Predicting Recruitment and Retention of Caregivers for the Families and Schools Together Program Using Health Beliefs Model Variables

By

Meghan K. McMackin

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This dissertation is approved by the following members of the Final Oral Committee:

Craig Albers, Associate Professor, Educational Psychology
Andy Garbacz, Associate Professor, Educational Psychology
Daniel Bolt, Professor, Educational Psychology
Katherine Magnuson, Professor, Social Work

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Abstract

Researchers have identified numerous barriers to the implementation of school-based family engagement programs for effectiveness studies, including difficulties recruiting and retaining caregivers for participation in such studies. The pervasive issue of low recruitment and retention of participants for family engagement program studies is problematic, as it limits the validity and public health significance of the study findings. There is evidence to suggest that variables within the Health Beliefs Model (HBM) may be able to predict recruitment and retention for prevention programming. However, very little research has applied the HBM to the study of recruitment and retention of families for family engagement effectiveness studies implemented in schools. In the present study, the HBM was used as a conceptual framework to explore potential predictors of recruitment and retention for a recent randomized control trial of the Families and Schools Together (FAST) program, a universal, family engagement program designed to prevent student academic, behavioral, and social-emotional problems. Using binary logistic regression and continuation ratio logistic regression, the following independent variables were found to be significant predictors of recruitment: caregiver employment status, number of siblings in the family, family social support, and school turnaround status. Caregiver employment status, number of siblings in the home, and family social support uniquely predicted retention. Findings have implications for the development of strategies to increase family participation in school-based family engagement program effectiveness trials. Findings also highlight the need for research focused on the development and implementation of school-based family engagement programs that fit the needs and preferences of diverse families.

Keywords: recruitment, retention, family engagement, Health Beliefs Model, implementation

Chapter 1: Background

This study examined predictors of recruitment and retention for the Families and Schools Together (FAST; McDonald, Billingham, Conrad, Morgan, & Payton, 1997; McDonald & Moberg, 2002) program. FAST is a family engagement program designed to support positive student academic and behavioral outcomes by improving family dynamics and family social capital. Family engagement programs have become increasingly prevalent in school psychology research (e.g., Borden, Schultz, Herman, & Brooks, 2010; Fishel & Ramirez, 2005; Garbacz, 2019; Lochman, 2000; Reid, Webster-Stratton, & Hammond, 2007; Shepard & Carlson, 2003) because they are well-aligned with the field's shift towards a public health approach (Hoagwood & Johnson, 2003; Nastasi, 2004; Strein, Hoagwood, & Cohn, 2003), which promotes the consideration of environmental factors for ecologically-based prevention and intervention (Trickett & Rowe, 2012). However, despite ample evidence that family engagement is associated with positive student outcomes (e.g., Barnard, 2004; Dotterer & Wehrspann, 2016; Fan & Chen, 2001; Gonzalez-DeHass, Willems, & Holbein, 2005; Hill & Tyson, 2009; Jeynes, 2007; Keith et al., 1998; Rumberger, 1995; Trusty, 1996), research examining the utility of school-based family engagement *programs* to improve student outcomes is inconclusive (Fishel & Ramirez, 2005; Mattingly, Prislin, McKenzie, Rodriguez, & Kayzar, 2002; Sheridan, Smith, Moorman Kim, Beretvas, & Park, 2019).

A potential reason that research on the utility of family engagement programs is inconclusive is that implementation challenges often impact study trials (DeCarlo et al., 2013; Garbacz et al., 2017; Ouellette & Wilkerson, 2008; Segrott et al., 2016). In particular, researchers commonly cite difficulties recruiting and retaining caregivers for participation in the program studies (Charlebois, Vitaro, Normandeau, & Rondeau, 2001; Cohen & Rice, 1995;

Eisner & Meidert, 2011; Perrino, Coatsworth, Briones, Pantin, & Szapocznik, 2001; Quinn, Hall, Smith, & Rabiner, 2010). Low recruitment and retention of targeted individuals for research studies is a noteworthy problem, as it may limit the studies' internal and external validity (Braver & Smith, 1996; Hansen, Collins, Malotte, Johnson, & Fielding, 1985; Lipsey & Cordray, 2000). This is because differences between those who sign up for, and participate in, studies may obfuscate interpretations regarding the impact of the intervention on the participants and the generalizability of the findings to broader populations. Furthermore, when few people sign up and participate in prevention programs for research studies, it is difficult to discern whether recruitment and retention is low due to flaws in study design and implementation or shortcomings of the program being studied. Ultimately, this challenge may limit the public health significance of both research and practice efforts (Winslow, Bonds, Wolchik, Sandler, & Braver, 2009). Therefore, it is important for research to focus on facets of recruitment and retention for research studies. In particular, it is beneficial for researchers to identify predictors of caregiver recruitment and retention for family engagement program studies, as this information may enhance our understanding of how these programs impact real-world populations, including whether programs could benefit from modifications and/or adaptations to better fit the needs of diverse families and students. Ultimately, this information may inform the development of strategies to maximize family participation in programs that are deemed effective.

The Health Beliefs Model (HBM; Rosenstock, 1966) is a theoretical framework that proposes that certain individual and family variables may be able to predict recruitment and retention for prevention programming. Research that examines the association between individual and family variables and recruitment and retention in family-focused program studies

is well developed in other fields, including the field of medicine (e.g., Julinawati, Cawley, Domegan, Brenner, & Rowan, 2013; Juniper, Oman, Hamm & Kerby, 2004; Wallace, 2002; Yep, 1993), social work (e.g., Buttell & Carney, 2002; Buttell, Powers & Wong, 2012; Volk & Koopman, 2001), and mental health (e.g., Gonzalez, Weersing, Warnick, Scahill & Woolston, 2011; Kazdin, 2000; Kim & Zane, 2016; O'Connor, Martin, Weeks, & Ong, 2014; Sullivan, Pasch, Cornelius & Cirigliano, 2004). However, less educational research examines predictors of caregiver participation in family engagement program research trials. The research that does examine this topic is sparse and somewhat inconclusive. Therefore, it is important to expand this research, as caregiver participation in school-based family engagement program studies is vital to maximizing their value.

The present study examined family recruitment and retention in the most recent effectiveness study of the FAST program. Multiple previous randomized control trials (RCTs) examining the impact of the FAST program presented inconclusive findings (see Kratochwill et al., 2018 for a review). Additionally, the most recent RCT presented null results (Kratochwill et al., 2018). Across multiple FAST studies, researchers cited various implementation challenges (Abt. Associates, 2001; Fiel, Haskins, & Turley, 2013; Gamoran, Turley, Turner, & Fish, 2012; Kratochwill, McDonald, Levin, Bear-Tibbetts, & Demaray, 2004; McDonald et al., 2006; Moberg, McDonald, Posner, Burke & Brown, 2007; Turley et al., 2017; Turley, Gamoran, McCarty, & Fish, 2017). In particular, low recruitment and retention were often highlighted as significant barriers to study implementation (Abt. Associates, 2001; Fiel et al., 2013; Gamoran et al., 2012; McDonald et al., 2006; Moberg et al., 2007; Turley et al., 2017). In the most recently conducted RCT of the FAST program, researchers identified low recruitment and retention as two of the most problematic barriers to study implementation (Kratochwill et al., 2018).

To better understand recruitment and retention for the most recent FAST study, the present study explored predictors of family recruitment and retention for the study using an extension of the HBM as a conceptual framework with which to select and organize predictor variables.

The Public Health Model

In recent decades, the school psychology profession has attempted to shift away from the medical model towards a more public health approach (Strein et al., 2003). In contrast with the medical model's individual focus, the public health approach seeks to improve the collective wellbeing of populations using ecologically informed, evidence-based methods. Fundamental elements of the model include an emphasis on prevention and early intervention, as well as the consideration of the multiple individual and environmental factors that contribute to health outcomes. Additionally, researchers stress the importance of performing research in real-world settings to maximize the generalizability of results (Hoagwood, Hibbs, Brent, & Jensen, 1995; Norquist, Lebowitz, & Hyman, 1999).

Prevention

A focus on prevention and early intervention is central to the public health model. The ultimate goal of prevention is to reduce the probability that individuals will develop unfavorable outcomes over time (Gillham, Shatté, & Freres, 2000). To do so, preventive interventions often are designed to reduce malleable risk factors and increase protective factors. A *risk factor* is defined as a variable that is associated with a negative outcome **(**Gutman, Sameroff, & Cole, 2003), whereas a *protective* factor is a variable that moderates the probability of negative outcomes based on risk status (Garmezy, 1983). By preventing adverse outcomes, successful

preventive interventions should ultimately reduce the physical, mental, and financial burdens on society (Mihalopoulos, Vos, Pirkis, & Carter, 2011).

Researchers generally agree that prevention occurs at one of three levels, distinguished by the juncture and intensity of intervention (Strein et al., 2003). Primary (also called universal or global) prevention programs target whole populations, irrespective of risk (Muñoz, Mrazek, & Haggerty, 1998). Secondary (also known as selective or targeted) prevention programs target individuals who have indicated an increased risk for an adverse outcome. Tertiary (or indicated) prevention programs are suitable for individuals who have already displayed minimal but demonstrable adverse symptoms or conditions.

Prevention programs also vary by change agents; *person-centered* programs are administered directly to the targeted individual, whereas *environment-centered* (or ecological) programs are designed to indirectly influence the individual through the people or things in the environment (Durlak & Wells, 1997). Many school-based prevention programs are person-centered with interventionists working directly with individual or groups of students (e.g., Gillham et al., 2007; Kjøbli & Ogden, 2014; Stoltz, van Londen, Deković, de Castro, & Prinzie, 2012). However, as the school psychology profession shifts towards a public health framework, multiple researchers have advocated for the use of ecological theory as a framework for school-based prevention and intervention (Burns, 2011; Kratochwill & Hoagwood, 2005; Sheridan & Gutkin, 2000). In contrast with a medical model, which focuses on locating and treating pathology within an individual, ecologically-based efforts target complex systems that impact student development (Sheridan & Gutkin, 2000).

The Ecological Framework

Bronfenbrenner's ecological systems theory (1977, 1979) serves as a guiding framework for ecologically-based prevention and intervention. Ecological systems theory explains that human development does not occur in isolation, but rather as the result of interactions between the developing person and the environment. The environment is complex, involving increasingly broad systems of people, places, and objects. These systems consist of the (a) microsystem, (b) mesosystem, (c) exosystem, (d) macrosystem, and (e) chronosystem. The microsystem describes proximal environments such as the home and classroom settings, and individuals with which children regularly directly interact, such as teachers, caregivers, and friends. The mesosystem describes the lateral connections that occur between people within different microsystems. For example, the relationship between caregivers and teachers comprises an important mesosystem. The exosystem describes the system of people who indirectly impact a child, such as their caregivers' employers or school central administration. The macrosystem encompasses broader environmental conditions, including the economic, cultural, and political conditions of society. Finally, the chronosystem describes the point in time at which all the other systems are situated. The interactions that occur between the developing child and each of these environmental systems reciprocally and dynamically drive human development over time.

From an ecological theoretical perspective, it is crucial to target preventive efforts towards not just individual students, but also relevant environmental systems (Bronfenbrenner, 1977, 1979). In particular, Bronfenbrenner stressed the influence of the family and the home microsystems on child development. Various research suggests that family/home variables can act as both risk factors for negative child outcomes, as well as protective factors which moderate risk. For example, children of caregivers with mental health problems are more likely to display higher levels of psychopathology (Beardslee, Versage, & Gladstone, 1998; Goodman et al.,

2011), externalizing and internalizing problems (Goodman et al., 2011), and interpersonal difficulties (Beardslee et al., 1998) than children of caregivers without mental health problems. Research also suggests that caregiver behaviors are associated with child behavioral outcomes (e.g., Bradley & Corwyn, 2012; Derzon, 2010; Hoeve, Dubas, Eichelsheim, Smeenk & Gerris, 2009; Rinaldi & Howe, 2012). For instance, children of caregivers who display poor child-rearing skills are at higher risk for externalizing problems than those with better child-rearing skills (Bradley & Corwyn, 2012; Derzon, 2010). Also, children of caregivers who provide less supervision are at higher risk for antisocial behavior than children of caregivers who provide more supervision (Derzon, 2010; Hoeve et al., 2009).

Research also indicates that family variables may be associated with *adaptive* child behaviors. For example, research suggests that authoritative parenting styles may be associated with higher levels of child adaptive behaviors, including better social skills, higher levels of adaptability, and less externalizing behaviors than either passive or authoritarian parenting styles (Rinaldi & Howe, 2012). Other research suggests that adolescents who are more connected with their caregivers are less likely to commit weapons violence over time (Henrich, Brookmeyer & Shahar, 2005) and teenagers with more involved caregivers are less likely to use alcohol (Handren, Donaldson & Crano, 2016).

Family Engagement

In addition to the influence of caregiver traits on child development, Bronfenbrenner and other ecological theorists proposed that interactions between the school system and the home system are influential in child academic, behavioral, and social-emotional outcomes (Bronfenbrenner & Morris, 2006). This relationship is often referred to as *family engagement*, which describes caregiver behaviors, attitudes, beliefs, and skills that support student learning

(Fan & Chen, 2001; Fishel & Ramirez, 2005). The term *parental engagement* is frequently used interchangeably with family engagement; however, families are diverse and often headed by caregivers who are not biological parents. Therefore, the term family engagement is used throughout this document unless mirroring another researcher's terminology.

Family engagement is a multifaceted construct that encompasses a wide array of variables describing the ways in which families engage with their children's education. A widely accepted framework of family engagement was proposed by Epstein (1987, 1995), who designated the following six types of family engagement: (a) parenting, (b) communicating, (c) volunteering, (d) learning at home, (e) decision-making, and (f) collaborating with the community. Parenting describes caregiver behaviors that support learning within the home environment. This involves behaviors such as providing a safe learning environment and ensuring that a child's needs are met so that the child is able to learn. Communicating involves two-way contact between the school and the caregiver regarding school programs and the child's educational development. This may include emails, phone calls, or meetings between caregivers and school staff. Volunteering describes caregivers helping and supporting their child's class or school through various efforts such as leading school programs or organizations, organizing and facilitating school-based events, and providing support within the classroom or other school settings. Learning at home is a construct that encompasses the ways in which caregivers support their child's academic development at home. This may manifest as helping with homework, supplementing academic concepts, or supporting the child as the child makes plans and decisions regarding school. Decision-making describes caregiver involvement in school decision-making processes, such as parent-teacher organizations, councils, or committees. Lastly, collaborating with the community describes caregiver involvement in the identification and integration of

community-based resources and services that support student learning and development. For example, a caregiver may involve their child in community programs, tutoring, or mentoring to support their academic development. Across each of the six categories of family engagement, Epstein et al. (2002) communicated the importance of a partnership between schools and families, stressing that families do not hold sole responsibility for their own engagement. Rather, schools and families hold equal responsibility in promoting and supporting family engagement in education to maximize student success.

In addition to Epstein's six facets of family engagement, researchers have examined another marker of family engagement labeled *personal involvement* (Grolnick & Slowiaczek, 1994). Personal involvement describes caregiver interest and expectations about the value and utility of education. Caregivers may convey their values and expectations regarding education to their children through parenting practices, communications, and behaviors.

Family Engagement Research

Research generally suggests that various indicators of family engagement are related both to academic (e.g., Fan & Chen, 2001; Hill & Tyson, 2009; Jeynes, 2005) and behavioral (e.g., Fantuzzo, McWayne, Perry, & Childs, 2004; Hill et al., 2004; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004) student outcomes. For example, Fan and Chen (2001) compiled the results of 25 studies that examined the relationship between academic achievement and parental involvement. Across studies, definitions of parental involvement varied widely. Therefore, Fan and Chen coded types of parental involvement into broad categories that included parents' positive expectations and aspirations for academic achievement, communication with children regarding school, contact with school, supervision at home, and participation in school-based events, amongst others. Academic achievement was measured using individual grades and grade

point averages, test scores, and grade retention or promotion. Fan and Chen also examined race and age of the target child as potential moderators for the relationship between parental involvement and academic achievement. They noted that the studies included in the meta-analysis did not report on SES to a degree that allowed them to address the relationship between SES and parental involvement. Fan and Chen's findings revealed that, on average, parental involvement and academic achievement were positively correlated (r = .25). Age and race had very small moderating effects on the relationship between parental involvement and academic achievement, such that Fan and Chen deemed the effects insignificant.

Hill and Tyson (2009) conducted a meta-analysis that examined the relationship between different categories of parental involvement and the academic achievement of middle schoolers. They also examined differences in the relationship between parental involvement and academic achievement by ethnicity. The meta-analysis included fifty published and unpublished empirical articles. The researchers divided the construct of parental involvement into the following three categories: home-based involvement, school-based involvement, and academic socialization. Home-based involvement described engagement with schoolwork, communication between children and parents about school, fostering a positive learning environment and home, and facilitating educational opportunities such as trips to museums. School-based involvement was defined as activities such as visiting school, volunteering at school, communication between parents and teachers, and involvement in school governance. Academic socialization described activities such as linking schoolwork to current events, supporting academic aspirations, and helping children make academic plans for the future. The researchers also examined the construct of general involvement, which combined all three of the aforementioned constructs.

Academic achievement variables included standardized test scores, GPA, individual class grades, academic track placements, and other achievement tests.

The results of Hill and Tyson's (2009) study revealed a positive association between general parental involvement and middle schoolers' academic achievement (r = .18). Upon examining differences in the strength of the relationship between involvement and achievement across types of involvement, the researchers found that academic achievement was more highly correlated with academic socialization (r = .39) than it was with home-based involvement (r = .03) or school-based involvement (r = .19). With regard to ethnicity differences, the strength of the relationship between parental involvement and academic achievement was not significantly different for African-American and European-American students. Hill and Tyson noted that they were not able to examine the relationship between SES and academic achievement due to a lack of available SES data across studies.

Jeynes' (2005) meta-analysis examined the association between specific types of parental involvement and the academic achievement of urban elementary-school students. They also examined the relationship between parental involvement and academic achievement by child gender and race. Jeynes compiled 41 published and unpublished quantitative studies from major social science journals. They defined the following parental involvement variables: study-specific measures of parental involvement, parental expectations for their children's educational achievement, parental attendance and participation in school activities/events, communication between parents and children regarding school, the level at which parents were involved in their children's homework, the extent to which parents read or have read to their children in the past at home, and parenting style (i.e., the extent to which parents demonstrated a helpful and supportive parenting approach). Jeynes also examined general measures of parental involvement as defined

by the authors of the individual studies. Academic achievement measures included grades, standardized test scores, teacher rating scales, and other indicators of academic behaviors and attitudes. Jeynes found that children of parents who displayed higher levels of overall parental involvement obtained higher academic achievement than those who displayed lower levels of parental involvement (*Hedge's g* = .74). They found that parental expectations was the construct most strongly related to academic achievement (*Hedge's g* = .58). Additionally, the association between academic achievement and parental involvement was consistent across genders and races.

In addition to academic outcomes, research also suggests that family engagement is related to child behavioral functioning in schools. McWayne et al. (2004) examined the association between child social functioning and parental involvement within a sample of 307 ethnic minority kindergarten students from primarily low-income backgrounds. Parental involvement was measured using the *Parent Involvement in Children's Education Scale* (Fantuzzo, Tighe, McWayne, Davis, & Childs, 2002), which measures caregiver involvement in schools across Epstein's (1987, 1995) six facets of family engagement. Child social functioning was measured using the teacher and parent versions of the *Penn Interactive Peer Play Scale-2* (Fantuzzo & Hampton, 2000) and the parent version of the *Social Skills Rating System* (SSRS; Gresham & Elliott, 1990). McWayne and colleagues observed that higher levels of parental involvement were associated with higher levels of child prosocial behavior. Specifically, children of more involved caregivers displayed higher levels of positive play behaviors at home (*Rc* = .32); more self-control, responsibility, and cooperation at home (*Rc* = .45); and higher levels of positive peer play behaviors in school (*Rc* = .25).

Fantuzzo et al. (2004) also examined the relationship between family involvement and classroom behavior problems, such as conduct problems and hyperactivity. Their sample consisted of 144 children, ages 46 to 68 months, who were enrolled in Headstart in an urban setting. The majority of the sample (96%) was African-American. The researchers used the *Family Involvement Questionnaire* (FIQ; Fantuzzo, Tighe, & Childs, 2000) to measure the degree and type of parental involvement in their children's schooling. Classroom behavior problems were measured using the *Preschool Learning Behaviors Scale* (McDermott, Green, Francis, & Stott, 1996) and the *Conner's Teacher Rating Scale-28* (Conners, 1990). Fantuzzo et al. observed that children of caregivers who were more involved displayed less conduct problems (R_2 = -.30) and hyperactivity (R_2 = -.24) in the classroom. Also, children of more involved parents displayed more positive classroom behaviors, such as more positive attitudes towards learning (R_2 = .30), higher levels of attention and persistence (R_2 = .36), and more motivation to engage in learning activities (R_2 = .35).

In another examination of the impact of parental involvement on child behavior, Hill et al. (2004) followed a sample of 463 students from seventh through eleventh grade. The schools included in the study were public schools in Knoxville and Nashville, Tennessee, and Bloomington, Indiana. One third of the schools in each area were considered 'high-risk' based on high percentages of 'at-risk' ethnic minority (i.e., African-American) students, students who received free or reduced lunch, and projected rates of student dropout. Hill et al. (2004) measured parent academic involvement using the *Parent – Teacher Involvement Questionnaire* (Kohl, Lengua, McMahon, & The Conduct Problems Prevention Research Group, 2000). They also asked students and parents questions about the parents' level of involvement with school and relationships with school personnel. To measure school behavior problems, teachers completed

the Teacher Report Form of the *Child Behavior Checklist* (CBCL; Achenbach & Edelbrock, 1991).

Hill et al. (2004) found that, overall, children of parents who were more involved in seventh grade displayed less behavior problems in the classroom (r = -.29) in eighth grade. This included fewer social problems, attentional problems, and aggression. However, this relationship varied depending on socioeconomic status: whereas parental involvement and student behavior problems were related for parents with higher socioeconomic status (SES), this relationship did not exist for lower-SES parents. Because Hill et al. identified a positive association between parental academic involvement and student educational aspirations for lower-SES families (r = .43), they hypothesized that although lower-SES parents may communicate high expectations to their children, parents may face barriers to participating in education in ways that facilitate their children's positive behavior in school. For example, parents may not feel comfortable or capable of supporting their children in this way. This finding emphasizes the importance of determining how and why the impact of family involvement may manifest differently for families of varying socioeconomic groups.

In summary, research suggests that there is a positive association between family engagement and student outcomes, such that children of more engaged families are more likely to fare better in school, both academically (Fan & Chen, 2001; Hill & Tyson, 2009; Jeynes, 2005) and behaviorally (Fantuzzo et al., 2004; Hill et al., 2004; McWayne et al., 2004). However, questions remain regarding the impact of certain sociodemographic characteristics on the relationship between family engagement and student outcomes. In particular, little research has examined the influence of SES on the relationship between family engagement and student outcomes. Research that has examined SES as a moderator suggests that the relationship

between parent engagement and positive outcomes may be weaker for families of lower SES (Hill et al., 2004). Therefore, it is important to extend this area of research to examine whether the positive impact of family engagement applies for students/families across SES levels.

Family Engagement Programs

The research base supporting the connection between family engagement and positive student outcomes is well established (Fan & Chen, 2001; Fantuzzo et al., 2004; Hill et al., 2004; Hill & Tyson, 2009; Jeynes, 2005; McWayne et al., 2004). Correspondingly, many preventive interventions have been designed to increase family engagement in schools (Borden et al., 2010; Fishel & Ramirez, 2005; Lochman, 2000; Reid et al., 2007; Shepard & Carlson, 2003). The overarching goal of family engagement programs is to improve student academic, behavioral, and/or social-emotional outcomes by increasing family engagement in education. Because the construct of family engagement encompasses multiple variables, family engagement programs vary widely by specific program goals and format (Lochman, 2000). For instance, programs may focus on improving caregivers' skills, fortifying the caregiver-child relationship, equipping caregivers to help their children improve specific academic/behavioral skills, or strengthening the connection between caregivers and school staff. Likewise, family engagement program components and activities vary dependent on the specific goals of the program. Common program elements include direct teaching of skills and strategies, group discussions, and role-playing parenting techniques, amongst others. Despite the variability in program goals and format, a common feature amongst family engagement programs is that they necessitate some degree of caregiver involvement in program sessions and/or activities.

Family Engagement Program Research

Numerous studies have examined whether family engagement programs are successful in increasing family engagement, thereby improving student academic, behavioral, and/or social-emotional outcomes. Despite theoretical support for family engagement programming, study trials which assess the ability of interventions to produce outcomes under real world conditions have produced inconsistent results (Fishel & Ramirez, 2005; Mattingly et al., 2002; Sheridan et al., 2019). This trend is demonstrated by three large meta-analyses that compiled the results of a multitude of family engagement program studies. Two of these meta-analyses concluded that findings were too inconclusive to suggest that family engagement programs are effective in improving student outcomes (Fishel & Ramirez, 2005; Mattingly et al., 2002). The authors of both meta-analyses cited widespread problems with the studies' methodology, which likely diminished their ability to draw sound conclusions regarding the utility of family engagement programs. The most recent meta-analysis, by Sheridan et al. (2019), presented more promising findings, which suggest that the family engagement programs examined were effective in improving student social-emotional and behavioral functioning. All three meta-analyses highlighted important areas for future research.

Mattingly et al. (2002)'s meta-analysis examined the effectiveness of parent engagement programs across 39 reports published between 1960 and 2002, which included journal articles, evaluation reports, technical reports, summary reports, book chapters, theses, practicum reports, and conference papers. To be included in the meta-analysis, the reports had to describe a study that evaluated specific educational interventions targeting parents of U.S. public school students in grades kindergarten through twelve. Additionally, the reports had to provide adequate information about the interventions, evaluation methods, and outcomes of the interventions.

Across the thirty-nine reports that met inclusion criteria, forty-one parent engagement programs were analyzed.

Mattingly et al. (2002) reported that only a handful of the studies included in their review presented positive results. Additionally, the majority of the studies they reviewed were wrought with methodological weaknesses, limiting their ability to draw conclusions. For example, the majority of studies provided insufficient and inconsistent information regarding the sample characteristics: 51% of the studies did not report the racial-ethnic makeup of their samples, 56% omitted income characteristics, and 86% failed to report parent education levels. The studies that reported demographic sample characteristics tended to serve mainly non-White, low-income populations. However, very few of these studies examined differences in outcomes by demographic variables, such as race and income. Therefore, it was not possible to determine the effectiveness of parent engagement programs for diverse racial and socioeconomic groups based on studies included in this review.

Mattingly et al. (2002) also noted that the majority of the studies in their review used subjective evaluation tools and reported multiple intervention components and outcome measures. This poses the potential for the causal relationship between parental engagement and student outcomes to be confounded. Additionally, the majority of studies used weak evaluation designs, including post-test only designs and studies that did not use a control group to account for maturation and history effects. In fact, only seven studies compared pre- and post-test data with matched controls. Also, very few of the studies that reported positive results had utilized strong research designs. For example, although fifteen studies reported an improvement in intervention students' academic outcomes, only four of these studies were deemed methodologically sound. Of those four studies, just two suggested that students who received the

parent engagement intervention performed better academically than matched controls. Studies examining the impact of parent engagement programs on behavioral outcomes showed a similar pattern: few were methodologically sound, and the average effectiveness ratio of the methodologically strong studies was negative. In conclusion, Mattingly et al. stated that they did not find sufficient evidence to suggest that parent engagement programs improved child academic/social outcomes. Additionally, the impact of demographic characteristics on the relationship between parent engagement and outcomes was not satisfactorily addressed. Therefore, it is important to increase methodologically rigorous research which accounts for the interactions amongst program interventions and family demographic characteristics.

Fishel and Ramirez (2005) performed a similar meta-analysis which also generated inconclusive results. Their review examined 24 empirical studies of parent engagement interventions that were published between 1980 and early 2003. These studies examined programs designed to improve student academic and behavioral outcomes. Descriptive, correlational, and case studies were excluded. Overall, Fishel and Ramirez found that the studies included in their review were characterized by both methodological strengths (e.g., strong documentation of program components and procedures) and weaknesses (e.g., inconsistent reporting of effect sizes and failure to link interventions to positive outcomes).

Similar to Mattingly et al. (2002), Fishel and Ramirez (2005) found that the majority of studies that reported large positive effect sizes utilized weak methodology. Those studies that utilized stronger methodology generally failed to find significant improvements in outcomes. However, a small subset of methodologically strong studies yielded significant results with strong positive effect sizes (with *Cohen's d* ranging from .98 to 12.98), suggesting that very specific types of parent engagement interventions were associated with positive outcomes.

Specifically, parent tutoring and parent encouragement at home was associated with improvements in an academic problem in a specific subject for elementary school children. Beyond this finding, the authors did not discover sufficient evidence to suggest that parent engagement interventions were effective in improving student behavioral or academic outcomes.

With regard to demographic characteristics, Fishel and Ramirez (2005) noted that few studies reported important variables such as participant gender, ethnicity, SES, etc. Those that did report such details indicated that their samples were comprised of mainly low to middle-SES participants representing a diversity of racial-ethnic backgrounds. However, Fishel and Ramirez did not comment on whether these studies examined differences in the relationship between parent engagement and outcomes based on sociodemographic characteristics.

Overall, Fishel and Ramirez (2005) concluded that their review did not find sufficient evidence to suggest that parent engagement programs are effective in improving student outcomes. Additionally, the lack of scientifically rigorous studies severely limited their ability to assess the effectiveness of parent engagement interventions. Therefore, more methodologically strong research is needed to understand whether parent engagement programs are effective and for whom. It is also pertinent to determine the underlying mechanisms of parent engagement interventions that are considered effective.

Sheridan et al.'s (2019) meta-analysis examined family involvement or parent-school relationship program effectiveness studies that were conducted between 2001 and 2014. This meta-analysis included journal articles, book chapters, dissertations, and theses that examined group interventions designed to improve the academic, behavioral, or social-emotional outcomes of students from preschool to twelfth grade. Both published and unpublished studies were included in Sheridan et al.'s review. Studies were excluded if they did not (a) focus on parental

involvement or family-school relationships; (b) involve students between preschool and twelfth grade; (c) present academic, behavioral, or social-emotional outcomes; (d) present the results of an intervention that was implemented in a naturalistic setting; or (e) use an experimental, quasi-experimental, or pre-/posttest design. Their review included a total of 117 studies and 592 effect sizes. Sheridan et al. noted that 44% of the studies included in their review did not provide sufficient information regarding participant race. Of those that reported participant race, the following characteristics were reported: 62% White, 35% African-African, 22% Hispanic/Latino, 8% Asian American, 2% Native American/Pacific Islander. Sheridan et al. did not comment on the SES-makeup of the samples included in their study.

Sheridan et al. (2019) examined the impact of family engagement program components on student social-behavioral competence and mental health outcomes. Social-behavioral competence was defined as child prosocial skills, peer relationships, self-regulation, and externalizing problems, and mental health outcomes included internalizing concerns, self-esteem, and emotional regulation. They also examined the moderating effects of child and community characteristics, including child grade level, child race/ethnicity, and type of community (i.e., urban or rural). Overall, they found a statistically significant effect of family engagement interventions on both student social-behavioral (*Hedge's g* = 0.33) and mental health (*Hedge's g* = 0.39) outcomes. Upon examining potential moderators, Sheridan et al. found that the impact of family engagement interventions was not moderated by age (i.e., interventions were equally impactful for all developmental levels). The type of community (i.e., rural or urban) moderated mental health outcomes, such that the programs were less effective in improving mental health outcomes in urban settings than they were in rural communities ($b = 0.12$). However, there was no difference between type of setting in terms of social-behavioral competence outcomes. Race

also moderated effects, with the effects of family engagement interventions being more pronounced in samples with larger percentages of participants who identified as African-American ($b = 0.12$).

Sheridan et al. (2019) also compared the effectiveness of distinct family engagement intervention components and found the following components to be significantly related to both social-behavioral competence and mental health outcomes: communication (*Hedge's g* = 0.66 for social-behavioral competence; *Hedge's g* = 0.64 for mental health), home-based involvement (*Hedge's g* = 0.32 for social-behavioral competence; *Hedge's g* = 0.46 for mental health), behavioral support (*Hedge's g* = 0.39 for social-behavioral competence; *Hedge's g* = 0.33 for mental health), parent-teacher relationship (*Hedge's g* = 0.36 for social-behavioral competence; *Hedge's g* = 0.33 for mental health), and collaboration (*Hedge's g* = 0.32 for social-behavioral competence; *Hedge's g* = 0.32 for mental health). School-based involvement was significantly related to only social-behavioral competence (*Hedge's g* = 0.51), and the only family engagement intervention component that was not related to positive outcomes was homework support.

Sheridan et al. (2019) noted several limitations to their study which highlight needs for future research. First, they discussed the fact that they examined components of interventions, rather than whole interventions. Because intervention components are typically combined to comprise cohesive programs that are administered in naturalistic settings, it will be important to learn more about the nature by which effectiveness may differ by program. Second, Sheridan et al. were not able to examine the mechanisms for change, so the pathways by which the family engagement interventions impacted student outcomes are not known. Additionally, this study did not examine differences in the effectiveness of programs based on system-wide policies and

practices within schools. However, systemwide practices may impact the implementation of family engagement programs and may also impact their effectiveness. An additional limitation to Sheridan et al.'s review is its lack of acknowledgment of the potential impact of SES on the relationship between parent engagement and student outcomes. Therefore, future research should examine how family engagement programs may function differently for families of varying SES in different school settings.

Taken together, these findings suggest that research examining the effectiveness of family engagement programs is inconclusive. In two large meta-analyses, Mattingly et al. (2002) and Fishel and Ramirez (2005) both found that most studies examining family engagement programs were too methodologically weak to yield valid conclusions. Only a few methodologically strong studies yielded positive effects, and of those that did, findings tended to apply to a very specific subset of family engagement interventions, populations, and outcomes. Conversely, Sheridan et al. (2019) found that the family engagement programs they reviewed were effective in improving student outcomes. In conclusion, there is evidence to suggest that family engagement interventions can be successful in improving student academic, social-emotional, and/or behavioral outcomes. However, questions remain regarding the mechanisms by which successful family engagement programs improve student outcomes and which variables moderate and/or mediate their effectiveness. For example, due to a lack of reporting of SES characteristics across studies, it is unclear what impact SES has on the effectiveness of family engagement programs. Also, it is likely that, overall, the poor methodology of many family engagement studies has clouded researchers' ability to interpret study findings (Fishel & Ramirez, 2005; Mattingly et al., 2002). Therefore, it is important to conduct more

methodologically strong research in this area that specifically examines how family engagement programs impact families with varying demographic characteristics (e.g., SES).

Challenges with School-Based Effectiveness Research

There are a number of reasons that may account for the inconclusiveness of family engagement program research. As was previously discussed, family engagement program trials are often marked by a variety of methodological problems, such as weak evaluation designs and lack of control groups (Fishel & Ramirez, 2005; Mattingly et al., 2002). Additionally, problems with implementation may complicate study trials and cloud the interpretation of results. Program *implementation* describes the process by which a program is carried out in a particular setting. Dane and Schneider (1998) designated five main factors of program implementation: (a) fidelity, (b) dosage, (c) quality, (d) participant responsiveness, and (e) program differentiation. Fidelity describes the degree to which the practices of the program are implemented in adherence with the practices intended by the original program. Dosage refers to the degree to which the components of the program are delivered to participants. Quality denotes qualitative aspects of program implementation, including how well the interventionist(s) implement the program components. Participant responsiveness describes how individuals respond to the intervention (e.g., how enthusiastically participants engage in the sessions/activities). Differentiation refers to differences between the implemented program's theory and practices and other programs (i.e., how distinguishable the program is from others of its kind).

Durlak and Dupre (2008) described three more key factors of program implementation: (a) monitoring of comparison/control conditions, (b) program reach, and (c) program adaptation. Monitoring of comparison/control conditions refers to the examination of the quantity and type of services that these groups receive (i.e., alternative services). Program reach describes the rate

of involvement of the eligible population, as well as the representativeness of the program sample. This construct differs from program dosage in that it describes the percentage of the eligible population that participated in the program, as well as their characteristics. This is relevant information, as the characteristics of the individuals who participated in the program may differ from those of the eligible population. Program adaptation refers to the degree to which components of a program were modified for a particular implementation of the program.

When a program study is implemented in a practical setting for a research study, this process introduces a variety of contextual variables which may have been unaccounted for in program design and planning stages (Flay, 1986; Greenberg, 2004). When implementing research studies in schools, in particular, extraneous variables are particularly salient within each of Bronfenner's ecological systems levels (i.e., the microsystem, mesosystem, exosystem, macrosystem, and chronosystem) (Bronfenbrenner, 1977; 1979). For example, each individual school is characterized by unique microsystem variables such as school norms and rules, administrative cultures and processes, and makeup and availability of staff and resources, etc. At the mesosystem level, schools vary by level and nature of connectedness to families and outside resources. Individual schools are also uniquely impacted by decisions and processes that take place at the exosystem level, such as central school administration. Additionally, the cultural, economic, and political conditions of society, which comprise the macrosystem, impact school norms and priorities, availability of resources, and the functioning and development of school staff and families. Finally, school systems function at various points within the chronosystem, such that systems and processes shift over time. Unique variables at each systemic level may act as facilitators or barriers to program implementation for a research study (Langberg & Smith, 2006).

Researchers who have implemented preventive programs in schools have documented a variety of challenges to program implementation at various systemic levels (e.g., Baker, Kupersmidt, Voegler-Lee, Arnold, & Willoughby, 2010; Bambara, Goh, Kern, & Caskie, 2012; Bambara, Nonnemacher, & Kern, 2009; Hamre et al., 2010; Kincaid, Childs, Blase, & Wallace, 2007; Lohrmann, Forman, Martin, & Palmieri, 2008; McIntosh, Kim, Mercer, Strickland-Cohen, & Horner, 2015; Sutherland, McLeod, Conroy, & Cox, 2013; Turri et al., 2016). Commonly cited barriers include a lack of time (Bambara et al., 2009; Bambara et al., 2012), lack of resources (e.g., facilities, technical support; Bambara et al., 2009; Kincaid et al., 2007; McIntosh et al., 2015; Turri et al., 2016), inadequate staff training (Bambara et al., 2009; Bambara et al., 2012; Turri et al., 2016), and high staff turnover (McIntosh et al., 2015; Turri et al., 2016). These various challenges may impact one or more aspects of program implementation for research studies, including fidelity (e.g., schools may lack the resources or support to fully deliver the program as designed), quality (e.g., staff may not be adequately trained to deliver the program as designed), or dosage (e.g., sessions may have to be cut short due to a lack of time), amongst others.

One implementation problem that is especially prevalent in school-based family engagement program research is low program reach, or low rates of participation in the program study (Eisner & Meidert, 2011; Fontana, Fleischman, McCarton, Meltzer, & Ruff, 1989; Heinrichs, Bertram, Kuschel, & Hahlweg, 2005; McKay, McCadam & Gonzales, 1996; Segrott et al., 2016; Spoth, Redmond & Shin, 2000). This is an important consideration, because family engagement programs necessitate the active participation of caregivers. When caregivers do not participate in school-based family engagement programs in research contexts, the meaning of the associated results may be unclear. Furthermore, it may be uncertain whether low recruitment and

retention for such research could be related to shortcomings of the programs, themselves, which raises questions regarding their potential to reach and positively impact broad audiences in practical settings.

Recruitment and Retention

Participation in research studies occurs at two broad levels: recruitment and retention. *Recruitment* refers to the process by which people from the eligible population enroll, or sign up to participate in, a program and/or study (Heinrichs et al., 2005). *Retention* describes the rate at which participants partake in program/study sessions and/or activities. Researchers often aim to recruit and retain large numbers of the eligible population for participation in studies. However, researchers frequently report significant difficulties recruiting and retaining caregivers in prevention research (Axford, Lehtonen, Kaoukji, Tobin & Berry, 2012; Baker, Arnold, & Meagher, 2011; Kazdin, 2000; Miller & Prinz, 2003; Prinz et al., 2001). This is especially the case in school-based family engagement program trials (Eisner & Meidert, 2011; Fontana et al., 1989; Heinrichs, Bertram, Kuschel, & Hahlweg, 2005; McKay et al., 1996; Segrott et al., 2016; Spoth et al., 2000).

Despite the fact that multiple researchers describe challenges with recruitment and retention for studies implemented in practical settings, it is less common for researchers to report exact recruitment and retention rates (Heinrichs et al., 2005). Furthermore, even when recruitment and retention rates are reported, the metrics used to define these constructs differ across studies. For example, some studies denote population-based recruitment rates, which describe how many individuals from the eligible population signed up to participate in the study. Others report sample-based recruitment rates, which refer to the proportion of people who signed up for the study relative to how many were directly contacted and offered participation.

Additionally, researchers use different thresholds to represent retention. For example, some researchers define retention as the completion of more than half of program sessions (e.g., Bamberger, Coatsworth, Fosco & Ram, 2014; Eisner & Meidert, 2011). Others consider individuals retained if they complete just one program session (e.g., Perrino et al., 2001).

A review of available data regarding participation in school-based family engagement program research indicates that recruitment and retention rates tend to be quite low. For example, researchers have commonly reported recruitment rates for school-based family engagement program studies that range from 30% (Eisner & Meidert, 2011; Heinrichs et al., 2005) to 60% (Fontana et al., 1989; McKay et al., 1996; Segrott et al., 2016) of targeted families. Reported retention rates are similarly low, commonly ranging between 20 and 50% of enrolled participants (Gomby, 2000; Hooven, Pike, & Walsh, 2013; Kazdin & Mazurick, 1994; Masi, Miller, & Olson, 2003; Quinn et al., 2010). These data suggest that only a fraction of eligible populations are both recruited and retained in school-based family engagement program studies. Low recruitment and retention for research studies is problematic because sufficient program recruitment and retention is necessary for researchers to accurately examine the effectiveness of preventive programs (Braver & Smith, 1996; Campbell & Stanley, 1963). Furthermore, it raises questions regarding reasons that individuals do not participate in these programs in research stages.

Impact of low recruitment and retention on research outcomes. Sufficient participation in research studies is necessary to gain an accurate understanding of the impact of prevention programs on target populations. When participation in study trials is low, this has negative implications for the studies' internal validity (Braver & Smith, 1996; Campbell & Stanley, 1963) and external validity (Braver & Smith, 1996; Hansen et al., 1985; Lipsey &

Cordray, 2000; Prinz et al., 2001; Stein, Bauman & Ireys, 1991). Additionally, it is difficult to discern whether low recruitment and retention can be attributed to flaws in the research study design or shortcomings of the studied program, itself. Ultimately, low recruitment and retention in research studies and disseminated programs may limit the public health significance of such research and practice efforts (Braver & Smith, 1996; Winslow et al., 2009).

Internal validity is defined by the extent to which causal conclusions regarding the impact of a program on a research sample are warranted (Braver & Smith, 1996). The internal validity of research studies may be compromised when individuals participate in trials at different rates. This is because it is difficult to differentiate between program effects and self-selection bias (Braver & Smith, 1996; Campbell & Stanley, 1963). That is, there may be fundamental differences between those who sign up for prevention research and those who do not. These pre-existing differences may cloud the interpretation of the impact of the program on outcomes (Braver & Smith, 1996). Additionally, even when experimental groups are equivalent to control groups in the beginning of a study, differential attrition may lead to unequal groups at post-test (Braver & Smith, 1996; Campbell & Stanley, 1963). Therefore, observed effects may be the result of comparing unequal groups.

Differential participation in research studies may also compromise the external validity of associated outcomes. External validity describes the degree to which research findings can accurately be generalized to broader populations (Braver & Smith, 1996). When populations participate differently in research trials, the ability of researchers to extrapolate findings to broader populations may be greatly diminished (Braver & Smith, 1996; Hansen et al., 1985; Prinz et al., 2001; Stein et al., 1991). This is because certain populations may not be represented equally in research samples. Populations may vary by sociocultural variables, such as SES or

race. Population samples may also vary by risk level as some studies have shown that individuals who are identified as being at higher risk for the problem targeted by a prevention program are the least likely to participate in that program study (Herzog, Cherniss, & Menzel, 1986; Kazdin, 1996; Spoth & Redmond, 1993). When samples are made up of primarily low-risk participants, results may not be generalizable to medium- or high-risk populations (Stein et al., 1991). This is problematic, because programs are often designed to target higher-risk populations. Akin to internal validity, external validity may also be compromised by differential retention of families. That is, even when research samples are initially representative of the general population, families with different characteristics may drop out at dissimilar rates. This may result in low certainty that the studied program will have equivalent effects on broader populations (Braver & Smith, 1996).

Low recruitment and retention in research studies also raises questions that extend beyond the internal and external validity of the research findings. In particular, when recruitment and retention for research studies is low, this may call into question the studied program's applicability and appeal to targeted populations. That is, it is possible that families may not be adequately recruited and retained for a study if they do not perceive the program being studied as attractive or accessible to them. Furthermore, if subpopulations are recruited and retained in studies at different rates, it is possible that the program being studied is differentially appealing or suitable to varying subpopulations. This may suggest critical issues with the program, itself, illuminating the need for potential program modifications that will maximize the program's appeal to targeted populations. This process may also inform best practices for the design of future programs. However, it is difficult to discern whether low participation in research trials can be attributed to facets of the study design/implementation or

shortcomings of the studied program. This is especially difficult when researchers do not explicitly address issues of recruitment and retention in primary research. Therefore, to begin to parse apart the underlying reasons for low recruitment and retention for research studies, it is important to report on and examine aspects of recruitment and retention, including characteristics of the population that was and was not recruited and retained in the study and any potential differences in recruitment and retention by subpopulation. Ultimately, this type of research will help ensure that preventive programs meet the needs and preferences of targeted populations, which will maximize their public health significance (Braver & Smith, 1996; Winslow et al., 2009).

The Health Beliefs Model

Considering the implications of recruitment and retention for prevention research and practice, it is important to examine participation patterns for research trials. Thus, researchers have developed theoretical frameworks to explain and predict how and why people are recruited and retained in preventive interventions at different rates. The Health Beliefs Model (HBM; Rosenstock, 1966) is one such framework that has garnered a great deal of research support in its ability to predict preventive health behaviors (Carpenter, 2010; Harrison, Mullen & Green, 1992; Janz & Becker, 1984). There is research to suggest that the HBM is able to predict and explain the probability that individuals will engage in a wide range of preventive physical health behaviors, from breast cancer screenings to regular exercise (Janz & Becker, 1984). The HBM designates the following four constructs as predictors of preventive health behaviors: (a) perceived susceptibility, (b) perceived severity, (c) perceived benefits, and (d) perceived barriers.

Perceived susceptibility describes an individual's perception of his/her own risk for an adverse outcome (Janz & Becker, 1984). The HBM suggests that individuals are more likely to

engage in a preventive intervention if they perceive a high personal risk for the problem addressed by that intervention. The construct of perceived susceptibility may be measured directly using tools such as Likert-type scales ratings regarding how "at risk" individuals believe themselves to be for a certain problem (e.g., King, 1982). Some researchers also measure the construct of perceived risk indirectly by assessing individuals' *actual* risk for a problem addressed by a preventive program (e.g., Winslow et al., 2009). According to the HBM, if an individual is more at risk for a problem that would be addressed by a program, that person has a greater need to participate in that program and is therefore more likely to do so.

Perceived severity describes an individual's opinion regarding how detrimental a problem targeted by a program would be should it develop. This construct can be measured using Likert-type scales or survey questions that elicit individuals' opinions regarding the severity of a particular problem (e.g., Alogna, 1980). The HBM postulates that if people believe a particular problem to be more severe, they will be more likely to participate in a program that addresses that problem.

Perceived benefits describes individuals' opinions regarding the amount of benefit a particular prevention program will likely provide. Researchers tend to examine this construct directly by eliciting ratings from individuals regarding their opinions of a preventive program using scales or surveys (e.g., Kelly, 1979). According to the HBM, the more people believe in a program's ability to benefit them, personally, the more likely they will be to participate in that program.

Perceived barriers describes variables which may obstruct individuals from participating in a program, such as conflicts or challenges that may impede their ability to attend or follow through with program sessions/activities. The HBM suggests that logistical variables (e.g., travel

to program sessions, childcare, conflicting time commitments) may impede program participation (Berkanovic, Telesky & Reeder, 1981; Spoth & Redmond, 1995; Taylor, 1979). According to the HBM, the more barriers that people are faced with or perceive, the less likely they are to participate in prevention programs.

In addition to direct measurements of perceived barriers to program participation, many researchers conceptualize demographic characteristics as indirect barriers to participation (e.g., Heinrichs et al., 2005; Mauricio et al., 2014; Skarstrand, Branstrom, Sundell, Kallmen, & Andreassen, 2009; Winslow et al., 2009). The rationale for this is that certain demographic characteristics may be associated with a greater likelihood that logistical barriers will inhibit program participation. An example of a demographic characteristic that is commonly conceptualized as an indirect barrier to study participation is SES (Eisner & Meidert, 2011; Gorman-Smith, 2002) and contributors to SES, including income (Frankel & Simmons, 1992; Kazdin & Mazurick, 1994; Perrino et al., 2001; Winslow et al., 2009) and educational attainment (Barnes, MacPherson, & Senior, 2006; Cohen & Rice, 1995; Haggerty, MacKenzie, Skinner, Harachi, & Catalano, 2006; Patel, Calam, & Latham, 2011; Quinn et al., 2010). For example, researchers posit that individuals with less financial resources may be less able to participate in program sessions, as they may have less access to transportation, or less ability pay for gas, childcare, or other resources that facilitate program participation (Spoth et al., 2000; Redmond, Spoth, Shin & Hill, 2004; Winslow et al., 2009). Also, individuals with lower incomes may be more likely to experience work-related barriers, such as having less control over their schedules or working multiple jobs (Mendez, Carpenter, LaForett & Cohen, 2009). With regard to education level, some researchers speculate that individuals with lower levels of education may be more isolated, have more reading difficulties, and be more likely to require an interpreter, all

of which may act as barriers that impede prevention program study participation (Gray, 2002; Haggerty et al., 2006; Patel et al., 2011; White & Verduyn, 2006).

Another demographic variable that has been consistently examined with regard to participation in preventive program studies is being of a minority race (Armbruster & Fallon, 1994; Cohen & Rice, 1995; Danoff, Kemper & Sherry, 1994; Dyson, Gorin, Hooper, & Cabral, 2009; Eisner & Meidert, 2011; Haggerty et al., 2006; Kazdin & Mazurick, 1994; Lau, Fung, & Young, 2010). It is possible that minority-race individuals are less likely to participate in prevention program studies due to differences in cultural values, language barriers, mistrust of services, and low numbers of service providers of similar racial backgrounds (Dyson et al., 2009; Eisner & Meidert, 2011; Illovsky, 2003; Lau et al., 2010; Murry et al., 2004). Other characteristics which may indirectly impede individuals from participating in prevention program studies include being a single parent (Armbruster & Fallon, 1994; Cohen & Rice, 1995; Gorman-Smith et al., 2002; Kazdin & Mazurick, 1994; Quinn et al., 2010), being younger (Danoff et al, 1994; Herzog et al., 1986; Kazdin & Mazurick, 1994), and being a parent of multiple children (Eisner and Meidert, 2011). Each of these variables may pose additional time-related and practical barriers to signing up and attending sessions for preventive program studies.

Health Beliefs Model Research

Some research suggests that a range of caregiver, family, and child traits may be associated with rates of recruitment and retention for family- focused program studies (Corkum, Rimer & Schachar, 1999; Gorman-Smith et al., 2002; Solish & Perry, 2008; Winslow et al., 2009). However, the results are largely inconclusive. For example, whereas some findings suggest that families are more likely to enroll and engage in programs if they endorse a need for those programs (Skarstrand et al., 2009), others suggest the opposite: that families who endorse a

need for a particular program are actually less likely to enroll and engage in program studies (Gorman-Smith et al., 2002; Solish & Perry, 2008). Furthermore, few researchers have applied the study of HBM principles to family participation in family-focused program studies implemented in *school settings*. The few studies that have applied the HBM to the examination of participation in school-based, family engagement studies have presented inconclusive results.

A series of studies by Spoth et al. (1993, 1995, 1996, 1997, 2000) represents perhaps the most well-known line of research applying the HBM to school-based family engagement program studies. Spoth and colleagues utilized the HBM as a guiding framework with which to study family participation in a five-year, family-focused prevention research project titled 'Project Family'. Project Family examined the implementation of a study offering two family-focused preventive programs: Preparing for the Drug (Free) Years (Hawkins et al., 1988) and the Iowa Strengthening Families Program (Molgaard, Spoth, & Redmond, 2000). Both are universal parent training programs intended to reduce adolescent problem behaviors, prevent substance abuse, and improve family protective factors. In total, 1,192 families completed the initial phone survey. Of these families, 1121 were eligible for the study. Five-hundred and ninety-five (53.1%) eligible families completed the initial program assessment, and 222 (53.9%) families went on to participate in the intervention. Over the course of multiple studies, Spoth et al. examined the association between various HBM constructs and families' inclination to enroll in the study, as well as their actual enrollment and participation in intervention components. The researchers captured HBM constructs through caregiver responses to surveys comprised of a series of Likert-type scales. Spoth et al. also examined sociodemographic characteristics, such as income and education level, as indirect barriers and/or moderators for participation levels.

With regard to HBM variables, Spoth et al. (1993, 1995, 1996, 1997, 2000) found evidence that perceived barriers was related to various indicators of study or program participation (Spoth, Redmond, Kahn, & Shin, 1997). For example, they found that more families who reported more perceived barriers exhibited lower inclination to enroll in the study, as well as lower participation in the study components (β = -.12; p <.01) (Spoth et al., 1997). With regard to specific barriers, respondents most commonly noted that time and scheduling demands were the primary reasons they did not participate in the study (Spoth et al., 1997). Additional barriers commonly indicated by respondents included privacy concerns and other family members' refusal to participate in the study (Spoth et al., 1996).

Spoth et al. (1993, 1995, 1996, 1997, 2000) presented modest findings to suggest that perceived susceptibility may be a significant predictor of actual participation in the program. For example, they found that families who enrolled in the program were more likely to report higher levels of perceived teenager susceptibility to problems (β = .02; p <.01). Those who reported higher levels of perceived teenager susceptibility to problems were also more likely to participate in more program sessions (β = .02; p <.05). Across multiple studies, they found that perceived problem severity was not a significant predictor of study or program participation (Spoth et al., 1997).

Spoth et al. also examined the relationship between sociodemographic characteristics and HBM constructs and program participation (Spoth et al., 1997). They reported that caregiver educational attainment was predictive of a range of beliefs and behaviors. For example, parents with higher educational attainment rated the program as having more benefits (Spoth & Redmond, 1995), reported more use of formal and informal parenting resources (Spoth & Redmond, 1995; Spoth & Conroy, 1993), endorsed greater perceived efficacy to prevent teen

problems (Spoth, Redmond, Yoo, & Dodge, 1993; Spoth & Conroy, 1993), and demonstrated higher actual participation in the intervention sessions (β = -34; p <.01) (Spoth et al., 1997). Also, researchers found that throughout the course of the program sessions, families with lower SES were more likely to drop out than families with higher SES (β = -0.28; exp[β] = 0.75) (Spoth, Goldberg, & Redmond, 1999).

In 2005, Heinrichs et al. published a study modeled after Spoth et al.'s series of studies. Heinrichs et al. examined differences in families who did or did not participate in a study researching the effects of a family engagement program implemented in preschools in Germany. The Triple P Program entailed four, 2-hour-long group sessions at the rate of one per week, along with four optional 15-minute phone calls per week. The final sample included 915 families. Of the 915 eligible participants, 31% (282) enrolled in the study, of which 77% (144) participated in the intervention program. Heinrichs et al. examined patterns of participation at two points: (a) when the families decided whether or not to participate in the study, and (b) when the families decided whether or not to participate in the intervention program (i.e., after learning of their assignment to either the experimental or control group). At each point, Heinrichs compared participants and non-participants on the basis of barriers, which families endorsed through surveys similar to those used in Spoth et al.'s studies. Heinrichs et al. also examined differences by demographic characteristics, which they conceptualized as indirect barriers to participation.

Heinrichs et al. reported qualitative information regarding the barriers endorsed by families as reasons for non-participation. Specifically, they indicated that families endorsed concerns with privacy as the most important reason that they did not participate in the study. Families who did not participate in the program endorsed time demands or scheduling conflicts

as the most significant barrier to participation. Heinrichs et al. did not examine the HBM variables of perceived severity or susceptibility.

Heinrichs et al. also reported a variety of findings related to differences in demographic variables between participants and non-participants. For example, families in single parent homes were more likely to participate (OR=1.56, 95% CI=1.05–2.32) in the project than those from dual-parent homes. Also, low-income families (OR=0.27, 95% CI=0.14–0.51) and those from low-SES neighborhoods (OR=0.49, 95% CI=0.34–0.72) were less likely to participate in the project than families with higher incomes or from higher-SES neighborhoods. With regard to program participation, single-parent families (OR=0.25, 95% CI=0.10–0.62) and those that lived in a low-SES neighborhoods (OR=0.31, 95% CI=0.13–0.75) were less likely to participate in the program than dual-parent families or those who lived in higher-SES neighborhoods. Also, families of children that exhibited more externalizing behaviors were more likely to participate in the program (OR=1.06, 95% CI=1.03– 1.12).

Pérez et al. (2008) also referenced Spoth's line of studies as a model for their study, which examined family participation in a universal life skills training program to prevent adolescent drug abuse. The program was implemented in six private schools in Spain, which were randomly assigned to one of three recruitment conditions or a control group. Each of the three recruitment conditions exposed families to different types of recruitment strategies. Specifically, researchers made phone calls and communicated with families about either: the severity of drug use-related problems, the susceptibility of the families' own children to drug use, or problem-solving of barriers to program attendance. The remaining three schools were assigned to the control condition. The researchers created Likert-type scales to measure

caregivers' perception of their child's susceptibility to use drugs and their perceptions of the severity of drug use.

In Pérez et al.'s (2008) study, 29% of parents attended the informational pre-program session, 16.2% attended the first session, and 4.9% attended all sessions. The researchers compared attendance rates by methods of recruitment and caregivers' opinions regarding the severity of drug use or susceptibility of their child to drug use. They found no significant differences in rates of attendance amongst the three recruitment categories. Likewise, they found no association between parental ratings of severity and susceptibility and program session attendance. They did not examine the relationship between perceived barriers and attendance rates.

Perrino et al. (2001) also compared differences in family engagement in a school-based program study by HBM variables (i.e., family need for intervention, barriers to participation, demographic characteristics, and family systems-level variables). The program, the Structural Ecosystems Preventive Intervention, was designed to prevent adolescent conduct problems and substance abuse by increasing parental investment, adolescent self-regulation skills, academic achievement, and social bonding between parents and their teenagers. The program was offered universally in three urban middle schools in Miami. A total of 143 families were recruited. Sessions took place over the course of nine months, and on average, participants completed about 35.4 sessions. The researchers considered families that attended at least one of the first three sessions to be 'engaged', whereas those that did not attend any of the first three sessions were considered 'not engaged'.

Perrino et al. (2001) found that Hispanic-American caregivers were significantly more likely to be engaged in the intervention than African-American caregivers ($\chi_2 = 20.50$, $df = 1$, p

< .001). Additionally, families with higher household incomes were more likely to be engaged (β= 0.22, χ_2[1, N= 143] = 6.31, p <.01) than those with lower household incomes. Perrino et al. also found that parents of target children who had an emotional or learning disability were significantly less likely to engage in the intervention than parents of children that did not have a disability (β = -1.34; χ_2 [1, N=143] = 8.34, p <.004). Also, families with a higher need to participate in the intervention, as determined by level of adolescent problems that would be addressed by the program, were less likely to engage (β = -.19; χ_2 [1, N =143] = 11.19, p <.001) than families with lower need (i.e., lower level of adolescent problems) to participate. Additionally, families that were more likely to attend initial sessions had higher levels of order and organization (β = .22; χ_2[1, N=143] = 8.84, p <.003), better family communication and shared views amongst family members (β=.83; χ_2 [1, N=143] = 7.06, p <.008), and higher levels of family cohesion (β=.84; χ_2 [1, N =143] = 4.01, p <.05). No significant association was found between initial engagement in the program and participation barrier variables such as number of stressful life events and family stress levels. Perrino et al. (2001) also reported on another important finding: that family systems variables were stronger predictors of engagement in the intervention than any of the other predictors, including barriers and benefits to participation. Furthermore, the interaction between family ethnicity and family organization was a strong predictor of engagement. The researchers commented that this finding suggests that family ethnicity may be less of a determinant of program participation when other contextual variables are taken into account.

In 2013, Hooven, Pike, and Walsh examined the relationship between HBM variables and parent attendance in a school-based, parent-focused study. Hooven et al.'s study differed from other studies based on the HBM in that, although researchers referenced the HBM as their

conceptual framework, they did not measure any of the HBM constructs directly. Rather, researchers exclusively utilized indirect measures of HBM constructs, such as demographic and psychosocial variables. Specifically, they examined the following variables as predictors of program participation: demographic variables (i.e., age, education, minority status, adolescent gender and age, and family composition), adolescent psychosocial variables (i.e., depression, anger, drug use, school performance, association with deviant peers), family dynamic variables (e.g., family conflict, family cohesion/support, parenting style, etc.), and parent variables, (e.g., parenting style, parent perception of adolescent mood/behavior, etc.). Hooven et al. examined whether these variables were associated with the total number of program sessions that parents attended.

Hooven et al. (2013) implemented the Parents as Partners program. This program consists of fifteen sessions focused on increasing parent support, improving the relationship between parents and their adolescents, and teaching parenting skills. The program was delivered at the adolescents' school, with one home visit preceding the school-based sessions. The majority of the sessions involved only parents, with teenagers attending three sessions in order to demonstrate the relevance of program material to the parents. The researchers invited randomly selected at-risk youth and their families to participate in the study. Risk status was determined based on low grades, low attendance, suspensions, or failure to progress with school credits. Participants were placed into one of three conditions: youth intervention, parent and youth intervention, and control.

In total, 221 parents participated in Hooven et al.'s study (2013). Of these 221 parents, 85% (188) attended at least one parent group session, 63% (140) attended at least eight sessions, 20% (44) attended 14 or more sessions, and 12% (27) attended all 15 sessions offered by the

program. Hooven et al. found that minority parents were 97% more likely to drop out of the program at any given session than non-minority parents (hazard ratio = 1.97, $p < .05$). Also, parents were 3% more likely to attend sessions for each 1-year increase in parent age (hazard ratio = .97, $p < .10$). The researchers also found that families were more likely to drop out of sessions if their adolescent reported more difficulty managing their anger (hazard ratio = 1.14, $p < .10$), poorer school attendance (hazard ratio = 1.12, $p < .10$), and more thoughts of dropping out of school (hazard ratio = 1.17, $p < .10$) than families of teenagers who reported less difficulty managing their anger, better school attendance, and less thoughts of dropping out of school. Finally, families were more likely to drop out of sessions if they endorsed more authoritarian parenting style (hazard ratio = 1.17, $p < .10$), more conflict over school attendance (hazard ratio = 1.09, $p < .10$), and more satisfaction over family support received through the program (hazard ratio = 0.74, $p < .10$). Families who reported more conflict over school performance were more likely to attend program sessions (hazard ratio = .88, $p = .016$).

Hooven et al. interpreted their findings through the lens of the HBM, explaining that the variables that were associated with lower program attendance acted as indirect barriers. For example, Hooven et al. explained that it was possible that minority families were less likely to attend program sessions because they may have had higher levels of discomfort with being involved in research. Also, a lack of cultural adaptations to the program may have deterred them from participating. Additionally, they suggested that parent attendance was negatively associated with adolescent problems such as poorer school attendance, more desire to drop out, and more difficulty controlling their anger because these anger problems may have acted as barriers which impeded parents' ability to attend sessions. With regard to the finding that conflicts over attendance was associated with lower attendance, researchers speculated that parents may be less

likely to provide educational support to their children if their children don't appear to be 'doing their part' by attending school. In this sense, parents may not perceive the program as beneficial if students aren't putting in effort to attend school in the first place. Conversely, parents may be motivated to attend program sessions if their children are 'trying' but not succeeding in school, which could explain the association between conflict over school performance and more parent program attendance.

Mauricio et al. (2014) also utilized various sociodemographic and mental health and behavioral family characteristics as indicators of HBM variables in their examination of family participation in a school-based program study. Specifically, these researchers conceptualized barriers as caregiver-reported levels of stress, well-being, income, and education. They measured caregiver perception of program benefits using measures of parenting efficacy, parental monitoring, and involvement in education. Mauricio et al. examined the association between these variables and participation in the Bridges to High School Program, which is a universal prevention program for families of children transitioning from middle to high school. Bridges entails nine group sessions and two home visits, which are focused on the promotion of positive parent-child interactions in order to prevent child problem behaviors and academic disengagement. Mauricio et al. distinguished levels of attendance by combining the proportion of sessions attended with family risk levels. Risk status for families was determined based on their sociodemographic characteristics and self-reports of stress and well-being prior to the intervention. Using these variables, families were placed into the following groups: early terminators (ET), mid-program terminators (MPT), low-risk persistent attenders (LRPA), high-risk persistent attenders (HRPA).

Mauricio et al. implemented their study in middle schools in Arizona with a sample of 353 Mexican-American families with children between the ages of 11 to 14 years. With regard to their conceptualization of perceived benefits, researchers found that the LRPA families had more parenting efficacy than ET (Logit = .900, p <.05) and HRPA families (Logit = 1.23, p <.05), and LRPA families perceived more program benefits than ET families (Logit = .900, p <.05). On the topic of program barriers, Mauricio et al. found that caregivers in the ET group were less depressed than those classified as MPT (Logit = .040, p <.01), and MPT caregivers more depressed than HRPA caregivers (Logit = .030; p <.01). Concerning perceived susceptibility, children in LRPA group had lower GPAs than those who were classified as ET (Logit = .400, p <.001), MPT (Logit = .270, p <.01) and HRPA (Logit = .415, p <.001). Additionally, families in the LRPA class had stronger familism than those in the ET or MPT classes. Caregivers in the LRPA category reported less pre-intervention child externalizing symptoms than those in the MPT group (Logit = .080, p <.001), and HRPA families reported more pre-intervention externalizing symptoms than ET families (Logit = .056, p <.05) and LRPA families (Logit = .078, p <.05). ET families reported less pre-program externalizing symptoms than those in the MPT group (Logit = .056, p <.05).

Overall, Mauricio et al.'s study presented mixed support for the HBM. For example, families who terminated very early tended to have children with less externalizing problems, but those who terminated mid-program had children with more externalizing problems than those who persisted through the program. Mauricio explained that their findings have implications for understanding when different families may be more vulnerable for dropping out of a particular program study at different points throughout the study. This information may inform how to incentivize families at different points throughout the study to encourage them to remain

involved. More broadly, findings that families participated differently based on parent mental health and child behavior problems suggest that it may be beneficial to market programs to families by emphasizing about how programs can help alleviate these types of problems.

Overall, research examining the relationship between HBM variables and family participation in school-based family engagement program studies is very scarce and inconclusive. Also, not all research in this area has examined the full range of HBM constructs. For example, only a few studies examined the construct of perceived susceptibility (i.e., Heinrichs et al., 2005; Hooven et al., 2013; Perrino et al., 2001). Of those that did, only Heinrichs et al.'s study found that families of children who exhibited more problems that may be addressed by the program were more likely to participate in the program. However, Hooven et al. and Perrino et al. presented contradictory findings: that families of children who exhibited more problem behaviors were actually less likely to participate in the program studies. It is possible that the problems that constitute a need to participate in a prevention program may also act as barriers to program participation. For example, families of children who exhibit more problem behaviors may have a greater need to participate in a prevention program to alleviate problem behaviors. However, at the same time, the children's problem behaviors may pose barriers that decrease the likelihood that caregivers will want or be able to participate in program sessions. For instance, families whose children exhibit more problem behaviors may feel more apprehensive about taking their children in public and/or their children may be more resistant to attending sessions.

It is also the case that few educational researchers have examined the predictive value of the HBM construct of perceived benefits with regard to participation in family engagement program studies (e.g., Hooven et al., 2013; Spoth & Redmond, 1995; Spoth et al., 1997). The

researchers who have examined this construct have presented contradictory findings. That is, Spoth et al. found that perceived benefits was related to both family inclination to enroll in the study (Spoth & Redmond, 1995) and actual participation in the program assessment and intervention components (Spoth et al., 1997). Alternatively, Hooven et al. found that families were more likely to drop out if they endorsed more satisfaction with the program. It is possible that these differences stem from inconsistencies with how and when perceived benefits was measured. Families who endorse high levels of perceived benefits before a program begins may be more likely to sustain participation in the program. However, families who report that they have received many benefits from the program after attending multiple sessions may drop out early because they feel they have benefitted sufficiently from the program and no longer need to attend. Overall, more research is needed to understand the relationship between perceived benefits and family participation in school-based family engagement program studies.

Across studies that examined family participation in school-based program studies, the most commonly studied HBM variable was perceived barriers. However, only Spoth et al. (1996) studied perceived barriers directly (i.e., by asking parents to rate their perception of program-related barriers). They found that parents who endorsed more perceived barriers were less likely to participate in their study. Although no other studies examined perceived barriers directly, multiple studies examined demographic characteristics as indirect barriers to program participation. Overall, results tend to converge, suggesting that various demographic characteristics are associated with different levels of participation in school-based, family engagement program studies. For example, multiple researchers found that families with lower incomes and/or education levels were less likely to participate in the studies than families with higher incomes and/or education levels (Heinrichs et al., 2005; Perrino et al., 2001; Spoth et al.,

1997, 1999). Also, researchers found that younger parents participated in program studies at lower rates than older parents (Hooven et al., 2003), and single-parent households were less likely to participate in program studies than dual-parent households (Heinrichs et al., 2005). These findings support the notion that demographic characteristics, such as income, age, and number of caregivers in the home, may be related to variables which impede families from participating in preventive studies and associated program activities.

Limitations of existing research. Despite the fact that there are some consistent findings across studies examining the relationship between HBM constructs and school-based, family engagement program study participation, there are numerous limitations to this research. First and foremost, the amount of research in this area is very limited. Because so few studies have been conducted, the results cannot be generalized to broadly explain how and why diverse populations participate differently in school-based family engagement program studies. In addition to the scarcity of research in this area, it is problematic that existing studies define HBM constructs and recruitment and retention differently. Inconsistency in key variables makes it difficult to compare and contrast study findings.

Another shortcoming of existing school-based HBM research pertains to limitations of the HBM model itself. Critiques of the HBM highlight the model's strict focus on individual attitudes and beliefs as barriers to treatment participation (Flay & Petraitis, 1994). This narrow focus on internal, individual factors is constrained to microsystem-level variables. Therefore, it fails to acknowledge the fact that individuals make decisions within the context of broader social ecologies. Although multiple researchers have extended the HBM construct of perceived barriers to include demographic characteristics, it is also important to recognize that subpopulations are heterogenous and barriers do not have an equal impact on all individuals

within specific demographic groups. Therefore, future research would benefit from a consideration of the relationship between diverse individuals and broader environments in order to better understand how systemic barriers impact participation in preventive programming research.

For researchers studying participation in family engagement program research in schools, examining variables within the mesosystem level is particularly important. This is because such research aims to improve the school-home connection. However, it is possible that aspects of the school-home relationship may impede families from participating in school-based studies in the first place. For example, poor family-school relationships may deter families from participating in studies of programs that take place on school grounds and are facilitated by school staff. This may create a circular problem, in which families who have less positive relationships with their children's school are less likely to participate in studies of school-based programs designed to improve their relationship with their children's school. In this case, the targeted mechanism for change (i.e., family engagement) may also act as a primary barrier preventing families from participating in the study. This may result in the families with the lowest family engagement acting as both the target audience, as well as the least likely families to be recruited and retained. Furthermore, it is possible that various school-level variables may be associated with trends in family engagement across schools. For example, school climate describes student, parent, and personnel's experience of the school and encompasses a variety of factors such as organizational structures, norms, goals, values, and interpersonal relationships. Any of these variables may impact the likelihood that families will be recruited and retained in program studies implemented at their children's school. Considering the potential relevance of variables such as these, it is

important to incorporate systematic variables into research that examines participation in school-based family engagement program studies.

In conclusion, research regarding the effectiveness of family engagement programs in schools is inconclusive, especially as it applies to the effectiveness of such programs for use with diverse populations (Fishel & Ramirez, 2005; Mattingly et al., 2002; Sheridan et al., 2019). Also, multiple researchers have cited difficulties implementing family engagement programs in schools to conduct research (e.g., Baker et al., 2010; Bambara et al., 2012; Bambara et al., 2009; Hamre et al., 2010; Kincaid et al., 2007; Lohrmann et al., 2008; McIntosh et al., 2015; Sutherland et al., 2013; Turri et al., 2016). In particular, researchers have reported challenges recruiting and retaining families for such studies (Eisner & Meidert, 2011; Fontana et al., 1989; Heinrichs et al., 2005; McKay et al., 1996; Segrott et al., 2016; Spoth & Redmond, 2000).

Considering the problematic impact of low recruitment and retention for family engagement program studies, it is essential to examine this issue in depth. This line of research may build upon prior research using the HBM as a conceptual framework. Considering the unique systemic intricacies of school systems, future research may benefit from extending beyond individual HBM variables to include broader systemic factors (Flay & Petraitis, 1994). There are no known studies to-date that examine family participation in school-based family engagement studies as a function of both HBM and school-level factors. Such research is critical in that it will reveal important information regarding who participates in school-based family engagement program studies and who does not. This information will elucidate the representativeness of study samples, thus revealing the applicability of study findings to broader populations. It may also inform recruitment and retention strategies to increase family participation in such studies. Furthermore, this line of research may extend beyond recruitment

and retention strategies for studies to inform the actual design of family engagement programs to maximize their applicability and appeal to diverse populations. Because the overarching goal of most school-based family engagement programs is to maximally benefit broad populations, especially those who are considered at risk, it is crucial that researchers ensure that programs fit the needs of these populations. Thoroughly examining patterns of recruitment and retention for program studies may act as a crucial first step in this process.

Chapter 2: The FAST Program Literature Review

Families And Schools Together (FAST; McDonald et al., 1997; McDonald & Moberg, 2002) is a family engagement program that has demonstrated research support across efficacy trials (Ackley & Cullen, 2011; Crozier, Rokutani, Russett, Godwin & Banks, 2010; Mcdonald, Bradish, Billingham, Dibble & Rice, 1991; McDonald & Doostgharin, 2012), but mixed results in effectiveness studies (Abt. Associates, 2001; Fiel, Haskins, & Turley, 2013; Fiel, Shoji, & Gamoran, 2015; Gamoran, Turley, Turner, & Fish, 2012; Kratochwill, McDonald, Levin, Bear-Tibbetts, & Demaray, 2004; Kratochwill, McDonald, Levin, Scalia & Coover, 2009; McDonald et al., 2006; Moberg, McDonald, Posner, Burke & Brown, 2007; Turley, Gamoran, McCarty, & Fish, 2017). Across multiple randomized controlled trials (RCTs) evaluating the effectiveness of the FAST program, findings are largely inconsistent. The most recent RCT examining the FAST program produced no significant findings (Kratochwill et al., 2018). Additionally, a recent meta-analysis evaluating the effectiveness of the program concluded that across studies, there is insufficient evidence to suggest that the program is effective in improving child or family academic, behavioral, or mental health outcomes (Valentine, Leach, Fowler, Stojda & McDonald, 2019). Across RCTs, researchers reported a variety of challenges with the program's implementation in schools for the studies, including low recruitment and retention of families.

FAST Program Overview

FAST is a universal prevention program that aims to improve child academic, social-emotional, and behavioral outcomes by enhancing family functioning through a series of multi-family afterschool sessions. Specific targets for improving family functioning include improving the parent-child bond, increasing positive family communication, improving child problem-solving skills, and increasing family social capital. Family social capital is defined as a family-

school bond characterized by relations of trust, mutual expectations, and shared values (Mancini, Bowen, & Martin, 2005; Shoji, Haskins, Rangel, & Sorensen, 2014). FAST differs from other family engagement programs in that it does not directly focus on child academic skills or school performance (Valentine et al., 2019). Rather, FAST's theory of change posits that if the program can increase family social capital and family engagement, children who participate in the program will experience overall improvements in academic, social-emotional, and behavioral functioning (Abt. Associates, 2001).

FAST Program Structure

To achieve program goals, the FAST program brings together groups of eight to ten families on a weekly basis (Kratochwill et al., 2004; McDonald & Howard, 1998). Sessions typically take place in the school building after school hours. FAST is comprised of two phases. Phase 1 entails eight weekly, 2.5-hour-long sessions. Sessions are led by a team of four to eight members, including at least one FAST parent from the school, two individuals from local outside agencies, and one principal-appointed school employee (e.g., a school social worker, teacher, or an outreach specialist). Ideally, teams reflect the cultural, ethnic, and gender makeup of the families in the group. Additionally, FAST teams may be tailored to reflect the unique needs of the school. For example, schools that identify drug abuse as a particular challenge may include drug abuse specialists on their FAST teams.

Sessions throughout Phase 1 involve a variety of group activities led by FAST teams (Kratochwill et al., 2004; McDonald & Howard, 1998). They begin with a set of family activities that are designed to promote positive and effective communication amongst families. The activities also are designed to foster family emotional sensitivity, effective problem-solving, and responsive play, as well as increased child impulse control and parental control of child

behavior. Following the family activities, parents and children are separated into two separate groups. During this time, parents engage in a support group while childcare is provided in a separate space. This support group allows parents to share experiences and build trust and relationships with other parents. Sessions also include group/family meals that the families purchase themselves using funds from the program. Families are encouraged to sit together while they eat. After eating, the whole group participates in sing-alongs, after which families independently engage in uninterrupted, one-on-one play between parents and children (McDonald & Howard, 1998). Lastly, each session concludes with a fixed "lottery" that each family wins one time. Lottery prizes typically include a variety of educational items, as well as gift cards that families can use to purchase food for the next week's meal.

To graduate from FAST, families must attend at least 6 of the 8 sessions offered in the first Phase of the FAST program (Abt. Associates, 2001). Families who complete FAST are eligible to participate in Phase 2 of the program, known as FASTWORKS (Families and Schools Together, Working, Organizing, Relaxing, Knowing, Sharing). This phase involves monthly meetings that occur for two years following the conclusion of FAST Phase 1 (McDonald & Howard, 1998). These meetings are led by a Parental Advisory Council consisting of elected FAST graduates who receive a budget to plan and organize the meetings with the help of FAST employees. Multiple cohorts join together to participate in a common FASTWORKS network. This allows families the opportunity to extend and strengthen their social network. In addition to strengthening social bonds, families who participate in FASTWORKS sessions also have the opportunity to reinforce and develop skills acquired throughout Phase 1 of the program (Abt. Associates, 2001).

FAST Program Theory and Goals

FAST primarily draws on two theoretical models to support its design: Bronfenbrenner's Ecological Theory (1977, 1979), and Family Systems Theory (Bowen, 1974). Ecological theory states that development results from interactions between an individual and the environmental systems within which that individual exists (Bronfenbrenner, 1977, 1979). According to this theory, child development is the result of the interconnectedness of these multiple systems. In particular, the relationship between the school and home/family system is influential in child development. The FAST program's multidimensional approach is designed to support and enhance this relationship.

Family Systems Theory explains that families are interdependent, such that individual development is impacted by the relationships amongst the family unit and the functioning of its members (Bowen, 1974). Accordingly, a change in the functioning of one family member impacts the functioning of others. Also, modifications of the interactions amongst family members can have an impact on individual family members. Therefore, modifying the functioning of an individual family member and/or the relationships amongst family members can impact each individual. FAST aims to positively impact family functioning by improving the interactions that occur amongst family members and also by improving family social capital between families and the school (McDonald & Frey, 1999).

FAST Research

The FAST program has been adopted on a large scale and implemented in over 2,500 schools across forty-five states within the United States and over twenty countries worldwide (McDonald & Doostgharin, 2013). Given the large scope of the FAST program, a significant amount of research has been dedicated to examining the program's effectiveness. Thus far, multiple RCTs have examined the association between family participation in the FAST program

and a variety of outcomes, including family social capital, child behavioral and academic outcomes, and indicators of family functioning (Abt. Associates, 2001; Fiel et al., 2013; Fiel et al., 2015; Gamoran et al., 2012; Kratochwill et al., 2004; Kratochwill et al., 2009; McDonald et al., 2006; Moberg et al., 2007; Turley et al., 2017). The results of these studies have presented inconclusive findings regarding the effectiveness of the FAST program. By and large, findings tend to vary dependent on individual variables such as the implementation setting/agency, target population, and outcome measures used. A summary of the studies and their findings is provided next. Additionally, Table 1 (below) summarizes the study characteristics and results.

Table 1
Summary of FAST RCTs

Author/Year	Setting	Sample Size (N)	Sample Demographics	Outcomes Assessed	Significant Findings
Abt. Associates (2001)	9 urban schools in New Orleans	403	- Low-income - African-American - 2nd through 4th grade students	- Childhood Behavior Checklist (CBCL; Achenbach & Edelbrock, 1991) - Social Skills Rating System (SSRS; Gresham & Elliott, 1990) - Adapted version of the Student Evaluation Form (Abt Associates, 2001) -The Family Environment Scale (Moos & Moos, 1994) -The Family Routines Questionnaire (Boyce, Jensen, James & Peacock, 1983) - The Parent As a Teacher Inventory (Strom, 1984)	- FAST parents rated their children as exhibiting significantly lower levels of externalizing problem behaviors than did control group parents at the one-year follow-up ($F = 10.71$; $p = .001$). - FAST parents reported doing more volunteer work immediately after the intervention than control parents ($X^2 = 4.02$; $p = .05$).

				- The Parent Interview Schedule (U.S. Department of Education, 1993) - Student grades - Whether the student was retained in his/her grade or not - Parent interviews that elicited self-reports of community participation and family-school connections	
Kratochwill et al. (2004)	3 rural reservation schools in Wisconsin	100	- 100% Native American - Kindergarten through 2nd grade students	- CBCL (Achenbach & Edelbrock, 1991) - Curriculum-Based Measurement (Deno, 1985) - Ecobehavioral Assessment System (Greenwood et al., 1997) - SSRS (Gresham & Elliott, 1990)	- FAST students had lower teacher ratings of aggressive behavior (*Cohen's d* = 1.20, $p < .05$) than control group students immediately following the intervention. - FAST students had lower parent ratings of withdrawn behavior (*Cohen's d* = 0.87, $p < .05$) than control group students immediately following the intervention. - FAST students had more improved teacher ratings of academic competence than controls at the 1-year follow-up (*Cohen's d* = 0.77, $p < .05$).
McDonald et al. (2006)	10 Title I urban elementary schools in Milwaukee, WI	180 Latino families (out of a total sample of 473)	Of the 180 Latino families: - 70% earned incomes less than $20,000 - 1/3 earned incomes less than $10,000	- CBCL (Achenbach & Edelbrock, 1991) - SSRS (Gresham & Elliott, 1990)	- FAST students had significantly higher academic performance than FAME (comparison group) students (*Cohen's d* = 0.38, $p < .05$) at the 2-year follow-up. - FAST students had significantly higher teacher-rated social-emotional functioning than FAME students (*Cohen's d* = 0.13, $p < .05$) at the 2-year follow-up.

			- 50% did not complete high school - 20% had higher than a high school income		- FAST students displayed significantly less aggressive behavior in the classroom than FAME students (*Cohen's d* = 0.26, $p < .001$) at the 2-year follow-up.
Moberg et al. (2007)	10 Title I urban elementary schools in Milwaukee, WI	473	- 1st through 3rd grade students - Predominantly African-American or Latino-American - 2/3 of sample had income less than $20,000 - Parent education levels roughly 1/3 less than high school, 1/3 high school graduates, and 1/3 some post-secondary education	- Family Attachment and Changeability Index (McCubbin, Thompson & Elver, 1996) - Social Support Index (McCubbin et al., 1996) - Generalized Expectancy of Stress (Fibel & Hale, 1978) - Parent-School-Community Involvement Survey (Epstein & Salinas, 1993) - CBCL (Achenbach & Edelbrock, 1991) - SSRS (Gresham & Elliott, 1990) - Structural Family Systems Rating Scale (Szapocznik et al., 1991)	- African-American FAST students had significantly higher teacher-rated internalizing problems than African-American FAME students at the 2-year follow-up (*Coefficient* = 4.65, *SE* = 1.70, $p < .05$). - Latino-American FAST students had significantly higher teacher-rated internalizing problems than Latino-American FAME students at immediate post-test (*Coefficient* = 2.94, *SE* = 1.42, $p < .05$). - Latino-American FAST students had significantly higher parent-rated externalizing problems than Latino-American FAME students at the 2-year follow-up (*Coefficient* = 3.26, *SE* = 1.46, $p < .05$). - Latino FAST students had significantly higher parent-rated externalizing problems than Latino FAME students at the 2-year follow-up (*Coefficient* = -4.67, *SE* = 1.57. $p < .05$). - Latino FAST students had higher teacher-rated social skills than Latino FAME students at the 2-year follow-up (*Coefficient* = 4.52, *SE* = 2.12, $p < .05$). - FAST children had higher levels of academic performance than FAME children (Cohen's *d* = 0.24, $p < .05$).

					- Latino FAST parents reported less social support than FAME families immediately following the intervention (*Coefficient* = -3.05, *SE* = 1.32. $p < .05$) - All FAST parents reported having less social support two years following the intervention (*Cohen's d* = -0.20, $p < .05$) than all FAME parents.
Kratochwill et al. (2009)	8 urban elementary schools in a Midwestern university town	134	- 40% White - 35% African-American - 13% Asian-American - 12% Latino-American - Majority low-income - Kindergarten through 1st grade students	- CBCL (Achenbach & Edelbrock, 1991) - SSRS (Gresham & Elliott, 1990) - Family Adaptability and Cohesion Evaluation Scales (Kratochwill et al., 2009)	- FAST families in the control group displayed significantly higher levels of family adaptability than control group families at the immediate post-test (*Cohen's d* = 1.53, $p < .05$). - FAST family adaptability declined less than controls at the 9-(*Cohen's d* = 1.35, $p < .05$) 12-month post-test (*Cohen's d* = 0.79, $p < .05$). - FAST students had greater improvements in parent-rated externalizing behaviors than control students at the 12-month follow-up (*Cohen's d* = 0.68. $p < .05$). - FAST students displayed fewer parent-rated somatic complaints than control students at the 12-month follow-up (*Cohen's d* = 0.53, $p < .05$). - FAST students experienced more teacher-rated "thought problems" than control students at the 12-month follow-up (*Cohen's d* = 0.45, $p < .05$). - 4 control group students received 7.5 years of special education; 1 FAST student received .5 years of special education.

Gamoran et al. (2012)	52 schools in San Antonio, TX and Phoenix, AZ	1262 (this study examined Cohort 1 only)	- Over 1/3 of parents born outside of U.S. - 77% Latino-American - 11% African-American - 1.5% Asian-American - 1.5% Native-American - 43% spoke native language other than English - 75% of students eligible for free/reduced lunch - First grade students	- Researcher-created measure of parent-staff relationships (i.e., set of questions asking parents to report the quality and quantity of their relationships) - Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997)	- FAST parents reported having more friends' who were parents of their children's' friends than control group parents (*Cohen's d* = 0.23, $p < .10$).
Fiel, Haskins, & Turley (2013)	52 schools in San Antonio, TX and Phoenix, AZ	3084	- Over 1/3 of parents born outside of U.S. - 75% Hispanic-American - 8% African-American	- Whether the student enrolled in another school in third grade than he/she attended in first grade - Whether the student was retained in his/her grade or not	- African-American FAST families were less likely to move than African-American control families (*Coefficient* = -0.788, $p < .05$).
Turley et al. (2017)	52 schools in San Antonio, TX, and Phoenix, AZ	3084	- Over 1/3 of parents born outside of U.S. - 75% Hispanic-American - 8% African-American	- Researcher-created measure of parent-staff relationships (i.e., set of questions asking parents to report the quality and quantity of their relationships) - SDQ (Goodman, 1997)	Intent-to-treat analysis: - FAST parents were more likely to know their children's' friends' parents than control parents (0.21 standard deviations, $p < .001$). - FAST parents were more likely to exhibit reciprocity than control parents (0.11 standard deviations, $p = .001$). - FAST parents were more likely to share expectations than control parents (0.11 standard deviations, $p = .005$).

	- FAST parents scored higher on a composite measure of social capital than control families (*Cohen's d* = 0.18l, $p < .001$). Treatment-on-Treated analysis: - FAST parents reported greater increases in intergenerational closure than control parents (0.54 standard deviations, $p < .001$). - FAST parents reported higher levels of feelings of reciprocity with other parents than control parents (0.36 standard deviations, $p < .001$). - FAST parents perceived more shared expectations with other parents than control parents (0.40 standard deviations, $p = .001$). - FAST parents scored higher on composite measure of social capital than control parents (0.52 standard deviations, $p < .001$). - FAST children had greater decrease ($p < .001$) in student internalizing problems than control children (*Cohen's d* = -1.84, $p < .001$).

Abt. Associates (2001) implemented the FAST program in nine urban schools in New Orleans between 1997 and 1999. Their sample consisted of 403 low-income, African-American students in grades 2 through 4 who were identified by teachers as having academic or behavioral problems. Researchers randomly assigned students to either the FAST or the control condition. Seventy-seven percent of families assigned to the FAST condition attended at least one program session, and 53% of the families who attended at least one session went on to attend at least six of the eight sessions (thereby "graduating" from the FAST program). Researchers assessed

children's social competence and behaviors using parent and teacher ratings on the SSRS (Gresham & Elliott, 1990) and the CBCL (Achenbach & Edelbrock, 1991). Additionally, they measured classroom behaviors such as alertness and concentration using teacher-completed student evaluation forms. Researchers also collected additional student information (e.g., grades and whether or not they were retained) using parent interviews and school report cards.

Abt. Associates (2001) used hierarchical linear modeling and the intention-to-treat model to compare child and family functioning before receiving FAST to functioning after receiving FAST. They assessed outcomes both immediately after the intervention and one year following the end of the program. They found that at the 1 year follow-up, FAST parents rated their children as exhibiting significantly lower levels of externalizing problem behaviors (as measured by the CBCL) than did control group parents ($F = 10.71$; $p = .001$). However, teacher ratings did not replicate this finding. In fact, no significant differences were located across any teacher-rated outcomes, school grades, attendance, or current-grade retention. Although parents in the FAST condition reported doing more volunteer work immediately after the intervention than parents in the control condition ($X^2 = 4.02$; $p = .05$), researchers did not find a significant difference in the actual number of hours that parents reported volunteering.

Kratochwill et al. (2004) adapted the FAST program to be implemented with American-Indian families ($N = 100$) in three rural reservation schools in Wisconsin. They randomly assigned participants to either the treatment or control condition and matched families on the basis of the following five variables: age, gender, grade, tribe, and teacher CBCL aggression ratings. Researchers used the *Ecobehavioral Assessment System* (Greenwood, Carta, Kamps, & Delquadri, 1997) and curriculum-based measurements (Deno, 1985) to measure academic outcomes, and the SSRS and CBCL to measure social skills, behavior problems, and academic

competence. Fifty families attended at least one FAST session, and 40 families (80%) graduated from the program.

Using intention-to-treat analysis, Kratochwill et al. (2004) found significant decreases in FAST children's parent-rated withdrawn behaviors (*Cohen's d* = 0.87, $p < .05$) and teacher-rated aggressive behaviors (*Cohen's d* = 1.20, $p < .05$) as measured by the CBCL immediately following the intervention. Also, FAST students' teachers rated students as having more academic competence as rated on the SSRS twelve months following the intervention than did teachers of control group students (*Cohen's d* = 0.77, $p < .05$). However, researchers found no significant differences between FAST and control students as measured by curriculum-based measurements in the areas of mathematics computation and oral reading fluency, which were also used to indicate academic competence. Researchers pointed out that FAST is not specifically tailored as an academic-based intervention. Researchers also did not find significant improvements in social skills for FAST children as compared to non-FAST children.

McDonald et al. (2006) implemented FAST in 10 Title I urban elementary schools in Milwaukee, Wisconsin. For their study, they randomly assigned students to either the FAST group or a comparison group. The comparison group received another family engagement intervention titled FAME (a contraction of Family Education; Moberg et al., 2007), which is a family education intervention program that provides parents with eight behavioral parenting pamphlets and active follow-up. The total sample consisted of 473 families, but McDonald et al.'s study exclusively examined the outcomes of the Latino families in the sample. In total, 180 families self-identified as Latino and were therefore included in the analyses. At baseline, more than 70% of these Latino families reported earning annual incomes of less than $20,000, and almost half of the parents in the total sample did not complete high school.

McDonald et al. (2006) followed up with families two years following the intervention. They were able to contact and collect data on 87% of the original 180 families. They examined child behavioral-social-emotional and academic outcomes using the SSRS (Gresham & Elliott, 1990) and the CBCL (Achenbach & Edelbrock, 1991). SSRS scores indicated that FAME students had significantly higher teacher-rated socioemotional functioning than students assigned to the FAST group (*Cohen's d* = 0.13, $p < .05$). At that point, FAST students also had significantly higher academic performance (*Cohen's d* = 0.38, $p < .05$). Conversely, teachers rated Latino FAST students as displaying significantly less aggressive behavior in the classroom than Latino FAME students (*Cohen's d* = .26, $p < .001$). Researchers did not find significant differences between the FAST and the FAME group in terms of academic competence or internalizing problems.

Moberg and colleagues (2007) used the same data as McDonald et al. (2006) to further evaluate longitudinal outcomes. They used the full sample of 473 students and measured outcomes both immediately following the intervention and also one and two years following the intervention. They examined family-, parent-, and child-level outcomes using the *Family Attachment and Changeability Index* (McCubbin, Thompson, & Elver, 1996), *Social Support Index* (SSI; McCubbin, Patterson, & Glynn, 1982), *Generalized Expectancy of Success* (Fibel & Hale, 1978), *Parent-School Community Involvement Survey* (Epstein & Salinas, 1993), the CBCL, and the SSRS. They also examined students' third- and fourth-grade test scores at the one and two year follow-up. Additionally, researchers used the *Structural Family Systems Rating Scale* (Szapocznik et al., 1991) to measure the quality of parent-child relationships. Raters who were blind to families' treatment assignment completed this scale by scoring videotapes of family interactions both immediately after and one year following the intervention.

Moberg et al. (2007) found that African-American FAST students had significantly higher internalizing problems than African-American FAME students at the two-year follow-up, according to teacher ratings (*Coefficient* = 4.65, *SE* = 1.70, $p < .05$). This difference was also detected among Latino children immediately following the intervention (*Coefficient* = 2.94, *SE* = 1.42, $p < .05$), but the effect disappeared by the two-year follow-up. They also observed that Latino FAST parents reported significantly higher levels of child externalizing problems than did Latino FAME parents at the two-year follow-up (*Coefficient* = 3.26, *SE* = 1.46. $p < .05$). Alternatively, *teachers* reported that Latino FAME students had significantly more externalizing problems than Latino FAST students (*Coefficient* = -4.67, *SE* = 1.57, $p < .05$) two years following the intervention. Teachers also rated Latino FAST children as displaying significantly better social skills than Latino FAME children two years following the intervention (*Coefficient* = 4.52, *SE* = 2.12, $p < .05$). FAST children also received significantly higher ratings of academic performance two years following the intervention than FAME children (Cohen's $d = 0.24$, $p < .05$). However, there were no significant differences between FAST and FAME students' standardized test scores.

Moberg and colleagues (2007) also examined the impact of the two programs on parent social capital outcomes. They found that Latino FAST families perceived that they had less social support immediately following the intervention (*Coefficient* = -3.05, *SE* = 1.32, $p < .05$) than Latino families in the comparison group. Additionally, two years following the intervention, all FAST parents reported less social support than all parents in the comparison group (*Cohens d* = -0.20, $p < .05$). Researchers also reported some positive descriptive findings regarding parents' social networks and behavior at home. For example, two years following the intervention, 90% of FAST parents reported that they made friends with other FAST parents, and

29% reported that they contacted other FAST parents at least "once in a while." Also, 70% of FAST parents reported that they engaged in "special play" with their child at least two times a week.

Overall, Moberg et al. concluded that for the full sample, the FAST program had a positive impact on only teacher-rated academic performance, and it did not have significant impacts on any of the program's secondary aims (e.g., family attachment, parent self-efficacy, parent involvement with school, and family social support). Also, it differentially impacted sub-populations, such that the FAST program had a significantly greater positive impact on child externalizing problems and child total social skills for Latino children in the FAST program than the FAME program. Also, African-American students in the FAST program had significantly higher internalizing problems than FAME students two years following the intervention. Moberg et al. suggested that it would be beneficial for future research to examine the longitudinal effects of the FAST program, as well as the reasons for the differential impact of the program on different subpopulations.

Kratochwill et al. (2009) examined the impact of the FAST program with students identified by their teachers as at risk for behavioral and academic problems in eight urban elementary schools in the Midwest. Their sample consisted of 134 students, of whom 40% identified as White, 35% as African-American, 13% as Asian-American, and 12% as Latino-American. The researchers also reported that the majority of their sample was low-income. Researchers randomly assigned families to either the FAST condition or a control condition. Of the 67 families who were assigned to the FAST condition, all families attended at least one session, and 90% attended six sessions (or graduated from the FAST program).

Kratochwill et al. (2009) examined child social-emotional, behavioral, and academic outcomes using the SSRS (Gresham & Elliott, 1990) and CBCL (Achenbach & Edelbrock, 1991). They also examined family-level variables using the *Family Adaptability and Cohesion Evaluation Scales* (FACES; Camara, 1988). They found that immediately following the intervention, FAST families displayed significantly higher levels of family adaptability as measured by FACES (*Cohen's d* = 1.53, $p < .05$). Using a repeated measures analysis-of-covariance, they found that FAST participants' family adaptability declined less than that of the control group nine and twelve months (*Cohen's d* = 1.35; $p < .05$); *Cohen's d* = 0.79; $p < .05$, respectively) following the intervention. Parent ratings indicated that FAST students demonstrated greater improvements in externalizing behaviors (*Cohen's d* = 0.68; $p < .05$) and reported fewer somatic complaints (*Cohen's d* = 0.53; $p < .05$) 12 months following the intervention. Teacher ratings on the CBCL revealed that FAST students experienced more "thought problems" (*Cohen's d* = 0.45; $p < .05$) at the 12 month post-test. Kratochwill et al. also examined the differences in cost of special education services between the control group and the FAST participants. Four students in the control group eventually received 7.5 years of special education services, which cost approximately $290,000. One student in the FAST group received a half year of special education services, costing an estimated $20,000.

Gamoran and colleagues (2012) evaluated the association between the FAST program and various indicators of social capital in a large-scale study conducted in San Antonio, TX and Phoenix, AZ between 2008 and 2009. The final sample for the three-year longitudinal study contained 3084 participants. However, due to the timing of their study, these researchers only used data from the first year (or cohort) of the study. Their sample was therefore comprised of 1262 total participants. With regard to outcome variables, researchers examined (a) family

beliefs regarding issues of social capital, (b) the association between FAST and measures of social capital, and (c) the differences in child outcomes between demographic groups, specifically Hispanic and non-Hispanic White families. The sample was diverse, with more than 33% of the parents reporting being born outside of the United States and 43% reporting a native language other than English. Also, 75% of the students involved in the study were eligible for free or reduced-price lunch. Overall, researchers only found one significant difference between the FAST and control groups following the study. Specifically, they found that FAST parents reported a significantly greater increase in number of friendships with their children's friends' parents than those in the control group (*Cohen's d* = 0.23, $p < .10$).

Fiel et al. (2013) also used data from the San Antonio and Phoenix study ($N = 3084$) to analyze the effects of FAST on school mobility. They used the full sample from all three years of the study. They found no significant differences in overall school mobility between FAST schools and control schools. However, they did find that African-American FAST families were less likely to move than African-American control families (*Coefficient* = -0.788, $p < .05$). A limitation of this finding is that generalizability is limited by the fact that less than 10% of the sample identified as African-American.

A final study that utilized the San Antonio and Phoenix data examined the relationship between social capital and child behavioral outcomes (Turley et al., 2017). They used data from all 3084 participants who participated in the study over the course of three years. Researchers used ITT and treatment-on-treated (TT) analyses to examine the effects of FAST on families who graduated from the program. In this case, only about one-third of families who attended at least one session graduated from FAST. Using ITT analysis, researchers found that families in FAST schools scored 0.18 standard deviations higher on a composite measure of social capital than

families who attended control schools (*Cohen's d* = 0.18l, $p < .001$). FAST parents also scored higher on the following individual components of social capital: they were more likely to know their children's' friends' parents (0.21 standard deviations, $p < .001$), more likely to exhibit reciprocity (0.11 standard deviations, $p = .001$), and more likely to share expectations with other parents (0.14 standard deviations, $p < .01$) than parents in the control group.

Turley et al. (2017) used TT analysis to compare the outcomes of FAST families to control families who would have completed the FAST program had they been assigned to it. They found that FAST parents reported greater increases in intergenerational closure (SD=0.54, $p < .001$), more feelings of reciprocity with other parents (SD=0.36, $p < .001$), and more shared expectations with other parents (SD=0.40, $p = .001$) than control parents. FAST parents also scored higher on composite measure of social capital than control parents (0.52 standard deviations, $p < .001$), and FAST children experienced a greater decrease ($p < .001$) in student internalizing problems than control children (*Cohen's d* = -1.84, $p < .001$).

The most recent FAST RCT was carried out by Kratochwill and colleagues (2018) in a large urban school district in Pennsylvania in which 81% of students were economically disadvantaged. A total of sixty schools participated in the study, thirty of which were randomly assigned to receive the FAST condition. The remaining thirty schools served as controls. A total of 1,396 families participated in the study. Kratochwill et al. used school records and parent surveys to obtain family demographic information. For example, school records indicated whether students were classified as English Language Learners (ELLs) and whether or not they had a disability that qualified them for an Individualized Education Plan (IEP). Researchers also utilized a variety of student assessments, parent surveys, teacher surveys, principal surveys, and school records to measure outcomes across multiple domain. Specifically, they assessed child

academic outcomes using the *Peabody Picture Vocabulary Test, Fourth Edition* (PPVT-4; Dunn & Dunn, 2007) and subtests of the *Woodcock Johnson, 3rd Edition* (WJ-III; Woodcock, McGrew, & Mather, 2001). Child social/behavioral outcomes were examined using the Cooperation, Responsibility, and Self-Control subscales of the *Social Skills Improvement System* (SSIS; Gresham & Elliott, 2008). They also used the *Family Environment Scale* (FES; Moos & Moos, 1994), which is a self-report questionnaire that measures social and environmental characteristics of families, to measure family conflict and cohesion. *The Child-Parent Relationship Scale* (CPRS; Pianta, 1992) was utilized to assess parental perceptions of their relationship with their child. Researchers also measured family support and involvement at school using tools including the *Reciprocal Support from Other Parents Scale* (RSOP; Desmond, 2012), which is designed to assess family social capital, the FIQ (Fantuzzo et al., 2000), which measures different aspects of family involvement in schools, and the *Parent-Teacher Relationship Scale* (PTRS; Vickers & Minke, 1995), which assesses teachers' opinions of the quality of the relationship between parents and themselves.

Kratochwill et al. (2018) used a two-level hierarchical linear model with school as the unit of analysis to compare growth rates of children and families within the treatment and control groups across the various key outcomes. To control for potential differential program effects by student and family subgroups, child and family demographic variables and school variables were used as covariates. Kratochwill et al. found just two significant effects of offering the FAST program in schools, and they deemed these effects as non-meaningful. Specifically, a small yet statistically significant negative effect was found for changes in family conflict as assessed by the Conflict subscale of the CPRS (Pianta, 1992) for Cohort 2 at the end of Grade 1 (effect size of 0.26 standard deviations). However, there were no other statistically significant effects of

FAST on family functioning as assessed by the Home-Based Involvement subscale (HBIS) on the FIQ (Fantuzzo et al., 2000) or the RSOP (Desmond, 2012). The second significant effect was found in teacher-family engagement as assessed by the Joining subscale of the PTRS (Vickers & Minke, 1995). Specifically, researchers found that Cohort 1 families displayed statistically significantly higher levels of teacher-family engagement (effect size of 0.28 standard deviations); however, this effect did not persist through Grade 1 or Grade 2, and no effect was found for Cohort 2 at any time point. The Communication subscale of the PTRS (Vickers & Minke, 1995) and the School-Based Involvement Subscale of the FIQ (Fantuzzo et al., 2000) did not reveal any additional significant effects of the program on family engagement. There were no significant differences in school attendance between students who received FAST and those who did not. Additionally, there were no statistically significant effects found on students' overall reading scores or overall mathematics scores, as assessed by the WJ-III (Woodcock et al., 2001), or their vocabulary scores, as measured by the PPVT-4 (Dunn & Dunn, 2007). Finally, no significant effects of FAST were found at any time point on students' social and behavioral functioning, as assessed by teacher ratings on the SSIS (Gresham & Elliott, 2008).

Taken together, research regarding the effectiveness of FAST is inconsistent (Abt Associates, 2001; Gamoran et al., 2012; Kratochwill et al., 2004; Kratochwill et al., 2009; Kratochwill et al., 2018; McDonald et al., 2006; Moberg et al., 2007). Although some positive significant effects have been described, the general trend is that there have not been improvements of significance. For example, four studies (e.g., Abt Associates, 2001; Kratochwill et al., 2009; McDonald et al., 2006; Moberg et al., 2007) found nuanced effects on FAST children's externalizing behaviors which differed by study and by rater. Whereas Kratchowill et al. (2009) and Kratochwill et al. (2004) found a decrease in externalizing behavior

in both parent and teacher CBCL (Achenbach & Edelbrock, 1991) ratings, Abt. Associates (2001) found these effects only in parent CBCL ratings and not in teacher ratings. Alternatively, McDonald et al. (2006) found decreases in externalizing behaviors based on teacher ratings of Latino students' aggressive behavior but not parent ratings. Moberg and colleagues (2007) used the same dataset as McDonald et al. (2006) and found that FAST parents reported that Latino FAST children displayed significantly higher levels of child externalizing problems than comparison group children. Teachers reported the opposite: Latino FAST children displayed significantly lower levels of externalizing problems than the comparison group. Gamoran et al. (2012), Turley et al. (2017), and Kratochwill et al. (2018) also examined child externalizing behaviors but did not find any significant effects of FAST.

Overall, FAST effectiveness studies have presented inconsistent and contradictory findings across the same or similar outcome variables. Accordingly, a recent meta-analysis by Valentine et al. (2019) which included the aforementioned RCTs concluded that the FAST program has not produced positive child or family outcomes across studies. Rather, these studies have presented a mix of results. Furthermore, where potentially meaningful effects have been highlighted, these effects have tended to lack significance and/or not been replicated consistently across studies.

Various factors may contribute to the inconsistency in findings across FAST studies. For example, Valentine et al. (2019) suggested that recruitment bias and failure to include all families in outcome analyses due to attrition likely negatively impacted the quality of the studies. In concurrence with this notion, some FAST researchers noted that various challenges with implementation, especially low recruitment and retention of families, likely detracted quality of

their studies (Abt. Associates, 2001; Fiel et al., 2017; Gamoran et al., 2012; Kratochwill et al., 2004; Kratochwill et al., 2018; McDonald et al., 2006; Moberg et al., 2007; Turley et al., 2017).

Implementation Challenges

Researchers who have studied the effectiveness of the FAST program have noted a variety of challenges related to implementing the program on a large scale in school settings. Common challenges include logistical problems (Abt. Associates, 2001; Kratochwill et al., 2018; Moberg et al., 2007), low adaptability of the program (Gamoran et al., 2012; Kratochwill et al., 2004; Moberg et al., 2007), and low rates of recruitment and retention (Abt. Associates, 2001; Fiel et al., 2013; Gamoran et al., 2012; Kratochwill et al., 2018; McDonald et al., 2006; Moberg et al., 2007; Turley et al., 2017). Across the board, researchers indicated that they suspected that one or more of these problems may have impacted their ability to accurately assess the effectiveness of the FAST program.

Multiple researchers indicated that logistical problems negatively impacted their implementation of the FAST program for an effectiveness study. For instance, Abt. Associates (2001) reported that they experienced scheduling conflicts, a lack of adequate facilities and equipment, and issues with understaffing. They explained that the sessions occurred in the afternoon (i.e., immediately after school), which posed conflicts for families, who often arrived late or could not attend at all. To accommodate late family arrivals, the interventionists frequently restructured the sessions so that families did not miss important content. However, this often resulted in rushed sessions with key components being omitted or compressed. The timing of the sessions also created multiple conflicts with other after-school activities, such that the FAST teams had to compete for space and equipment (e.g., play materials) for the sessions. Abt. Associates also noted that the quality of the program implementation differed by FAST team

members in that each group facilitator had a different style and approach, such that some facilitators' styles were truer to the original FAST model than others. These differences affected the overall efficiency and organization of the sessions. Additionally, FAST teams were often understaffed due to budget constraints, resulting in low fidelity. Moberg et al. (2007) also shared logistical challenges with implementing FAST in schools in Washington D.C., including a lack of monetary resources and low numbers of staff.

Issues with the adaptability of the FAST program to be implemented in different settings with different populations were also reported. For example, Moberg et al. (2007) reported that although 80% of essential FAST content was delivered with fidelity, this differed by school. Specifically, programs implemented in predominately African-American schools were consistently rated as having lower fidelity than those implemented in predominately Latino-American schools. Moberg et al. (2007) also reported differences in program effectiveness by racial groups. Specifically, Latino-American children benefitted more from the FAST program relative to a comparison program on two outcome measures (i.e., teacher-rated externalizing behaviors and teacher-rated social skills). However, African-American students did not experience these benefits and, in fact, were rated significantly higher in internalizing problems after receiving FAST than the children in the comparison group. These researchers speculated that the program may be a better fit for individuals that identify with Latino culture, though they did not indicate why this would be the case.

Moberg et al. (2007) also compared the process of implementing FAST in two distinct locations: Milwaukee, WI and Washington, D.C. The results of their qualitative analysis suggested that implementation was significantly more challenging in Washington, D.C., where all the children in the study were considered 'high risk', as opposed to the Milwaukee study,

where the percentage of high-risk children ranged from 36% to 87% across schools. Members of the D.C. implementation team also suggested that there was a poor cultural match between the FAST program and the study population. For example, the implementation team felt that the families did not respond well to the rigidity and routine of the FAST sessions and that the curriculum could have benefitted from the addition of culturally-specific content.

Kratochwill et al. (2004) reported that adapting the program to be implemented with a Native-American population on a reservation was quite difficult, although they did not provide details regarding the specific challenges associated with this task. Gamoran et al. (2012) also compared FAST outcomes between ethnic groups and found that the program was more effective for White families than it was for Hispanic-American families. These various findings suggest that a lack of adaptability of the FAST program may result in unequal effectiveness amongst diverse populations. If true, this would limit the program's ability to reduce inequality amongst different sociocultural groups.

Multiple researchers who implemented FAST for RCTs also noted that low rates of recruitment and retention likely limited their studies in various ways (Abt. Associates, 2001; Fiel et al., 2013; Gamoran et al., 2012; Kratochwill et al., 2018; McDonald et al., 2006; Moberg et al., 2007; Turley et al., 2017). For example, Abt. Associates (2001) explained that 54% of the families who were asked to be in the FAST condition of their study signed up. Of the families who signed up, only 53% graduated from the program (or attended six or more sessions), and roughly 25% of families who signed up did not attend any sessions at all. McDonald et al. (2006) cited low retention as a major limitation of their study, as 50 of the 180 families who began the study did not finish. Turley et al. (2017), Fiel et al. (2013), and Gamoran et al. (2012) all used the same database to conduct research on the effectiveness of FAST. In this

implementation of FAST, roughly 60% of targeted families consented to participate in program, and approximately one third of those families attended six or more sessions. Turley et al. (2017), Fiel et al. (2013), and Gamoran et al. (2012) all noted that issues with recruitment and retention acted as a limitation of the program's implementation. For example, Gamoran et al. (2012) wrote that low participation rates limited the generalizability of their study's findings, and Turley et al. (2017) postulated that the ability of the intervention to impact relevant school and child outcomes was likely compromised by low participation. Moberg et al. (2007) reported a low recruitment rate and a relatively higher retention rate. Specifically, 30% of the targeted population participated in their study and 78% were retained. However, this retention rate represents the percentage of people who attended the first session and attended five program sessions or more (as opposed to the rate of six sessions that is typically used to denote graduation from FAST). These researchers also did a qualitative review of the implementation process in which they asked individuals involved in the program implementation (e.g., FAST team members, school employees, etc.) which aspects were the most challenging. Recruitment and retention of families emerged as recurrent themes. Also, implementors noted that because fewer families participated than expected, the cost-efficiency of the program was diminished.

Kratochwill et al. (2018) experienced such pronounced problems with recruiting and retaining families that they described low family participation as one of the most problematic aspects of their implementation of the FAST program. The researchers' initial goal was that 60% of all kindergarteners would enroll in the program, but only 24% of families who were offered the program attended at least one session. Retention was also low: just over half of the families who enrolled in the program went on to graduate. Because participation in the program was markedly low, implementors modified the program to heighten participation. For example, some

FAST sites increased their cycle from eight sessions to nine or ten sessions so that families had more opportunities to attend six sessions or more, which would allow them to graduate from the program. Additionally, during the second cohort year, families were allowed to enroll in the program in kindergarten or first grade, rather than kindergarten only, as the program typically prescribes. Despite the extra steps taken to increase participation, the program reached far fewer families than the implementation team originally intended. Ultimately, researchers postulated that low recruitment and retention likely contributed to low power to detect differences between intervention and control schools. Also, they communicated that low retention limited enrolled families' exposure to program components, thereby restricting the programs' ability to impact the families in meaningful ways.

In addition to general challenges with recruitment and retention, some researchers also noted that participation in their study varied by sociocultural groups. For instance, Turley et al. (2017) noted that their sample had a disproportionately high percentage of Hispanic-American students and low percentage of African-American students when compared to the racial/ethnic distribution of the study schools. Although McDonald et al. (2006) only examined the Latino-American subsample that was involved in their FAST study, these researchers questioned the generalizability of their results, because two-thirds of the families in their sample attended mono-cultural schools. The cultural and linguistic makeup of monocultural schools may have special implications for caregiver involvement in school-based programming. For instance, families may feel more comfortable attending a multi-family afterschool program knowing that the other families will likely share cultural similarities and speak the same native language as them. Moberg et al.'s (2007) qualitative analysis revealed that FAST interventionists perceived low-risk families to be more likely to attend FAST sessions than high-risk families. Researchers added

that families who were considered low risk appeared to be "bored" by the program, as those families already utilized many of the strategies modeled and practiced in program sessions. Abt. Associates (2001) noted that working families were disproportionately underrepresented in their sample because the time of the sessions did not allow those who had scheduling conflicts with work to attend sessions. Overall, these findings suggest that families may engage differently in the FAST program depending on their sociocultural backgrounds. Therefore, it is important to examine these differences to further understand the accessibility of the program for various populations, especially those who may be considered at risk for negative outcomes.

Need for Study

Across RCTs, FAST research is inconclusive and generally suggests that the program has not been effective in improving family or student outcomes (Valentine et al., 2019). Mixed results regarding the effectiveness of the FAST program have been compounded by low rates of recruitment and retention of families for FAST effectiveness studies, which has made it difficult to determine the root causes for inconclusive results. Furthermore, there exists an overall lack of information regarding study sample demographic characteristics, particularly with regard to recruitment and retention across studies. This is problematic, as differences in recruitment and retention based on demographic characteristics are likely to impact studies' internal and external validity, calling into question the generalizability of any significant findings. Additionally, a lack of inquiry into low and differential recruitment and retention across studies raises questions regarding the applicability and appeal of the FAST program, itself, to diverse subpopulations.

The most recent FAST RCT took place in a very diverse school district that served a high percentage of low-SES students and families (Kratochwill et al., 2018). For this study, researchers attributed a lack of meaningful effects of the FAST program to very low recruitment

and retention of eligible participants for the study. Therefore, it is important to examine differences in recruitment and retention for this study. Such research will not only enhance the interpretability of the study outcomes, but it will also support an understanding of *why* researchers were not able to recruit and retain adequate numbers families from the targeted population for this study. Ultimately, this research may reveal considerations for best practices for the implementation of family engagement programs for research studies. Furthermore, this research may inform the need for potential adaptations to family engagement programs, such as FAST, to better fit the needs of diverse populations.

No known studies to date have examined recruitment and retention of families for a FAST effectiveness study using a model of predictor variables that extends beyond individual characteristics. Considering the multitude of systemic factors that may impact recruitment and retention of families for studies conducted in schools, it is crucial to examine the impact of a wide range of both individual and systemic variables on recruitment and retention. Therefore, the present study examined the association between individual (i.e., HBM) and systematic (i.e., school-level) variables and recruitment and retention for Kratochwill et al.'s 2018 study of the FAST program. In particular, the present study examined differences in family recruitment and retention for the program on two levels: program recruitment (i.e., the level at which families who signed up for the study participated in any program sessions) and program retention (i.e., the rate at which families who participated in at least one program session participated in multiple program sessions). The present study examined the following variables as potential predictors of recruitment and retention: caregiver employment status, caregiver educational attainment, family use of public assistance, number of siblings in the home, family social support, school turnaround status, school poverty rate, and school climate rating.

Research Questions

The primary purpose of this study is to examine potential predictors of recruitment and retention for a recent RCT of the FAST program (i.e., Kratochwill et al., 2018). This study addressed two primary research questions:

1. Which of the following variables uniquely predict family recruitment for the FAST program: caregiver employment status, caregiver educational attainment, family use of public assistance, number of siblings in the home, family social support, school turnaround status, school poverty rate, and school climate rating?
2. Which of the following variables uniquely predict family retention for the FAST program: caregiver employment status, caregiver educational attainment, family use of public assistance, number of siblings in the home, family social support, school turnaround status, school poverty rate, and school climate rating?

Chapter 3: Methods

The present study utilized data from a recent large-scale randomized control trial (RCT) examining the effectiveness of the FAST program (Kratochwill et al., 2018). Funding for this RCT was provided by a U.S. Department of Education Investing in Innovation (i3) research grant (U411B120009). For the purposes of this paper, this RCT is referred to as the FAST i3 Validation Study from here forward. The FAST i3 Validation Study examined outcomes associated with the implementation of the FAST program in a large urban school district. Preliminary analyses for the FAST i3 Validation Study produced no meaningful, significant results with regard to student or family social-emotional, academic, or behavioral outcomes (Kratochwill et al., 2018). Because recruitment and retention for this study were markedly low, the present study examined the association between family and school-level variables and recruitment and retention. Variables of interest were selected using an extension of the Health Beliefs Model (HBM; Rosenstock, 1966) as a conceptual framework.

Overview of FAST i3 Validation Study

In 2013, an i3 validation grant (U411B120009) through the U.S. Department of Education funded the FAST i3 Validation Study, a large-scale RCT to study the impact of FAST in a large urban school district (Kratochwill et al., 2018). To oversee the implementation of the project, partnerships were created between a midwestern university, a school district, an urban-based child service agency, a FAST program training and implementation agency, and an independent contract evaluator responsible for data collection and analyses. The program was implemented over the course of two cohorts: Cohort 1 (2013-2014) and Cohort 2 (2014-2015).

Setting

For the FAST i3 Validation Study, the FAST program was implemented in a large urban school district in Pennsylvania that served 146,080 students. This school district was selected because it had been considered economically disadvantaged in the years preceding the study. Additionally, the school district identified family engagement as a focus for school improvement prior to the beginning of the study. Furthermore, the school district had experience with the FAST program, as multiple schools in the district had implemented the FAST program prior to the study.

Within this district, schools were selected for participation in the study based on the following criteria: (a) they had not previously implemented the FAST program; (b) they were not charter schools; (c) they were in "turnaround status", which is defined as schools that are identified as struggling and in need of comprehensive improvement by the district, in the 2012-2013 school year; (d) they failed to achieve satisfactory annual progress during the 2011-2012 school year; (e) they had between two and four kindergarten classrooms in the 2012-2013 school year; and (f) they were not identified by the district as schools that would be closed in the near future. Of the school district's 208 elementary schools, a total of 74 met these criteria and were therefore considered eligible to participate in the study.

Of the 74 schools that were considered eligible for participation in the FAST i3 Validation Study, 63 schools agreed to participate. Three of these schools were eliminated. Two were eliminated because they were actively enrolling students from schools that had closed, putting them at risk of having more than four kindergarten classrooms. The third school was eliminated because it had very restricted time availability for FAST sessions (i.e., they indicated that they would only allow sessions to take place on Fridays).

The FAST i3 Validation Study used a nested three-stage sampling design to randomly select a total of 30 schools to receive the FAST intervention across two cohorts, such that all 30 schools would receive the intervention during the 2013-2014 school year (Cohort 1) and the 2014-2015 school year (Cohort 2). This randomization design was used to ensure that the lowest-performing schools were equally represented in the treatment and control conditions. First, the 60 schools that were eligible and agreed to participate were grouped based on their turnaround status: "intervention," "support," or "at risk". The "intervention" group consisted of 10 schools that were labeled as "low-performing" by the district in the 2012-2013 academic year and that received the most improvement assistance from the district at the time of the study. The "support" group described 32 schools that were also considered "low-performing" in 2012-2013 and received the second highest level of improvement assistance from the district. The remaining 18 schools were placed in the "at risk" category because they failed to make annual yearly progress in the 2011-2012 school year and were likely to be designated "low-performing" in the future. Each participating school was randomly assigned a number and ranked by from lowest to highest within each block (i.e., intervention, support, and at risk). Then, the first half of schools within each block was assigned to the FAST condition. The remaining 30 schools served as controls during the data collection phase, with all 30 schools serving as controls across both cohort years. The control schools received the FAST intervention when data collection concluded at the end of 2016.

Recruitment Procedures

The implementation team met prior to and throughout the program's two years of implementation. Implementation team meeting notes demonstrated that the team frequently discussed recruitment, particularly with regard to challenges with recruitment and efforts to

increase recruitment rates. The team's initial recruitment plan included various methods of advertising the program to families. Specific program advertisement strategies included hosting a FAST "Awareness Day" event at each school in which FAST teams would promote the program to families, asking principals to send letters to families to encourage their participation in the program (see Appendix A), posting flyers at the school (e.g., Appendix B, Appendix C, Appendix D) and asking teachers to send FAST flyers (see Appendix E) home with students. Additionally, teachers were instructed to distribute recruitment packets to families during annually scheduled one-on-one meetings. The recruitment packets contained an informational letter (see Appendix F), consent form, and envelope to return the consent form to the child's teacher. Families were also incentivized with a $10 reward for attending the first session. Also, teachers were incentivized with $5 rewards for each completed consent form that their families returned.

Implementation team meeting notes revealed that the team encountered numerous challenges to recruiting families and, as such, they continuously devised and executed new and varied methods of recruitment. For example, the team recognized that caregivers may have been unlikely to read the flyers/letters that were sent home by school staff. Additionally, FAST teams did not receive district clearances in time to assist in many of the recruitment efforts which occurred during the summer prior to the first year of the program. Also, many families failed to attend their scheduled one-on-one meetings with teachers, preventing teachers from using that opportunity to advertise the program to parents, directly.

As challenges with recruitment persisted, the implementation team noted much lower response rates for Cohort 1 than they anticipated. As a result, the implementation team generated a number of additional recruitment strategies. For example, it was documented that teachers

were asked to communicate with caregivers at school drop-off and pick-up times. Additional strategies that the team discussed included: distributing new and varied FAST flyers (e.g., Appendix G) to the schools, creating a FAST Facebook page, distributing FAST brochures (see Appendix H) to schools, executing robocalls to all families in the FAST schools, requesting that principals make intercom announcements to remind teachers of FAST efforts, having FAST representatives attend report card conferences and kindergarten orientation nights, and incentivizing all FAST recruiters (i.e., team members and other recruiters) with $10 per recruited family. The team also implemented a $100 reward for the teacher that recruited the most families for the FAST program.

As the first FAST program cycle began, the implementation team noted that there was still a need to recruit a substantial number of families. Additionally, they noticed that families who were recruited were not necessarily attending sessions regularly. Therefore, in addition to recruitment strategies, the implementation team also generated and executed a number of retention strategies. For example, they distributed magnets that displayed the date and time of FAST sessions. The team also began to incentivize families with $10 per session attended (rather than $10 for the first session only). Additionally, they encouraged FAST teams to begin planning special themes and events for each FAST session to encourage families to attend. The team also communicated weekly attendance rates and goals to school principals to maintain communication around recruitment/retention efforts.

Discussions concerning recruitment and retention persisted throughout the two years of the program. Through these discussions, the implementation team made what were seen as necessary changes to the program structure to account for low recruitment and retention, including that they extended the length of the program cycle and allowed families to attend more

than the eight sessions that constitute the program as designed. They also allowed families to enroll in the program in first grade, as opposed to in kindergarten only. Despite various efforts to strengthen recruitment and retention, the implementation team noted consistent challenges recruiting and retaining families throughout the entirety of the program's implementation.

Participants

At the outset of program recruitment the implementation team planned to send recruitment packets to 12 families per school. Due to the low response rate from families, the implementation team incrementally increased the number of recruitment packets they sent out until they had distributed packets to a total of 2,488 families for Cohort 1. Of these 2,488 families, 1,048 (42%) returned consent forms and 796 (32%) ultimately consented to participate in the study. Because the team recruited a lower proportion of families for Cohort 1 than was originally anticipated, at the outset of Cohort 2 the team sent recruitment packets to all kindergartners in experimental schools (n=5,107). Of families who received packets in Cohort 2, a total of 2,130 (78%) returned consent forms and 2,130 (78%) of these families gave consent to participate.

In total, 7,595 families received recruitment materials over the course of the two cohorts. Of these families, 3,787 returned completed consent forms and 2,926 consented to participate in the study. Using the aforementioned nested three-stage sample design, a subsample of families who consented to participate in the study were randomly selected to receive the FAST intervention. For Cohort 1, 680 students participated in the study, of which 313 were assigned to the treatment (FAST) condition and 367 were assigned to the control group. Cohort 2 included 716 students, with 357 assigned to the treatment (FAST) condition and 359 assigned to the control group.

Sample Characteristics

Researchers obtained information regarding family demographic characteristics from school records. In Cohort 1, approximately 47% of families identified as African-American, 23% as Latino-American, 5% as Asian-American or Asian, 10% as multi-racial or other, and 10% as white. Twelve percent of the students in Cohort 1 were ELLs, 10% had disabilities, and 58% percent used public assistance for purchasing food (e.g., Women, Infants, and Children [WIC], Supplemental Nutrition Assistance Program [SNAP], or food pantries). In Cohort 2, 644 (90%) of the 716 students were minority students, with 57% percent of families identifying as African-American, 19% as Latino-American, 6% as Asian-American or Asian, 7% as multiracial or other, and 10% as white. In Cohort 2, 10% of students were identified as ELLs, 5% had disabilities, and 55% accessed public assistance to purchase food. Table 2 (below) displays the sample demographic characteristics.

Table 2
Sample Demographic Characteristics

Characteristic	**Cohort 1**			**Cohort 2**		
	Treatment (%)	**Control (%)**	**Total (%)**	**Treatment (%)**	**Control (%)**	**Total (%)**
Gender (Females)	51.1	49.6	50.3	51.0	48.5	49.7
Gender (Males)	48.9	50.4	49.7	49.0	51.5	50.3
Ethnicity: African-American	45.0	49.0	47.2	57.1	42.9	50.0
Ethnicity: Latino-American	27.5	20.4	23.7	20.7	17.5	19.1
Ethnicity: Asian or Asian-American	5.8	4.6	5.1	3.6	8.1	5.9
Ethnicity: White	9.3	9.8	9.6	10.4	9.7	10.1
Ethnicity: Multi-Racial/Other	11.8	10.1	10.9	6.2	7.0	6.6
English Language Learner	14.7	10.4	12.4	10.6	9.7	10.2
Child has Disability	9.3	9.8	9.6	4.8	5.3	5.0
Family Receives Public Assistance	61.7	54.5	57.8	56.9	53.2	55.0

Measures

Throughout the course of the FAST i3 Validation Study, data were collected at multiple time points from teachers, parents and caregivers, and students. A variety of validated tools were used to measure outcomes across the following domains of interest: family functioning, family-school engagement, academic learning, and social/behavioral learning. Measures included student assessments, parent surveys, teacher surveys, principal surveys, and school records. For the present study, a subset of variables from the original FAST i3 Validation Study were selected to examine possible predictors of recruitment and retention of families for the study. For a full review of measurement tools and primary outcomes (including those that were not included in the present study) see Kratochwill et al. (2018).

Predictor Variables

For the present study, the following predictor variables were selected based on their fit to the Health Beliefs Model (HBM; Rosenstock, 1966): (a) caregiver employment status, (b) caregiver educational attainment, (c) family use of public assistance, (d) number of siblings in the home, (e) family social support, (f) school poverty rate, (d) school turnaround status, and (e) school climate rating. Five of the aforementioned predictor variables (i.e., caregiver educational attainment, caregiver employment status, family use of public assistance, number of siblings in the home, and school poverty rate) were conceptualized as potential barriers to program participation. The remaining three variables (i.e., family social support, school climate rating, and school turnaround status) were conceptualized as indicators of perceived susceptibility. The rationale for fitting these variables to the model in this way, as well as descriptions of how these

variables were measured, is provided next. Additionally, Figure 1 provides a graphical model that displays these variables within an extension of the HBM framework.

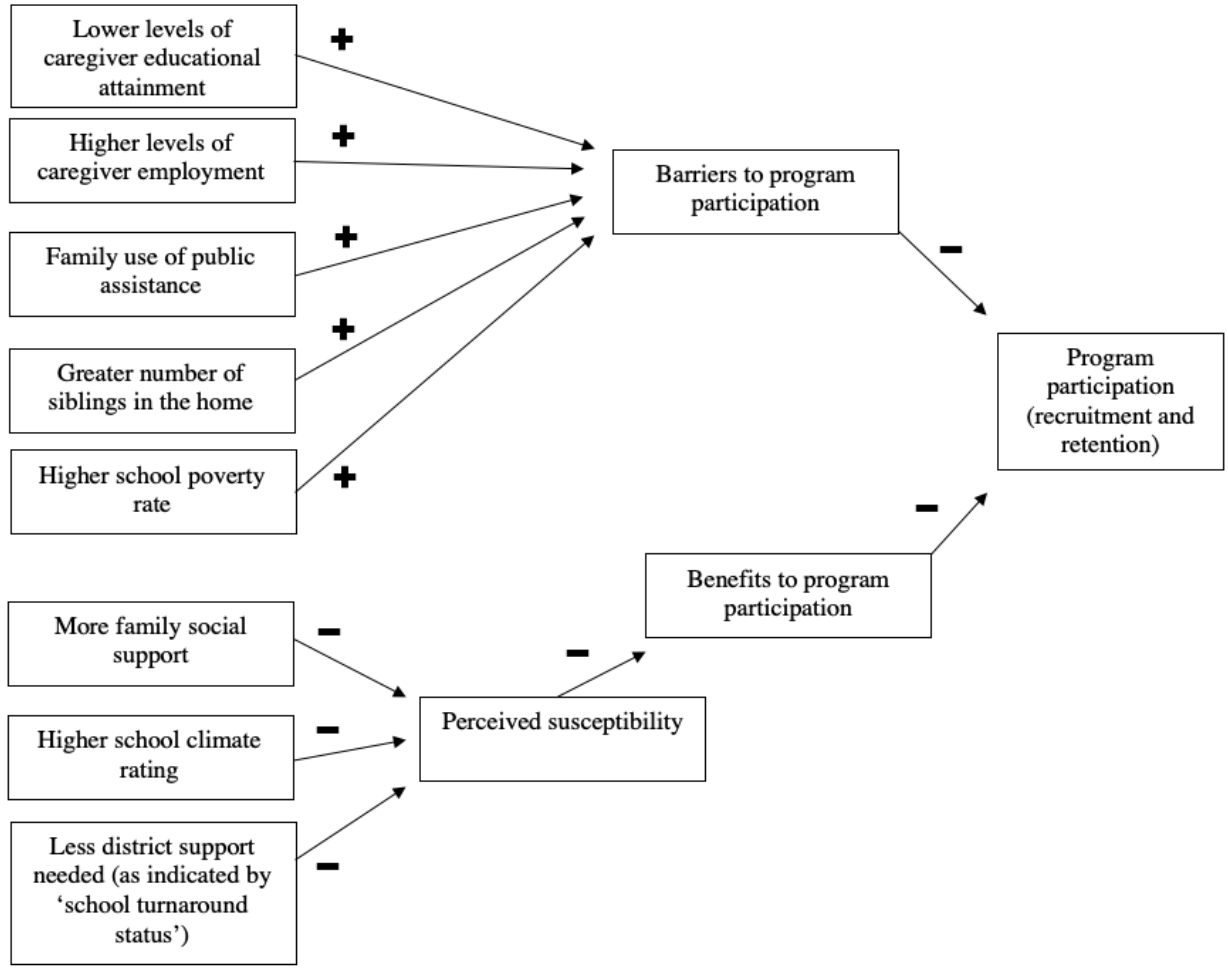

Figure 1. Hypothesized predictors of recruitment and retention. This figure displays the predictor variables that will be examined in this study and their hypothesized impact on rates of program participation (i.e., recruitment and retention).

Perceived Barriers

Because the HBM (Rosenstock, 1966) predicts that certain socio-cultural variables may indirectly limit people from enrolling and engaging in prevention programs, a variety of socio-cultural variables were selected to represent perceived barriers to program recruitment and retention. In particular, socioeconomic status (SES) has been indicated as a variable that may

predict preventive health behavior. Researchers typically define SES as a combination of parental income, education level, and job status (Chen, Matthews & Boyce, 2002). Multiple studies have identified an association between participation in prevention programming and SES (Eisner & Meidert, 2011; Heinrichs et al., 2005), as well as components of SES, including family income level (Coatsworth, Duncan, Pantin, & Szapocznik, 2006; Frankel & Simmons, 1992; Gorman-Smith et al., 2002; Herzog et al., 1986; Perrino et al., 2001), caregiver education level (Cohen & Rice, 1995; Herzog et al., 1986; Quinn et al., 2010; Winslow et al., 2009), and use of public assistance (Kazdin & Mazurick, 1994). Previous research also suggests that systems-level indicators of income may be associated with preventive program study participation in that families residing in lower income neighborhoods have been found to be less likely to participate in preventive program studies than those living in higher income neighborhoods (Heinrichs et al., 2005).

For this study, two family-level variables that represent socioeconomic status were selected as potential barriers to program recruitment and retention: caregiver educational attainment and family use of public assistance. School poverty rate was also selected to examine the potential impact of systems-level variations in SES on recruitment and retention for the FAST i3 Validation Study. Based on prior research, it was predicted that lower levels of income (i.e., more use of public assistance) and education and higher levels of school poverty would be associated with lower recruitment and retention for the FAST program in the FAST i3 Validation Study.

Although some researchers may conceptualize higher levels of employment as an indicator of higher SES and therefore a facilitator of program participation, for the purposes of this study, this variable was hypothesized as a barrier. This is because the vast majority of the

families involved in the FAST i3 Validation Study were low-income. Past research suggests that logistical barriers related to employment may be particularly salient for lower-income families (Mendez et al., 2009). Therefore, it was hypothesized that families with more employed caregivers would be less likely to attend FAST sessions due to logistical barriers related to employment (i.e., scheduling conflicts, lack of ability to take time off work, etc.) than families with fewer employed caregivers. The measurement of these variables is described in depth next.

Caregiver educational attainment. Researchers contacted caregivers via telephone to administer a survey regarding general information about the family. These surveys were administered to one caregiver per family in both the treatment and the control group. Surveys lasted approximately thirty minutes. Through these surveys, researchers asked caregivers to report information on each individual living in the home, including that individual's relationship to the target child. Researchers also asked caregivers to report the highest level of education that each parent had completed (i.e., whether the mother had graduated from high school and whether the father had graduated from high school). Ultimately, the database that was used for the present study contained information regarding how many people lived in the home, how many caregivers lived in the home, and whether the mother and/or father had graduated from high school. Parent's educational attainment was included in the database for both parents, even in cases in which only one caregiver lived in the home. In the case of single parent families, the database did not provide information delineating which caregiver lived in the home.

Using the available information, families were coded into one of three discrete variables: 0, representing families with no caregivers who graduated from high school; 1, representing families with one caregiver who graduated from high school; and 2, representing families with two caregivers who graduated from high school.

Caregiver employment status. Through parent surveys, researchers asked caregivers to describe the employment status of each parent. As was the case for caregiver educational attainment, the database used for the present study described the employment status of each parent, whether both parents lived in the home or not, and information was not available to discern which parent lived in the home in the case of single-parent families.

Caregiver employment status was coded as a discrete variable between 0 and 2, with: families with no employed caregivers coded as 0, families with one employed caregiver coded as 1, and families with two employed caregivers coded as 2.

Family use of public assistance. Researchers obtained caregiver permission to access school records, which provided information regarding children's free or reduced lunch status. This variable was coded as a binary discrete variable. Specifically, families were placed into one of two categories: those of children who did not receive free or reduced lunch (i.e., 0), and those of children who did receive free or reduced lunch (i.e., 1).

Number of siblings in the home. Through family surveys, researchers asked caregivers to report the name, age, and relationship to the target child of every individual living in the household. Using this information, researchers calculated the number of siblings of the target child that lived in the household. No families reported that more than eight siblings in the home. Therefore, this variable was recorded as a discrete variable between 0 and 8 (i.e., 0, 1, 2, 3, 4, 5, 6, 7, 8).

School poverty rate. School poverty ratings were obtained through publicly available data available on the schools' websites. Poverty ratings described the percentages of the total school population that qualified to receive free or reduced lunch. This variable was reported as a discrete variable between 0 and 100.

Perceived Susceptibility

Three variables were selected to indicate perceived susceptibility for the FAST program: family social support, school climate rating, and school turnaround status. Some past research has indicated that families who are more susceptible to problems addressed by a program are more likely to participate in studies examining the effectiveness of that program (Heinrichs et al., 2005). Because one of the main aims of the FAST program is to improve families' relationships with other families (thereby increasing social support), it was hypothesized that families with less social support would participate in the FAST program at a higher rate than families with more social support.

Additionally, FAST aims to improve the connections and relationships between families and school staff, thereby improving school climate. Therefore, it was predicted that families attending schools with poorer school climate would be more susceptible to the problems addressed by the FAST program, and therefore more likely to attend program sessions.

Lastly, school turnaround status describes school performance and level of assistance required by the district. FAST was marketed to families as a program that could improve student academic outcomes. Therefore, families whose children attended lower-preforming schools were conceptualized as more susceptible to a primary problem (i.e., low academic performance) addressed by the FAST program. As such, it was predicted that families who attended schools with poorer school turnaround status (i.e., those schools designated as lower performing and in need of more district assistance) would participate in the FAST program at higher rates than families attending schools with better school turnaround status (i.e., those schools designated as better performing and in need of less district assistance). The measurement of these variables is described next.

Family social support. Family social support was assessed using the *Reciprocal Support from Other Parents Scale* (RSOP; Desmond, 2012). The RSOP is designed to assess family social support by measuring three properties of their social networks: intergenerational closure, shared expectations, and reciprocal exchanges. These constructs are measured through six self-reported, Likert-type scale items. These items specifically ask parents to rate the following items on a scale from 1 to 4: (a) how much do other parents at [child's] school help you with babysitting, shopping, etc.?, (b) how much do other parents at [child's] school invite you to social activities such as meals and parties?, (c) how much do you help other parents at [child's] school with babysitting, shopping, etc.?, (d) how much do you listen to other parents at [child's] school talk about their problems?, and (e) how much do you invite other parents at [child's] school to social activities such as meals or parties? Researchers administered the RSOP at the beginning and end of kindergarten and end of Grade 1 for Cohort 1 and Cohort 2, and the end of Grade 2 for Cohort 1 only. In the current analysis, the composite scale score of the RSOP that was collected in the beginning of kindergarten was used to represent family social support. It was recorded as a discrete variable between 0 and 6 (i.e., 0, 1, 2, 3, 4, 5, or 6). The composite scale of the RSOP has a reported reliability (alpha) of 0.76.

School climate ratings. School climate ratings were obtained through publicly available data available on the school district's website. According to the district website, the rating system was devised by the district, applied to all schools, and made publicly available on an annual basis. The district indicated that school climate rating was calculated by combining the following metrics: the percentage of students who attended 95% or more instructional days, the percentage of students with zero out-of-school suspensions, the percentage of students with zero in-school suspensions, the percentage of students retained in the same school as the prior year,

and the student survey school climate rating (i.e., the percentage of the most positive responses). The composite of these measurements fell on a continuous scale from 0 to 100. Because the school climate rating encompasses characteristics of the school from an entire academic year, for the purposes of this study, the school climate rating from the previous academic year was used. That is, for Cohort 1 (who was offered FAST in the 2013-2014 academic year), the school climate rating from the 2012-2013 academic year was used. For Cohort 2, (who was offered FAST in the 2014-2015 academic year), the school climate rating from the 2013-2014 academic year was used.

School turnaround status. The schools in the study were grouped by "turnaround status," which was determined by the district based on the school's level of performance and support needed by the district. The district calculated level of performance using measurements of school climate (e.g., rates of suspension, attendance, dropout, and school and staff retention, etc.) and student performance (e.g., performance on formative assessments, improvements in standardized test results, and graduation rates, etc.). All data on individual school performance in the aforementioned areas was made publicly available for all participating schools. Ultimately, ten schools were classified as "intervention" schools, meaning that they received the highest level of improvement assistance from the district and were labeled as low performing based on school climate and student performance data. Thirty-two schools were considered "support" schools. These schools received the second highest level of improvement assistance from the district and were also labeled as low performing. Eighteen schools were labeled as "at-risk" schools. These schools were not labeled as low performing but were considered likely to receive a "low-performing" designation in the future based on failure to make annual yearly progress in the previous academic year. Because the schools' turnaround status was designated

before the beginning of the school year and did not change prior to the conclusion of each school year, the turnaround status of each school during the year that the program was implemented (i.e., 2013-2014 for Cohort 1 and 2014-2015 for Cohort 2) was used. For the purposes of this study, school turnaround status was represented using numerical values, with intervention schools being coded as 0, support schools being coded as 1, and at-risk schools being coded as 2.

Dependent Variables

Program recruitment and program retention in the FAST i3 Validation Study were examined as dependent variables.

Program Recruitment

For the present study, all families who were included in the FAST i3 Validation Study database were technically recruited for the *study* in that they consented to allow researchers to obtain and use their information in the study. As such, at least a portion of outcome data was collected from all families. However, not all families who consented to participate in the study were recruited for, or went on to participate in, elements of the program. In other words, some families participated in the study (i.e., by contributing parent, school, and/or student data), but did not attend a single program session. Therefore, for the purposes of this study, only those families who signed up and participated in at least one program session were considered "recruited" for the program. Families who signed up but did not attend a single program session were considered "not recruited" for the program. This variable was coded as a binary discrete variable, with 0 representing families who were not recruited for the program, and 1 representing families who were recruited for the program.

Program Retention

To track attendance, implementation teams recorded how many sessions families attended. As was previously explained, for the purposes of the present study, only families who completed at least one FAST program session were considered recruited for the FAST program. Only families who were successfully recruited for the program could be considered retained. Therefore, program retention was defined as how many sessions successfully recruited families (i.e., families who attended at least one session) completed. Although the FAST program technically entails eight sessions, researchers implementing the FAST i3 Validation Study allowed families to attend more than eight sessions if they elected to do so. Therefore, retention was represented as a categorical variable between 1 and '8 or more sessions' (i.e., 1, 2, 3, 4, 5, 6, 7, 8 or more).

Data Analysis

Descriptive statistical analysis was utilized to examine the characteristics of the sample. Additionally, a binary logistic regression analysis was utilized to address the first research question (i.e., whether the selected independent variables predicted recruitment in the FAST program). A continuation ratio logistic regression analysis was performed to examine the second research question (i.e., whether the selected independent variables predicted retention in the FAST program). The *Statistical Package for the Social Sciences* (SPSS) program was used to conduct the descriptive statistical analyses, as well as the binary logistic regression analysis. The *Stata* statistical software package was utilized to perform the continuation ratio logistic regression analysis required to examine the second research question.

Descriptive Statistical Analysis

Descriptive statistical analysis is an analytical procedure that is used to describe and summarize the characteristics of a sample (Pallant, 2010). Descriptive statistics were computed

to report the frequencies and quantitative characteristics of participants within categories of interest. Descriptive statistical analysis was also used to describe patterns in FAST program attendance. Specifically, the number participants in the total sample that were recruited for the program (i.e., the number of families that attended at least one session), as well as the number of families that completed different amounts of sessions (i.e., 1, 2, 3, 4, 5, 6, 7, or 8 or more sessions) was calculated. To determine the proportion of families that attended each possible number of program sessions, the number of families that attended a particular number of sessions was divided by the total number of families that were recruited for the program (i.e., the number of families that attended at least one session).

Binary Logistic Regression

Binary logistic regression is a statistical technique that examines the predictive nature of a set of independent (also known as predictor or explanatory) variables on a dichotomous dependent (also known as outcome or response) variable (Hosmer, Lemeshow, & Sturdivant, 2003). Logistic regression provides information regarding the relative impact of each predictor variable on the outcome variable(s), as well as the strength of the overall model to predict the outcome variables (i.e., "goodness of fit"). For the current study, a logistic regression analysis was conducted to examine the impact of the predictor variables (i.e., caregiver educational attainment, caregiver employment status, family use of public assistance, number of siblings in the home, family social support, school turnaround status, school poverty rate, and school climate rating) on recruitment.

Continuation Ratio Logistic Regression

The *continuation ratio* model of logistic regression is an extension of logistic regression that examines the probability that an individual will fall into a given category when categories

are organized in successive stages through which an individual can progress. In other words, the probability that an individual will fall into a particular category is dependent on whether or not that individual falls into lower levels of that category (Liu, O'Connell & Koirala, 2011). This description applies to the current study's dependent variable of program retention in that it is an ordinal variable for which individuals must fall into lower levels in order to reach higher levels. For example, individuals could only have completed five program sessions if they also completed one, two, three and four program sessions, and so on. Therefore, the continuation ratio model of logistic regression was used to examine the probability that individuals would fall into different levels of attendance given the selected predictor variables (i.e., caregiver educational attainment, caregiver employment status, family use of public assistance, number of siblings in the home, family social support, school turnaround status, school poverty rate, and school climate rating).

For both analyses, the predictive nature of the independent variables was explored, as well as the overall fit of the models in predicting recruitment and retention.

Missing Data

The FAST i3 Validation Study dataset has an average of 20.8% missing data across family-level independent variables (i.e., caregiver employment status, caregiver educational attainment, family use of public assistance, number of siblings in the home, and family social support). Three percent of dependent variable (i.e., recruitment and retention rates) data were missing. Because the school-level variables (i.e., school poverty rate, school turnaround status, and school climate rating) were publicly available, these data were accessible for each participating family. As a result, there were no data missing for these variables. See Table 3 (below) for details regarding missing data across all variables.

Table 3
Missing Data Across Variables

		Missing	
Variable	**N**	**Percent**	**Valid N**
Recruitment	22	3.0	716
Retention	22	3.0	716
Caregiver Employment Status	154	20.9	584
Caregiver Educational Attainment	148	20.1	590
Family Use of Public Assistance	156	21.1	582
Number of Siblings in the Home	154	20.9	584
Family Social Support	155	21.0	583
School Poverty Rate	0	0.0	738
School Turnaround Status	0	0.0	738
School Climate Rating	0	0.0	738

To account for missing data, multiple imputation (Rubin, 1976) was used. Multiple imputation is a technique that replaces missing values with a reasonable estimate of the value that would have been collected had it been available. Multiple imputation is appropriate for use with logistic regression statistical analyses (Meeyai, 2016). Additionally, for the present study, the probability of missing data within one variable was not dependent on another variable.

To conduct multiple imputation, SPSS was utilized to impute the original dataset and create a new dataset which contained the original dataset, as well as twenty imputed datasets. A pooled imputed dataset was then utilized in the binary logistic regression analysis. Because Stata does not have the capability of utilizing a multiply imputed database when conducting a continuation ratio logistic regression analysis, the continuation ratio logistic regression analysis was used with the original database, omitting the missing data points. However, in order to validate that the missing data did not significantly impact the results of the continuation ratio logistic regression analysis, this analysis was run twenty additional times with each of the imputed databases. No meaningful differences were observed in the results obtained from the original dataset as compared to the results obtained from the imputed datasets.

Chapter 4: Results

Descriptive Statistics

Recruitment. In total, 738 families consented to participate in the FAST i3 Validation Study and were assigned to the FAST group. Data regarding the number of sessions attended per family was missing for 22 families and available for 716 families. Of these 716 families, 292 (41%) were recruited for the program (i.e., they attended at least one session) and 424 (59%) were not recruited for the program (i.e., they attended no sessions). Table 4 displays the number and percentage of families who were recruited and not recruited for the program.

Table 4
Family Program Recruitment

Recruitment Status	Number of Families	Percentage of Families
Recruited	292	41
Not Recruited	424	59

Retention. Of the 292 families who were recruited for the program, 29 (9.9%) attended one session, 21 (7.2%) attended two sessions, 18 (6.2%) attended three sessions, 16 (5.5%) attended four sessions, 26 (8.9%) attended five sessions, 24 (8.2%) attended six sessions, 43 (14.7%) attended seven sessions, and 115 (39.4%) attended eight or more sessions. Table 5 displays the number and percentages of recruited families who attended each number of sessions. Table 6 displays the descriptive statistics pertaining to recruitment in the program (i.e., the minimum, maximum, median, mean, and standard deviation of number of sessions completed).

Table 5
Family Program Retention

Number of Sessions Completed	Number of Families	Percentage of Families
1	29	9.9
2	21	7.2

3	18	6.2
4	16	5.5
5	26	8.9
6	24	8.2
7	43	14.7
8	115	39.4

Table 6
Descriptive Statistics for Program Retention

Total	Minimum	Maximum	Mean	Median	Standard Deviation
292	0	8	5.77	7	2.49

Caregiver employment. Of the 738 families who consented to participate and were assigned to the FAST group, data regarding caregiver employment status was available for a total of 584 (79.1%) families and were missing for 154 (20%) families. The available data revealed that 132 (22.6%) families reported that no parents were employed, 265 (45.4%) reported that one parent was employed, and 187 (32%) reported that two parents were employed. Table 7 displays the number and percentages of families across the different levels of employment (i.e., no parents employed, one parent employed, and two parents employed).

Table 7
Caregiver Employment Status

Number of Caregivers Employed	Number of Families	Percentage of Families
0	132	22.6
1	265	45.4
2	187	32.0

Caregiver educational attainment. Data regarding caregiver educational attainment was available for a total of 590 (80%) families and was missing for 148 (20%) families. Of the 590 families for whom educational attainment data were available, 27 (4.6%) families reported that no parents graduated from high school, 107 (18.1%) reported that one parent graduated from high school, and 456 (77.3%) reported that two parents graduated from high school. Table 8 displays the number and percentages of families across the different levels of educational attainment (i.e., no caregivers graduated from high school, one caregiver graduated from high school, and two caregivers graduated from high school).

Table 8
Caregiver Educational Attainment

Number of Caregivers That Graduated from High School	Number of Families	Percentage of Families
0	27	4.6
1	107	18.1
2	456	77.3

Family use of public assistance. Of the 738 families who were assigned to the FAST group, data regarding family use of public assistance were available for a total of 582 (78.9%) families and was missing for 156 (21.1%) families. The available data revealed that 152 (26.1%) families did not receive free or reduced lunch and 430 (73.9%) did receive free or reduced lunch. Table 9 displays the number and percentages of families who did and did not receive free and reduced lunch.

Table 9
Family Use of Public Assistance

Receives Free/Reduced Lunch	Number of Families	Percentage of Families
No	152	26.1

Yes	430	73.9

Number of siblings. Of the 738 families who consented to participate and were assigned to the FAST group, data regarding how many siblings of the target child lived in the home were available for a total of 584 (79.1%) families and were missing for 154 (21%) families. Of the 584 families for whom sibling data was available, 136 (23.3%) reported that there were no siblings in the home, 181 (31%) reported that there was one sibling in the home, 147 (25.2%) reported that there were two siblings, 70 (12%) reported three siblings, 24 (4.1%) reported four siblings, 19 (3.3%) reported five siblings, one (0.2%) reported six siblings, three (0.5%) reported seven siblings, and three (0.5%) families reported eight siblings. Table 10 displays the number and percentages of families reporting the different numbers of siblings. Table 11 displays the descriptive statistics associated with the number of siblings in the home (i.e., minimum, maximum, mean, median, standard deviation).

Table 10
Number of Siblings in the Home

Number of Siblings	Number of Families	Percentage of Families
0	136	23.3
1	181	31.0
2	147	25.2
3	70	12.0
4	24	4.1
5	19	3.3
6	1	0.2
7	3	0.5
8	3	0.5

Table 11
Descriptive Statistics for Number of Siblings in the Home

Total	Minimum	Maximum	Mean	Median	Standard Deviation
738	0	8	1.59	1	1.41

Family social support. Of the 738 families who consented to participate and were assigned to the FAST group, 583 (79%) caregivers provided information regarding the overall level of social support they perceived at their child's school. A total of 155 (21%) did not provide this information. The level of social support was reported as a continuous variable between 1 and 4. Table 12 provides descriptive statistics for caregiver-reported levels of family social support (i.e., minimum, maximum, mean, median, standard deviation).

Table 12
Descriptive Statistics for Family Social Support

Total	Minimum	Maximum	Mean	Median	Standard Deviation
583	1	4	1.46	1.67	0.66

School turnaround status. All the families in the study attended schools which were designated a rating indicating their 'turnaround status' (i.e., their performance level and district-identified level of support needed). Therefore, there is no missing data for this variable. Across the 738 families assigned to the FAST group, 124 (16.8%) attended schools that were designated 'intervention' turnaround status, 406 (55%) attended schools that were designated 'support' turnaround status, and 208 (28.2%) attended schools that were designated 'at-risk' turnaround status. Table 13 displays the number of families assigned to schools at each level of turnaround status.

Table 13
School Turnaround Status

School Turnaround Status	Number of Families	Percentage of Families
Intervention	124	16.8

Support	406	55.0
At risk	208	28.2

School poverty rate. The level of poverty of the school the target child attended was available for all of the 738 families who consented to participate and were assigned to the FAST group. According to this data, FAST students attended schools with levels of poverty that ranged from 76% to 98%, with a mean of 91.75% and a standard deviation of 5.88. Table 14 displays the number of families who were assigned to schools at each poverty level. Table 15 displays the descriptive statistics pertaining to the poverty rates of the experimental schools included in the study (i.e., minimum, maximum, mean, median, and standard deviation).

Table 14
Number of Families by School Poverty Rates

School Poverty Rate	Number of Families	Percentage of Families
76	32	4.3
83	92	12.5
85	18	2.4
88	26	3.5
89	68	9.2
90	63	8.5
91	20	2.7
94	47	6.4
95	68	9.2
96	110	14.9
97	170	13.3
98	24	3.0

Table 15

Descriptive Statistics for School Poverty Rates

Total	Minimum	Maximum	Mean	Median	Standard Deviation
738	76	98	91.75	95	5.88

School climate rating. Each school in the study was assigned a school climate rating. Therefore, this data was available for all 738 schools. Overall, FAST students attended schools with school climate ratings that ranged from four to ninety. Table 16 displays the descriptive statistics which describe the climate ratings for the schools attended by the students in the FAST condition of the study.

Table 16
Descriptive Statistics for School Climate Ratings

Total	Minimum	Maximum	Mean	Median	Standard Deviation
738	4	90	37.63	36	20.71

Binary Logistic Regression Analysis

A binary logistic regression analysis was performed to assess the impact of the eight independent variables (i.e., caregiver educational attainment, caregiver employment status, family use of public assistance, number of siblings in the home, family social support, school poverty level, school autonomy level, and school climate rating) on the likelihood that individuals would be recruited for the FAST program. Prior to running the binary logistic regression, the original dataset was imputed twenty times. A pooled imputed dataset was used in the analysis to determine the significance of the individual predictors. The remainder of the statistics (i.e., the overall model fit, Cox and Snell R square, Nagelkerke R-squared, and percentage correctly classified statistics) were calculated using the original dataset, because SPSS does not have capability of applying a multiply imputed dataset to these particular statistical tests.

The full model containing all predictors was statistically significant, χ_2 (8, N = 738) = 60.186, $p < .001$, indicating that the model was able to distinguish between families who were recruited and were not recruited for the FAST program. As a whole, the model explained between 10.1% (Cox and Snell R square) and 13.6% (Nagelkerke R-squared) of the variance in recruitment status. The model correctly classified 82.9% of those who were recruited and 44.0% of those who were not recruited, with an overall percentage of 66.8% of correctly predicted cases. This percentage represents an increase over the null model, which correctly classified 58.7% of total cases.

The following four independent variables made a unique statistically significant contribution to the model (i.e., uniquely predicted recruitment): level of social support ($p < .001$) , number of siblings in the home ($p = .024$), caregiver employment status ($p < .001$), and school autonomy level ($p = .001$).

The strongest predictor of recruitment in the FAST program was family social support, with a regression coefficient of $\beta = .802$ ($p < .001$). This regression coefficient suggests that for every one unit increase on the RSOP scale, there was an increase in .802 log odds that caregivers would be recruited for the FAST program, holding all other predictors constant. The odds ratio of 2.231, 95% CI [1.688, 2.948] indicates that for every one unit increase in social support (i.e., one point increase on the RSOP) endorsed by caregivers, there was a 2.231 increase in the likelihood that they would be recruited for the program, when controlling for all other factors in the model.

Caregiver employment was also a strong predictor. The regression coefficient was $\beta = -.824$ ($p < .001$), indicating that for every additional employed caregiver in a family, there was a decrease in .824 log odds of the family being recruited for the program. The odds ratio was .439

(95% CI [.305, .631]). This odds ratio indicates that for every additional employed caregiver in a family, families were .439 times as likely to be recruited for the FAST program.

School autonomy level predicted recruitment, as well. The negative regression coefficient of β = -.463 (p = .001) demonstrates that families attending schools with higher levels of autonomy were less likely to be recruited for the program than families attending schools with lower levels of autonomy, with a log odds decrease of .463 per one level increase in school autonomy. The odds ratio indicates that for each one level increase in school autonomy, families were .630 times as likely to be recruited for the FAST program (OR = .630, 95% CI [0.482, 0.882]).

Finally, families of children with more siblings were less likely to be recruited for the program. The regression coefficient was β = -.155 (p = .024). This coefficient demonstrates that for every additional sibling the family reported, there was a .155 log odds decrease in the chances that they would be recruited for the program. Also, the odds ratio suggest that families were .856 times as likely to be recruited for the program for every additional sibling that they reported (OR = .856, 95% CI [0.748, 0.980]). This means that families with more children were less likely to attend a single program session than families with less children. Table 17 displays the results of the binary logistic regression analysis.

Table 17
Predicting Recruitment in the FAST Program: Results of the Binary Logistic Regression Analysis

Variable	β	S.E.	Sig.	Exp (β)	95% C.I. for Exp (B) Lower	Upper
Caregiver Employment Status	-.824	.185	.000***	.439	.305	.631
Caregiver Educational Attainment	-.248	.167	.138	.780	.562	1.084
Family Public Assistance	-.196	.217	.368	.822	.537	1.263
Number of Siblings	-.155	.069	.024*	.856	.740	.980
Family Social Support	.802	.142	.000***	2.231	1.688	2.948
School Poverty Rate	-.033	.021	.127	.968	.928	1.009
School Autonomy Level	-.463	.136	.001**	.630	.482	.822
School Climate Rating	.004	.005	.465	1.004	.993	1.014

*$p < .05$, **$p < .005$, ***$p < .001$

Continuation Ratio Logistic Regression Analysis

A continuation ratio regression analysis was performed to assess the impact of eight independent variables (i.e., caregiver educational attainment, caregiver employment status, family use of public assistance, number of siblings in the home, family social support, school poverty level, school autonomy level, and school climate rating) on increasing levels of retention for the FAST program. The results of the chi-square test reveal that the full model containing all eight predictors was statistically significant, χ_2 (8, N = 738) = 49.16, $p < .001$, indicating that the

full model with eight predictors provides a better fit than the null model with no independent variables in predicting conditional probability of retention. The likelihood ratio $R_2 = 0.0306$ was small.

The following three independent variables made a unique statistically significant contribution to the model (i.e., uniquely predicted retention): level of social support ($p < .001$), number of siblings in the home ($p = .050$), and parent employment status ($p < .005$).

The coefficient for caregiver employment status is negative, $\beta = -.382$, Wald $z = -2.86$, $p < .001$, indicating that the log odds of completing more than a particular number of sessions versus completing that number of sessions decreases by .382 log odds for each additional caregiver in the home who is employed, when holding the other variables constant. The odds ratio (OR = .682, 95% CI [0.525, 0.887]) indicates that for each additional employed caregiver in the home, families are.682 as likely to complete more sessions relative to completing a certain number of sessions, when controlling for the effects of the other predictors in the model. These results indicated that the more caregivers in a family that were employed, the less likely families were to attend additional sessions.

The coefficient for number of siblings in the home is also negative, $\beta = -.092$, Wald $z = -1.96$, $p = .050$. These results indicate that the log odds of completing more than a certain number of sessions versus completing that number of sessions decreases by .092 log odds for each additional sibling in the home, when holding the other variables constant. The odds ratio of .911 (95% CI [0.831, 0.999]) suggests that for each sibling in the home, families are .911 as likely to complete more than a certain number of sessions (or 9.11%), when controlling for all the other predictors in the model. In other words, families with more siblings in the home were significantly less likely to complete more sessions than families with less siblings in the home.

With regard to level of social support, the coefficient is positive, $\beta = .567$, Wald $z = 5.51$, $p < .001$ This means that the log odds of completing more sessions versus completing a particular number of sessions increases by .567 log odds for each one-unit increase in a family's score on the RSOP, when holding the other variables constant. The odds ratio (OR = 1.762, 95% CI [1.440, 2.156]) indicates that the likelihood that families would attend more than a particular number of sessions increase by 1.762 (or 17.62%) for each one-unit increase in score on the RSOP, and when holding all other variables constant. This means that families who endorsed higher ratings on the RSOP were more likely to attend additional sessions than families who endorsed lower ratings on the RSOP.

Table 18 displays the results of the continuation ratio logistic regression analysis.

Table 18
Predicting Retention in the FAST Program: Results of the Continuation Ratio Logistic Regression Analysis

Variable	β	S.E.	Sig.	Wald z	95% C.I. for Exp (B) Lower	Upper
Caregiver Employment Status	-.382	.134	.004**	-2.86	-.645	-.120
Caregiver Educational Attainment	-.040	.120	.735	-0.24	-.275	.194
Family Public Assistance	-.152	.157	.333	-0.97	-.458	0.155
Number of Siblings	-.092	.047	.050*	-1.96	-.184	-.000
Family Social Support	.567	.103	.000***	5.51	.365	.768
School Poverty Rate	-.012	.017	-0.73	0.465	-.046	-.021
School Autonomy Level	-.092	.105	0.379	-0.88	-.297	.113
School Climate Rating	-.002	.004	.667	-0.43	-.010	.006

*$p < .05$, **$p < .005$, ***$p < .001$

Chapter 5: Discussion

The present study examined predictors of recruitment and retention for Families And Schools Together (FAST; McDonald et al., 1997; McDonald & Moberg, 2002), a school-based family engagement prevention program aimed at improving student academic and behavioral outcomes by strengthening family interactions and the school-home connection. The present study examined recruitment and retention for the FAST program as implemented for the FAST i3 Validation Study, which is a randomized control trial (RCT) that examined the impact of the FAST program on family and student academic, social-emotional, and behavioral outcomes in 30 schools in a large urban school district (Kratochwill et al., 2018). The FAST i3 Validation Study researchers noted significant difficulties recruiting and retaining families for the original RCT, despite ample efforts to increase recruitment and retention both prior to and throughout program implementation.

The present study presented descriptive statistics to demonstrate general trends in recruitment and retention for the FAST program as implemented for the FAST i3 Validation study. Overall, it was observed that recruitment and retention for the FAST program was very low across the district for both cohort years that the study was implemented. Specifically, 716 families consented to participate in the FAST i3 Validation Study, of which 292 (41%) attended at least one program session and were thereby considered recruited for the FAST program. Of the 292 families who were recruited for the program, twenty-nine (9.9%) attended a total of one session, twenty-one (7.2%) attended two sessions, eighteen (6.2%) attended three sessions, sixteen (5.5%) attended four sessions, twenty-six (8.9%) attended five sessions, twenty-four (8.2%) attended six sessions, forty-three (14.7%) attended seven sessions, and 115 (39.4%) attended eight or more sessions.

Additionally, two statistical analyses were conducted to examine the predictive nature of a set of independent variables (i.e., caregiver employment status, caregiver educational attainment, family use of public assistance, number of siblings in the home, family social support, school poverty rate, school turnaround status, and school climate rating) for recruitment and retention for the FAST program. Specifically, a binary logistic regression was used to examine the ability of the independent variables to predict recruitment, and a continuation ratio logistic regression was conducted to examine the ability of the independent variables to predict retention. A number of unique predictors emerged for both recruitment (i.e., caregiver employment status, family social support, number of siblings in the home, and school turnaround status) and retention (i.e., caregiver employment status, family social support, and number of siblings in the home) for the program.

Low Recruitment and Retention for the FAST Program

An examination of recruitment and retention rates for the FAST i3 Validation Study revealed problematically low recruitment and retention of families for participation in the FAST program across both cohort years. Because recruitment and retention posed significant barriers to study implementation, the FAST i3 Validation team engaged in extensive efforts to promote and boost recruitment and retention for the FAST program. According to implementation team meeting notes, throughout the study, the team applied strategies such as offering monetary incentives to families for attending sessions, providing dinner and childcare, encouraging teachers to initiate individual conversations with families promoting the program, and eliciting extensive promotional materials and reminders to boost attendance for FAST sessions. Some of these strategies were integral to the FAST program, as designed. For example, the FAST program suggests offering dinner and conducting a raffle as a component of the program

(Kratochwill et al., 2004). However, many of the strategies that the FAST i3 Validation team implemented were unique to the FAST i3 Validation study and were offered above and beyond what is designated by the original program. For example, the team offered families a monetary reward for session attendance in an attempt to boost recruitment and retention. Despite the ongoing application of varied strategies, recruitment and retention for the FAST program remained problematically low throughout the duration of the FAST i3 Validation Study.

Although it is possible that the research nature of the FAST i3 Validation project deterred families from participating in the FAST program, the majority of the families who were recruited for the FAST i3 Validation Study participated in elements of the study (i.e., by providing responses to surveys and assessment protocols) but did not participate in elements of the FAST program (i.e., by attending program sessions). Specifically, 59% of the families who consented to participate in the study did not attend a single FAST session. This finding suggests that there may be program-related reasons that families were insufficiently recruited and retained for participation in FAST program sessions. Additionally, difficulties with low recruitment and retention are not unique to the FAST i3 Validation Study. Rather, across a variety of FAST studies, researchers have described difficulties recruiting and retaining families for participation in the FAST program (Abt. Associates, 2001; Fiel et al., 2013; Gamoran et al., 2012; McDonald et al., 2006; Moberg et al., 2007; Turley et al., 2017). Furthermore, multiple researchers have noted that recruitment and retention for the FAST program has varied by demographic subpopulations (Abt. Associates, 2001; Moberg et al., 2007; Turley et al., 2017). This trend of low and differential recruitment and retention for the FAST program across multiple studies suggest that characteristics of the FAST program, itself, may not sufficiently appeal to or accommodate the needs of diverse populations. Therefore, implications for the FAST program

are discussed, including suggestions for individuals implementing FAST and similar programs in either research or practical contexts.

Significant Predictors of Recruitment and Retention

The present study revealed that families were recruited and retained differently for the FAST program based on individual and systems-level variables. Specifically, the following independent variables were found to be significant predictors of recruitment for the FAST program: caregiver employment status, family social support, number of siblings in the home, and school turnaround status. Caregiver employment status, family social support, and number of siblings in the home also uniquely predicted retention in the FAST program. Because a number of the same variables (with the exception of school turnaround status) acted as significant predictors for both recruitment and retention, it is likely that the same mechanisms underlie the relationships between these independent variables and recruitment and retention for the FAST program in this study. Therefore, the predictive ability of each independent variable is discussed here for recruitment and retention, simultaneously. Possible explanations for the difference in the predictive ability of school turnaround status for recruitment as opposed to retention are also discussed.

Caregiver Employment Status

Caregiver employment status was found to be a significant predictor of both recruitment and retention for the FAST program as implemented for the FAST i3 Validation study. Specifically, families who reported having more employed caregivers were significantly less likely to be recruited for and retained in the FAST program than families who reported having fewer employed caregivers. This finding coincides with the hypothesis that caregiver employment may act as a barrier to program participation.

There are a number of reasons that employment may impede recruitment and retention for a school-based family engagement program. From a logistical standpoint, it is possible that caregivers adhering to employment schedules may encounter more difficulties incorporating extracurricular activities (i.e., program sessions) into their calendars than caregivers who do not need to accommodate employment schedules. An additional consideration for the impact of employment on participation in the FAST program for the FAST i3 Validation Study, specifically, is the type of jobs the caregivers may have held. Although specific information regarding caregivers' line of employment was not collected, it is known that the population involved in this study was primarily low income, with school-level poverty rates ranging from 76% to 98% (M = 1.75, SD = 5.88). Overall, low-paying jobs tend to offer less flexibility in scheduling. Additionally, it is not uncommon for low-income individuals to work multiple jobs or jobs with odd hours (e.g., second or third shift). In the case of the FAST i3 Validation Study, program sessions were offered immediately after school (i.e., roughly 3:30 p.m.). This time may have conflicted with the work hours of caregivers who worked later or who worked multiple shifts. Furthermore, challenges posed by low-paying jobs may have compounded other logistical challenges inherent to poverty, such as difficulties arranging transportation to and from work and/or program sessions. Therefore, it is possible that employment posed a particular challenge for the families in this study, such that those who had one or two employed caregivers may have been unable to attend sessions due to a myriad of employment-related logistical barriers. Additionally, even in cases in which families did not experience direct time conflicts related to employment, it is possible that balancing multiple additional demands (e.g., errands, church, extracurricular activities, etc.) made it more challenging for families with one or more working caregivers to accommodate program sessions (Dillman-Carpentier et al., 2007). That is,

although some families may not have been working at the time of the FAST sessions, they may have elected to reserve their limited time off for other activities. These types of scheduling challenges may be more salient for families with working caregivers, who have less availability, overall, to accommodate a range of activities.

Considering the observed relationship between employment and low recruitment and retention for program sessions for the FAST i3 Validation Study, it is important to develop strategies to alleviate employment-related barriers for families with working caregivers. These strategies may be useful for researchers and practitioners implementing FAST and other family engagement programs in both research and practical contexts. Considerations for accommodating employment-related barriers may be especially important when implementing programs such as FAST with populations who are considered low income. For example, it may be beneficial to proactively assist parents in problem solving barriers to program session attendance (Miller & Prinz, 2003). Additionally, sessions could be scheduled at later times or multiple times throughout the same week to accommodate differing schedules across families (Mendez et al., 2009). Offering later or different session times may pose a special challenge for programs implemented in school settings, as scheduling options are often limited due to constraints on available facilities. Furthermore, FAST teams, specifically, include school staff, who often begin their work days early in the morning and may be reluctant to facilitate later program sessions. Therefore, researchers and practitioners implementing the FAST program may benefit from generating creative solutions to overcoming school-related logistical challenges. For example, implementors may consider holding sessions in community-based facilities or offering incentives to school-based employees to stay late or offer sessions at multiple times throughout the week (e.g., additional compensation, tangible rewards, etc.).

Even when offering flexible schedules, family engagement program session times may not be accessible for all working caregivers. Therefore, it may be beneficial to 'overfill' programs, or to allow more families to sign up than there are spots. For example, in the case of the FAST program, researchers and practitioners may consider recruiting 20 families for FAST groups which would ideally be comprised of roughly 10 families. This may be especially important when implementing programs and studies with populations of families who have high proportions of working caregivers.

Family Social Support

Prior research has found that the HBM variable of perceived susceptibility may predict recruitment and retention for preventive program studies when perceived susceptibility is measured directly (Heinrichs et al., 2005; Hooven et al., 2013; Perrino et al., 2001). This suggests that individuals who endorse a need for a program may be more likely to engage in a study offering that program. Applying this line of reasoning to the FAST program as implemented for the FAST i3 Validation Study, it was hypothesized that families with lower levels of social support would be more likely to be recruited and retained in the FAST program, which is designed to increase family social support. However, this study found that families who reported lower levels of social support were actually *less* likely to be recruited and retained in the FAST program than those who reported higher levels of social support.

A potential explanation for the finding that families with lower levels of social support were less likely to be recruited and retained in the FAST program than those with higher levels of social support is that FAST was not clearly marketed as a program designed to increase family social support. Although some of the recruitment materials that were utilized in the FAST i3 Validation Study made mention of opportunities to meet other families, this was not a central

focus of FAST recruitment messaging. Rather, FAST was most prominently advertised as a program that could provide family fun and support children in achieving academic success. Therefore, it is possible that families did not view FAST as a program which may increase their social support within the school community. In this case, the HBM construct of perceived susceptibility may not have been fully applicable in the context of this study.

In general, in order for perceived susceptibility to impact program recruitment and retention, it may be helpful for researchers and individuals implementing family engagement programs in practice settings to support potential participants in both (a) recognizing their need for a program and (b) understanding how the program can address that need. To do so, it may be helpful to make conscious efforts to establish this understanding prior to the onset of program sessions. For example, program implementors may use pre-intervention screenings to determine families' self-identified needs and clearly delineate how the program is applicable to those needs. Furthermore, they may use communication techniques such as motivational interviewing to increase families' motivation/commitment to attending program sessions (Dishion & Kavanagh, 2003). Overall, extra steps such as these may help ensure that families fully understand the potential benefits of the program relevant to their individual needs, which may increase the probability that they will be recruited and retained in the program.

An additional consideration is that it is possible that low levels of social support may have acted as a barrier to program participation. That is, families who have lower levels of social support may be less comfortable attending program sessions for a number of reasons. For example, they may know fewer families or school staff, they may be less comfortable in group social situations, or they may be more mistrustful of strangers (e.g., service providers, unknown families). Conversely, families with higher levels of social support may be more comfortable in

group situations. Also, they may already know families or staff at the school who will also be in attendance. A higher level of comfort with the social context of the FAST program may both increase the chances that families will 'try it out,' or attend a single session, and that they will continue to attend sessions over time. Also, if families have pre-existing social connections at the school, this may add an 'accountability' factor, which may augment family motivation to attend sessions.

Regardless of the underlying mechanism, the observed relationship between lower social support and lower recruitment and retention for the FAST program is problematic because the FAST program is designed to increase the social support of families who are more disconnected from their school communities. Therefore, when the program is implemented for research purposes, the associated study findings may not generalize to targeted populations. Additionally, if families with less social support are less likely to be recruited and retained in the FAST program once disseminated into practical settings, the program will not be able to influence its true target audience. To account for this problem, it may be beneficial for researchers and practitioners implementing FAST and other family engagement programs to focus recruitment and retention efforts on building positive relationships between program staff and families *prior* to the onset of the first program session. For example, researchers that have effectively recruited and retained parents in other family-focused program studies have utilized recruitment and retention strategies that involved face-to-face (e.g., home) visits between program staff and families (Caspe & Lopez, 2006; Davidson & Campbell, 2007). Other successful strategies have included using prior program graduates as recruiters for the program and training program staff in effective methods of communication with families. It may also be beneficial to recruit families through other entities, such as local churches, shopping centers, or resource centers

(Axford et al., 2012). Individuals that families already trust, such as church leaders, may be enlisted to help 'sell' the program to families. These strategies may be useful in both research and practical contexts.

With regard to retention, specifically, it will be important for individuals implementing family engagement programs, such as FAST, to utilize strategies to maintain family program session attendance once families attend an initial session. Caregivers tend to respond more positively to individuals that they know and trust (Axford et al., 2012). Therefore, it will be important to train and enable program leaders to create a warm, welcoming, and personal environment for program sessions and to continuously fortify their relationships with families. For example, program leaders may make efforts to engage in genuine, friendly interactions with families before, during, and after sessions. Also, it may be beneficial to reach out to families between sessions via phone, e-mail, or text message.

Number of Siblings

The finding that families with more children were less likely to be recruited and retained in the FAST program than families with less children aligns with previous research that has found that families with greater numbers of children may experience more barriers to preventive-program participation (Eisner & Meidert, 2011). Anticipating this challenge, many family-focused prevention programs and associated studies offer childcare as a component of the program and/or study. In the case of the FAST program, families are encouraged to bring all their children to participate in program sessions. However, the finding that families with more children were still less likely to be recruited and retained in the program than families with less children suggests that offering childcare may not be enough to alleviate participation barriers for families with multiple children. It is possible that this is because there are a variety of other

challenges inherent to bringing multiple children to program sessions. For example, it may be more difficult to arrange transportation for a larger family, especially if the caregiver does not have access to a car. Also, individual children may have competing needs or activities (e.g., sports, extra-curricular activities, appointments, etc.) which may override the family's inclination to attend program sessions. Furthermore, families may be reluctant to bring potentially tired children to a structured program setting after a long day fulfilling a number of other responsibilities, particularly if some of their children are young. It is also possible that the children, themselves, may resist attending sessions. The more children a family has, the more likely it is that one or more of them will resist. Also, more generally, families may be reticent to bring cranky or tantrummy children to sessions for fear of embarrassment stemming from their children's behavior.

Considering the potential challenges associated with bringing multiple children to program sessions, future researchers and practitioners implementing FAST and other family engagement programs in research or practical settings may consider offering solutions to alleviate potential barriers, above and beyond providing childcare. For example, when applicable, program staff may encourage families to attend sessions with only one caregiver while the other caregiver stays at home with one or more of their children. Even when programs are designed to involve the whole family, it may be more realistic to split the family up. In practical contexts, families may achieve a certain level of benefit as the result of certain members of the family attending sessions, whereas the family cannot benefit when no family members attend at all. Likewise, when programs are implemented in research contexts, studies may be strengthened from the participation of some family members when the alternative would entail families missing sessions entirely. Program staff can also assure families that it is acceptable

(and at times, expected) to arrive to sessions with children who may be exhibiting problematic behaviors. This may put families at ease when they may otherwise choose to stay home out of fear of embarrassment. In general, validating and problem-solving families' concerns related to bringing multiple children to sessions may increase their ability and willingness to attend.

School Turnaround Status

This study found that families who attended schools with less autonomy (i.e., lower-performing schools that required more assistance from the district) were more likely to be recruited for the FAST program than families who attended schools with more autonomy (i.e., higher-performing schools that required less assistance from the district). This relationship was observed in the predicted direction, supporting the hypothesis that school autonomy may have acted as a marker of perceived susceptibility. That is, families attending struggling schools may have perceived a greater need to access additional educational support for their children in the form of the FAST program. Likewise, families attending higher-achieving schools may have felt that their schools were providing adequate education and related supports to their children, and thus they may have perceived less of a personal need to sign up for the FAST program. Furthermore, it is possible that less autonomous schools provided less extracurricular activities and program options for families. This could result in less competition for the FAST program. However, without clear data regarding variables such as educational support, extra-curricular activities, etc., these explanations are purely speculative.

It is important to note that school autonomy level was not a significant predictor of retention in the FAST program. It is possible that the mechanisms that supported family recruitment were overcome by barriers which detracted from retention equally across schools at varying autonomy levels. That is, although families at schools with less autonomy may have

perceived a greater need for the program initially, schools across the district may have faced similar barriers to retention, such as lack of adequate space or transportation for families to and from sessions. Ultimately, these types of systemic barriers to program retention may have equally impacted families across schools within this district, irrespective of individual school autonomy levels.

It will be important for future research to examine how school-level variables may impact family recruitment and retention in family engagement programs and associated studies. In particular, because the relationship between school autonomy level and program recruitment was found to be significant, it may be especially important for future researchers and practitioners to consider aspects of school autonomy in the early stages of recruitment. For example, it may be important to emphasize the potential benefits of a program when marketing it to families, especially those attending more autonomous schools. This may support families' perception of program benefits above and beyond what their school already offers. Furthermore, it may be beneficial to coordinate with other school-based programs/activities in an attempt to reduce competing commitments for families.

Nonsignificant Independent Variables

The following four variables did not act as significant predictors of recruitment and retention for the FAST program for the FAST i3 Validation Study: family use of public assistance, caregiver educational attainment, school poverty rate, and school climate rating.

Family Use of Public Assistance

Based on research that suggests that income is associated with preventive program recruitment and retention challenges (Coatsworth, Duncan, Pantin, & Szapocznik, 2006; Frankel & Simmons, 1992; Gorman-Smith et al., 2002; Herzog et al., 1986; Perrino et al., 2001), it was

hypothesized that families who used public assistance to purchase food would be less likely to be recruited and retained for the FAST program than those who did not use public assistance to purchase food. However, this variable was not found to be a significant predictor of either recruitment or retention. This lack of significant relationships may be explained by the fact that family use of public assistance is a weak and broad metric to approximate family income. That is, it was assumed that families who used public assistance to purchase food had lower incomes than those who did not use public assistance. However, this variable does not differentiate amongst a range of income levels that fall above and below the cut-off to qualify for public assistance. Also, it is unclear whether or not all families who qualified for public assistance elected to access it. Furthermore, the population involved in the FAST i3 Validation Study was characterized by very limited economic variability. Therefore, it is possible that the differences in income amongst families were not substantial enough to impact program recruitment and retention.

Considering the shortcomings of the public assistance variable used in this study, future research should utilize more robust indicators of economic status to examine its ability to predict family recruitment and retention for school-based, family engagement programs and/or studies. This is particularly important considering that research suggests that low economic status is a significant risk factor for poor academic outcomes (Cooper, Borman, & Fairchild, 2010; Gutman et. al., 2003; Lee & Burkam, 2002; McLoyd, 1998). An understanding of the relationship between economic status and participation in school-based, family engagement programs and studies will illuminate both the validity of empirically-tested family engagement programs for a range of economic groups, as well as the applicability and appeal of such programs to

economically diverse families in practical settings. Ultimately, this research may also inform efforts to tailor programs to meet the needs of lower-income families.

School Poverty Rate

For the present study, school poverty rate was used as a systemic indicator of income because low-income schools are more likely to be situated in low-income neighborhoods. Heinrichs et al. (2005) found that families who lived in lower-SES neighborhoods were less likely to be recruited and retained in a study of a family-focused preventive program. Heinrichs et al.'s study also found that families in lower-SES neighborhoods expressed more resistance to outside involvement in family matters. Contrary to Heinrichs et al.'s (2005) findings, the present study found that families who attended schools characterized by higher levels of poverty were no more or less likely to be recruited and retained in the FAST program than families who attended schools with lower levels of poverty.

The lack of significant findings in this area may be attributed to the limited economic variability of the sample. That is, the district, as a whole, was largely low-income, with poverty levels ranging from 76% to 98% and an average of 91.75% across schools. This high average poverty rate across schools set the FAST i3 Validation Study apart from past FAST studies that served more economically heterogenous populations. Therefore, it is possible that low recruitment and retention for the FAST program as implemented for the FAST i3 Validation Study, as a whole, was related to the low income status of the entire study sample, and minute differences in income levels across schools may not have impacted how likely families were to be recruited and retained for the program as implemented in individual schools. Rather, it is possible that families were less likely to be recruited and retained for the FAST program, overall, due to factors related to the economic status of the entire district. A possible explanation for this could be that these

families may be more suspicious or doubtful of the intentions of research or educational staff due to previous negative experiences within salient social systems. It is also possible that the district faced a range of other barriers related to its low-income status, such as less access to resources (e.g., adequate space for program sessions) and consistently available staff members, etc. A lack of resources such as these may have a negative impact on the execution of the program itself, thus making the program less appealing to families across the district, overall. Many questions remain regarding how and why families participate differently in family engagement programs and associated studies across different schools and school districts. Therefore, it will be important to focus future inquiry on the quantitative differences between program uptake across school districts with varying economic resources.

Caregiver Educational Attainment

Because prior research has found that caregivers with lower levels of education are less likely to be recruited and retained in preventive programming (Cohen & Rice, 1995; Herzog et al., 1986; Quinn et al., 2010; Winslow et al., 2009), it was predicted that caregiver educational attainment would be a significant predictor of program recruitment and retention. Specifically, it was hypothesized that families with caregivers who completed lower levels of education would be recruited and retained at lower rates than families who completed higher levels of education. However, this variable was not found to be a significant predictor of either recruitment or retention. Akin to family use of public assistance, family educational attainment was measured using a broad and relatively vague metric (i.e., how many caregivers completed high school). This metric does not differentiate between multiple possible levels of educational attainment. Furthermore, it tells us little about caregivers' values pertaining to education and their views

regarding their role in their children's education, both of which may be stronger predictors of education-related behaviors.

It is possible that individuals with differing levels of education may have different values, skills, and beliefs about self-efficacy pertaining to education, all of which may impact their willingness or ability to participate in school-based programs and/or studies. Therefore, it is important to further research in this area. Future researchers may consider examining the relationship between recruitment and retention for family engagement programs/studies and educational attainment using more specific metrics, such as exactly how many years of education each caregiver completed. Furthermore, it may be beneficial to examine how caregivers are recruited and retained differently in school-based family engagement programs and associated research given their beliefs and ideas regarding education, including their own self-efficacy to assist their children in obtaining educational success. This research may provide important information regarding differences in program and study recruitment and retention by education-related variables, which may inform outcome interpretation and the design of future studies and practice.

School Climate Rating

A final variable that showed no significance in its ability to predict recruitment and retention for the FAST program was school climate rating. It was hypothesized that families who attended schools with lower school climate ratings would be recruited and retained at higher rates than families who attended schools with higher school climate ratings. This prediction was based on the assumption that school climate rating would act as an indicator of perceived susceptibility, in that families whose children attended schools with poorer school climates would be more in need of the FAST program, and thus more likely to attend sessions.

The lack of predictive ability of the school climate variable may be attributed to the way that school climate was calculated. That is, the school district calculated school climate using an amalgamation of student-level variables, including student attendance rates, suspension rates, and retention rates. Therefore, the resulting climate score did not represent caregiver perceptions of the school. Additionally, this variable did not reveal information regarding the actual strength of the social networks within the school. Therefore, it is important for future research to examine how *caregiver* perceptions of school climate are related to recruitment and retention for family-focused, school-based programming. This will be especially important for studies of programs that attempt to improve caregiver perception of the school and their relationships with individuals associated with the school.

Cultural Considerations

Overall, findings of the present study suggest that families were recruited and retained differently for participation in the FAST program based on a variety of individual and systems-level variables. In many cases, these differences suggest an increase in logistical barriers related to certain demographic characteristics. For example, families with more children and more working caregivers were less likely to participate in the FAST program, which may be due to the increased logistical difficulty of attending FAST sessions associated with having more children and more difficulties scheduling around work commitments. Based on these findings, future researchers and practitioners implementing family engagement programs may consider utilizing a variety of the discussed recruitment and retention strategies to address logistical barriers, which may support adequate and uniform recruitment and retention across subpopulations. From a research standpoint, increasing recruitment and retention may enhance the internal and external validity of study findings. In practical contexts, boosting recruitment and retention could

heighten the reach of effective family engagement programs, strengthening their public health significance. However, it is also important to consider that even when applying best practices for recruitment and retention in study and practical contexts, families may not participate in elements of a program if the program is not suitable for the targeted population. In particular, for family engagement programs to be appealing and applicable to diverse families, the program content must reflect the cultural norms, patterns, and values of the families being served (Smith, Rodriguez, & Bernal, 2011).

The FAST program embodies a one-size-fits-all design that follows the same routine across settings, regardless of context or the population with which it is implemented. Additionally, the program differs from other family engagement programs in that it does not directly address children's academic progress, performance, or skills. Rather, it aims to indirectly influence child and family outcomes by promoting parenting practices which tend to reflect the norms and values of the cultural majority. As a result, it is possible that the program may not appeal to diverse families who do not connect with the program's goals, content, or activities. Therefore, FAST may benefit from the addition of flexible, culturally-adapted content, which may be modified to maximize its relevance within different contexts. To achieve this aim, it may be beneficial to identify the mechanisms of change which should remain consistent across program implementation sites, as well as the elements which may vary by individual subpopulation (Smith et al., 2011). Then, FAST could be adapted based on subpopulations' unique needs and preferences. The process of developing and applying culturally-adapted elements should be guided by formative research which involves the input of stakeholders and the continuous evaluation of the effectiveness of adaptations of the intervention (van Mourik, Crone, de Wolff, & Reis, 2017).

In addition to adapting family-focused programming to reflect the cultural values and norms of target populations, it is also important for programs to address relevant cultural, social, and environmental influences on parenting (van Mourik et al., 2017). In the case of the FAST i3 Validation Study, the targeted population was a school district comprised of primarily low-income, minority race students and families. Research suggests that racial/ethnic minority families living in poverty are likely to face a plethora of institutional barriers rooted in social systems (Lakind & Atkins, 2018). For example, individuals from marginalized racial groups, such as African- and Mexican-Americans, are likely to experience bias and discrimination in employment, housing, healthcare, and education (Acevedo-Garcia, Osypuk, McArdle, & Williams, 2008). Research has also found that African-Americans, in particular, are likely to face racial bias and discrimination within the education system (McKay, Atkins, Hawkins, Brown, & Lynn, 2003). Resultant feelings of alienation, disenfranchisement, and isolation may dissuade caregivers from marginalized racial backgrounds from actively engaging in school-based activities and programs. Research has also found that immigrant families may face specific systemic barriers to family engagement related to their immigration status, including challenges posed by acculturation, language barriers, and concerns regarding documentation status (Chow, Jaffee, & Snowden, 2003). These challenges, compounded with the stressors inherent to living in poverty, are likely to detract from families' ability to engage in family engagement activities.

It is possible that the FAST program, in particular, does not sufficiently account for or address the unique systemic challenges that low-income families from marginalized racial groups may face. This is problematic, as parenting practices and family interactions are influenced by variables which are embedded in broader social-ecological systems (Lakind & Atkins, 2018).

Therefore, by not directly addressing broader systemic challenges, the FAST program may fall short of its potential to influence change within family systems. Furthermore, families facing a plethora of systemic problems may not elect to dedicate their time and energy towards the FAST program, which they may not perceive as directly relevant to their most salient stressors. Therefore, the FAST program could benefit from expanding its scope to encompass a more holistic conceptualization of family engagement within broader ecological systems. This may include incorporating the flexibility to adjust program components to include the discussion of critical content, such as racism and politics. Program flexibility could also allow room to directly address primary stressors identified by families themselves (Smyth & Schorr, 2009). Additionally, FAST could offer case management services which may ameliorate stressors, thus allowing caregivers the ability to more meaningfully engage in program sessions and activities (see Lakind & Atkins, 2018). Strategies such as these may increase the FAST program's perceived relevance and usefulness to diverse families, such as those targeted by the FAST i3 Validation Study.

Another consideration for fitting family engagement programs to the culturally-embedded needs and preferences of diverse populations is situated at the systems level. In the case of the FAST i3 Validation Study, the families involved in the study were primarily low-income families. Furthermore, the target school district was characterized by poverty and an overall lack of resources to support positive student outcomes. Some associated challenges that researchers encountered at the systems-level included high staff turnover, lack of space to conduct sessions, and an apparent lack of investment on the part of some district leaders who may have been occupied by more outwardly pressing issues faced by their schools, such as failing test scores. The FAST program, as designed, does not specifically address or account for

school or district-level organizational and structural issues such as these. Ultimately, these unaddressed systems-level issues may have hindered the program's implementation, which may have ultimately impeded recruitment and retention of families. Considering the inherent challenges that school districts characterized by higher rates of poverty may face, it is important that family engagement programs, such as FAST, to embody the adaptability to adjust its components and/or structure to reflect the needs and capacities of unique districts and individual schools. Furthermore, prior to choosing to implement a program such as FAST, researchers and practitioners may consider eliciting information from district stakeholders regarding their perception of need for such a program, as well as the feasibility of implementing it for practical or study purposes. Additionally, it will be important to consider that school-based barriers (e.g., access to resources) and the needs/preferences of the school population may change throughout the course of a program (Miller & Prinz, 2003). This may be especially true in low-income school districts. For example, families attending these schools may be more prone to moving from school to school, hindering their ability to engage in long-term family engagement efforts, such as the FAST program. Also, the priorities and interests of key stakeholders may change with evolving political and social contexts. Therefore, it is important to continuously re-assess the appropriateness of family engagement program structures and components to dynamically account for the changing circumstances of unique school districts and individual schools.

Overall, difficulties recruiting and retaining economically and racially diverse families for participation in the FAST program are problematic. The present study identified multiple individual and systems-level variables which predicted recruitment and retention for the FAST program as implemented for the FAST i3 Validation study population. These predictors suggest an increased presence of barriers to program attendance associated with individual and systems-

level traits. Future researchers and practitioners who implement FAST and other family engagement programs in research and practical contexts may consider utilizing a variety of the discussed strategies to support adequate recruitment and retention across subpopulations. Doing so may enhance the internal and external validity of study findings. In practical contexts, applying best practices in recruitment and retention may increase the reach of programs such as FAST. However, it is also important to consider FAST and other family engagement programs are not likely to attract and positively impact diverse families if they do not reflect the cultural values, preferences, and needs of the families, themselves. Additionally, when family engagement programs do not account for the influence of relevant social ecologies on parenting, their effectiveness may be limited. Therefore, it is important for FAST and future researchers to modify, design, and implement programs so that they account for cultural and systemic factors. Doing so may both increase family participation and enhance the effectiveness of such programs. Ultimately, this line of work will strengthen the public health significance of family engagement programs designed to support the academic, behavioral, and social-emotional needs of broad populations of children and families.

Limitations and Future Directions

Several limitations of this study highlight areas of need for future research. First and foremost, the study was retrospective in nature. That is, the FAST i3 Validation Study RCT was completed, after which the idea for this study was generated based on implementation challenges noted throughout the course of the original RCT (Kratochwill et al., 2018). As a result, this study was limited to variables that were included in the original RCT. Because the original RCT was not focused on recruitment, retention, or possible predictors of recruitment or retention, several variables which may have otherwise been examined could not be included in this study.

One particularly relevant category of data that was not collected is caregiver perceptions of HBM variables, including perceived barriers to program participation, perceived susceptibility to the problems addressed by the program, perceived severity of the problems addressed by the program, and perceived benefits of the program. As a result, some of these constructs were measured indirectly using hypothesized indicators of these variables. Although this is a technique that is commonly used in HBM research (e.g., Heinrichs et al., 2005; Hooven et al., 2013; Mauricio et al., 2014; Perrino et al., 2001; Spoth et al., 1993; 1995; 1997; 1999), direct caregiver ratings constitute more robust indicators of HBM constructs. Therefore, it would be helpful for future researchers to obtain caregiver ratings of HBM constructs prior to the first session of the studied program. This will allow researchers to examine how caregiver perceptions of their own needs relative to the program being studied relate to recruitment and retention in the program. Such information will support inferences regarding the applicability of the program to the studied population, as we well as ideas regarding how to market or adjust the program for use with future research or real-world populations.

A second limitation of this study is the use of several weak metrics to represent broad sociocultural variables. As was previously mentioned, the study was retrospective in nature. Therefore, the availability of variables was limited. Furthermore, the original study focused on the impact of the FAST program on family interaction and child academic and behavioral outcomes. Therefore, the researchers did not collect specific data regarding a range of demographic characteristics, such as caregiver education level, family income level, race, etc. The dataset did include various broad metrics from which these variables were approximated for the purposes of this study. For example, family use of public assistance (e.g., whether or not the target child received free/reduced lunch) was used to represent income, assuming that lower-

income families would access public assistance and higher-income families would not. However, this is a weak approximation of income that does not constitute a thorough representation of the economic variability of the sample. Overall, this study would have benefitted greatly from the availability of more specific quantitative data regarding socio-demographic characteristics.

In the future, researchers may consider collecting family demographic data at the outset of their study. Such data may be collected as part of an initial survey that caregivers complete when they agree to take part in the study. This way, the data could be used in an examination of family recruitment and retention rates, incorporating families who never attend a single session. This type of information may allow researchers to draw conclusions regarding the internal and external validity of study findings, based on the characteristics of the participating families. This information could also support inquiry regarding families who were *not* recruited or retained in the program being studied, including why they were not. Variables of interest based on past research on recruitment and retention for family-focused prevention program studies may include race, income level, education level, native language, number of siblings in the home, and number of caregivers in the home, amongst others.

A third limitation of this study is that it is unknown whether certain factors may have influenced recruitment and retention in the FAST program because the program was implemented as part of a research study. That is, all individuals who were included in the analysis used for this study participated in the FAST i3 Validation study components (i.e., by providing survey and assessment data). Therefore, it is not possible to discern whether program recruitment and retention was influenced by barriers to study participation, above and beyond barriers to program participation. Furthermore, broad quantitative data regarding rates of

recruitment and retention for FAST as implemented in other practice settings is not readily available. Therefore, it is unclear whether recruitment and retention patterns for FAST as implemented in practice settings mirror those which have been observed in research contexts, such as the present study.

In the future, it will be important to determine whether underlying mechanisms for recruitment and retention may be attributed to facets of the study, the studied program, or a combination of both. To do so, researchers may consider examining population-based recruitment rates, which denote how many people were recruited for a study relative to how many were offered participation in the study. This is different from a sample-based recruitment rate, which describes the proportion of individuals who participated in the program relative to how many signed up for the study. Population-based recruitment rates may be more useful in studying patterns of recruitment, in that they may reveal differences between families who sign up for studies and those who do not. Additionally, when subpopulations participate differently in studies of particular programs, this may suggest differences in the suitability of the program being studied across diverse demographic groups.

It is important to consider that researchers' ability to access information regarding the traits of individuals who decline study participation may be limited. This is because individuals who do not sign up for studies do not typically provide personal information, nor do they provide consent to access their personal information. However, at a bare minimum, researchers could report on how many people in a population are offered participation in a study, as well as details regarding what 'being offered' study participation entails. Furthermore, researchers implementing studies in schools, in particular, may be able to report descriptive population characteristics using publicly available school demographic data. By providing descriptive

characteristics of the study population and the study sample, researchers can offer some insight into the representativeness of the recruited study sample. This information may also support a discussion on the appropriateness of the fit of the program to varying subpopulations.

Although information regarding differences in study participation by demographic subgroups is useful in that it may allow researchers to hypothesize the reasons for differences in participation by demographic characteristics, it will also be important for future primary research to elicit qualitative information from families, themselves. In particular, it will be beneficial for researchers to gather data from families who are offered but decline participation in studies. This information should include families' reasons for not signing up for or participating in particular studies. Information such as this will be particularly valuable in that it will inform conclusions regarding whether families decline study participation due to reluctance to participate in a research study or a lack of interest program being studied. These findings may inform strategies to improve study design and implementation to support family participation in research efforts. Likewise, if it is found that families decline study participation due to a lack of interest in the program being studied, this may inform program adaptation and future design of programs to better suit the needs and interests of diverse families.

A final limitation of this study is the lack of specific information regarding the impact of researchers' efforts to recruit and retain families. Although FAST i3 Validation Study implementation team meeting notes provide insight into the team's recruitment and retention efforts, a description of the follow-through of discussed strategies was not presented. Additionally, there is no available information regarding the effectiveness of various applied strategies. Ultimately, in the absence of these details, conclusions cannot be drawn regarding which strategies were impactful and in what ways. However, the primary goal of recruitment

and retention research is two-fold: (a) to examine the representativeness of study samples, and (b) to inform best practices in recruitment and retention of diverse families for future research and practice. Without specific information regarding what was done, for whom, and the result, we cannot benefit from an in-depth discussion of recruitment and retention strategies for this particular study.

In the future, researchers should consider recruitment and retention strategies as integral components of family engagement program research, rather than a retrospective point of discussion (Axford et al., 2012). As such, future research should focus on the development and application of recruitment and retention strategies throughout each stage of program development and study implementation. Such strategies should be based in theory and empirical research. Recruitment and retention strategies may be explicit (e.g., offering incentives to families for session participation). They may also be more nuanced (e.g., utilizing particular forms of communication when making initial contact with families). Additionally, in developing and applying these strategies, the various implementation challenges inherent to school settings should be taken into consideration.

In addition to dedicating substantial time and effort towards building and implementing research-based recruitment and retention strategies, researchers should carefully document their use of such strategies. This is important even in the case that recruitment and retention strategies are not successful. This is because researchers can contribute greatly to the field by sharing information regarding strategies that they have tried as well as their lessons learned. Strategies that are found to be successful in increasing recruitment and retention of culturally diverse families for school-based family engagement program studies may be broadly applied to school-based family engagement research. Additionally, when program studies achieve sufficient

recruitment and retention of diverse families, the results of such studies may be deemed more valid and generalizable to broader audiences. Furthermore, for programs that do achieve valid and generalizable positive outcomes in research trials, recruitment and retention strategies that were useful in research stages may be applied to disseminated programs. Ultimately, this will increase the public health impact and cost-effectiveness of both school-based family engagement research and practice.

Finally, it is important for researchers to keep in mind that methodologically-sound research will inevitably reveal that some family engagement programs are not effective in improving family or student outcomes. For example, in cases where best practices in recruitment and retention are applied but recruitment and retention remain low, researchers may conclude that the program itself may not apply or appeal to the targeted population. If this is the case, modifications and/or adaptations may be made to existing programs to improve their suitability to broad populations. In particular, these modifications should aim to enhance the cultural responsiveness of family engagement programs to reflect the values, goals, and practices of the populations they aim to serve. Ultimately, the process of using lessons learned from recruitment and retention research will support the development and dissemination of effective programs that fit the needs and preferences of diverse families.

Conclusion

A great deal of research suggests that family engagement is related to positive student social-emotional, behavioral, and academic outcomes (Barnard, 2004; Dotterer & Wehrspann, 2016; Fan & Chen, 2001; Gonzalez-DeHass et al., 2005; Hill & Tyson, 2009; Jeynes, 2007; Keith et al., 1998; Rumberger, 1995; Trusty, 1996). Despite these findings, research regarding the ability of family engagement programs to improve student outcomes is largely inconclusive

(Fishel & Ramirez, 2005; Mattingly et al., 2002; Sheridan et al., 2019). The difficulties inherent to examining the impact of family engagement programs in real-world settings have been discussed across studies (DeCarlo et al., 2013; Garbacz et al., 2017; Ouellette & Wilkerson, 2008; Segrott et al., 2016). In particular, researchers have noted significant difficulties related to recruiting and retaining caregivers to participate in such studies (Eisner & Meidert, 2011; Fontana et al., 1989; Heinrichs, Bertram, Kuschel, & Hahlweg, 2005; McKay et al., 1996; Segrott et al., 2016; Spoth et al., 2000). The result of low recruitment and retention in family engagement program studies is low internal validity, which limits the legitimacy of conclusions regarding the impact of the program on outcomes, and low external validity, which restricts the generalization of findings to broader audiences. Low recruitment and retention in family engagement program studies also raises questions regarding the fit of such programs to targeted populations. That is, it is difficult to discern whether low recruitment and retention may be attributed to flaws in research study design and implementation or shortcomings of the program being studied. In cases in which best practices in recruitment and retention are applied in research contexts but family participation in the studied program remains low, researchers may conclude that the studied program does not sufficiently appeal to targeted families. If programs do not appeal to targeted families in research contexts, it may be reasonable to assume that families will not participate in such programs in practice settings, such as diverse school districts. A necessary first step in exploring these questions is to report on and examine patterns of recruitment and retention for school-based family engagement programs in depth.

Research in other fields has utilized the Health Beliefs Model (HBM; Rosenstock, 1966) to examine the association between individual variables and participation in preventive interventions (e.g., Buttell & Carney, 2002; Buttell et al., 2012; Gonzalez et al., 2011; Julinawati

et al., 2013; Juniper et al., 2004; Kazdin, 2000; Kim & Zane, 2016; O'Connor et al., 2014; Sullivan et al, 2004; Volk & Koopman, 2001; Wallace, 2002; Yep, 1993). A small amount of educational research has applied the HBM to examine caregiver participation in school-based family engagement program studies (Heinrichs et al., 2005; Hooven et al., 2013; Mauricio et al., 2014; Perez et al., 2008; Perrino et al., 2001; Spoth & Redmond, 1995; Spoth et al., 1997). The present study fills a gap in the current literature by examining the ability of an extended HBM model to predict recruitment and retention for the FAST i3 Validation effectiveness study of the FAST program (Kratochwill et al., 2018). This FAST i3 Validation Study was characterized by markedly low recruitment and retention of families for the program, which severely limited the researchers' ability to examine the impact of the program on outcomes of interest.

The present study revealed that multiple variables acted as unique predictors of recruitment for the FAST program for the FAST i3 Validation Study, including caregiver employment status, number of siblings in the home, family social support, and school turnaround status. Additional variables found to be significant predictors of retention for the program included caregiver employment status, number of siblings in the home, and family social support. These findings highlight important considerations for future researchers and practitioners implementing family engagement programs such as FAST in schools. Implementors may benefit from considering the characteristics of the targeted population when determining which recruitment and retention strategies to apply from the outset of program implementation. For example, based on the findings from the present study, program implementors may consider utilizing particular recruitment and retention strategies to support families with more working caregivers, more children, and less social support, including offering varied and additional session times, promoting communication regarding the benefits of the

program as related to the family's individual needs, and increasing an overall focus on relationship-building before and during program implementation. Applying strategies such as these may increase family recruitment and retention in school-based family engagement programs and studies examining the effectiveness of these programs. When implementing such programs for research studies, increasing family recruitment and retention in said studies will allow researchers to better understand the effectiveness of these programs for diverse populations. If programs are found to be effective for diverse populations, lessons learned from this research will inform best practices in recruitment and retention for practice contexts. If programs are not found to be effective for diverse populations, this line of research may signify the need for program modification and design to better fit the needs of diverse families.

In conclusion, studies that examine the effectiveness of family-focused interventions are of little value if researchers do not recruit and retain sufficient numbers of participants in the programs being studied. Additionally, when study findings do not explicitly report on the characteristics of the individuals who were recruited and retained, the value of the intervention for diverse groups may be unclear. Furthermore, low recruitment and retention for studies of family engagement programs raises questions about the quality of the programs themselves. This study contributes important findings to the field of school-based family engagement research in that it reveals numerous significant predictors for family recruitment and retention for the FAST program as implemented as part of a large RCT. Researchers and practitioners can use this information to inform recruitment and retention strategies when implementing school-based family engagement programs for research and practice. Furthermore, these findings may encourage future researchers to focus program development on fitting programs to the needs of diverse families. Ultimately, lessons learned from recruitment and retention research, such as

this, may be applied to developing and implementing effective family engagement programs for both research and practice, which will ultimately enhance their public health impact.

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Appendix A

FAST Principal Letter to Families

The [redacted] FAST-i3 Project Principal Letter to Families

Dear Kindergarten and First Grade Parent or Guardian,

You and your child are invited to Families and Schools Together (FAST®)! This is a very special program at our school that—

Supports your child's learning

Helps build friendships among parents, guardians and students

Engages all your family in a fun time together, with a free meal and activities

Why do I and your child's teacher think this is a great opportunity for your child?

We want your child to have a great school experience. We know each child comes to our school ready to learn. When all parents and grandparents, the children, and our school come together, we build a stronger community. Together, we can do a better job supporting our kids in developing their strengths.

Last year, we saw FAST make a huge difference in kids' school experience. We saw our children gain confidence when they went to FAST with their family. And parents who went to FAST said,

It was something we looked forward to—to just get out of the house, to have dinner and be with other parents who are going through the same things we are… It was neat to see how families came together.

Each member of your family (from the youngest to the oldest) is invited to come try FAST — to have a meal, play and do fun activities that build self-esteem and respect. A free dinner is part of every FAST event. The session includes time for parents to talk with one another. Children have time to play and do a little homework, as well.

I know that if all kindergartners and first graders attend FAST, our school will become stronger. More importantly, each child and family will benefit. Please come **(INSERT DATE AND LOCATION)**. If you have any questions, please talk to your child's teacher.

We look forward to seeing you.

Sincerely,

Principal Signature

School

A new web site tells parents' views of FAST and provides more information about the program.

See www.[redacted]fasti3.com

Appendix B

FAST Flyer One

Bring a Friend to F.A.S.T.*

for FUN, Games & Dinner, too!

Kindergarten & First Grade Families, invite your buddies and BFFs— to have a BLAST!

Don't miss out! Here's the day you can bring a friend to FAST at YOUR school!

[redacted]– Tues.	[redacted]– Tues.	[redacted]– Thurs.	[redacted]– Tues.	Cramp – Tues.
[redacted] Mon.	[redacted]– Wed.	[redacted] Thurs.	[redacted] Thurs.	[redacted] Wed.
[redacted] – Tues.	[redacted] – Thurs.	[redacted]– Wed.	[redacted]– Tues.	[redacted]– Wed.
[redacted] – Tues/Sat.	[redacted] Wed.	[redacted]– Thurs.	[redacted] – Thurs.	[redacted]– Mon.
[redacted] – Mon.	[redacted]– Wed.	[redacted] – Wed.	[redacted]– Mon.	[redacted] Thurs.
[redacted] – Tues.	[redacted] Wed.	[redacted]– Mon.	[redacted]– Mon.	[redacted]– Thurs.

* F.A.S.T. = Families and Schools Together

Appendix C

FAST Flyer Two

! KINDERGARTEN FAMILIES !

Your Students Are RAISING Their Hands for

Families and Schools Together (FAST®)

Do you know the top 6 reasons kids love FAST?

1. IT's FUN!
2. Special time with you
3. Confidence-building activities
   (Kids learn they ARE really smart ☺)
4. Games, crafts, homework help
5. Their parents enjoy FAST too!
6. A great (free) meal with their family.

Have you registered?

All K-1 Families Are Invited.

Let your child's teacher know

OR register through

[redacted]FASTi3.com

[redacted]
Office: [redacted]
Email: [redacted]
www[redacted]org

The School District of [redacted]
Office: [redacted]
Email: [redacted]

FAST Families & Schools TOGETHER®

[redacted]FASTi3.com

Appendix D

FAST Flyer Three

Appendix E

FAST Teacher Backpack Letter

[redacted]**FAST**-i3 Project

Teachers' Backpack Mail to Parents

Dear Parents and Guardians of Room ____,

I want to invite you to come to a very special time with your student! It's called Families and Schools Together (or FAST).

When you come to FAST, you and ALL your family will share a free meal (no dishes!) and enjoy fun activities. FAST will also give you a chance to meet other families from your child's class.

Parents who have attended this short-term program have said they "really looked forward to getting out of the house, having dinner, and being with other parents who are going through the same things we are." And children really love having special time with their parents.

I hope you will come to FAST. When children go to FAST, they bring the positive lessons they learn back to school. Often they feel more confident that they will succeed. Families also see benefits at home.

I have more information about FAST I can share with you. Or, you can check out *www.*[redacted]*FASTi3.com*, if you have questions.

FAST is happening (when) _____

AT _____.

Please mark your calendar and come have a special time with your child and family!

Sincerely,

TEACHER NAME

A new web site tells parents' views of FAST and provides more information about the program.

See www.[redacted]fasti3.com

Appendix F

FAST Informational Letter

AIR®
AMERICAN INSTITUTES FOR RESEARCH®

You and your child are invited to be in a study about Family Engagement

What is this study about?
The American Institutes for Research (AIR) is doing a study to learn more about ways to increase parent involvement and increase trust between parents and schools. The study includes students from some schools that are getting special support to work with families, and some schools that do not get this support. That way, we can see whether or not students do better in schools that get support to work with families. The School District of [redacted] and your child's school have agreed to participate in this study. **You and your child are invited to participate in this study** as well.

Who is funding this study?
This study is being funded by the U.S. Department of Education.

Why is my child being asked to be in this study?
Your child is being asked to take part in this study because his/her school has agreed to help us with our study. We are asking all kindergarten children at your child's school to participate in this study.

What will my child have to do?
We will ask your child to take part in some activities so we can see what kinds of things he/she is learning in math and reading. This will be like a game for your child. Your child will receive stickers or other small gift after these activities.

These activities will take about 45 minutes and will take place in your child's school in the fall of this school year (2014) and then at the end of next school year (spring 2016). The person who will ask your child questions has a lot of experience working with children and has gone through a thorough background check.

What do I have to do?
Please fill out and return the consent form to let us know if you give permission for your child to be in this study.

If your child is chosen for this study, we will call you to complete a telephone survey about your experiences at school and at home with your child, at the beginning and end of this school year, and at the end of the next school year. After each parent survey, you will receive $25 to thank you for your time.

Appendix G

FAST Flyer Four

FAST Families & Schools TOGETHER®

Help YOUR K-1 CHILD SUCCEED in school!

Kids build skills.

Communication improves.

Confidence increases.

FUN is had by all.

***Teachers say**: Students are **so excited** on FAST days! They make better choices & come to school more sure of their abilities.*

ALL K-1 Families are WELCOME— EVEN FAST GRADUATES!

Everyone enjoys a free meal.

Kids love this special time with their family.

FAST IS HAPPENING NOW!!!

TIME:

PLACE:

ACTIVITIES

Only 2.5 hours, 9 weeks

Lottery Basket!

Parenting Tools that Build Respect

Kids' Time

Parents' Time (Adults Only)

Free Meal

FUN!

Graduation & PARTY!

QUESTIONS?

[redacted]

[redacted].org

THE SCHOOL DISTRICT OF [redacted]

(215) 400-6716

FASTi3.com

Appendix H

FAST Brochure

Parent Tonni D. says —

Because of FAST....I no longer view myself as a single mother with questions about the future. I am a mother of four amazing children. I have the skills and knowledge to overcome many obstacles with confidence and a smile, and I have a network of people that I can go to for support.

FAST

Families & Schools TOGETHER

For over 10 years in [redacted]

FAST® has helped children to grow more confident in their abilities—and to make more thoughtful choices—at home and at school.

For over 25 years around the world,

FAST® has been recognized for helping kids build skills, improve school-family relationships, prevent substance abuse, and more.

Why Attend FAST? *Everyone Gains!*

- You and your child(ren) will try new activities and enjoy a shared (free) meal.
- Your child will feel more at ease at school by spending time there with you.
- You will enlarge your friendship network.
- With other parents, you will discover new ways to build your child(ren)'s confidence.

EXAMPLE FAST SESSION

Week 1

HOUR 1:

You and your family design a family flag with provided supplies. It shows your family's special personality and interests.

Plus, you enjoy a meal together!

HOUR 2:

Adults go to **Parent Time**. No children or school staff are present. You and other parents have a chance to share ideas, experiences, or concerns. *It is a strict rule that parents protect each other's privacy.*

Your child(ren) goes to **Kids Time**. A team member (usually a teacher) and a recreation coordinator lead kids in organized games, reading, arts and crafts, or homework.

Where and When?

Families meet once a week for 8 weeks at your child's school. Families who attend regularly will "graduate" and receive a special certificate.

Who Leads FAST?

- Parent FAST graduates
- Teachers or school members
- Recreation coordinators
- Community partners, such as [redacted] staff members

What Happens at FAST?

A lot! Activities seem playful, but all work to strengthen relationships.

Hour 1 You enjoy a free meal and activity.

Hour 2 Parents meet, while children enjoy supervised play or school-related activities.

A Lottery is held every week, and a family will take home a basket of items, plus money to prepare a meal for fellow participants.

"Everyone gives. Everyone receives."