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THE EFFECTS OF A FUNCTION-BASED CLASSWIDE INTERVENTION ON THE BEHAVIOR OF STUDENTS IN URBAN SELF-CONTAINED ENGLISH LANGUAGE ARTS CLASSROOMS

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Students with emotional and behavioral disorders (EBD) may experience a number of negative school outcomes including low levels of academic performance, poor academic growth, and high rates of school dropout (Gage, Adamson, MacSuga-Gage, & Lewis, 2017; U.S. Department of Education, 2017). These difficulties are due in part to the occurrence of problem behaviors and their association with inadequate response to instruction and school disengagement (Brigham, Bakken, & Rotatori, 2012; Hagan-Burke et al., 2011). Therefore, school-based practitioners must employ strategies that are effective at decreasing the occurrence of problem behaviors and increasing engagement during instruction. The necessity of addressing behavioral issues is particularly salient to urban schools due to the challenges facing students and educators in these settings.

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CHALLENGES IN URBAN SCHOOLS

Urban schools may be characterized as having high percentages of students living in poverty (McFarland et al., 2018) and pervasive academic underachievement (Dolph, 2017). For example, greater percentages of students in urban schools performed at the below basic level in reading in grades 4, 8, and 12 compared to students who attended schools in other geographic locations (U.S. Department of Education, 2015).

Furthermore, urban schools may seek to prevent, limit, or respond to the occurrence of problem behaviors through the use of restrictive or punitive methods (Mallett, 2017). Even more concerning, some researchers have expressed concerns regarding the capacity of urban schools to provide appropriate instruction to students with and without disabilities (DeMatthews & Mawhinney, 2014; Pazey, Heilig, Cole, & Sumbera, 2015; Weintraub, Myers, Hehir, & Jaque-Anton 2008). These concerns highlight the importance of student access to highly qualified teachers who teach in conditions that promote teacher effectiveness (e.g., reasonable working conditions).

Although teacher quality is essential to student success (Lee, 2018), urban schools may experience high rates of teacher turnover and employ greater percentages of teachers with provisional certification (Alliance for Excellent Education, 2014; Hanushek & Rivkin, 2010; Mason-Williams, 2015). Considering the challenges associated with being a novice teacher assigned to an urban school, educators with provisional certification require sufficient training and support to integrate research-based practices into their developing repertoire of skills to prevent the adoption of ineffective or punitive strategies and lessen the cognitive demands associated with employing multiple, complex practices during

instruction (Feldon, 2007; McKenna, Flower, Falcomata, & Adamson, 2017; Sutherland & Wright, 2013). Contingencies for teacher support such as explicit instruction and performance feedback in practices that target frequently occurring challenges are particularly salient for novice special education teachers, who must now meet increased expectations regarding the provision of a free appropriate public education (FAPE; see Yell & Bateman, 2017).

School-based support teams are one potential source for support. However, support teams may be overwhelmed or otherwise challenged by competing demands on their available time (Curtis, Castillo, & Gelley, 2012; Wills et al., 2010) and therefore, limited in their capacity to provide assistance. Consequently, professional development with contingencies for ongoing support in the use of a limited set of behavioral strategies with a high likelihood of success may minimize the already substantial demands placed upon inexperienced teachers and school-based support teams. Furthermore, it may be beneficial for these strategies to directly address the most common causes of problem behavior.

INDEPENDENT GROUP CONTINGENCIES

Classwide interventions target all students and can be effective at promoting positive behaviors and limiting the performance of challenging behaviors (see Conroy, Sutherland, Snyder, & Marsh, 2008; Richards, Heathfield, & Jenson, 2010). Independent group contingencies are one type of classwide intervention available to teachers that is supported by research (Little, Akin-Little, & O'Neill, 2015). When using this intervention, teachers provide some form of reinforcement to individual students for behavior performance. Similar criteria of success are used with each student, who access the consequences of their actions (e.g., reinforcement) based on their own performance. However, information on behavioral function may be useful to inform the specific procedures for independent group contingencies.

FUNCTIONAL BEHAVIOR ASSESSMENT

Functional Behavioral Assessment (FBA) has an extensive research base supporting its use to inform individualized behavioral interventions for students with EBD (Gage, Lewis, & Stichter, 2012). FBA and function-based interventions are based on the premise that problem behavior is predictable and performed for a purpose (Smith & Sugai, 2000). For example, problem behaviors may be performed to obtain something that is desired or avoid something that is considered aversive (e.g., social reinforcement). Problem behaviors may also be performed to obtain automatic reinforcement, which is derived from the problem behavior itself rather than the social environment (Volmer, 1994). An FBA is typically performed to identify antecedent and consequent conditions that predict the occurrence of problem behaviors for an individual student. This information is then used to modify the environment to make a student's problem behaviors less efficient and effective at meeting a need (e.g., the hypothesized function). FBA data may also be used to select strategies to promote the performance of positive behaviors by the target student and decrease the occurrence of problem behaviors. This is particularly important because teachers may inadvertently perform behaviors that reinforce problem behaviors (McKenna et al., 2017). For example, teachers may refrain from placing appropriate academic demands on students who engage in problem behaviors to avoid academic tasks. Although function-based interventions are typically individualized (e.g., a tier 3 intervention), it may be advantageous to use FBA data to plan classwide interventions.

FUNCTION-BASED CLASSWIDE INTERVENTIONS

When multiple students in a classroom are in need of more intensive behavior support, it may be challenging to conduct an FBA and implement an individualized intervention for each student (McKenna et al., 2017; Poole, Dufene, Sterling, Tingstrom, & Hardy, 2012). In these instances,

it may more feasible and efficient to develop a function-based intervention that can be effective for multiple students. Specifically, FBA methodology may inform classwide interventions that address the most common functions of problem behaviors performed by a group of students. When conducting an FBA in this manner, the class rather than an individual student is the unit of analysis. Interviews and observations are used to obtain information on the most common antecedent-behavior-consequence chains occurring in the classroom and to select intervention procedures that account for the function of the most frequently performed problem behaviors. Further, it may be beneficial to use FBA data to identify a small number of strategies that have a high likelihood of success. Focusing on a small set of broadly applicable procedures is likely to reduce the cognitive load of novice teachers, thereby making cognitive recourses available to support effective instruction (Feldon, 2007). Inexperienced teachers may be more likely to implement the strategies with fidelity due to the ability to focus their efforts on fewer strategies rather than a larger set associated with a standard protocol or those taught during a professional development or university course. Furthermore, research has demonstrated the importance of coaching and performance feedback to support the application of new skills (Fallon, Collier-Meek, Maggin, Sanetti, & Johnson, 2015; Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005), a consideration that is particularly salient for inexperienced teachers.

PREVIOUS RESEARCH ON FUNCTION-BASED CLASSWIDE INTERVENTIONS

Few studies have investigated the effects of function-based classwide interventions. VanDerheyden, Witt, and Gatti (2001) investigated the effects of a function-based classwide intervention on disruptive behavior in two pre-school classrooms. FBA procedures consisted of teacher interviews and multiple classroom observations, although observation methods varied for each class. Attention was the most common function of disruptive behavior for both classes. During intervention phases, the consultant

supported student behavior when directed by the teacher and assisted with implementation of a differential reinforcement of alternative behavior (DRA) procedure. Specifically, the consultant provided prompts to use intervention procedures and also used DRA in the classroom. In this study, the intervention was effective at reducing disruptive behavior in both classrooms.

Poole and colleagues (2012) investigated the effects of a function-based classwide intervention in two pre-school classrooms. FBAs consisted of teacher interviews, observations, and a functional analysis. Teachers were interviewed using the Functional Assessment Information Record for Teachers-Preschool (FAIR-T P; Dufrene, Doggett, Henington, & Watson, 2007). Observations were 20 minutes in duration and data were collected on each student during 20-second intervals. In this study, researchers provided nonverbal prompts to assist teacher implementation of the functional analysis. Teachers were provided 40 minutes of intervention training, which consisted of modeling, prompting, practice in attention and escape conditions, and performance feedback. Findings suggest that the FBA was effective at identifying the common functions of disruptive behavior and the function-based DRA procedure had positive effects on student behavior. Teachers also had positive perceptions of FBA and intervention procedures.

Kennedy, Jolivet, and Ramsey (2014) investigated the effects of a function-based classwide intervention with students with EBD who attended a residential school. Common problem behaviors included disruptive behavior and non-compliance. Students with problem behaviors maintained by attention were selected for intervention. FBA procedures included a review of office referrals, teacher interviews using the Functional Assessment Checklist for Teachers and Staff (FACTS-Part B; March et al., 2000), and observations. Although the researchers reported that at least five classroom observations occurred for each student, specific observation procedures were not reported. Findings suggest that an attention-based intervention (e.g., praise notes)

was effective at decreasing problem behaviors. The teacher also perceived the intervention effective and feasible. In this study, information researcher efforts to support intervention fidelity were not reported.

More recently, Stanton-Chapman, Walker, Voorhees, and Snell (2016) used an FBA procedure to select primary supports for a tiered system of positive behavior supports at ten Head Start (HS) programs. In this study, teachers used antecedent-behavior-consequences (ABC) data to inform a classwide prevent-teach-respond intervention for use during class activities with frequent problem behaviors. Each classroom was assigned a consultant who followed manualized procedures and self-assessed the degree to which they adhered to training and consultation procedures. Training sessions consisted of Powerpoint presentations, role plays, video models, and case studies. Consultation services included direct support in the form of modeling and performance feedback. During teacher meetings, consultants and teachers watched and discussed models of specific practices and discussed effective practices and those in need of refinement. Upon reaching a consensus, classroom staff and the consultant revised written implementation plans. Classroom staff then recorded implementation of the revised procedures. Although the nature of this study makes it difficult to draw conclusions regarding the effectiveness of the classwide intervention, it does serve as an example of how FBA can inform the selection of classwide behavior supports.

Although few investigations have been conducted, there appears to be variability in the manner in which this tier 3 methodology (e.g., FBA) has been operationalized to inform classwide interventions. Researchers used various interview and observation protocols. However, teacher interviews and classroom observations were used in some form to identify the function of problem behavior for individual students or the most common function of classwide problem behavior. Observations were used across studies to record instances of problem behavior and to identify antecedents and consequences associated

with their performance. Despite this variability in FBA procedures, interventions were effective at improving student behavior.

In sum, FBA may be effective at identifying strategies that have the highest likelihood of success with the greatest number of students, permitting novice teachers to focus their efforts on becoming fluent in a small set of strategies. However, few studies of function-based classwide interventions have been completed. Furthermore, we have been unable to locate any studies carried out in secondary or urban public school settings. As a result, an investigation of function-based classwide interventions provided by an alternatively certified teacher of students with disabilities in an urban school setting is warranted. We hypothesized that improved student behavior (e.g., decreased disruptive behavior, increased class engagement) would be observed across classrooms in response to teacher use of a classwide function-based intervention with consultation support. This study was guided by the following research questions:

1. What are the effects of a function-based classwide intervention with consultation support on the disruptive behavior and class engagement in self-contained English Language Arts classes for students with EBD?
2. What is the social validity of the intervention and consultation practices according to the perspective of a recently alternatively certified special education teacher assigned to a high need-low resourced urban high school?

METHOD

SETTING AND PARTICIPANTS

This study was conducted in a public high school in an urban area of the Northeast. Approximately 420 students attended the school, 86% of which were eligible for free lunch. Approximately 50% of the school were African American and 47% Hispanic. Twenty-four percent of the school population was identified as having a disability

and received special education services. Fourteen percent of all students with disabilities spent at least 80% of their instructional time outside of general education settings. During the 2013-2014 school year, approximately 13% of graduates were considered college ready and 11% of all students were classified as an English Language Learner (ELL). At the time of this study, the school did not employ a tiered system of behavioral support and did not provide consultation services on classroom management and positive behavior supports to teachers assigned to self-contained classes.

Students. Three self-contained English Language Arts (ELA) classes for students with EBD and students with learning disabilities (LD) participated in this study. English was the primary language for all participants and the ethnicity of all three classes was consistent with that of the school. All students displayed problem behaviors in school and were multiple years below grade level across subject areas. A total of twenty-eight students across the three classes participated, seven of which were female. The ninth grade class consisted of nine students, all of which were male. The 10th grade class had seven students, three of which were female. A combined 11th and 12th grade class had twelve students, four of which were female. The 11th and 12th graders were combined into one class because the majority of 12th graders had stopped attending school. Ten of twelve students in this class were in 11th grade. Specific information on individual student was unavailable to the researchers; however, the majority of students in each class received special education services for ED according to teacher reports. All students in each of the three classes received special education services and received all core academic instruction in self-contained classes. All students had academic and behavioral goals in their IEPs. Furthermore, two of three (e.g., 9th grade class, 10th grade class) classes had at least one student with suspected gang involvement.

Classroom teacher. The participating teacher was a twenty-three-year-old Caucasian female who was recently alternatively certified in special education. She had 1.5 years of teaching

experience, the vast majority of which occurred prior to earning her credentials. The teacher was previously enrolled in an alternative certification program designed to place pre-service teachers in full-time teaching positions in high-need schools while they completed their Master's degree and certification requirements. The teacher taught all three classes without the support of a co-teacher or a paraprofessional. At the time of the study, this teacher was not receiving consultation support from any school-based or outside professional.

DESIGN

This study employed a randomized multiple-baseline across settings (in this case, classroom) design (Kratochwill & Levin, 2010). Although not required in a single-case design, randomization strategies can be used to improve internal validity. Prior to baseline data collection, (1) the order in which classes received intervention and (2) the session in which the first class received intervention was randomly selected. The first randomly selected class could have potentially received the intervention during the fourth, fifth, or sixth session. These potential start points were chosen to provide the intervention as quickly as possible while complying with What Works Clearinghouse (WWC) Design Standards (Kratochwill et al., 2010) criteria for minimum number of data points per phase. For example, studies with at least three data points per phase can potentially meet WWC standards with reservations. Use of criteria that could have established longer baseline phases were not employed due to a desire to improve student behavior as quickly as possible through consultation services. Furthermore, the teacher requested immediate assistance due to her experience of stress and concern for her students. Another decision rule was created and used prior to baseline data collection to provide the intervention to each subsequent randomly selected class after the previous class received two intervention sessions. This decision rule was employed to balance a desire to provide the intervention as quickly as possible to all classes while providing an opportunity to establish an intervention effect at three different points in time.

Classes were selected to receive the intervention in the following order: ninth grade, combined 11th and 12th grade, and 10th grade. The fourth session was randomly selected as the session in which the ninth grade class would receive the intervention. Applying the previously mentioned decision rule, the 11th/12th grade class was scheduled to receive intervention during session six and the 10th grade class during session eight. However, data were not collected for the 10th grade class during session eight due to low attendance. Only two students from this class attended school this day. As a result, the 10th grade class did not receive intervention until session nine. No other significant variations in attendance occurred during this study, with no more than one student absent from a class during each observation. No student was absent for more than one observation.

In this study, a problem-solving model of consultation was employed (Bergan, 1977). The researcher (e.g., consultant) collaborated with a classroom teacher (e.g., treatment provider from school setting) to improve the behavior of students in three urban self-contained classes. Procedures were employed to define a salient problem of practice, design an intervention to improve student behavior, and monitor effectiveness (Kratochwill, Altschaeffl, & Bice-Urbach, 2014). We also sought to support teacher implementation through various training and support procedures including modeling, performance feedback, and ongoing data-based discussions.

DEPENDENT VARIABLES AND MEASURE

The current study was three weeks in duration with data collection occurring three to four times per week. For each scheduled data collection day, all three classes were observed once for the duration of an instructional period with the only exception being the eighth session for the 10th grade class. For example, data collection for the first session for each class occurred on the same day. Each session represents data collected during the regularly scheduled ELA class period for the respective class.

Three data sources were collected in this study: (1) observation data on classwide disruptive behavior, (2) observation data on class engagement, and (3) a social validity measure. Observations were the duration of a class period, which ranged from 40 to 45 minutes. A 10-second partial interval recording system was used to collect data on disruptive behavior. If disruptive behavior was observed at any time during the 10-second interval, it was marked accordingly. Disruptive behavior was defined as out of seat/area, negative verbal statements to peers or adults, noncompliance to behavior or academic demands, aggression, making noises with objects, property destruction or misuse (Kamps, Wendland, & Culpepper, 2006) as well as throwing objects, taking another's property, and simulating masturbation. If at least one student in the class was observed displaying disruptive behavior at any time during the interval, the interval was marked as having disruptive behavior.

Using an observation method employed in previous studies (see Bryant et al., 2013; Flower, McKenna, Muething, Bryant, & Bryant, 2014), a one-minute momentary time sampling procedure was used to collect data on class engagement. At the end of each minute, observers noted the number of students in the class who were displaying on-task behavior at that moment. Class engagement was defined as an interval in which at least two-thirds of the class was observed on task. This criterion was selected based on previous research involving the assessment of class engagement (Bryant et al., 2013; Flower et al., 2014). On-task was defined as student engaged in teacher instruction or the academic task (Haydon, Mancil, & Van Loan, 2009) and not engaged in actions that were not a part of instruction or the academic task. Examples of engaged behavior included answering instructor's question, looking at instructor while instructor is talking, looking at another student who is answering a question (Berrong, Schuster, Morse, & Collins, 2007) and a student's head and eyes oriented toward independent seatwork assignments or materials

specifically designated by the teacher (Williamson, Campbell-Whatley, & Lo, 2009).

Interobserver agreement. A trained graduate student collected interobserver agreement (IOA) data on class disruptions and class engagement for 37.5% of all observation sessions. IOA data were collected across study phases and participants for both dependent variables. Prior to data collection, the graduate student was trained in operational definitions and completed two video-based practice observations. The graduate student was not permitted to collect data until 90% agreement was obtained with the first researcher on both videos. IOA was calculated using kappa statistics, which accounts for chance agreement (Hintze, 2005). Kappa values range from +1 to -1, with high positive values evidence of agreement greater than expected by chance and high negative values evidence of observers agreeing less frequently than expected by chance. Kappa values are interpreted in the following manner: .21 to .40 is fair agreement, .41 to .6 is moderate agreement, and values greater than .6 is evidence of substantial agreement (Gelfand & Hartmann, 1975). Kappa values were at acceptable levels across study phases, participants, and dependent variables (e.g., .81 or higher).

Social validity. At the conclusion of the study, the classroom teacher completed the Intervention Rating Profile-15 (IRP-15; Witt & Elliot, 1985). The IRP-15 is a 15-item, 6-point Likert-type scale assessment with scores ranging from 15 to 90. Higher scores represent higher levels of intervention acceptability. The items on the scale ask the evaluator to rate such things as intervention effectiveness, appropriateness of the intervention, and the degree to which the intervention was user friendly. The internal consistency of the scale is reported to be .97 (Carter, 2007). The first author also interviewed the classroom teacher to obtain more specific information on any outlying item scores.

PROCEDURES

Baseline. Baseline conditions were a “business as usual condition” for each ELA class. The teacher

followed a structured routine. First, students entered the room and were required to complete a “do now”, which consisted of copying the focus question for that period or brief notes from the previous class session. The teacher then led the class through an activity which consisted of a whole group discussion of the focus question followed by the teacher either reading aloud to the class with stop points for discussion or the teacher showing video clips related to ELA content and leading a discussion. The teacher reported that a response cost system was in place where students earned points for performing positive behaviors and were debited points for class rule infractions. However, the teacher reported that she had great difficulty awarding and debiting points while providing classroom instruction. During baseline observations, the teacher infrequently awarded points for positive behaviors and did not debit points for behavioral infractions. In general, students frequently engaged in disruptive behavior with some of the behaviors involving physical and verbal aggression towards peers. The following disruptive behaviors were frequently observed for all three classrooms: non-compliance and work refusals, throwing objects, getting out of seat to disrupt other students, directing obscene language at peers, encouraging peers to engage in disruptive behaviors, and taking the possessions of others without their permission. Furthermore, bullying behaviors (e.g., verbal and non-verbal threats, making physical contact) was frequently observed in the 9th grade classroom. In all three classes, the majority of students did not complete the “do now” and rarely participated in class discussions and activities. The teacher frequently stopped providing instruction to reprimand students, who either ignored teacher requests, told her to leave them alone, and continued to engage in disruptive behaviors. In regards to reinforcement of positive behaviors, students who partially completed assigned tasks by the end of the class period earned points. Although the teacher was not observed providing reinforcement to other positive behaviors, there appeared to be few opportunities to do so as students tended to engage in problem behaviors as soon as they entered the classroom.

Often, students would engage in problem behaviors in the hallway and continue them in the classroom.

Functional behavior assessment. An FBA consisting of a teacher interview and an observation was completed for each class to identify the most common function or functions of problem behavior. In this study, we used the FBA procedure to identify the most common topographies of problem behavior, their function, and specific strategies that the teacher could focus her efforts on developing fluency in. By identifying the most common characteristics and functions of problem behavior, teacher training and coaching could be provided in a more targeted manner by focusing on a few strategies that addressed these qualities. We sought to improve class behavior through teacher use of function-based behavioral strategies rather than through reinforcement that was not provided in a systematic manner.

A modified version of the Functional Analysis Interview Form (FAIF; O'Neill, Horner, Albin, Storey, & Sprague, 1990) were used to guide teacher interviews. A separate meeting with the teacher was held on each class and occurred in a staggered manner across classes. During the interviews, the teacher stated that she wanted to reinforce specific positive behaviors and have strategies for addressing the most common problem behaviors in each class. The teacher was asked to identify common disruptive behaviors and rate their severity, common antecedents to disruptive behaviors, common peer and teacher responses to disruptive behaviors, and to hypothesize possible motivations. The teacher was also asked about previously implemented strategies, school-based efforts to support their implementation, and the degree to which these strategies had been successful. Common antecedents reported by the teacher for all three classes included the presentation of academic tasks including group discussions, round robin reading, note taking, and independent seatwork. The teacher also stated that students in all three classes frequently received peer attention when they displayed problem behaviors and

that problem behaviors tended to initiate when students entered the classroom. For all three classes, the teacher stated she was unable to identify a strategy that was effective for decreasing disruptions and increasing engagement and that students frequently ignored her efforts to redirect their behavior.

Upon completion of each interview, each respective class was observed one time for the duration of an instructional period (e.g., 40 to 45 minutes). During the observation, the first researcher used the Functional Assessment Observation Form (O'Neill et al., 1990) to collect data on common antecedents, consequences, and disruptive behaviors. Target behaviors (e.g., refusals, inappropriate language, throwing objects, threatening behaviors, etc.) and predictors (e.g., transition into class, academic tasks) identified during interviews and observed during the collection of baseline data were used to frame these observations. For each observation, the researcher sat at a desk located at one side of the room, facing the area where student desks were located. This location provided a vantage point to observe students as they entered the classroom, transitioned to their desks, and teacher instruction. Observations began when the first student entered the classroom. When observing, the researcher recorded information on the first instance of disruptive behavior (e.g., antecedent, the behavior, consequences) performed by any student in the classroom and then scanned the classroom for the next occurrence of disruptive behavior. This process was followed for the duration of each observation. Due to the frequency of disruptive behavior and the classroom being the unit of analysis, the researcher was unable to record every instance of problem behavior. While previous researchers have rotated from student to student when conducting FBA observations (Poole et al., 2012), the host school was unwilling to allow collection of data on individual students. However, it was believed that observation data collected was a representative sample of disruptive behaviors for each class. For all three classes, disruptive behaviors were observed and recorded during a

percentage of intervals comparable to baseline data and had antecedents and topography that were consistent with teacher interviews.

After completing an FBA observation for a class, the hypothesized function of each recorded instance of disruptive behavior was determined. The first researcher then completed a frequency count of the hypothesized function for each recorded instance of disruptive behavior and rank ordered each function. The most frequent function of problem behaviors was similar for all three classes. Students engaged in disruptive behaviors to gain peer attention and to escape from academic demands. In fact, many instances of disruptive behavior appeared to serve both functions as students were able to escape academic demands and receive peer attention when performing these behaviors. Teacher attention was ruled out as a primary function because students often ignored the teacher or told her to leave them alone. The teacher would then comply with this request, thus reinforcing the negative behavior (e.g., permitting the student to escape from the academic task and obtain peer attention in the form of laughter, etc.). Upon completion of the FBA, intervention strategies were selected for each class based upon these common functions of disruptive behavior. Infrequent functions of problem behavior (e.g., using disruptive behavior to acquire teacher attention) were not considered to limit the number of strategies that the teacher would have to implement with fidelity.

Preparation for intervention. Upon completion of the FBA for the 9th grade class (e.g., first class that received intervention), the researcher met with the classroom teacher to review interview and observation data and discuss the most common functions of disruptive behavior. During this discussion, the researcher provided concrete examples of frequently observed antecedent-consequence-chains, explained the hypothesized function of each, and then suggested strategies that directly addressed the common functions of class disruptions. The classroom teacher was also asked if recommended practices were feasible for use and responded in the affirmative. Upon acquiring

teacher commitment to use the strategies, the researcher modeled each strategy, using role plays of observed antecedent-behavior-consequences to provide context. The teacher then practiced each strategy and received performance feedback from the researcher. The researcher then discussed additional examples of when each strategy would be appropriate to use and answered any teacher questions. This procedure was followed prior to each class receiving intervention. At the end of the meeting, the first researcher and the teacher discussed potential methods to support classroom implementation and scheduled a consistent time for coaching sessions that was convenient for the teacher. Coaching sessions occurred during scheduled planning periods and after school.

Prior to initiating intervention phases for each class, students completed a preference assessment. Students were informed that they would have the opportunity to earn points in class that could be redeemed for privileges or small tangible items. The preference assessment was a paper and pencil task in which students indicated their degree of preference for three teacher identified reinforcers that they could potentially earn. These items were rated using a three point Likert-type scale. The preference assessment also included three blank spaces for students to write down their ideas for reinforcers. Information for each class was aggregated to create a list of rewards for each class. When creating the list, the teacher made certain that each student had at least one preferred reward on the list. Identified reinforcers were similar for each class and included small snack items, work passes, and free time with peers.

Intervention phase. For each class, the intervention phase consisted of teacher use of the selected function-based strategies and researcher performance feedback (e.g., coaching) on intervention fidelity. Performance feedback was provided because it was requested by the teacher at the beginning of the study and it is an effective practice for promoting intervention fidelity (Fallon, Collier-Meek, Maggin, Sanetti, & Johnson, 2015). No changes were made to academic instructional practices. A researcher-created checklist was

used during each coaching session, which were provided for each intervention session. Coaching sessions were 15 to 30 minutes in duration and were scheduled during planning periods and at the end of the school day. Coaching sessions only focused on those classes that were currently in the intervention phase and the teacher was periodically reminded that she would be offered strategies and consultation for each class as patterns in student behavior were identified and as each class transitioned from baseline to intervention.

During coaching, the researcher: (1) pointed out specific instances in which the teacher used the intervention strategies as intended and noted student response, (2) noted differences between strategy use and teacher behaviors observed during baseline, and (3) gave feedback on specific instances in which the teacher partially implemented or did not use a strategy. Upon completion of performance feedback, the researcher provided an expert model of strategies that were partially or not implemented through role play. The teacher then had an opportunity to ask any questions and state any concerns regarding the provision of intervention procedures and request additional modeling. After each coaching session, the classroom teacher received a follow up email from the researcher that summarized the session and highlighted key considerations for successful implementation. The teacher acknowledged reading the email either with an email reply or verbally.

The classroom teacher used the same intervention procedures with all three classes due to the identified function of disruptive behavior being similar across classes. Function-based classwide interventions consisted of the following procedures. To address escape from academic tasks, the teacher placed escape on extinction (i.e., briefly reminded student of academic expectation) and awarded points to students who were on task (i.e., reinforced a behavior that was incompatible to escape). Extinction was also addressed by permitting students to redeem points for “work passes”, thus permitting the exchange of points

for a break from academic work. When awarding points, the teacher used behavior specific praise to make an explicit link between the observed student behavior and the receipt of points. Problem behaviors performed to receive peer attention were addressed by awarding points to students for ignoring problem behaviors and staying on task (i.e., behaviors that were incompatible to peer attention) and permitting students to redeem points for free time with peers. To facilitate implementation, the teacher used a vibrating timer set to a fixed interval of five to seven minutes as a prompt to award points to students who were on task and ignoring problem behaviors as well as to remind off task students of the academic demand. Interval duration was selected in consideration of the high rates of observed disruptive behavior and the need to address these behaviors as frequently and efficiently as possible while simultaneously providing instruction. During consultation, the teacher believed that a five to seven-minute interval was feasible but wanted flexibility to select the exact duration prior to the start of each class. The teacher addressed bullying and instances in which students made contact with other students by deducting a point from students when they performed these behaviors. Point deduction was the only consequence awarded to students for these behaviors during the study due to concerns regarding student access to services. The vibrating timer was not used as a prompt to deduct points due to concerns with the behaviors escalating if student-to-student contact was not immediately addressed when it occurred. Point deduction was included in interventions because the teacher believed this strategy was appropriate and feasible to implement. Researcher in vivo prompting and feedback were not used at the teacher’s request. The teacher believed that she could implement intervention procedures in the absence of this support.

The teacher made no changes to instructional practices other than implementing the classwide function-based intervention during intervention phases. When five minutes remained in class, the teacher counted the number of points each student

earned and informed them if they had earned a sufficient amount to earn a reward from the class list. Five points was the minimum number of points necessary to receive a prize, so students could potentially earn a reward each class. Earned points were cumulative so that students would not become discouraged if they had insufficient points to earn a prize. Students who had earned a sufficient number of points were permitted to trade in their points for a prize on the class list or hold on to those points for another time.

Intervention fidelity. Fidelity data were collected during all intervention sessions. Prior to the collection of intervention phase data, a checklist was created by performing a task analysis of the behavioral intervention. Each component with the exception of one was rated on four-point Likert-type scale ranging from zero to three. Intervention components that were not observed received a score of zero, components that were sometimes observed received a score of one, components that were observed most of the time received a score of two, and components that were always observed received a score of three. Reminding the class that they could redeem points to earn rewards that they had previously selected was scored binomially: 0 (did not remind the class prior to starting instruction) or 1 (reminded the class prior to the start of instruction). Components with no opportunity for the teacher to implement (e.g., deducting points for bullying and aggression) were scored as not applicable and were omitted from calculation of the fidelity score for that observation.

Upon the introduction of intervention procedures with the first class (e.g., 9th grade class), fidelity data were collected for all subsequent baseline sessions to determine if the teacher generalized intervention procedures. However, the teacher was not observed implementing intervention procedures with classes during baseline (e.g., fidelity at baseline was 0%) and only used them after receiving researcher support (e.g., brief professional development, coaching) that was specific to identified behaviors and behavior functions for each class. As a result, baseline

conditions were maintained through this study. Fidelity data were collected during each intervention session by the first researcher. In regards to coaching sessions, fidelity was assessed each session using a checklist that was created through task analysis of planned coaching sessions. Individual items were scored as either occurring or not occurring.

IOA of fidelity data were collected during 23.5% of intervention observation sessions, with the data collector trained in intervention components and procedures for using the fidelity checklist prior to data collection. Specifically, examples and non-examples of intervention components were provided through modeling (e.g., role play) and discussion. The reliability observer was considered trained when able to discern between examples and non-examples and provide a rationale for their response with 100% accuracy on 4 consecutive role-plays. IOA of fidelity was calculated by dividing the lower of the two overall percentage scores by the higher score. In regards to IOA of fidelity for coaching sessions, the classroom teacher served as the second evaluator. Although the teacher is not an independent observer, we sought to maximize teacher involvement in the coaching process and to make certain that coaching sessions were completed to teacher satisfaction. By having the teacher assess fidelity of coaching, we could identify aspects that the teacher perceived as problematic or not fully implemented and then engage in error correction. At the end of each coaching session, the teacher determined if each procedure occurred. IOA of fidelity was assessed during 100% of coaching sessions for each class and was calculated in the same manner as IOA for classroom interventions.

DATA ANALYSIS

Disruptive behavior and class engagement was analyzed through visual analysis and calculation of percentage of non-overlapping data (PND; Scruggs, Mastropieri, & Casto, 1987). Visual analysis was used to determine the immediacy of effect, changes in trend and level, and the presence of an intervention effect at three different points in time. PND was calculated to determine the

consistency of the effect (Scruggs et al., 1987). PND is calculated by dividing the number of intervention data points that exceed the most extreme baseline data point in the desired direction by the total number of intervention data points and then multiplying this number by 100 to obtain a percent. PND is interpreted in the following manner: PND greater than 90% is evidence of a highly effective intervention, PND between 70% to 90% is evidence of a moderately effective intervention, PND between 50% and 70% is evidence of a mildly effective intervention, and PND less than 50% is evidence of an ineffective intervention. Means were calculated for social validity ratings and individual items were analyzed.

RESULTS

In the following sections, we report the effects of the function-based classwide interventions as well as their social validity. First, we report information on intervention effects on disruptive behavior followed by information on the effects on class engagement. Lastly we report information on social validity and fidelity data.

DISRUPTIVE BEHAVIOR

Figure 1 displays intervention effects on disruptive behavior and class engagement. During baseline, disruptive behavior was observed at high rates in all three classes. Although there is a decreasing baseline trend for all three classes, we believe this is an artifact of a ceiling effect: Disruptive behavior was observed during session 1 for at least 81% of intervals for all three classes. Upon introduction of the independent variable in the 9th grade class, disruptive behavior sharply decreased while baseline levels were maintained in the 11th/12th and 10th grade classes. A pronounced decrease in disruptive behavior was observed in the 11th/12th grade class was immediately observed upon the initiation of the intervention phase for this class, with low levels observed in the 9th grade class. Disruptive behavior in the 10th

grade class decreased in a similar manner with lower levels observed in the other two classes.

In sum, visual analysis shows an immediate drop in disruptive behavior upon introduction of the intervention as well as a change in level compared to baseline for all three classes. Additionally, visual analysis shows evidence of an intervention effect at three different places in time. There are no overlapping data points although one data point approaches baseline levels in the 11th/12th grade class. During this observation, a student said that someone in the class had stolen a snack from his backpack during the class period. However, all students had been in their seats and none had approached his desk or personal belongings. The student then stated, “If you are not going to make everyone empty their pockets and their bags, then I am not going to let you teach” and began disrupting the class. The other students remained on-task and, for the most part, ignored the problem behaviors. PND for each class was 100%.

CLASS ENGAGEMENT

Visual analysis of baseline data for class engagement shows low levels for all three classes and few instances in which at least 2/3 of the class was observed on task. An immediate increase in class engagement with a clear separation from baseline is observed upon introduction of the intervention in the 9th grade class. The increased variability in class engagement during the intervention phase is largely due to the presence of few observed instances of class engagement during the baseline observations. Increases in class engagement were observed in subsequent intervention phase observations. A similar pattern of response was observed in the remaining two classes. Visual analysis shows a change in level and trend for all three classes and an intervention effect at three different points in time. PND was 100% for all three classes. Table 1 reports mean performance for both dependent variables across study phases for each class.

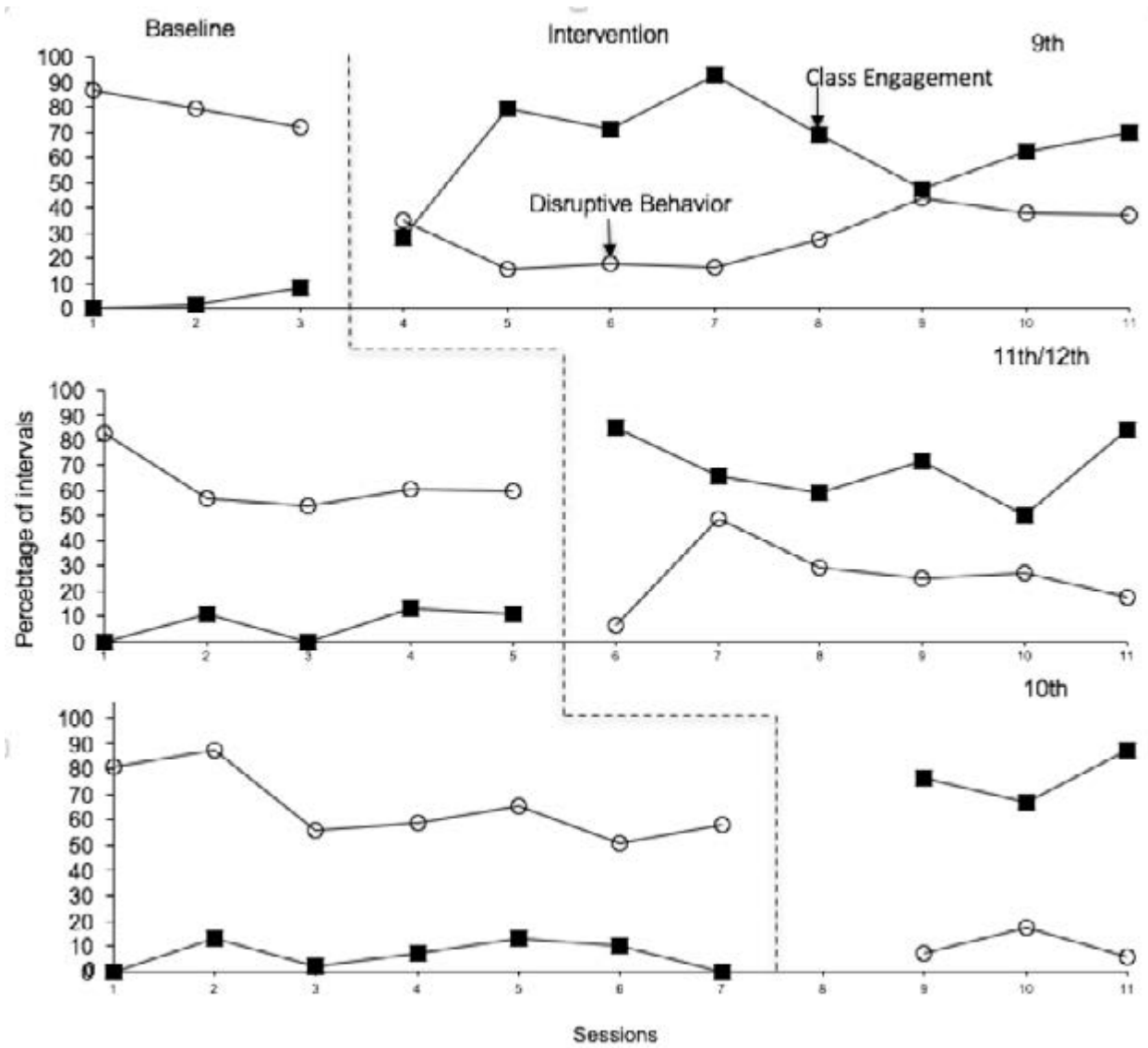


Figure 1. Disruptive behavior and class engagement data.

SOCIAL VALIDITY

The intervention received an overall score of 75 out of a possible 90 on the IRP-15 (Witt & Elliot, 1985). The teacher strongly agreed that the intervention was acceptable, that she would suggest it to other teachers, that it was necessary, fair, and reasonable. The teacher also strongly agreed that she was willing to use it in her classroom. The teacher slightly agreed that most teachers would find it appropriate, that

most teachers would find it suitable, and that the intervention would not result in negative side effects. The teacher disagreed that the intervention would be appropriate for a variety of children, stating that the intervention would be inappropriate for students enrolled in a SAT preparation course that she taught.

FIDELITY

Fidelity was the following for each respective class: 85.75% (range 65%-100%) for 9th grade,

Table 1

Mean performance for disruptive behavior and class engagement for each phase

Dependent Variable	Class	Baseline	Intervention
Disruptive Behavior	9th	79.5%	28.9%
	11th/12th	62.7%	25.6%
	10th	65.3%	10.3%
Class Engagement	9th	6.8%	65.3%
	11th/12th	6.9%	69.2%
	10th	6.5%	76.6%

88.2% (range 70% to 100%) for 11th/12th grade class, and 95.2% (range 85.7% to 100%) for 10th. Lower levels of fidelity coincided with lower levels of class engagement (ex: the first intervention session for the 9th grade class) or higher levels of disruptive behavior (ex: the second intervention session for the 11th/12th grade class). Deducting points for instances of bullying or physical or verbal aggression was the treatment component with the lowest level of fidelity across all three classes. The teacher stated that she felt uncomfortable deducting points because she perceived a lack of administrative support in the event a student escalated in response to receiving this consequence. IOA of fidelity was at acceptable levels across classrooms (e.g., in excess of 90% agreement). Fidelity of coaching procedures and consultation model was 100% for each class.

DISCUSSION

Despite having pervasive needs (see Gage, Adamson, MacSuga-Gage, & Lewis, 2017; U.S. Department of Education, 2017), students with EBD are more likely to be assigned to novice or uncertified teachers (Billingsley, Fall, & Williams, 2006). In turn, students with EBD may not receive appropriate instruction and behavioral support (Bettini, Cumming, Merrill, Brunsting, & Liaupsin, 2017; Gage et al., 2010; McKenna & Ciullo, 2016). As a result, it is imperative that schools provide sufficient professional development, coaching, and ongoing support to those professionals responsible for educating these students.

In the present study, a novice teacher with alternative certification was provided professional development and coaching in a function-based classwide intervention intended to reduce the frequency of class disruptions and increase class engagement. Study findings suggest that the intervention was effective for all three classes. Although interventions did not eliminate disruptive behavior, it was consistently observed at lower rates compared to baseline conditions. Class engagement was also dramatically higher during intervention phases compared to baseline conditions for all three classes. Higher levels of classroom engagement serve as evidence of positive changes in the classroom environment and climate (Reyes, Brackett, Rivers, White, & Salovey, 2012). It is encouraging that such positive changes in classroom behavior were functionally related to the teacher's implementation of a small set of strategies with fidelity after receiving only brief training and short coaching sessions.

The intervention could be considered a possible primary level support for self-contained classes because the majority of students responded positively to the intervention, as indicated by decreases in disruptive behavior, increases in class engagement, and teacher perceptions. By identifying the most common functions of disruptive behavior within each class, strategies could be selected that directly addressed the most common causes of these behaviors. Such an approach would be likely to increase the efficiency of teacher and student supports. By improving the

general quality of classroom management, school teams can then focus their expertise and resources on the few students who continue to display disruptive behavior (e.g., inadequate responders to function-based classwide interventions who need for more targeted support). Consultants who support educators in self-contained settings with high rates of disruptive behavior and low levels of academic engagement may view function-based classwide interventions as an initial step towards improving student behavior and promoting teacher skill building.

Teachers should possess a repertoire of effective behavioral practices so that they can maximize instructional time (Cheney, Cumming, & Slemrod, 2014). Improving teacher education programs at the pre-service level is one clear way to promote acquisition of effective behavioral strategies, and highly trained teachers are more effective than are those with limited preparation and experience (Lee, 2018). However, only addressing issues related to insufficient pre-service teacher preparation is insufficient for addressing the unsatisfactory school and transition outcomes for students with EBD. The demand for special education teachers has routinely surpassed the supply (Boe, 2014), and the concentration of novice and unprepared teachers is substantially greater in schools such as the one where this study took place (Kolzleski, Artiles, McCray, & Lacy, 2014). Collaboration between novice teachers and support staff is necessary to identify salient problems of practice and possible strategies for addressing them. School-based consultants must be prepared to support educators who possess a limited set of skills and are responsible for educating students with significant needs. In this investigation, strategies were strategically selected to align with the hypothesized functions of problem behavior, permitting the training and coaching sessions to focus on developing a small repertoire of teacher skills. When using this approach, consultants can focus on supporting teacher use of a small set of strategies and then add additional strategies when skill fluency is demonstrated.

Special education should serve as a gateway to services and supports that address student needs (Brigham, McKenna, Lavin, Brigham, & Zurawski, 2018; Kauffman, Wiley, Travers, Badar, & Anastasiou, 2019). However, it may be unreasonable to expect an inexperienced teacher to meet the needs of students with such complex profiles and pervasive needs while they are simultaneously developing mastery of the fundamentals of teaching in the absence of substantial ongoing support. This is particularly true when one considers the heightened expectation for providing FAPE to students with disabilities (Yell & Bateman, 2017): Students with disabilities must be provided meaningful opportunities to benefit from school and to make behavioral and academic gains. The application of FBA technology across an entire classroom is one potentially useful way of supporting novice teachers while making it possible for them to attend to the other challenges facing beginning educators.

LIMITATIONS

Four limitations are associated with this study. First, while an initial effect and two replications are sufficient for a multiple baseline design (Kratochwill et al., 2010), it is not for generalization of findings. Furthermore, only one teacher participated in this investigation and overall the study was brief in duration. Second, although study phases met WWC requirements for minimum number of data points, the presence of additional data points could have more strongly established experimental control. Third, this study involved classrooms in which high rates of disruptive behaviors were observed. Study findings may be less relevant to classrooms with lower rates of challenging behaviors. Finally, this study included no maintenance phase to determine the degree to which changes in student behavior were maintained and the degree to which the teacher maintained intervention fidelity in the absence of coaching. However, the teacher did report continued use of the intervention and stated she did not require any additional assistance with its implementation.

FUTURE RESEARCH

Only a limited number of studies that have investigated the effectiveness of function-based classwide interventions appear in the literature; therefore, additional replications of the applications of the procedures used in the present study are warranted. The present study was carried out in a secondary school with characteristics that may limit ability to generalize these results to other, dissimilar schools. Therefore, replication studies in elementary and secondary settings as well as inclusive and substantially separate educational settings are necessary. Furthermore, future research should investigate potential maintenance and generalization effects.

Future research should also identify the FBA methods that are best used to guide classwide interventions. For each class, a brief teacher interview and a classroom observation was completed to identify the most common functions of problem behavior. This procedure may be insufficient in at least some instances as a more comprehensive procedure may be warranted. Additionally, research should also investigate the reliability of FBAs that are based on shorter and, therefore, less extensive planning (e.g., a teacher interview and a single classroom observation). Given the probability of continued employment of under-prepared classroom personnel in difficult teaching assignments, research should continue to investigate the supports necessary for teachers to use function-based interventions with fidelity, particularly when they are implemented in urban school settings. Finally, research should also address pairing of classwide function-based interventions with changes to academic instruction to meet student behavioral and academic needs.

Providing a forum for teachers to discuss instructional practice and engage in collaborative problem solving is essential to teacher development and student performance.

IMPLICATIONS FOR PRACTICE

Study findings suggest three implications for school practice. First, function-based classwide interventions may be effective in reducing class disruptions and increasing class engagement. Application of these procedures may be particularly well considered when the classroom environment is chaotic and little teaching and student learning is occurring. Second, it may be advantageous for inexperienced teachers working with students who have complex profiles to use classwide function-based interventions. Identifying those strategies that are most likely to have success may enable teachers to specifically focus on a small set of behavioral strategies, thus enhancing feasibility and lessening cognitive load. As novice teachers gain skill fluency, additional strategies can be targeted for instruction.

Lastly, schools should include contingencies for monitoring teacher fidelity to improve the effectiveness of intervention and instruction (McKenna & Parenti, 2017). Engaging in ongoing conversations about fidelity may also support efforts to create a collaborative school environment, which is an essential support for novice special educators (Bettini et al., 2017). Providing a forum for teachers to discuss instructional practice and engage in collaborative problem solving is essential to teacher development and student performance (Johnson, Reinhorn, & Simon, 2018)

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