman & Nickerson, 2015; Goldman & Burke, 2017; Smith et al., 2019). Whereas some studies have noted that family engagement is related to positive outcomes (e.g., increased parent participation in the IEP process; Jones & Gansle, 2010), others have revealed non-significant findings (Smith et al., 2019). Despite some inconsistencies, family engagement is primarily associated with benefits for children. However, to continue to expand our understanding of family engagement, we must acknowledge shortcomings, consider methodological rigor, and yield consideration to relevant student- and classroom-level characteristics.

1.2. Exploring aspects of principal leadership

School principals can play an integral role in fostering and maintaining family engagement (Giles, 2006; Gordon & Louis, 2009; Povey et al., 2016). Researchers have acknowledged that effective principals have the ability to set the stage for climates and create cultures conducive to family engagement in schools (Auerbach, 2010; Ferguson, 2005; Hiatt-Michael, 2006; Sanders & Sheldon, 2009). For instance, Auerbach (2010) conducted semi-structured interviews with principals about their visions for family engagement. Based on the findings, Auerbach (2010) suggested that principals can influence family engagement by (a) cultivating attitudes regarding the importance of family engagement, (b) prioritizing family engagement within their leadership role and school vision, and (c) creating opportunities for school-based parent involvement. Principals that highly value family engagement may also provide more opportunities for school personnel to receive training in this area, which is promising given recent meta-analytic work showcasing that

teachers' family engagement practices, attitudes, and knowledge can improve through training and professional development (Smith, 2019; Smith & Sheridan, 2019).

Teachers and parents also recognize principals' important leadership roles in promoting family engagement. Moreover, parents and teachers perceive principal attitudes, communication, and leadership practices as crucial components of effective partnerships between families and schools (Barr & Saltmarsh, 2014; Becker & Epstein, 1982). When surveyed, parents report greater engagement with schools when they view principals as welcoming and supportive, and lower engagement when principals are viewed as dismissive, disinterested, or inaccessible (Barr & Saltmarsh, 2014). Teachers have also noted that principal support is a key component of family engagement (Becker & Epstein, 1982; Erdener, 2016). In particular, past survey results have revealed that teachers are more likely to engage with families when they feel supported by administration (Becker & Epstein, 1982). This sentiment is echoed by principals themselves, as many surveys have revealed that principals consistently recognize the importance of family engagement to promote successful schools and student achievement (e.g., Gordon & Louis, 2009; Povey et al., 2016; Schubert, 2010).

Although this important leadership role is recognized across researchers, teachers, parents, and principals alike, research in this area is limited both theoretically and methodologically. For instance, some studies (e.g., Auerbach, 2010) make recommendations for principals based on small samples of qualitative principal interview data or case studies. Other studies using quantitative methods rely on correlational survey data conducted at a single time point (e.g., Povey et al., 2016). To advance research in this area, it is important to apply advanced methodological and statistical approaches. Further, principal leadership is a complex construct that is represented in various ways across the literature. Discussions of leadership characteristics that may promote family engagement range across principal-reported attitudes and behaviors (e.g., Gordon & Louis, 2009; Povey et al., 2016), teacher reports of support (e.g., Becker & Epstein, 1982; Erdener, 2016), and parents viewing principals as welcoming and supportive (e.g., Barr & Saltmarsh, 2014). Additionally, to our knowledge, no specific theories exist highlighting proposed relationships between leadership and family engagement. Limited methodology, theoretical work, and variable conceptualizations of principal leadership make it difficult to determine specific aspects of principal leadership that may be associated with family engagement. In the following section, we utilize ecological systems theory and an organizational health framework to conceptualize potential links between principal leadership and family engagement.

1.3. Ecological systems theory and organizational health

Family engagement includes multiple key stakeholders (e.g., families and schools) that contribute to child development (Coutts, Sheridan, Sjuts, & Smith, 2014; Sheridan & Kratochwill, 2008). Ecological systems theory posits that children are affected by the numerous proximal and distal environments in which they develop (Bronfenbrenner, 1977). Although the majority of family engagement takes place between parents and teachers (i.e., the mesosytem), principals appear to play an important role in promoting family engagement at more distal systemic levels by setting school policies (i.e., the exosystem) and creating school cultures (i.e., the macrosystem) conducive to family engagement (Auerbach, 2010; Ferguson, 2005; Holmes, Smith, & Garbacz, 2020; Sanders & Sheldon, 2009). Thus, the extensiveness and interactive nature of ecological systems theory serves as a valuable framework when considering relationships between aspects of principal leadership and family engagement.

School principals are also key to promoting certain aspects of organizational health and well-being within the complexities of school systems (Hoy, Sabo, & Barnes, 1996). Organizational school health is characterized by both the psychological and physical aspects of a school that affect the interpersonal dynamics of students, teachers, administrators, and other school personnel (Hoy & Miskel, 1996; Ringeisen, Hendersen, & Hoagwood, 2003). Hoy and Feldman (1987) conceptualized organizational health at three levels of control (i.e., technical, managerial, and institutional) which merge to establish organizationally healthy schools. At the technical level, issues relevant to a school's academic priorities and relationships among teachers are included. The managerial level contains issues related to leadership, principal impact, and resource management and support. Further, the institutional integrity level focuses on how schools adapt with environmental influences to maintain educational integrity within their system (Hoy & Hannum, 1997). Within the scope of the current study, we were interested in the managerial level of organizational health, as this level is focused on aspects of organizational health that are influenced by principal leadership practices and characteristics. In particular, one aspect within the managerial level – collegial leadership – appears to offer a potential link between principal leadership practices/characteristics and family engagement.

1.4. Collegial leadership

Collegial leadership is an aspect of overall organizational health defined as "principal behavior that is friendly, supportive, and guided by norms of equality. But, at the same time, the principal sets the tone for high performance by letting people know what is expected of them" (Hoy & Hannum, 1997, p. 294). Further, principals exhibiting high levels of collegial leadership tend to listen and be receptive to faculty feedback, provide frequent and genuine praise, and demonstrate respect towards teaching and non-teaching staff (Sia-ed, 2016). Schulman (1995) found that exemplary schools were characterized by certain features that included teachers viewing their principals as a collegial leader and an emphasis on family engagement, but the precise links between aspects of collegial leadership and family engagement are unclear as no previous study has used empirical evidence to study their links.

1.4.1. Developing trust and creating community

Research has indicated two key qualities of collegial leadership that may be of particular importance to family engagement: (a) developing trusting relationships and (b) creating a sense of community. Collegial leadership, characterized by egalitarian, supportive principal behaviors, is associated with positive teacher perceptions of organizational trust (DiPaola & Guy, 2009). In the same study,

DiPaola and Guy found that community engagement (including family engagement) was positively associated with perceptions of fair treatment. This indicates that collegial leadership may have an indirect relationship with family engagement. DiPaola and Guy interpreted these correlational findings as the abilities of parents to influence school climate. Alternately, we propose that when relationships within schools are characterized by a sense of fairness and mutual trust, these relationships can expand into more engagement with family and community. Moreover, principals' collegial leadership can play a pivotal role in promoting trust and a sense of fairness.

Beyond promoting trust and fairness, principals' collegial leadership may also be integral to creating a sense of community. For instance, a strong sense of community has been revealed as an imperative factor in creating positive relationships among school staff members and the families they serve (Belenardo, 2001). Further, the following elements have been noted as important for developing a sense of community: shared values, commitment, a feeling of belonging, caring, interdependence, and regular contact (Belenardo, 2001). A conception of collegial leadership developed by Hoy and Feldman (1987) integrates these elements from the perspective of the principal's role in developing community. As per Hoy and Feldman's (1987) definition, a collegial principal has the following characteristics: (a) explores all sides of topics and admits that other opinions exist, (b) discusses classroom issues with teachers, (c) accepts questions without appearing to brush off or put down staff members, (d) treats all faculty members as his or her equal, (e) goes out of his or her way to show appreciation to teachers, (f) lets faculty know what is expected of them, (g) conducts meaningful evaluations, (h) maintains definite standards of performance, (i) looks out for the personal welfare of the faculty members, and (j) is friendly and approachable. It is likely that many of the elements of collegial leadership are consistent with the elements noted by Belenardo (2001) as essential to creating a strong sense of community.

The literature discussed above offers support for a potential link between collegial leadership and family engagement through the creation of trusting relationships and/or developing a sense of community. However, to our knowledge, there is no empirical evidence linking collegial leadership with family engagement. Certain aspects of principals' collegial leadership as defined by Hoy and Feldman (1987) could be more important for promoting family engagement. Identifying these specific aspects could help in developing a framework that illustrates how principals' collegial leadership promotes family engagement.

1.5. Teachers – the missing link?

Teachers play multi-faceted and complex roles within schools as they handle managerial influences from principals, manage classroom expectations, and work with other key stakeholders in a student's life (i.e., families). In these roles, teachers directly experience principal leadership practices in addition to directly participating in practices that engage families in their children's education (e.g., holding parent-teacher conferences, building parent-teacher relationships). Given these experiences with both principals and families, teachers are perhaps the most appropriate and suitable reporters of both family engagement and collegial leadership.

Additionally, the vast majority of quantitative studies on principal leadership are based on teacher perceptions, reported through surveys (Leithwood & Jantzi, 2000; Robinson, Lloyd, & Rowe, 2008; Urick & Bowers, 2014). Conversely, studies of parental engagement have primarily relied on parent reports (Fan, Williams, & Wolters, 2012). Researchers have called for including more perspectives on family engagement (Domina, 2005; Sebastian, Moon, & Cunningham, 2017), as parents can overestimate their involvement due to social desirability bias (Nord, Lennon, Liu, & Chandler, 2000). Reynolds (1992) compared multiple sources of information on family engagement, including parents, teachers, and students and found that teacher reports were most correlated with student achievement. Furthermore, albeit separately, both teacher-reported family engagement and collegial leadership have been investigated as key constructs across a number of empirical studies. For instance, teacher-reported family engagement has been found to be an especially important predictor of student outcomes (Herman & Reinke, 2017; Smith et al., 2019; Stormont, Herman, Reinke, David, & Goael, 2013; Thompson, Herman, Reinke, & Webster-Stratton, 2017). As an example, in multiple studies, teacher ratings of family engagement during elementary school years predicted student dropout and grades in secondary school; parents' self-reported ratings of engagement did not (Bakker, Denessen, & Brus-Laeven, 2007; Barnard, 2004). Teacher reports of collegial leadership have also been associated with teacher burnout and self-efficacy (Pas, Bradshaw, & Hershfeldt, 2012) in addition to being identified as one of the strongest indicators of positive student academic achievement (Coleman & Roney, 2009; Roney, Coleman, & Schlichting, 2007). Thus, given the past use of teachers as reporters in empirical studies and their direct experiences with both principals and families within school systems, teachers may serve as a critical link between family engagement and collegial leadership.

1.6. Study purpose and research questions

The purpose of this study was to explore the association between teacher reports of family engagement and principal leadership (i.e., collegial leadership). Previous studies have highlighted an indirect and theoretical link between principal leadership and family engagement Auerbach, 2009; Barr & Saltmarsh, 2014). However, limited work has empirically explored specific aspects of principal leadership and their relation to family engagement. Further, previous research has primarily relied on single timepoint survey results, case studies, or qualitative interviews (e.g., Griffith, 2001; Povey et al., 2016). To our knowledge, this study is the first of its kind to use advanced statistical methodology to explore specific aspects of principal leadership and family engagement. As we noted above, it is also important to yield consideration to classroom- and student-level characteristics that may impact family engagement. In particular, in our previous work using the same sample of the current study, we focused on the influence of developmental context (i.e., elementary or middle school classrooms), race, SES, gender, disruptive behavior, and special education status in relation to family engagement (see Smith et al., 2019). Thus, the current study controlled for these classroom- and student-level characteristics when

assessing the link between principal leadership and family engagement. Data were drawn from two large-scale randomized controlled trials (RCTs) to answer the following specific research questions:

1. What is the association between family engagement and (a) overall principal collegial leadership and (b) specific collegial leadership practices/characteristics?
2. When controlling for developmental context (i.e., elementary or middle school classrooms) and student-level characteristics (i.e., race, gender, SES, special education status, and behavior problem severity) what is the association between family engagement and principal collegial leadership?
3. When controlling for baseline levels of family engagement, developmental context, intervention status, and student-level characteristics (i.e., race, gender, SES, special education status, and behavior problem severity), does principal collegial leadership at baseline predict family engagement at the end of year?

For Research Question 1, it was hypothesized that principal collegial leadership would be positively associated with family engagement at baseline. Additionally, for Research Question 2, we anticipated that the significant positive association between baseline principal collegial leadership and family engagement would remain when controlling for developmental context, student race, gender, SES, special education status, and disruptive behavior severity. Lastly, we expected principal collegial leadership to predict end of year family engagement when controlling for baseline levels of family engagement, developmental context, intervention status, and student-level characteristics (i.e., race, gender, SES, special education status, and behavior problem severity).

Table 1
Descriptions of student and teacher sample.

	Frequency (n)	Percentage
Student characteristics		
Gender		
Male	1626	50.7
Female	1582	49.3
Race/Ethnicity		
Asian/Pacific Islander	29	0.9
Black/African American	2300	72.6
Hispanic/Latino	60	1.9
White	593	18.7
Bi-racial	134	4.2
Other	54	1.7
FRL		
Yes	2103	65.6
No	1105	34.4
Special Education Status		
Yes	238	7.4
No	2970	92.6
Teacher/Classroom Characteristics		
Classroom type		
Elementary	105	50.7
Middle	102	49.3
Gender		
Male	34	12.7
Female	234	87.3
Race/Ethnicity		
Asian/Pacific Islander	4	1.9
Black/African American	49	23.7
Hispanic/Latino	1	0.5
White	149	72.0
Bi-racial	0	0.0
Other	4	1.9
Educational Level		
Bachelor's Degree	83	40.1
Master's Degree	124	59.9
Years Teaching		
0–5	55	26.6
6–10	51	24.6
11–15	48	23.2
16–20	36	17.4
21+	17	8.2

Note. Total numbers and percentages based on reported sample.

2. Method

2.1. Participants and settings

The study sample was drawn from two randomized controlled trials focused on promoting effective teacher classroom management (i.e., The Incredible Years Teacher Classroom Management [IY-TCM] and CHAMPS [Conversation, Help, Activity, Movement, Participation Success]). Both trials took place within the same school district in the Midwest United States. This school district is located in an urban area, predominantly serves Black students, and has a slightly higher portion of students receiving free/reduced lunch in comparison to other school districts in the area. The student characteristics of this district are comparable to student populations in urban settings of other large Midwestern cities.

The IY-TCM trial included 105 teachers and 1818 students in kindergarten to Grade 3 from nine urban elementary schools serving primarily Black students (Reinke, Herman, & Dong, 2018). The majority of teacher participants were female (97%) and White (75%, 22% Black). The student sample was 52% male and 76% Black (22% White); 61% of the students qualified for free or reduced lunch (FRL).

The CHAMPS trial included 102 teachers and 1450 students in Grade 6 through Grade 8 across nine middle schools (Herman, Reinke, Dong, & Bradshaw, 2020). Teachers were eligible for participation if they taught math or English language arts and consented to participate. Teachers within schools were randomly assigned to receive the intervention or to a wait-list control group. Teacher participants were 79% female and 71% White, 26% Black, 2% Asian, and 1% other. Student participants were 51% female and 78% Black, 18% White, 2% Hispanic/Latino(a), and 1% Asian, and less than 1% other. The percentage of students in sixth, seventh, and eighth grade was equal to 35%, 39%, and 26%, respectively. Overall, 70% of students were eligible for FRL.

As a consolidation of both the IY-TCM and CHAMPS trials, Table 1 provides descriptive information for student and teacher characteristics from 18 schools (i.e., nine elementary and nine middle). Students in the current sample were predominantly Black, received FRL, and did not qualify for SPED services. The percentage of male and female students was very similar, with only a 1.4% difference in favor of males. Further, elementary classrooms only slightly outnumbered middle school classrooms (i.e., 1.4% difference). Teachers included in the current study were typically White and female, with approximately one-quarter of the sample Black. No other racial demographic comprised more than 2% of the sample. Total years teaching varied widely across participants. In addition, approximately 60% reported their highest degree as a master's and 40% reported their highest as a bachelor's degree respectively.

2.2. Intervention trial procedures

Prior to both trials beginning, all study procedures were approved by the authors' university institutional review board. First, across both trials, teacher participants consented to participate. Next, students within participating classrooms were recruited for participation. Parent consent and student assent were obtained for all students included in both trials. In the elementary trial, 85% of students provided written parent consent and student assent, and 75% of students provided written consent and students in the middle school trial. The two trials occurred three years apart; however, both intervention trials included nearly identical research designs and collected data on the same time schedule. Data for the present study were collected in the fall of the school year (i.e., baseline, pre-intervention) and the late spring of the school year (i.e., post-intervention).

For the IY-TCM trial, teachers were randomly assigned within schools to receive the intervention or to a wait-list control group. The IY-TCM consisted of six full-day workshops focused on improving elementary teacher classroom management practices (Webster-Stratton, Reinke, Herman, & Newcomer, 2011). Over the course of a year, six trainings were led by certified IY-TCM group leaders. Workshops focused on evidence-based classroom management strategies (e.g., proactive behavior management). In between workshops, teachers worked with an IY-TCM coach who conducted classroom observations and provided ongoing performance feedback as teachers implemented IY-TCM strategies. One element of the workshops also focused on family engagement, a variable of interest to the current study. Because we were not interested in the effects of IY-TCM on family engagement, we accounted for potential intervention influence by controlling for intervention status in our analyses.

In the CHAMPS trial, middle school teachers were randomly assigned to receive the intervention or to a business-as-usual condition. CHAMPS consisted of three full days of workshops aimed at improving middle school teacher classroom management (Sprick, Garrison, & Howard, 1998). Utilizing components of direct instruction and ongoing coaching, workshops focused on developing clear expectations and routines, improving classroom functioning, and increasing student participation (Sprick et al., 1998). Each teacher also received at least four visits from an implementation coach that focused on helping teachers create individual goals and providing feedback towards goals.

2.3. Measures

2.3.1. Teacher ratings of family engagement and disruptive behavior

Across both prevention trials, teachers reported ratings of each student's disruptive behaviors and family engagement using the *Teacher Observations of Classroom Adaptation – Checklist* (TOCA-C; Koth, Bradshaw, & Leaf, 2009). The TOCA-C is a checklist version of the original TOCA-R that has previously been used in intervention trials for programs such as the Good Behavior Game (Petras, Chilcoat, Leaf, Ialongo, & Kellam, 2004) and Positive Behavioral Interventions and Supports (Bradshaw, Waasdorp, & Leaf, 2015). Numerous studies have also investigated the predictive and convergent validity of the TOCA-R (e.g., Petras et al., 2004) in addition to its psychometric properties (e.g., Dong, Reinke, Herman, Bradshaw, & Murray, 2016). To increase the utility of the measure for both

clinical and research purposes, the TOCA-R was expanded into the TOCA-C to include relevant family items (Bradshaw, Debnam, & Leaf, 2010). A recent investigation of the TOCA-C involving over 17,000 students found evidence for the measure as an efficient, valid, and reliable tool for teachers to estimate student's behavioral/social and family factors and the same study found minimal evidence of bias for the TOCA-C based on student grade, race, or gender (Bradshaw & Kush, 2019).

The current study utilized the 9-item *disruptive behavior* subscale (e.g., breaks rules, harms others; Cronbach's alpha [α] = 0.95; Bradshaw & Kush, 2019) and four items from the *family involvement* subscale (i.e., "I have a good relationship with the child's parent," "I am able to contact the parent of this child if I need to talk about his/her progress or problems," " Parent is involved in and supportive of child's education," and "Parent attends school functions such as open houses, book fair, and PTA meetings"). The entire family involvement subscale (α = 0.931; Bradshaw & Kush, 2019) also includes a fifth item (i.e., "This child's guardian/parent(s) attend parent–teacher conference") that was not included in the current study. Because our baseline data collection occurred at the beginning of the school year, many teachers reported that parent-teacher conferences had not yet occurred, and therefore they did not feel they could accurately complete this item. That said, each of the four included items have revealed high factor loadings (β = 0.81–0.94; Bradshaw & Kush, 2019) through confirmatory factory analyses indicating strong relationships between each item and the construct of family involvement. Lastly, although the subscale is titled "family involvement," we believe it is an accurate assessment of family engagement based on the definition we provide in this article. That is, family involvement captures both elements of family-school partnerships (e.g., "I have a good relationship with the child's parents") and parent involvement (e.g., "Parent is involved and supportive of child's education").

2.3.2. Teacher ratings of principal collegial leadership

To assess teacher reported principal leadership and support, the *Organizational Health Inventory (OHI) – Collegial Leadership* subscale was utilized. The collegial leadership subscale (α = 0.92) assesses principal practices that are friendly, supportive, open, and guided by norms of equality (Hoy, Tarter, & Kottkamp, 1991). This subscale consists of ten total items (e.g., the principal treats all faculty members as his or her equal, the principal explores all sides of topics and admits that other opinions exist, and the principal goes out of his or her way to show appreciation to teachers). Response categories for measures were on an ordinal scale (i.e., *1 = rarely occurs*; *4 = very frequently occurs*). Previous research involving the measure revealed that scores on the collegial leadership subscales were associated with the intercept and slope of teacher self-efficacy and burnout (Pas et al., 2012). As noted in our introduction, we also theorized that certain aspects of collegial leadership may be particularly important to family engagement. Thus, given minimal empirical work investigating the link between principal leadership and family engagement, we wanted to investigate both the collegial leadership subscale and each of its items individually.

2.3.3. Student and teacher/classroom-level variables

Student-level variables were collected from school district's records and included gender (i.e., coded 0 = female; 1 = male), race (i.e., Asian/Pacific Islander, Black, Hispanic/Latino, bi-racial, and other), special education status (i.e., coded 0 = not receiving special education services, 1 = receiving special education services), and SES. Race was converted to a dichotomous variable (i.e., coded 0 = non-Black; 1 = Black) due to minimal numbers of students from other races. Student participation in FRL was used as a proxy for SES (i.e., coded 0 = not receiving FRL; 1 = receiving FRL). Teacher characteristics were collected from a brief self-report measure. The teacher demographic measure included gender (i.e., coded 0 = female; 1 = male), race, teaching experience (i.e., less experienced [5 years or less] = 0, more experienced [greater than 5 years] = 1), and education level (i.e., 0 = bachelor's degree, 1 = master's degree). Developmental context was determined by the type of classroom in which the teacher worked (i.e., coded 0 = elementary; 1 = middle). Further, information on intervention status was collected for all teachers (i.e., coded 0 = control group; 1 = treatment group). Intervention status was necessary to control for in the analyses due to the IY-TCM trial involving a teacher training family engagement component.

2.4. Data analysis plan

As a preferred method of handling nested data (Raudenbush & Bryk, 2002), hierarchical linear modeling (HLM) was used throughout the study. Analyses of models were conducted using HLM software version 7.03 (Raudenbush, Bryk, & Congdon, 2017) to address all research questions. Within all analyses, teacher-reported data were treated as a scale-level mean or item-level observed data. Additionally, prior to conducting any analyses, all variables were standardized as a method of data transformation. This allowed all of our scores to be interpreted in the correct contexts to answer all of our research questions (i.e., by comparing z-scores across different continuous measures).

The null model was first conducted to establish a level of baseline comparison for later models and to determine if variation in family engagement was significant based on the level-2 grouping (i.e., teacher/classroom). Results revealed significant variation, χ^2 (198) = 2126.14, $p < 0.001$ with an intraclass correlation of 0.38, thus supporting the use of HLM. As teachers were also nested within 18 total schools, the null model was also conducted at a third level of analyses to assess for potential school-level variation (i.e., students [level 1]; teachers/classrooms [level 2]; schools [level 3]). However, only minimal and insignificant variance (i.e., 0.0007) could be explained with the addition of a third level to the model, χ^2 (17) = 86.98, $p = 0.83$. These results affirmed the use of a two-level model the address research questions.

Next, to answer Research Questions 1 and 2, we utilized concurrent baseline measures of family engagement and principal collegial leadership. In particular, to assess the association between family engagement and overall principal collegial leadership (i.e., Research Question 1a), the model included baseline collegial leadership (i.e., OHI collegial leadership mean) as a level-2 predictor of baseline

family engagement (i.e., TOCA-C family engagement mean). To answer Research Question 1b, the same model was utilized with each principal collegial leadership item describing a use of practice/characteristic (e.g., the principal treats all faculty members as his or her equal, the principal goes out of his or her way to show appreciation to teachers) entered as a level-2 predictor of family engagement. Next, for Research Question 2, we added developmental context (i.e., elementary or middle school) and student-level characteristics (i.e., race, gender, SES, special education status, and behavior problem severity) as covariates to our model to assess the relationship between baseline principal collegial leadership and baseline family engagement when controlling for these covariates (i.e., Research Question 2).

Third, to answer Research Question 3, a separate two-level model was utilized. In this model, we controlled for baseline levels of family engagement, developmental context, intervention status, and student-level characteristics (i.e., race, gender, SES, special education status, and behavior problem severity) to determine if baseline principal collegial leadership predicted end of year family engagement. Intervention status was added to the model due to the IY-TCM intervention including a teacher training family engagement component.

We also calculated effect sizes for significant relationships revealed through HLM analyses using Cohen's f^2 (Cohen, 1988) effect size metric. This effect size metric is preferred in cases where the independent and dependent variables are both continuous (Selya, Rose, Dierker, Hedeker, & Mermelstein, 2012). All calculated Cohen's f^2 effects sizes can be interpreted based on Cohen's (1992) subjective guidelines (i.e., 0.02 = small, 0.15 = medium, 0.35 = large). Lastly, to examine levels of variance, we reported R^2 values as recommended by Snijders and Bosker (1994) using the SAS macro HLMSRQ (Recchia, 2010). This approach allowed us to distinguish proportion of variance at the individual-level outcome based on level-1 predictors (i.e., R^2_1) from the variance accounted for in the group-mean level outcome by the level-2 predictors (i.e., R^2_2).

3. Results

Tables 2 and 3 provide descriptive characteristics of key study variables used in our analyses at baseline. Table 2 provides means and standard deviations of family engagement as organized by student- and teacher/classroom- level characteristics. Table 3 provides means and standard deviations for overall collegial leadership in addition to each item of the collegial leadership subscale (e.g., "The principal is friendly and approachable").

3.1. Family engagement and principal collegial leadership

A significant positive relationship was revealed between principal collegial leadership ($M = 2.91$, $SD = 0.64$) and family engagement ($M = 4.31$, $SD = 1.30$) at baseline ($\beta = 0.09$, SE = 0.04, $p < 0.05$; see Table 4 [Model 1a]). In terms of effect size, this translates to an f^2 value of 0.28, which signifies a moderate effect based on Cohen's (1988) guidelines. Significant positive associations were also found between family engagement and each of the following principal collegial leadership practices/characteristics: the principal discusses classroom issues with teachers ($\beta = 0.12$, SE = 0.06, $p < 0.01$, $f^2 = 0.16$; see Table 4 [Model 1b]), the principal lets faculty know what is expected of them ($\beta = 0.11$, SE = 0.04, $p < 0.01$, $f^2 = 0.23$), the principal conducts meaningful evaluations ($\beta = 0.09$, SE = 0.04, $p < 0.05$, $f^2 = 0.23$), the principal maintains definite standards of performance ($\beta = 0.14$, SE = 0.04, $p < 0.01$, $f^2 = 0.19$), and the principal looks out for the personal welfare of the faculty members ($\beta = 0.08$, SE = 0.03, $p < 0.05$, $f^2 = 0.25$).

Table 2
Means and standard deviations of family engagement by student and teacher/classroom characteristics.

Family engagement	*n*	*M*	*SD*
Full sample	3195	4.31	1.30
Gender			
Male	1608	4.29	1.30
Female	1565	4.33	1.31
Race/ethnicity			
Black	2292	4.40	1.28
Non-black	870	3.88	1.37
FRL			
Yes	2093	4.14	1.33
No	1080	4.64	1.19
SPED status			
Yes	238	4.19	1.31
No	2935	4.32	1.31
Intervention status			
Yes	1595	4.36	1.30
No	1600	4.26	1.32
Classroom type			
Elementary	1752	4.56	1.18
Middle	1443	4.00	1.39

Note. Results represent data reported at baseline.

Table 3
Means and standard deviations of principal collegial leadership.

	n	*M*	*SD*
Principal collegial leadership (overall)	207	2.91	0.64
The principal explores all sides of topics and admits that other opinions exist.	207	2.72	0.90
The principal discusses classroom issues with teachers.	207	2.75	0.85
The principal accepts questions without appearing to brush off or put down staff members.	207	2.87	0.92
The principal treats all faculty members as his or her equal.	207	2.61	1.02
The principal goes out of his or her way to show appreciation to teachers.	207	2.61	0.92
The principal lets faculty know what is expected of them.	207	3.41	0.66
The principal conducts meaningful evaluations.	207	3.03	0.79
The principal maintains definite standards of performance.	207	3.22	0.72
The principal looks out for the personal welfare of the faculty members.	207	2,80	0.90
The principal is friendly and approachable.	207	3.04	0.92

Note. Results represent data reported at baseline.

Table 4
Principal collegial leadership (overall) and collegial leadership practices/characteristics associated with family engagement.

	Family engagement			
	R^2_1	R^2_2	β	SE
Model 1a				
Principal collegial leadership (overall)	0.18	0.34	0.09*	0.04
Model 1b				
The principal explores all sides of topics and admits that other opinions exist.	0.22	0.36	0.06	0.05
The principal discusses classroom issues with teachers.			0.12**	0.05
The principal accepts questions without appearing to brush off or put down staff members.			0.05	0.04
The principal treats all faculty members as his or her equal.			0.06	0.05
The principal goes out of his or her way to show appreciation to teachers.			0.03	0.05
The principal lets faculty know what is expected of them.			0.11**	0.04
The principal conducts meaningful evaluations.			0.09*	0.04
The principal maintains definite standards of performance.			0.14**	0.04
The principal looks out for the personal welfare of the faculty members.			0.08*	0.03
The principal is friendly and approachable.			0.03	0.04

Note. Results represent the final estimation of fixed effects with robust standard errors.
β = standardized coefficient, SE = standard error, R^2_1 = variance explained based on level-1 predictors, R^2_2 = variance explained based on level-2 predictors
** $p < 0.01$.
* $p < 0.05$.

3.2. Controlling for student- and classroom/teacher-level variables

Next, developmental context (at level 2) and student-level variables (i.e., gender, FRL, race, special education status, level of disruptive behavior; [at level 1]) were added to the model to determine if the relationship between principal family engagement and principal collegial leadership at baseline remained significant when controlling for these characteristics. Results revealed that a significant positive relationship remained between family engagement and principal collegial leadership ($\beta = 0.13$, SE = 0.06, $p < 0.05$) with the addition of these variables to the model (see Table 5). The effect size ($f^2 = 0.24$) also revealed a moderate association between

Table 5
Association between principal collegial leadership and family engagement when controlling for student- and classroom-level variables.

Fixed effect	R^2_1	R^2_2	β	SE
Family engagement	0.34	0.29		
Principal collegial leadership (PCL)			0.13*	0.06
Developmental context (middle)			−0.45***	0.08
Gender (male)			0.02	0.04
FRL status (receiving FRL)			−0.31***	0.03
Race (Black)			−0.23***	0.04
SPED status (receiving SPED services)			0.08	0.10
Disruptive behavior			−0.37***	0.09

Note. Results represent the final estimation of fixed effects with robust standard errors.
β = standardized coefficient, SE = standard error, R^2_1 = variance explained based on level-1 predictors, R^2_2 = variance explained based on level-2 predictors
*** $p < 0.001$.
* $p < 0.05$.

collegial leadership and family engagement.

3.3. Principal collegial leadership predicting end of year family engagement

Lastly, to determine if baseline principal collegial leadership predicted end of year family engagement, we controlled for baseline family engagement, developmental context, intervention status, and all student-level variables (i.e., race, gender, FRL, disruptive behavior, and special education status). Results revealed that principal collegial leadership at baseline was a significant predictor of family engagement at the end of the year ($\beta = 0.16$, SE $= 0.06$, $p < 0.01$; see Table 6). Further, although slightly lower than at baseline, the effect size ($f^2 = 0.17$) also indicated a moderately strong association between baseline collegial leadership and end of year family engagement.

4. Discussion

The purpose of this study was to explore the association between family engagement and principal collegial leadership. This study expands the current literature base in this area by investigating this association across a large elementary and middle school sample. Further, we used HLM procedures and included a robust set of control variables for our analysis. Review of previous studies on family engagement have noted that inconsistent findings across studies can be a result of incorrectly specified models and lack of proper controls (Shen, Washington, Bierlein Palmer, & Xia, 2014). In particular, researchers have highlighted the issue of reactive hypothesis, which is the idea that students exhibiting academic or behavioral difficulties can actually lead to increased levels of family engagement. Without adequate controls to account for reactive hypothesis, studies of family engagement can observe biased results, such as negative correlations with achievement (McNeal, 2012). In our study we included a baseline measure of family engagement as well as a measure of student disruptive behavior.

The hypothesis that principal collegial leadership would be associated with family engagement was confirmed. This positive association remained constant when controlling for classroom- and student-level characteristics. Several aspects of collegial leadership in particular were found to be significantly associated with family engagement, including when the principal lets teachers know what is expected, sets definite standards of performance, and conducts meaningful evaluation. These findings support previous research in this area that suggests setting clear and consistent expectations and using effective communication are important leadership skills that may foster a climate in which family engagement occurs (Drysdale, Goode, & Gurr, 2009; Sanders & Harvey, 2002). Other characteristics of principal collegial leadership that were positively associated with family engagement included taking time to discuss classroom issues with the teacher and looking out for the personal welfare of the teacher. Perhaps when teachers feel supported and have opportunities to talk to the principal about issues in their classroom, such as challenging student behavior, solutions lead to engaging families. Surprisingly, being a principal who is friendly and approachable did not stand out as a characteristic that was uniquely associated with family engagement. However, some prior literature suggested that families who felt the principal was approachable were more likely to engage with the school (Barr & Saltmarsh, 2014). The present findings suggest that although being approachable is a part of the constellation, if not foundation, of leadership behaviors that predict family engagement, other leadership behaviors may contribute unique variance to explaining future family engagement.

These findings provide further evidence for the important role of principal leadership in supporting family engagement while also adding to the empirical base on family engagement using teacher perspectives. As discussed earlier, the bulk of research on family engagement is based on parents' own reports of their engagement which can be over-estimated and also show low correlations to student achievement, whereas teacher surveys showed the strongest correlations (Reynolds, 1992). Moreover, as we discussed in our literature review, much of the work that has been done in this area is based on single time point surveys, qualitative interviews, and case studies. The current study builds upon past work in this area using advanced methodological approaches. In particular, it was promising to find that the effects of collegial leadership on parent engagement were robust over time and when accounting for other explanatory variables. The longitudinal findings controlling for baseline levels of engagement suggest that higher levels of collegial

Table 6
Baseline principal collegial leadership predicting end of year family engagement.

Fixed effect	R^2_1	R^2_2	β	SE
Principal collegial leadership (PCL)	0.16	0.28	0.16*	0.06
Baseline family engagement			0.56***	0.04
Developmental context (middle)			−0.39***	0.08
Intervention status (receiving intervention)			0.06	0.07
Gender (male)			0.01	0.03
FRL status (receiving FRL)			−0.29***	0.04
Race (Black)			−0.36***	0.03
SPED status (receiving SPED services)			0.09	0.11
Disruptive behavior			−0.29***	0.08

Note. Results represent the final estimation of fixed effects with robust standard errors.
β = standardized coefficient, SE = standard error, R^2_1 = variance explained based on level-1 predictors, R^2_2 = variance explained based on level-2 predictors
***$p<0.001$; **$p<0.01$; *$p<0.05$.

leadership at the start of the school year predicts increases in family engagement by the end of the year across developmental contexts. Although causal inferences are not warranted in the present correlational study, this finding is consistent with a theory of change suggesting that effective collegial leadership precedes and causes improvements in family engagement. A future study with an experimental design is needed to determine if randomly assigning principals to a collegial leadership training condition or to a comparison group leads to significant improvements in family engagement.

4.1. Limitations

Although the study findings are important, there are also limitations worth noting. First, the study depended on a participant sample comprised of youth in urban settings from a specific area of the country. Thus, study results may not generalize to other regions of the country. However, the sample included a diverse group of students, many representing understudied youth, and thus the findings add to our understanding of family engagement in urban settings where many students may come from low SES homes. Second, it is worth mentioning that experimental manipulations of family engagement did not occur, therefore causal inferences are not warranted. Nevertheless, study results are consistent with prior theory and research. Further, the longitudinal design is a study strength, as it controlled for a broad range of covariates previously found to influence family engagement.

Limitations regarding measurement and study variables are additionally noteworthy. For one, we did not include the parent-teacher conference item from the TOCA-C in our assessment of family engagement. Because baseline data collection occurred early in the school year, many teachers did not have the opportunity to participate in parent-teacher conferences, and thus felt they could not accurately complete this item. Parent-teacher conferences are an important aspect of family engagement that provide opportunities to collaborate and build relationships. Future studies should also include this important aspect of family engagement when examining its potential association with principal leadership. Second, the current study relied on teacher reports of both collegial leadership and family engagement. Although we note in our introduction that teachers may be particularly well positioned to report on these variables due to their direct experiences with parents and principals, we also recognize that it is important to consider and assess the perspectives of multiple informants. Future research should aim to additionally include the perspective of families and principals when assessing principal leadership and family engagement. Third, the current study did not include additional information about principals (e.g., demographic characteristics, years in position) or organizational health (e.g., institutional integrity, resource influence) that may be of particular importance to family engagement. Expanded efforts should be made to collect this information about principals and school systems to more extensively understand the relationship between principal leadership and family engagement. Lastly, for some exploratory analyses we used single items to assess their relationship with family engagement. Although traditional psychometric theory maligns the use of single items given the low reliability associated with them, we believe these analyses were useful and necessary for several reasons. First, the critique of single items is somewhat an artifact of how reliability is defined in formulas that reword longer scales with higher reliability values. An emerging line of research has shown that single item scales can be reliable over time and can predict some outcomes as well as long scales (see Eddy, Herman, & Reinke, 2019, for a detailed review). Second, the purpose of these analyses was to identify specific principal behaviors that were uniquely associated with parent engagement. Although exploratory, we believe these analyses can guide further research on the topic including the development of effective principal training programs.

4.2. Implications

Although we have acknowledged shortcomings of past research in this area, our results do provide support for some of the potential theoretical links previously proposed. In particular, one promising area of research that may help link principal behaviors to family engagement is the growing body of evidence suggesting that principals indirectly influence family engagement through their work in shaping school climate (Povey et al., 2016). For instance, Barr and Saltmarsh (2014) found that principals affect family engagement via their impact on school climate by filtering down their personal vision to teachers and school staff. Others have noted that principals may influence school climate and facilitate family engagement through their approach to leadership formed by their attitudes and expectations (Drysdale et al., 2009; Giles, 2006; Mleczko & Kington, 2013). Thus, it may be that collegial leadership indirectly supports family engagement by promoting a positive school climate. Another possibility is that the definition of collegial leadership is extended to include principal relations with parents, whereas at present it only includes school personnel. Similarly, popular theoretical models of family engagement do not emphasize the role of the principal (Epstein, 1992; Hoover-Dempsey & Sandler, 1995). Further theory development in this area should consider the role of the school principal, and tenets of collegial leadership seem well suited to inform such an extension. Future research should seek to identify and explain the mechanisms by which school climate may mediate the relationship between principal collegial leadership and family engagement. This could lead to a testable theoretical model that could help to inform new school policies and practices and intervention development.

The findings also suggest promising targets for principal training programs to focus on improving school leader skills in fostering parent engagement. In particular, we confirmed that the broad construct of collegial leadership conceptualized by Hoy and Feldman (1987) is indeed predictive of present and future family engagement. However, the exploratory part of the study examining individual principal behaviors that most contributed to these findings provides a more nuanced picture. As we discussed in our introduction, previous research in this area appears to point to two key characteristics of collegial leadership as particularly important to family engagement – creating trust and building a sense of community (Belenardo, 2001; DiPaola & Guy, 2009). Our results support this assertion and provide insight into specific principal behaviors and characteristics that can help to improve trust and build community within schools (i.e., establishing clear expectations, communicating concern for the welfare of teachers, having objective meaningful

evaluation tools, and focusing on classroom issues). Thus, training principals to provide this style of leadership, with particular emphasis placed on trust and community, is a promising tool for increasing family engagement.

Findings also have key implications for school psychologists, whose broad training includes school and family systems (Skalski et al., 2015). In particular, school psychologists can use these findings to help support school leaders in developing a collegial leadership style. For instance, school psychologists could educate school leaders they work with about the elements of school leadership style and their potential value in increasing family engagement. For leaders who are interested in growing collegial leadership skills, school psychologists could provide feedback about areas of strength and in need of improvement in these domains.

Declaration of Competing Interest

None.

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