Examining School Proactive Outreach to Families in Public Middle Schools

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Abstract

The purpose of this study was to examine middle school outreach to families about student behavior and its relationship with student school behavior, conduct problems, emotional symptoms, prosocial behavior, as well as school safety. In addition, the role of school implementation of PBIS was examined as a systems-level approach that could promote school outreach to families. Participants were 653 teachers and 12,912 students across 41 public middle schools in the Northwest region of the U.S. The longitudinal data were examined using multilevel regression models in which repeated measures at the school level were nested within schools. Residualized change in school-level outcome was modeled as a function of current and prior measures. Findings suggested teacher-report of school proactive outreach to families predicted greater teacher-report of school safety, as well as declines in student-report of conduct problems and emotional symptoms. In addition, results suggested school outreach was associated with teacher-report of student school behavior. Implications for continued research on school-home communication, as well as implications for embedding proactive school-home communication approaches in school systems and practices are discussed.

Keywords: child behavior, family engagement, positive behavioral interventions and supports, school safety

Examining School Outreach to Families, Family Engagement, Systems Level Factors, and Student Behavior in Public Middle Schools

Emotional and behavior concerns in early adolescence are one of the most urgent concerns facing parents, educators, and society (Pastor, Rueben, & Duran, 2012). There is no single approach to address pressing emotional and behavior concerns in adolescence, but studies over decades have described the importance of families and positive family-school connections to support children's social behavior and reduce the risk of future concerns developing. Among the studies that have investigated the role of families and family-school connections, proactive school outreach to families has been identified as a particularly promising strategy (Dishion & Kavanagh, 2003; Moore et al., 2016). Proactive outreach refers to schools contacting families before significant concerns arise and about their child's positive behaviors, with clear communication about expected school behavior. Proactive outreach is contrasted with typical school practices, which often involve schools contacting families about negative behaviors, after problems have become intractable. Research is needed with proactive outreach, a specific element of family-school interventions, to better understand its influence on student behavior, as well as its influence in creating safe school environments. Furthermore, research on relations between schoolwide approaches to proactive outreach is necessary to better understand how outreach may be promoted. The purpose of the present study was to examine relations among proactive outreach, child behavior, school safety, and systems-level practices within middle school years and over time during the pivotal early adolescence developmental period.

A developmental cascade model suggests that left untreated early behavior problems can strengthen over time through ineffective parenting and discipline practices, peer rejection, academic problems, and deviant peer affiliation (Caspi, Moffitt, Newman, & Silva, 1996;

Dishion, Patterson, Stoolmiller, & Skinner, 1991; Masten & Cicchetti, 2010; Patterson & Dishion, 2006). Relatively minor behavior problems in early elementary school and middle childhood, such as noncompliance, can amplify into dangerous behaviors in middle school and early adolescence, which pose a serious risk to other children, and compromise school safety (Dishion & Owen, 2002; Dodge, Greenberg, & Malone, 2008; Esselmont, 2014; Martins et al., 2013).

Theoretical Underpinnings

There is no single approach to address the complex factors that contribute to the development of emotional and behavior problems in middle childhood and early adolescence, but several practices have been validated in multiple studies over decades that are central to addressing problems facing middle school students, and their parents, teachers, and peers (Dishion & Kavanagh, 2003; Stormshak et al., 2011; Weiner, Sheridan, & Jenson, 1998). A common characteristic across studies is a focus on ecological approaches that strengthen connections for children's primary developmental ecologies, such as home and school (Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001; Wilson & Lipsey, 2007)

Ecological systems theory (Bronfenbrenner, 1979) underlies the studies that have validated an ecological approach to understanding, addressing, and preventing emotional and behavior problems in middle school (Garbacz, Herman, Thompson, & Reinke, 2017). Ecological systems theory describes child development as occurring through several systems that interact over time. In the microsystem, home and school are proximal developmental ecologies. Settings, such as home and school, interact to influence child development in the mesosystem. Thus, the mesosystem includes communication between parents and teachers. More distal systems, such as the exosystem and macrosystem, include neighborhoods and socio-cultural ideologies,

respectively. Ecological systems theory positions home and school, and the connections between them as key developmental ecologies for children (Bronfenbrenner, 1979). In particular, school-family communication in the mesosystem is a central feature of interventions that address children's emotional and behavior problems (Garbacz, Sheridan, Koziol, Kwon, & Holmes, 2015). Ecological systems theory provides a framework for understanding how different systems may influence each other. School-family communication in the mesoystem can influence school settings and practices. For example, when schools communicate proactively to families about their child's behavior and convey expectations for school behavior, school environments may be experienced by educators and students as safer and more positive.

School-Home Communication

School-home communication is a critical ingredient of effective interventions for children with emotional and behavior concerns (Christenson & Sheridan, 2001; Dishion et al., in press; Garbacz et al., 2015; Sheridan et al., 2012). However, common school approaches to promote children's social-emotional skills and behavior do not include families or the home environment (Garbacz et al., 2018). A complicating factor is that home-school communication tends to decrease in frequency as children move through school (Larson & Richards, 1991; Wang, Hill, & Hofkens, 2014). During middle school, communication between home and school is relatively rare and often occurs only in reaction to a problem that has arisen. Interactions between educators and parents that are focused on problems can undermine the home-school relationship and ecological interventions that address behavior across home and school. In fact, for parents and teachers who have a child with behavior concerns, in the absence of intervention the parent-teacher relationship tends to degrade over time (Sheridan et al., 2012).

Research has demonstrated the importance of proactive communication in the context of ecological interventions (Dishion & Kavanagh, 2003; Dishion, Kavanagh, Schneiger, Nelson, & Kaufman, 2002) as well as the promise of proactive engagement to support children's behavior (Stormshak, Dishion, Light, & Yasui, 2005). When parents are engaged in middle school interventions, children experience less growth in substance use and behavior problems (Connell, Dishion, Yasui, & Kavanagh, 2007). However, more research is needed that specifically examines the influence of a school's proactive outreach to parents about their child's behavior as a key avenue to address children's emotional and behavior concerns. Specifically, outreach to parents about a child's positive school behaviors and clear communication about expected school behavior are thought to support cross-setting continuities and reinforcement (Christenson & Sheridan, 2001; Garbacz, 2019).

Despite strong theoretical underpinnings from ecological systems theory and promising preliminary school-based, family-centered research as part of larger schoolwide interventions (Stormshak et al., 2005), research on proactive outreach to families about their child's behavior has been underemphasized. Indeed, a primary limitation of ecological intervention research is that the influence of specific components has often not been discretely examined (Fosco, Frank, Stormshak, & Dishion, 2013; Sheridan et al., 2019). Acknowledging this limitation, Smith et al. (2019) examined effects of family-school partnership interventions, which included examining their structural and relational components. Among the interesting results, findings indicated that bi-directional communication within family-school partnership interventions significantly impacted social-behavioral competence. Recent studies have targeted more explicitly communication among parents and teachers of elementary school children with challenging

behavior (Fefer et al., 2020) and for parents who demonstrated low levels of engagement (Houri et al., 2019), with findings that suggest the promise of a proactive communication style.

Research is needed that examines the promise of schoolwide outreach to families under routine conditions in middle school about their child's behavior due to the strong theoretical support (Bronfenbrenner, 1979), promising findings when examined as part of family-school interventions (Smith et al., 2019; Stormshak et al., 2005), findings for targeted parents and teachers during elementary school (Fefer et al., 2020; Houri et al., 2019) and hypotheses based on findings from trials examining family-centered interventions (Dishion & Kavanagh, 2003). Such research should be investigated within school years, as well as over time, to understand how school outreach to families may influence student behavior and school-level factors. School outreach to families about their child's behavior could be a feasible and straightforward strategy schools could use to engage families and support children's behavior.

School Safety

Children's emotional and behavior problems during middle school can pose a risk to other children at school and compromise school safety. School safety includes physical and social-emotional safety (Osher, Dwyer, & Jimerson, 2006) as perceived and experienced by faculty, staff, and students. Violent deaths, nonfatal victimizations, bullying, and harassment are urgent problems for schools and public health (Musu-Gillette, Zhang, Wang, Zhang, & Oudekerk, 2017). Middle schools have among the highest rates of violence and victimization of all school levels (Musu-Gillette et al., 2017). In addition, school-based victimization is associated with emotional and mental health problems (Davis et al., 2018). Despite the empirical support for ecological approaches to address behavior problems and improve school safety (Osher, Bear, Sprague, & Doyle, 2010) and the importance of positive family-school connections

to prevent school violence (Dwyer, Osher, & Hoffman, 2000), approaches used by schools to address school safety often do not include proactive outreach to parents, and instead include practices, such as requiring a dress code, using security cameras, controlling building access (Musu-Gillette et al., 2017), and school discipline approaches such as detention and suspension (Skiba & Peterson, 1999) that do not routinely include proactive outreach to parents or collaboration with families. However, school-wide frameworks that provide comprehensive and proactive support for students at school are an effective means to address behavior problems and improve school safety (Skiba & Peterson, 2000).

The role of proactive outreach in promoting safe school environments epitomizes prevention. Families who are knowledgeable about their child's positive school behaviors can reinforce those behaviors at home. In addition, families who are aware of expected school behaviors can create conditions in the home that mirror school environments to create consistency across the two settings (Garbacz, 2019). Also, families who are contacted about their child's behavior before it becomes intractable have a greater likelihood of remediating the problems (Stormshak et al., 2011). Furthermore, these aspects of proactive outreach include features that can promote positive home-school relationships, which is a critical feature in school reform initiatives (Christenson, 2005). In summary, proactive outreach can support positive school behaviors, address negative behaviors before they escalate, and create the conditions to support positive home-school relationships, all of which have clear links to building safe school environments. However, the present state of family-school research does not include explicit study of proactive outreach to families. Proactive outreach may be a straight-forward approach that can be adopted by schools to promote school safety. Additional correlational and

longitudinal research could uncover relations between proactive outreach and school safety, which could propel rigorous intervention research.

School-wide Frameworks for Proactive Support

School-wide positive behavioral interventions and supports (PBIS) is a systems-level framework that provides a continuum of evidence-based support to promote student social-emotional skills, academic performance, and school climate (Sugai & Horner, 2002). Schoolwide PBIS is implemented in over 25,000 schools (Horner, 2019). PBIS is organized in a tiered framework with universal, targeted, and intensive supports aligned with a public health approach to service delivery (Walker et al., 1996). Each tier includes systems and practices that increase in intensity from universal to intensive (Office of Special Education Programs Technical Assistance Center [OSEP] on PBIS, 2015). Examples of universal systems include a leadership team; procedures for data-based monitoring and evaluation; and selecting, training, and coaching personnel. Examples of universal practices include schoolwide expectations that are defined and taught, a continuum of procedures to encourage expected behavior, and procedures for facilitating school-family partnerships (OSEP Technical Assistance Center on PBIS, 2015). Implementation of PBIS is associated with improvements in elementary student behavior (Bradshaw, Mitchell, & Leaf, 2010) and achievement (Horner et al., 2009), elementary school organizational health (Bradshaw, Koth, Thornton, & Leaf, 2009), middle school office discipline referrals (Taylor-Greene et al., 1997), and high school student attendance (Freeman et al., 2017). Studies examining PBIS have provided evidence that PBIS supports student behavior across elementary school and secondary school levels (Freeman et al., 2015). Indeed, one of the first studies to show the promise of PBIS for promoting student outcomes was conducted in a middle school (Taylor-Greene et al., 1997).

PBIS to Promote Proactive School Outreach

A universal PBIS practice includes promoting school-family partnerships, but some data suggest school-family connections are underemphasized in schools implementing PBIS (Garbacz, McIntosh, Vatland, Minch, & Eagle, 2018). However, PBIS can serve as an effective vehicle to promote and strengthen school-family connections through an embedded, school-based, preventative framework with universal, selected, and indicated interventions (Dishion, 2011; Eber, Sugai, Smith, & Scott, 2002; Smolkowski et al., 2017). For example, PBIS builds data systems that are conducive to collecting and managing family-school data. In addition, PBIS creates a schoolwide teaming structure that includes roles for families. PBIS's emphasis on prevention, proactive support for student behavior, and inclusion of families on schoolwide teams suggest there are systems and initiatives in place within schools implementing PBIS to support proactive outreach to families. However, the extent to which PBIS promotes school outreach to parents about their child's behavior to our knowledge has not been investigated. This is an important connection as PBIS has broad reach and could address the ecological shortcomings of common approaches to school safety by promoting proactive outreach to parents, as well as strengthening the school-family connection.

Purpose of the Study

Systems-level family supports have been identified in conceptual models and noted as implications in research studies as a critical component of school-based programs (Dishion & Kavanagh, 200; Dishion et al., in press; McIntyre & Garbacz, 2014). However, a lack of research has examined specific systems-level family supports. One systems-level support that is often identified is proactive outreach to families about student behavior (Dishion & Kavanagh, 2003). The purpose of the present study is to examine middle school outreach to parents about their

child's behavior with student behavior and school safety. In addition, due to the promise of PBIS for improving school outreach to parents, the relation between PBIS and school outreach is examined. The following research questions will be tested:

1. What is the nature of the relationship between middle school outreach to families and schoolwide student school behavior, conduct problems, emotional symptoms, and prosocial behavior within a school year and from one year to the next year? It was hypothesized that school outreach to families would significantly predict student school behavior and prosocial behavior as well as conduct problems and emotional symptoms (Dishion & Kavanagh, 2003; Stormshak et al., 2005). In addition to the hypothesized model, there is the possibility of an alternative model, which could suggest, for example, schoolwide student behavior predicting school outreach (see Figure 1).
2. What is the nature of the relationship between middle school outreach to families and school safety within a school year and from one year to the next year? It was hypothesized that school outreach to families would significantly predict school safety (Dwyer et al., 2000; Osher et al., 2010). Similar to Research Question 1, there is an alternative model, which could suggest school safety predicting school outreach.
3. What is the nature of the relationship between middle school implementation of PBIS and school outreach to families? It was hypothesized that PBIS would significantly predict school outreach to families (Dishion, 2011; Smolkowski et al., 2017). Like Research Question 1 and 2, an alternative model could suggest that school outreach predicts PBIS implementation.

Method

Participants and Setting

This study received approval from the appropriate institutional review board as well as approval from participating school sites. Data from the present study were drawn from a larger effectiveness trial of a family-school intervention conducted from 2009-2015 (Smolkowski et al., 2017). Forty-one public middle schools with Grades 6 to 8 across 27 school districts in the Northwest Region of the U.S. agreed to participate. Student enrollment at schools ranged from an average of 151 to an average of 1037. Across all schools, the median proportion of students who were eligible for a free or reduced price lunch was 58% (range 29% to 94%). Parents of 14,331 students across the 41 schools were contacted with a letter that described the project and a postcard they could return if they did not want their child to participate. Parents of 1,416 (9.9%) returned the postcard, which left 12,912 students to participate. Teacher and student demographic characteristics are summarized in Table 1, based on data collected in Grade 6. Across the 653 teachers, approximately 46% were female and 87% were White. The average teacher had 13.8 (*SD* = 8.7) years of professional teaching experience. The average student was 11.9 years-of-age. Approximately 49% of students reported as female. About 59% of students reported their race or ethnicity as White, 21% as Hispanic or Latino, 15% as American Indian or Native American, and 13% as multiple races or ethnicities. Approximately 45% of students reported that their family had "just enough money to get by."

Measures

School outreach. To better understand a school perspective about school outreach to families, teachers reported on their school's outreach to families on three items created for the larger study (Smolkowski et al., 2017). Items included (a) parents are contacted before child behavior problems get out of hand, (b) parents are regularly informed about their student's positive behaviors, and (c) this school clearly communicates with families about expected

student behaviors at school. Response options were on a 6-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*). A mean score was computed ($M = 4.35$ [$SD = 0.91$], sample $\alpha = 0.63$).

School safety. Teachers reported on school safety for students on one item created for the larger study (Smolkowski et al., 2017): "This school is a safe place for students." Response options were on a 6-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*). A mean score was computed ($M = 5.13$ [$SD = 0.91$]).

Student school behavior. Teachers reported on student behavior at school on one item created for the larger study (Smolkowski et al., 2017): "Students follow the rules and expectations." Response options were on a 6-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*). A mean score was computed ($M = 4.25$ [$SD = 0.99$]).

Student conduct problems, emotional symptoms, and prosocial behavior. Student conduct problems, emotional symptoms, and prosocial behavior were measured using the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001) based on student report. The SDQ has been rigorously examined across countries, including in the U.S. with evidence of reliability and validity. For example, retest stability for the student version is acceptable (mean correlation = 0.51; Goodman, 2001). In terms of validity, independent psychiatric diagnoses were compared with SDQ ratings, with findings that suggested all scales were associated with the relevant diagnoses and specificity and negative predictive values were high (Goodman, 2001). The student report version of the SDQ has five factors, hyperactivity, emotional symptoms, prosocial behavior, conduct problems, and peer relations. For the present study, conduct problems, emotional symptoms, and prosocial behavior were used based on Goodman's (2001) criteria.

Student conduct problems. Students reported on their misconduct on five items from the SDQ. Student ratings of their misconduct were based on the past six months (e.g., "I get very angry and lose my temper." "I take things that are not mine from home, school, or elsewhere."). Response options were on a 3-point scale from 1 (*not true*) to 3 (*certainly true*). A mean score was computed (M = 1.37 [SD = 0.37], sample α = 0.63).

Student emotional symptoms. Students reported on their emotional problems on five items from the SDQ. Ratings on emotional problems were based on the past six months (e.g., "I worry a lot." "I am often unhappy, depressed, or tearful."). Response options were on a 3-point scale from 1 (*not true*) to 3 (*certainly true*). A mean score was computed (M = 1.60 [SD = 0.49], sample α = 0.72).

Student prosocial behavior. Students reported on their prosocial behavior on five items from the SDQ. Ratings on prosocial behavior were based on the past six months (e.g., "I am helpful if someone is hurt, upset, or feeling ill." "I am kind to younger children."). Response options were on a 3-point scale from 1 (*not true*) to 3 (*certainly true*). A mean score was computed (M = 2.47 [SD = 0.41], sample α = 0.70).

PBIS implementation. PBIS implementation was measured with the SET (Horner et al., 2004). SET data were collected in the spring of each year. The SET assesses PBIS fidelity of implementation at Tier 1. Twenty-eight items were examined across seven subscales: (a) expectations defined, (b) behavioral expectations taught, (c) ongoing system for rewarding behavioral expectations, (d) system for responding to behavioral violations, (e) monitoring and decision-making, (f) management, and (g) district-level support. Data on the SET are collected through reviewing school records, completing direct observations, and conducting staff and student interviews. The SET has evidence of score reliability (0.96), test-retest agreement (97%),

and interrater agreement (99%; Horner et al., 2004). The average total SET score was 81.6 (*SD* = 13.2). Twenty-five of the 41 schools met the PBIS implementation criterion of 80 or better for the overall score and 80 or better for behavioral expectations taught (Vincent et al., 2010).

Professional SET data collectors completed the SET at schools. SET data collectors completed extensive training on the SET and worked on multiple projects to study or implement PBIS. In the present study, interrater reliability was assessed at ICC > 0.99.

Procedure

Data for the present study were collected as part of an effectiveness trial of a family-school intervention. Detailed descriptions about the intervention, outcomes, and implementation are available in other sources (Dishion, 2011; Dishion et al., in press; Fosco et al., 2013; Smolkowski et al., 2017). The effectiveness trial evaluated an adapted version of the Ecological Approach to Family Intervention and Treatment (EcoFIT; Dishion & Stormshak, 2007). EcoFIT was adapted using systemic concatenation (Dishion, 2011) and renamed, Positive Family Support (PFS).

Data collection. Students who did not decline participation and whose parents did not decline their participation completed surveys during the winter. Teachers completed surveys in the spring. Trained project staff collected data from teachers and students with either a scannable paper-pencil questionnaire or online, based on their preference. Student surveys were collected by project staff or school personnel, depending on school preference. If schools collected the surveys, project staff provided questionnaire proctors with an explicit protocol and required them to sign a confidentiality agreement. Students completed surveys at the school, often in their homeroom. Teachers often completed surveys in their classrooms or elsewhere in the school during the school day.

Data were collected across six study years, with three waves separated by one year. Wave A schools (n = 14) entered in Year 1 (fall) to Year 5 (spring), Wave B schools (n = 12) entered in Year 2 (fall) to Year 6 (spring), and Wave C schools (n = 18) entered in Year 3 (fall) to Year 6 (winter). To be included in the analysis, schools needed two consecutive years of data; each pair of successive years in which a school had data contributed to another data point to the analysis. Every school included in the analysis was observed for either three or four consecutive years.

Analysis

Our data structure considers multiple school-level variables (in some cases, aggregated from teacher- or family-level observations) collected across up to six successive years. Each of our research questions considers predictive relationships among these variables, and therefore are addressed using regression analysis. Importantly, the longitudinal data structure permits evaluation of predictors/correlates of change. As a result, we specified multilevel regression models in which repeated measures at the school level are nested within schools, and residualized change in a school-level outcome variable is modeled as a function of current and prior measures of a distinct school-level predictor. In each case the outcome for a second year is modeled as a function of effects due to (a) the same variable the previous year (an "autoregressive" effect), (b) the studied predictor variable the same year ("cross lag-0" effect), and (c) the same studied predictor variable the previous year ("cross lag-1" effect). The use of a multilevel model allows us to account for statistical dependence related to the use of the same schools across multiple years. For example, a school with measures in years 1, 2, and 3, will provide two observations: change from year 1 to year 2, and from year 2 to year 3.

Our intent in applying cross-lagged regression models is to learn about correlational relationships among the studied variables, as well as potential insight regarding the directionality of effects.

Such directionality considerations are seemingly important in understanding the effects of variables such as school outreach to families, which might be theorized as both a response to school/family/student variables as well as potentially having a causal influence on them. For each predictor/outcome combination, we therefore also consider a model in which we interchange the roles of predictor and outcome, attending in particular to the possible presence of cross-lag-1 effects, which may provide better insight into the direction of causal influence.

As an illustration, we consider below an example involving student school behavior and school outreach to families. Assuming that $SchBehavior_{j,k-1}$, $SchBehavior_{j,k}$ represent school-level measures of mean student school behavior for two successive years (*k-1, k*), and $Outreach_{j,k-1}$, $Outreach_{j,k}$ are the corresponding measures of school outreach to families for the same two years, we can specify a model predicting residualized change in student school behavior as a function of current and prior school outreach to families as:

$$SchBehavior_{jk} = \beta_{0j} + \beta_{1j}SchBehavior_{j,k-1} + \beta_{2j}Outreach_{jk} + \beta_{3j}Outreach_{j,k-1} + R_{jk}$$

$$\beta_{0j} = \gamma_{00} + U_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

where *j* indexes school, β_{0j} denotes a mean residualized change for school *j* (comprising a fixed coefficient γ_{00} and a school-level residual U_{0j}, β_{1j} (γ_{10}) , β_{2j}(γ_{20}), and β_{3j}(γ_{30}) denoted fixed effects related to prior year student school behavior, same year school outreach, and prior year school outreach, respectively, and $R_{j,k}$ is a residual term. The presence of $SchBehavior_{j,k-1}$ in the model allows us to view the predictive effects of school outreach as predictors of residualized change in student school behavior. Further, the inclusion of both $Outreach_{j,k-1}$, and

$Outreach_{j,k}$ allows the predictive effects of outreach on residualized change to be evaluated both concurrently, and in reference to the prior time-point. Consequently, evaluation of the relative size of γ_{20} and γ_{30} permits an evaluation of whether the effects of the studied predictor yield more of a concurrent (lag 0) or lagged (lag 1) effect.

To better evaluate the potential directionality of effects, we also consider reversing the role of predictor and outcome:

$$Outreach_{jk} = \beta_{0j} + \beta_{1j}Outreach_{j,k-1} + \beta_{2j}SchBehavior_{jk} + \beta_{3j}SchBehavior_{j,k-1} + R_{jk}$$

$$\beta_{0j} = \gamma_{00} + U_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

For both models, we evaluate the γ estimates both with respect to statistical significance and effect size. As regression coefficients, each of the γ terms can be understood in relation to the metrics of the corresponding predictor and outcome. For example, the unstandardized γ_{30} reflects the expected number of units change in the time *k* outcome for each unit change in the time *k-1* predictor. It is also possible to consider this effect size in proportion to the standard deviation of the outcome rendering something similar to a Cohen's (1988) effect size measure. All models were fit using the HLM software v. 7.01 (Raudenbush, Bryk, & Congdon, 2013)**.** Our analyses operate under missing-at-random assumptions, implying bias in studied effects to the extent that the missingness relates to outcomes for reasons unrelated to the studied predictors.

Results

Findings for each research question are described in the sections that follow. Tables display results of the multilevel regression analyses. Results are displayed in corresponding tables for each variable (e.g., student school behavior) so cross-lag effects can be examined.

Relationships Between Middle School Outreach to Families and Student School Behavior, Conduct Problems, Emotional Symptoms, and Prosocial Behavior

Table 2 reports on results related to teacher-report of students' school behavior. Neither of the Cross-lag 1 effects (i.e., the effect of prior year outreach on current year student behavior, and the effect of prior year student behavior on current year outreach) emerged as significant, although each of the Cross-lag 0 effects (i.e., the effect of current year outreach on current year student school behavior, and the effect of current year student school behavior on current year outreach) is statistically significant. For each unit increase in school outreach, we see a corresponding .671 units increase in mean student behavior gains, while for each unit increase in mean student behavior, we see a corresponding .511 increase in mean school outreach. Table 2 also reports standard error as well as variance component estimates that can be used to construct confidence intervals. For example, we note that the standard error estimates for the autoregressive and cross-lag-0 effects can provide a basis for constructing 95% confidence intervals of $.269 \pm 1.96\,(.105) = (.058, .510)$ and of $.671 \pm 1.96\,(.091) = (.492, .849)$ for the respective effects; similarly, the standard deviation of .014 for school intercepts implies that a 95% interval for school level adjustment in predicted outcome would be +/- .027.

For student-report of conduct problems, we observe a Cross-lag 1 effect from school outreach, indicating a decline in mean student conduct problems for each unit increase in prior year school outreach, as seen in Table 3. By contrast, no significant cross-lag effects are seen in the prediction of school outreach as a function of student conduct problems. Although relatively

weak, it appears school outreach has a directional effect reducing student-report of conduct problems. From Table 3, the standard error estimate for the cross-lag-1 effect implies a 95% confidence interval of $.020 \pm 1.96\ (.009) = (.002, .038)$; with no statistically detectable between-school residual variability.

Table 4 and Table 5 display corresponding relationships between school outreach and each of student emotional symptoms and prosocial behavior, respectively. The only cross-lag effect that emerges from these analysis concerns the cross-lag-1 effect from school outreach to student emotional symptoms. Like the effect seen for conduct problems, the predictive effect is weak, but suggests that for each unit increase in school outreach there is an additional .044 units decline in the change in mean student emotional symptoms.

Note that in all cases, the random effects associated with school appear to be relatively weak (and in no instances are statistically significant), implying little detectable between-school variability beyond what is explained by outreach.

Relationship Between Middle School Outreach to Families and School Safety

We applied a similar approach as in research question 1 to examine school outreach in relation to school safety. As seen in Tables 6, we observed significant cross-lagged effects between school outreach and school safety. Importantly, we see a Cross-lag 1 effect from school outreach to safety, suggesting greater school outreach both in the prior year and current year predicts greater perceived school safety. Specifically, for each unit increase in prior year school outreach, we observe .272 units gain in mean perceptions of school safety. By contrast, while the Cross-lag 0 effect is significant when reversing predictor and outcome, the Cross-lag 1 effect is not, lending stronger support for a directional effect from school outreach to perceptions of greater school safety than vice versa. We observed statistically detectable school effects for the

analysis in Table 6, suggesting systematic school variability in gains in school safety for reasons apart from the relevant predictors.

Relationship Between Middle School Implementation of PBIS and Outreach to Families

A similar modeling approach was taken in examining implementation of PBIS and school outreach as depicted in Table 7. Unlike the previous analysis, the only effect that statistically emerges is an autoregressive effect, implying detectable dependence with school outreach variables over time, but no detectable effects related to SET.

Summary

Considering the findings together, in examining how school outreach functions in relation to various school level outcomes, several important findings emerged. We observed rather stronger co-occurring relationships between outreach and school safety and student school behavior, as well as lag-1 effects from outreach to both student emotional symptoms and conduct problems. No detectable relationships were observed between outreach and either SET scores or student prosocial behavior.

Discussion

Despite the emphasis on systems-level family supports in schools, there is a lack of research that has examined relationships between relevant systems-level factors and student behavior (Garbacz et al., 2018). Implications from multiple studies of ecological interventions have pointed to the importance of systems-level family supports, and particularly highlighted school proactive outreach to families (Dishion, 2011; Dishion et al., in press; Fefer et al., 2020; Houri et al., 2019; McIntyre & Garbacz, 2014; Sheridan et al., 2012; Smith et al., 2019), yet studies that have examined proactive communication to families during middle school under typical conditions are lacking. The purpose of this study was to examine teacher-report of middle

school outreach to families about student behavior and its relationship with student-report of conduct problems, emotional symptoms, prosocial behavior; teacher-report of student school behavior; and teacher-report of school safety. In addition, the role of school implementation of PBIS was examined as a possible systems-level approach that could promote a school's outreach to families.

Main Findings

Relationships between middle school outreach to families and student school behavior, conduct problems, emotional symptoms, and prosocial behavior. The first set of findings examined relationships between school outreach and student school behavior; and student conduct problems, student emotional symptoms, and student prosocial behavior. Teacher-report of school outreach and teacher-report of student school behavior were significantly associated when examined within the same school year. However, no directional effects were present when examining the influence of school outreach in the prior year relative to student school behavior in the current year. These findings suggest additional study is needed to understand the ways in which school outreach may be related to teacher perception of student behavior.

We found evidence of directional effects when we examined teacher-report of school outreach with student-report of conduct problems and emotional symptoms. Specifically, we found a significant effect from school outreach in the prior year on student-report of conduct problems and emotional symptoms during the current year. The effect magnitudes for the directional effects of school outreach on conduct problems and emotional symptoms were weaker relative to the within year associations of school outreach and student school behavior. To some extent, these results may reflect the fact that difference (change) scores generally have

lower reliability, yielding lagged effects that may be more attenuated. In addition, these findings may reveal differences based on teacher versus student report. Taken together, these findings demonstrate the promise of school outreach as a variable in need of additional research to more thoroughly explore its relationship with student behavior.

The present findings underscore the bidirectional influence of home and school factors, which is at the core of ecological interventions (McIntyre & Garbacz, 2014). Home-school communication has been positioned as a critical factor in promoting positive home-school relationships and enhancing children's behavior and achievement for decades (Christenson & Sheridan, 2001; Larson & Richards, 1991). In addition, family-centered intervention trials have highlighted the importance of collaborating with families of middle school students as a key avenue to promote student engagement in interventions, particularly for students who engage in high-risk behavior (Dishion & Kavanagh, 2003). The present study did not include any intervention nor a randomized experiment, but data suggest a school's proactive outreach to parents may be one way to improve student behavior that could be considered for an experimental trial.

Relationship between middle school outreach to families and school safety. In addition to examining relationships between teacher-report of school outreach and teacher- and student-report of student behavior, we examined the relationship between teacher-report of school outreach and teacher-report of school safety. Findings from this set of analyses showed support for the hypothesis that school outreach to families about student behavior predicts teacher-report of school safety. The magnitude of the effect of prior year school outreach on current year school safety is higher than the effect magnitudes for findings related to school outreach and student behavior. Common approaches to promoting school safety include,

detention, suspension, and controlled building access (Musu-Gillette et al., 2018; Skiba & Peterson, 2000). Our findings suggest school proactive outreach to parents about student behavior may be helpful for schools to consider when promoting a safe school environment. Although prior research has demonstrated the importance of positive family-school connections to promote school safety (Dwyer et al., 2000), our findings suggest that reaching out to parents before problems become intractable may be an important factor to embed within ecological programs to promote school safety.

Relationship between middle school implementation of PBIS and outreach to families. Recent studies have examined the role of family-school collaboration in the context of systems-level behavior support frameworks, such as PBIS (Garbacz et al., 2017). These studies are grounded in an ecological systems theoretical model, and have suggested that PBIS may serve as an effective vehicle to promote family-school collaboration. In the present study, we were interested in examining the relationship between teacher-report of school outreach to families about student behavior and school implementation of PBIS. Findings from these analyses did not show statistically significant relationships between school outreach and PBIS implementation. This finding is inconsistent with our hypothesis, which suggested that school PBIS implementation would predict school outreach. However, it is conceivable that the lack of effects for implementation of PBIS might suggest more about the measure of implementation rather than PBIS itself. For example, it may be that the SET is not sensitive to school outreach to families. Alternatively, it may suggest that school outreach to parents is not a core feature of fully implemented PBIS. It is also important to note that just over half of schools met the SET criterion for PBIS implementation. It may be helpful for future studies to examine school outreach in the context of schools that are implementing PBIS. In addition, these issues may

suggest a need to clarify and expand roles for families within PBIS (Garbacz, 2019), particularly as it pertains to proactive communication (Fefer et al., 2020).

Limitations and Future Research Directions

There are several limitations with the present study that must be considered when interpreting the findings. Limitations have implications for future research directions. This study did not use an experimental design, and thus, causality cannot be inferred. In addition, we did not account for school district and classroom effects. Future research should test proactive outreach to families about student behavior in an experimental study to understand the extent to which it can improve student behavior and school safety. In addition, school safety and student school behavior were measured with one item each. School safety is often measured with multiple items (e.g., 45; Skiba, Simmons, Peterson, & Forde, 2006). Similarly, student school behavior is frequently measured with multiple items (e.g., 165; Reynolds & Kamphaus, 2015). Although single item measures have limitations, there is evidence that single items can be appropriate and have evidence of validity (Elo, Leppänen, & Jahkola, 2004; Stormont et al., 2017). In addition, teacher single-item ratings of student behavior have shown significant correlations with the Behavior Assessment Scale for Children 3 Behavioral and Emotional Screening System and the Social Skills Rating Scale (Chafouleas et al., 2013). Furthermore, it is useful to consider brief, pragmatic assessments of important school variables so they can be used in practice (Glasgow, 2013). Nevertheless, future research should examine school outreach with other measures of school safety and student school behavior that include measures that comprehensively assess school safety and student school behavior.

With the exception of PBIS implementation, all measures were assessed by teacher- or student-report. Future studies should include direct measures of variables. For example, direct

observations of student school behavior could be included. In addition, permanent records of school outreach to families through communication logs and meeting records, could be examined. A related limitation is that teachers reported on school outreach, student school behavior, and school safety. Future studies should include different reporters of these variables to reduce the risk of spurious associations due to factors related to shared method variance (Collishaw, Goodman, Ford, Rabe-Hesketh, & Pickles, 2009). In addition, future studies should include student perceptions of school safety and parent perceptions of school outreach. There was limited information about reliability and validity of many study measures. Future research is needed to examine those measures to better understand their properties.

In terms of measuring PBIS implementation, the SET is a comprehensive assessment for examining implementation of PBIS. However, the SET is limited in its assessment of family-school variables. Thus, the lack of significant findings when we examined the relationship between school outreach and PBIS implementation may not capture the ways in which PBIS may promote school outreach to families or family supports more generally. Future studies are needed that examine the ways in which family-school connections are examined within PBIS. The significant school effects for the analysis in Table 6 suggested school variability in gains related to school safety for reasons apart from the predictors, which limits the role of study predictors and suggests additional study is needed. The items used to assess school outreach were not comprehensive in reflecting the different ways that schools may reach out to families about student behavior. Future studies could explore adapting the measure of school outreach we used in this study to include other relevant items. The relatively low internal consistency observed for these items appears consistent with the formative nature of these indicators in relation to the outreach construct; future studies could explore adapting the measure of school outreach we used

in this study to include other relevant items. It is important to note that the study variables did not include measures based on parent report. It is critial for future studies to include family perspectives on variables related to family-school connections.

Implications

We identified several implications for research and practice based on the present study findings in the context of relevant conceptual and empirical work. Several conceptual frameworks and empirical investigations have pointed to proactive school outreach to families as essential (Dishion & Kavanagh, 2003). The logic underlying the importance of proactive outreach to families is that through reaching out to families before problems arise, schools have an opportunity to define a collaborative relationship with families based on positive communication and build trust. In turn, the positive relationship built through initial contacts can facilitate family engagement in certain practices, such as student screening, school-community prevention programs, and individual assessment and treatment, where necessary (Garbacz et al., 2017).

Research examining proactive outreach is needed through experimental studies. A randomized, controlled trial of a proactive outreach intervention could identify its impact on student behavior, as well as pathways to those effects. For example, proactive outreach may positively impact family monitoring in middle school, which could in turn improve student conduct problems.

To prepare for an experimental study, additional development is necessary. For example, the critical features for a proactive communication system during middle school must be defined. From the present study, outreach about student positive behaviors, expected student behaviors at school, and early contacts before problems arise should be considered. An additional feature of

proactive outreach that may be helpful to consider is the nature of the contact (i.e., positive or negative; Fefer et al., 2020), the defining a ratio of positive contacts to negative contacts (e.g., 5:1; Cook et al., 2017), and prior engagement (Houri et al., 2019). Another important component of the intervention to define is who will initiate contacts. Teachers may be appropriately equipped to implement a proactive communication intervention, but systems-level supports should be identified so the strategy is feasible for teachers to use. After details for the intervention are defined, an iterative process could include working with parents, teachers, and school administrators to refine the interventions and its implementation process, based on existing family-school research and its elements (Smith et al., 2019). Such an approach could end with an experimental pilot study to prepare for a larger efficacy trial to test the conceptual model (Speroff & O'Connor, 2004).

Prior to outcomes for a line of intervention research, promising findings from correlational studies, grounded in conceptual models and ecological systems theoretical underpinning provide schools with justification for embedding proactive communication to families in their systems and practices. For example, in the context of PBIS, it may be helpful for school teams to identify approaches to share information with families at the beginning of each school year about PBIS and how they can use positive parenting at home and support school behavior. In addition, families can be included in a school's screening systems. Moore et al. (2016) used a proactive approach for engaging parents in screening for student emotional and behavior concerns that could be embedded in a school screening system. In addition, families can be included in decisions about school programs to adopt and implement, such as an approach to promote school safety. Inclusion in school decision-making is a proactive strategy to improve buy-in and support for school initiatives.

Conclusion

The purpose of this study was to examine middle school proactive outreach to families about student behavior within years and over time. Relationships between teacher-report of proactive outreach; teacher-report of school student behavior; student-report of conduct problems, emotional symptoms, and prosocial behavior; teacher-report of school safety; and PBIS implementation were examined. Findings suggested proactive outreach may have an important role in promoting student school behavior and school safety, as well as reducing student conduct problems and emotional symptoms. Implications of the study highlight the importance of embedding proactive communication in school systems and practices.

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Table 1
Teacher and Student Demographic Characteristics

Demographics	Total
Teacher mean (*SD*) age	
Teacher female, %	45.6%
Teacher race or ethnicity, %	
American Indian or Native American	.4%
Asian	.4%
Black or African American	.6%
Hispanic or Latino	1.4%
Native Hawaiian or Pacific Islander	0
White or Caucasian	87.2%
Multiple races or ethnicities	4.5%
Teacher highest degree obtained, %	
High school diploma	1.9%
Associates	5.8%
Bachelors	22.8%
Masters	69.1%
Doctorate or Law Degree	.3%
Other	0
Teacher mean (*SD*) years teaching professionally	13.78 (8.71)
Teacher mean (*SD*) years teaching at this school	8.12 (6.24)
Student mean (*SD*) age	11.93 (1.38)
Student female, %	48.9%
Student race or ethnicity, %	
American Indian or Native American	15.3%
Asian	5.9%
Black or African American	4.8%
Hispanic or Latino	21.4%
Native Hawaiian or Pacific Islander	2.1%
White or Caucasian	59.3%
Multiple races or ethnicities	12.8%
Student-report “How much money does your family have?”, %	
Not enough to get by	5.8%
Just enough to get by	45.5%
We only have to worry about money for fun or extras	33.7%
We never have to worry about money	15%

Table 2

Results of Multilevel Regression Analysis Predicting Student Behavior as a Function of School Outreach (Outreach → Student Behavior) and School Outreach as a Function of Student Behavior (Student Behavior → Outreach)

	Coeff	SE	t-ratio(df)	*p*-value	95% CI
Outreach → Student Behavior					
Intercept	.099	.501	0.20 (40)	.845	(-.883, 1.081)
Autoregressive	.269	.105	2.57 (63)	.013	(.063,.475)
Cross-lag 0	.671	.091	7.40 (63)	<.001	(.492, .849)
Cross-lag 1	.031	.122	0.26 (63)	.798	(-.208, .270)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.000	.014	33.84 (40)	>.500	
Residual (σ^2)	.301	.548			
Student Behavior → Outreach					
Intercept	1.604	.415	3.87 (40)	<.001	(.791,2.417)
Autoregressive	.162	.106	1.53 (63)	.132	(-.046,.370)
Cross-lag 0	.516	.070	7.38 (63)	<.001	(.379,.653)
Cross-lag 1	-.040	.095	-0.42 (63)	.673	(-.226,.146)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.006	.076	41.09 (40)	.423	
Residual (σ^2)	.226	.476			

Table 3

Results of Multilevel Regression Analysis Predicting Student Conduct Problems as a Function of School Outreach (Outreach → Student Conduct Problems) and School Outreach as a Function of Student Conduct Problems (Student Conduct Problems → Outreach)

	Coeff	SE	t-ratio(df)	*p*-value	95% CI
Outreach → Student Conduct Problems					
Intercept	.478	.104	4.58(40)	<.001	(0.274, 0.682)
Autoregressive	.706	.069	10.28 (63)	<.001	(0.571, 0.841)
Cross-lag 0	.000	.008	0.05 (63)	.962	(-0.016, 0.016)
Cross-lag 1	-.020	.009	-2.26 (63)	.027	(-0.038, -0.002)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.000	.002	33.01 (40)	>.500	
Residual (σ^2)	.002	.047			
Student Conduct Problems → Outreach					
Intercept	2.466	1.484	1.66 (40)	.105	(-0.443, 5.375)
Autoregressive	.371	.109	3.41 (63)	.001	(0.157, 0.585)
Cross-lag 0	.175	1.252	.14 (63)	.889	(-2.279, 2.629)
Cross-lag 1	.039	1.243	.03 (63)	.975	(-2.397, 2.475)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.017	.132	43.60 (40)	.321	
Residual (σ^2)	.344	.586			

Table 4

Results of Multilevel Regression Analysis Predicting Student Emotional Symptoms as a Function of School Outreach (Outreach → Student Emotional Symptoms) and School Outreach as a Function of Student Emotional Symptoms (Student Emotional Symptoms → Outreach)

	Coeff	SE	t-ratio(df)	*p*-value	95% CI
Outreach → Student Emotional Symptoms					
Intercept	1.017	.145	6.99 (40)	<.001	(0.733, 1.301)
Autoregressive	.470	.086	5.48 (63)	<.001	(0.301, 0.639)
Cross-lag 0	.005	.009	0.52 (63)	.603	(-0.013, 0.023)
Cross-lag 1	-.039	.010	-3.87 (63)	<.001	(-0.059, -0.019)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.000	.018	52.58 (40)	.088	
Residual (σ^2)	.003	.050			
Student Emotional Symptoms → Outreach					
Intercept	2.136	1.93	1.11 (40)	.276	(-1.647, 5.919)
Autoregressive	.386	.113	3.41 (63)	<.001	(0.165, 0.607)
Cross-lag 0	.476	1.105	.43 (63)	.668	(-1.690, 2.642)
Cross-lag 1	-.130	1.090	-.12 (63)	.905	(-2.266, 2.006)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.016	.126	43.76 (40)	.314	
Residual (σ^2)	.344	.587			

Table 5

Results of Multilevel Regression Analysis Predicting Student Prosocial Behavior as a Function of School Outreach (Outreach → Student Prosocial Behavior) and School Outreach as a Function of Student Prosocial Behavior (Student Prosocial Behavior → Outreach)

	Coeff	SE	t-ratio(df)	*p*-value	95% CI
Outreach → Student Prosocial Behavior					
Intercept	1.006	.173	5.82 (40)	<.001	(0.667, 1.345)
Autoregressive	.579	.069	8.37 (63)	<.001	(0.444, 0.714)
Cross-lag 0	.003	.009	0.31 (63)	.758	(-0.015, 0.021)
Cross-lag 1	.005	.011	0.47 (63)	.642	(-0.017, 0.027)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.000	.003	35.84 (40)	>.500	
Residual (σ^2)	.003	.058			
Student Prosocial Behavior → Outreach					
Intercept	1.480	2.108	0.70 (40)	.487	(-2.652, 5.612)
Autoregressive	.366	.106	3.45 (63)	<.001	(0.158, 0.574)
Cross-lag 0	.266	1.021	0.26 (63)	.795	(-1.735, 2.267)
Cross-lag 1	.262	.930	0.28 (63)	.779	(-1.561, 2.085)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.011	.107	41.84 (40)	.391	
Residual (σ^2)	.348	.590			

Table 6

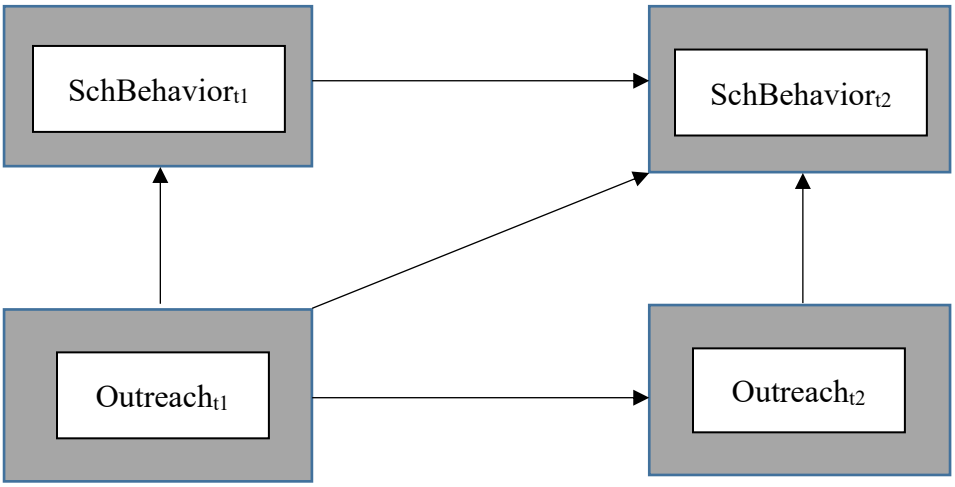
Results of Multilevel Regression Analysis Predicting School Safety as a Function of Implementation of School Outreach (Outreach → School Safety) and School Outreach as a Function of School Safety (School Safety → Outreach)

	Coeff	SE	t-ratio(df)	*p*-value	95% CI
Outreach → School Safety					
Intercept	2.648	.653	4.05 (40)	<.001	(1.368, 3.928)
Autoregressive	-.036	.113	-0.31 (63)	.753	(-0.257, 0.185)
Cross-lag 0	.379	.091	4.14 (63)	<.001	(0.201, 0.557)
Cross-lag 1	.249	.118	2.11 (63)	.039	(0.018, 0.480)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.126	.355	94.80 (40)	<.001	
Residual (σ^2)	.235	.485			
School Safety → Outreach					
Intercept	1.429	.594	2.41 (40)	.021	(0.265, 2.593)
Autoregressive	.173	.117	1.47 (63)	.146	(-0.056, 0.402)
Cross-lag 0	.341	.090	3.79 (63)	<.001	(0.165, 0.517)
Cross-lag 1	.080	.109	0.73 (63)	.469	(-0.134, 0.294)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.020	.142	51.06 (40)	.113	
Residual (σ^2)	.292	.540			

Table 7
Results of Multilevel Regression Analysis Predicting Implementation of Schoolwide Positive Behavioral Interventions as a Function of School Outreach (Outreach → SET) and School Outreach as a Function of Implementation of Schoolwide Positive Behavioral Interventions (SET → Outreach)

	Coeff	SE	t-ratio(df)	*p*-value	95% CI
Outreach → SET					
Intercept	68.749	15.420	4.46 (40)	<.001	(38.526, 98.972)
Autoregressive	.356	.094	3.78 (63)	<.001	(0.172, 0.540)
Cross-lag 0	-.683	2.414	-0.28 (63)	.778	(-5.414, 4.048)
Cross-lag 1	-2.631	2.735	-0.96 (63)	.340	(-7.992, 2.730)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.543	.737	32.86 (40)	>.500	
Residual (σ^2)	214.974	14.662			
SET → Outreach					
Intercept	2.626	.646	4.06 (40)	<.001	(1.360, 3.892)
Autoregressive	.374	.106	3.52 (63)	<.001	(0.166, 0.582)
Cross-lag 0	-.001	.004	-0.26 (63)	.798	(-0.009, 0.007)
Cross-lag 1	.003	.004	0.62 (63)	.539	(-0.005, 0.011)
Variance Estimates					
	Coeff (Variance)	Standard Dev.	Chi-square (df)	*p*-value	
Intercept (τ_0^2)	.012	.109	42.15 (40)	.378	
Residual (σ^2)	.347	.589			

Hypothesized Model



Alternative Model

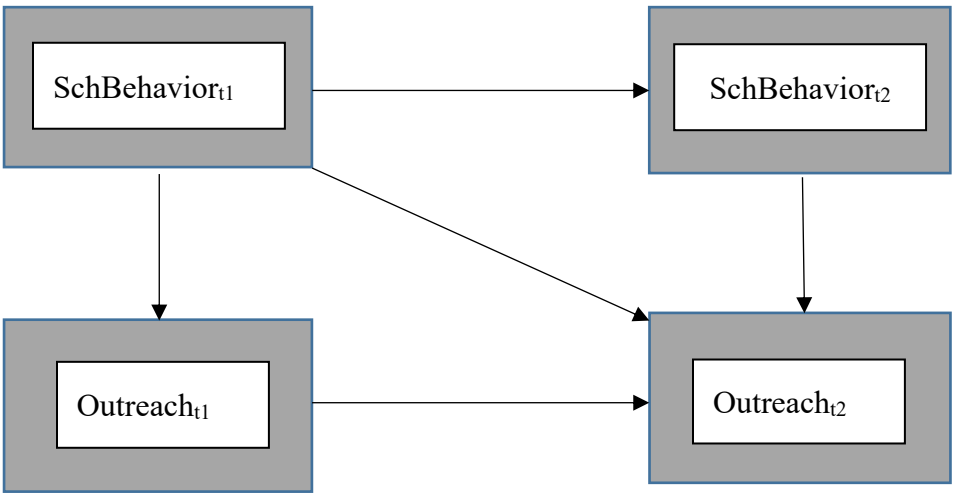


Figure 1. Visual depiction of the hypothesized model and an alternative model for school outreach and schoolwide student school behavior.