EXAMINING THE EFFECTS OF EXPERT PEER COACHING AS PROFESSIONAL DEVELOPMENT MODEL AND TRAINING TOOL FOR SPECIAL EDUCATION TEACHERS

by

Kaitlyn M. Brennan

Bachelor of Science, University of Pittsburgh, 2010

Master of Education, University of Pittsburgh, 2011

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This dissertation was presented

by

Kaitlyn M. Brennan

It was defended on

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and approved by

Dr. Steven Lyon, Associate Professor, Department of Instruction and Learning

Dr. Mary Kay Biagini, Associat Professor, School of Library Sciences

Dr. Rachel Robertson, Assistant Professor, Department of Instruction and Learning

Dissertation Advisor: Dr. Douglas Kostewicz, Associate Professor, Department of

Instruction and Learning

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Kaitlyn M. Brennan, PhD

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Federal legislation requirements from NCLB and IDEA have required teachers to provide both academic and behavioral programming to their students that is grounded in scientific research. Teachers may have a limited repertoire in such instructional and management skills and require staff development and training to meet such a standard, especially teachers working with students identified as having challenging behaviors in an alternative education setting. This study sought to examine the effects of expert peer coaching on teacher behavior who work with students involved in the juvenile justice system. A multiple baseline design across behaviors was used to assess the impact of the intervention. Each teacher's data denoted a functional relationship between the intervention and teacher behavior. Teachers rated the intervention as an effective use of their time and would be likely to continue to use this intervention in the future outside of the study if it was presented as an opportunity in their place of employment.

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PREFACE

Without the guidance and support of so many this dissertation and degree would not have been possible. I would first like to express my most sincere gratitude to my advisor Dr. Douglas Kostewicz for his mentorship, support, and guidance. He saw potential in me many years ago and was the first person who taught me what it means to be a scientist in our field. I am forever grateful for the lessons and experiences I have been afforded because of him. I would like thank my committee members Dr. Steven Lyon, Dr. Rachel Robertson, and Dr. Mary K. Biagini for their support and guidance throughout the dissertation process. I also thank Dr. Sheila Conway and Dr. Mandi Skerbetz for their mentorship, support and friendship. I would not be who I am today either professional or personally without the both of you. To my colleagues Jesse Smith, Molly Matsik, and Rachel Gwin, you are three of the most talented, thoughtful, and kind hearted people I know. I simply can't imagine a better group to have shared this process with over the last four years. To my invaluable network of loving, supportive, forgiving, and patient friends, thank you from the bottom of my heart for everything. I especially thank Mike while I may not always do the best job of letting you know, I truly admire how you live each day. You're one of the kindest souls I've ever known, thank you for sticking by me. To my grandmother Mary Ellen, I couldn't be happier that you get to see another Dr. Brennan. You have taught me more in my life than any degree could ever even come close to matching. I love you and I am forever grateful for your support. And finally, I would like to thank my students from Propel Northside.

Each of them inspired me every day to do better for kids than I did the day before. This degree and dissertation would not exist without them. While I know they will more than likely never see this, I need to thank them for the opportunity I had to be their teacher.

This dissertation is dedicated to my grandfather Dr. Joseph T. Brennan and great grandmother Mrs. Florence Morrison, I think you both would be very proud.

1.0   INTRODUCTION

Policy makers and education stakeholders alike brought special education to the policy table with the 1965 passage of The Elementary and Secondary Education Act (ESEA). Federal legislation (e.g. Individuals with Disabilities Education Act, No Child Left Behind, and Every Student Succeeds Act) over the next six decades continue to offer federal support for special education programs (McGuinn, 2006). The evolution of federal provisions focusing on special education led to a shift in accountability standards for students with disabilities and their teachers (McGuinn). The accountability standards put forth in these pieces of legislation not only guided, and may continue to guide, measures of student success, but also are one factor in determining where and how much federal funding school districts collect.

The mandates associated with varying pieces of federal legislation (i.e. NCLB, IDEA) outlined a clear emphasis on the incorporation of evidence-based practices (EBP) to best meet the academic and behavioral needs of all students, including students with disabilities (Dietrich, 2008). While standards for EBP vary across disciplines, a commonality appears to be the assumption that interventions with an empirical base are more likely to yield positive results (Cook, Landrum, Tankersley, & Kaufmann, 2003; Cook, Tankersley, & Landrum, 2009; Cook, & Cook, 2011; Deitrich, 2008; Odom, Brantlinger, Gersten, Horner, Thompson, & Harris, 2005). Given that research points to the implementation of EBP leading to improvement in student performance, one may assume teachers use of these practices would be seamless.

However, a gap between educational research and clinical practice persists (Garet, Porter, Desimone, Birman, & Yoon, 2001). Policy makers and researchers alike have hypothesized as to why the research-to-practice gap persists. Greenwood and Abott (2001) presented four themes that may contribute to why the research-to-practice gap exists in special education. These themes include; a division between the research and practice communities; perception of limited relevance in research to day to day classroom practices by practitioners; a lack of usable interventions once removed from research environment; lack of communication and opportunities for professional development between researchers and practitioners. Education stakeholders may want to consider these barriers when engaging in education reform efforts.

The potentially positive outcomes associated with education reform efforts rely heavily on teacher behavior. Policy makers and educational researchers alike have highlighted the importance of offering professional development opportunities to teachers. Effective professional developments may ensure that teachers have the necessary knowledge and skills to implement EBP in their daily programming (Borko, 2009).

A variation of having researchers provide training and feedback to participants on EBP may be peer coaching. Research points to coaching as a factor in increasing teachers' likelihood of transferring skills. Peer coaching can be differentiated into two variations; expert coaching and reciprocal peer coaching (Ackland, 1991). Hasbrouk (1997) identified three critical components of peer coaching; providing teachers with extensive training on coaching, structured observations that focus on objective and descriptive recording of teacher behavior, and debriefing and goal setting as a post-observation component.

A review of the literature examining the effectiveness of peer coaching as a professional development and training model for general, special, and pre-service teachers yielded 10

empirical studies. The studies included 74 currently practicing teachers and 64 pre-service teachers across multiple grade levels and content areas, including special education. Training varied across the ten identified studies but primarily consisted of two parts; training on intervention for targeting either teacher or student behavior and training focused on peer coaching as a professional development model for implementation of the intervention. Although the participants, settings, and targeted behaviors varied across settings all 10 studies point to peer coaching as having a positive or statistically significant effect on behavior.

Teachers require training to support their adoption of EBPs into their daily programming. However, a common method of professional development, the single-day professional development workshop, has received criticism (Ball & Cohen, 1999). In an effort to respond to the lack of quality professional development opportunities available for teachers NCLB put forth a set of standards a professional development must meet to be considered high quality. The five criteria encompass the following standards: (1) sustainable, intensive, and content driven; (2) aligned and directly related to state content standards, student achievement standards, and assessments; (3) improves and expands educators' knowledge of subjects they teach; (4) advances teachers understanding of evidence based instructional strategies; (5) regular evaluation on the impact of teacher effectiveness and student achievement (Yoon, Duncan, Wen-Yu Lee, Scarloss, Shapely, 2007).

Combining instructional or behavioral strategies already grounded in scientific research with peer coaching as a training model may address both the need for more high quality professional development opportunities for teachers and the research-to-practice gap. Researchers may want to consider systematically examining the effects of peer coaching as a professional development and training model for teachers. This approach could simultaneously

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address the need for high quality professional development needs of teachers as outlined in

NCLB and perhaps address the persisting research to practice gap.

2.0   LITERATURE REVIEW

In 1965 President Lyndon Johnson signed into law The Elementary and Secondary Education Act (ESEA). ESEA promised to provide federal grants and funding to districts serving low-income students, bring special education into focus, and offer federal funds to state education agencies with the goal of improving the quality of elementary and secondary education (McGuinn, 2006). Following ESEA, in 1975 Congress enacted the Individuals with Disabilities Education Act (IDEA). The primary goal of IDEA ensured that all students with disabilities would receive a free and appropriate public education. The underlying theme of both ESEA and IDEA centers on building student success (McGuinn). For students with disabilities, meeting the more rigorous academic standards involved moving students into the general education classroom with access to the general education curriculum. For teachers, ESEA and IDEA brought a new set of accountability standards to ensure that practitioners provided students with a high-quality education, grounded in evidence-based practices (McGuinn). Lawmakers have since revised both pieces of legislation (i.e. ESEA to No Child Left Behind Act [NCLB]) but the primary goal remains; to ensure that all children have access to a high quality education (McGuinn).

Although IDEA and NCLB focus on student outcomes as a target measure, neither initiative provides substantial details on how schools should achieve these improvements (Plank & Condliffe, 2013). The unspoken rationale behind these high stakes accountability policies is

that holding practitioners and administrators accountable for student performance will motivate the alignment of curriculum to standards (Plank & Condliffe). The assumption of policy makers is that in aligning curriculum to standards students will then perform well on the accountability measures (i.e. standardized assessments) (Elmore, 2004; Plank & Condliffe). However, Berryhill and colleagues (2009) found that teachers feel their impact on student academic performance is limited by situational factors outside of their teaching.

Although situational factors (e.g. student demographics, funding, resources) may impact student performance, Sanders and Horn (1995) found that teacher quality has the greatest impact on student achievement. Concurrently, Plank and Clondliffe (2013) point to classroom variables (i.e. teacher interactions), more so than school variables, as having a direct relationship with student achievement (Plank & Clondliffe). Given the link between teacher behavior and student achievement it is not surprising that NCLB and IDEA require all teachers to possess both instructional and classroom management skills that promote appropriate student behavior. Instructional and classroom management practices grounded in scientific research foster an environment that engages all students in learning.

When investigating research-based interventions, ease of implementation plays a major role in teachers' willingness to implement said interventions (Scott, 2002). Scott suggests that teachers often worry about their effectiveness in educating students with complex needs for a number of reasons including their need for training and the amount of time needed to implement interventions. Interventions that teachers can easily implement and that target multiple domains (i.e., social and academic) should receive initial attention. Experimenters have identified various teacher-mediated interventions that are not only grounded in research, but easy to learn and implement.

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2.1   TEACHER MEDIATED INTERVENTIONS

Teacher praise is one example of a teacher mediated intervention that is easy to learn, implement, and grounded in research (Conroy, Sutherland, Snyder, Al-Hedawi, & Vo, 2009). Researchers suggest that gains in student achievement and decreases in inappropriate behavior may occur as a result of a teacher providing explicit expectations and positively reinforcing students for engaging in appropriate school behavior (Pianta, Belsky, Vandergrift, Houts, & Morrison, 2008).   Another teacher-mediated intervention involves providing students with choice. As both an antecedent and consequence intervention, choice making involves the active selection among two or more options (Guess, Benson, & Siegel-Causey, 1985). Researchers have found both improvements in student academic and social behavior following the implementation of choice as an intervention (Von Mizener & Williams, 2009).

Further advancing the research on teacher mediated interventions; growing empirical support points to teachers providing students with frequent and varied opportunities to respond (OTR) as a class-wide instructional and behavioral support. Researchers point to OTR as improving the active engagement of all students in a classroom environment. A recent review of the literature describes teacher directed increases in student OTR as having a positive impact on on-task behavior, response rate, active student responding, disruptive behavior, and off task behavior (MacSuga-Gage & Brandi, 2015).

Similar to teacher praise, choice, and OTR other varying teacher mediated interventions include; structuring academic tasks, model rehearse, and feedback, and sequential prompting. All of these interventions involve the teacher manipulating antecedents to help reduce student problem behavior and increase academic performance (Ryan, Peirce, & Mooney, 2008). These

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interventions are easy to learn, implement, and involve a change in teacher behavior leading to a change in student behavior (Ryan, Peirce, Mooney).

While empirical evidence points to these types of teacher meditated interventions as effective in promoting appropriate student behavior and academic growth, many teachers fail to these evidenced-based teaching strategies. Teachers often report feeling unprepared to implement evidence based teaching strategies (Garet et al., 2001). Implementation gaps may result from how teachers experience new material. Training and professional development play a critical role in the implementation of evidence-based teaching strategies. However, teachers are most often trained using methods that focus on memorization of facts rather than a conceptual understanding (Garet et al.). More effective professional developments include ongoing collaboration, explicit goals, and opportunities to practice, observe, and reflect aligning with NCLB (Garet et al.).

NCLB explicitly promotes providing teachers with high quality professional development opportunities. Aligning with the attention NCLB brought to teacher professional development; the Teaching Commission released a report pointing to the importance of ongoing and targeted professional development (Guskey & Yoon, 2009). However, despite recognition of the importance of professional development for teachers NCLB does not offer indicators of what qualifies as a high quality professional development program (Guskey & Yoon). Further, according to the National Center for Education Statistics (NCES), teachers report spending a day or less in professional development within the past year. Of the teachers participating in some type of professional development, less than 25% report feeling that the training offered impacted their instruction (Guskey & Yoon).
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2.2   RESEARCH TO PRACTICE

NCLB and IDEA call on teachers to use evidence based practices in their daily instruction and programming. Yet, a gap between research and practice continues to exist (Burns & Ysseldyke, 2009). Researchers have speculated as to why the gap between research and practice persists; some suggest a lack of accessibility of research to classroom teachers, a lack of trust in the claims made by researchers, or a preference of more information sources of information over research (Landrum, Cook, Tankersley, & Fitzgerald, 2002). When researchers conduct studies on evidence-based instructional methodologies that could be implemented by a classroom teacher, a member of the research team most often provides the training to the participants.

A variation of having researchers provide the training and feedback to participants and possible solution to teacher resistance to such training may be peer coaching. Peer coaching has an extensive history in the field of education. The intervention involves a teacher observing a colleague and providing feedback providing teachers with the opportunity to collaborate with their colleagues in a safe, non-evaluative environment (Licklider, 1995; Kohler, Ezell, & Paluselli, 1999). Joyce and Showers (1980) conducted an analysis of over 200 studies to examine the effectiveness of various training methods for educators. Results pointed to practice and feedback as the most effective form of training in relation to skill acquisition and transfer of training to teacher behavior in the classroom (Joyce & Showers). Joyce and Showers postulated that feedback would best come from a peer and developed the concept of peer coaching.

Ackland (1991) differentiates peer coaching into two types; expert coaching and reciprocal peer coaching. Expert coaching involves one individual acknowledged as having expertise in an area and observes, provides feedback, and offers suggestions for change in that

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area. Conversely, reciprocal peer coaching involves two teachers observing, providing feedback, and making suggestions for change on an alternating basis. One of the teachers may have more expertise than the other but both participate in the observation, feedback, and change cycle while learning together. Showers (1985) noted that reciprocal peer coaching "provides a safe environment in which to learn and perfect new teaching behaviors, experiment with variations of strategies, teach students new skills, and expectations inherent in new strategies, and thoughtfully examine results" (p.47).

University teacher training programs and school districts alike have used peer coaching as a method of training. For pre-service teachers in a teacher-training program, peer coaching has been used as a method of preparation to compliment the collaboration of a cooperating teacher or traditional University supervisor (Britton & Anderson, 2010). Particularly for special education teacher preparation, peer coaching may offer preparation for consultation and collaboration that is becoming an increasingly critical skill for practitioners working in an inclusive environment (Hasbrouk, 1997). For current teachers, peer coaching has been used as an ongoing method of professional development and collaboration among colleagues. Not only does peer coaching provide teachers with the opportunity to practice new skills in a safe environment, but researchers have identified a variety of benefits to peer coaching including; reducing isolation, increasing collaboration among staff, developing a process for addressing instructional concerns, transferring pedagogical skills to practice, and encouraging reflective practice (Gersten et al., 1995; Joyce & Showers, 1982; Robbins, 1991; Willerman, McNeely, & Koffman, 1991).

Current thoughts on peer coaching (Joyce & Showers, 2002) recommend implementing peer coaching under certain conditions. First, structured observations that focus on objective and descriptive recording of teacher behavior are more favorable and provide a better opportunity for

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useful feedback than subjective evaluations (Hasbrouk, 1997). Second, providing teachers with extensive training on effective coaching is an important component, especially for pre-service and novice teachers who may have a limited repertoire of instructional skills (Hasbrouk). Finally, debriefing and goal setting as a component of a post-conference seemed to be most effective in showing change and improvement on teacher behavior (Hasbrouk). Structured observations, training, debriefing and goal setting as critical components of a peer coaching model align with the research on information treatments versus an informational component combined with demonstrations, practice, and feedback (Joyce & Showers, 2002). Additionally, the likelihood of teachers transferring skills to the classroom increases dramatically when coaching is added as a component of training. In an analysis of studies on training and staff development, Joyce and Showers (2002) found an effect size of 1.42 when coaching is included as an element of training.

2.3   PURPOSE OF REVIEW

The purpose of the current review is to examine the use peer coaching as a method of staff development and training. Recent focus from federal, state, local, officials on education reform has brought professional development and training models for pre-service and currently certified teachers alike to the forefront. Federal legislation requirements from NCLB and IDEA have required teachers to provide both academic and behavioral programming to their students that is grounded in scientific research. Teachers may have a limited repertoire in such instructional and management skills and require staff development and training to meet such a standard.

In this manuscript a review of the literature on peer coaching as a method of training and staff development for teachers and pre-service teachers was undertaken that addressed the following questions:

1. How have settings and participants have varied?

2. What are the key components to the intervention (i.e., training and feedback)?

3. What outcome measures were used to evaluate the effectiveness of peer coaching as an intervention and how were these outcomes defined and measured?

2.4   METHOD OF LITERATURE SEARCH

To answer the research questions, a review of the literature was conducted to identify studies concerning the use of peer coaching as a professional development model. Steps in the review included (a) a search of three computerized databases, (b) an ancestral search, and (c) a hand search of the *Journal of Teacher Education and Special Education.*

To meet criteria for review, an article had to:

1. Appear in a peer-reviewed journal,

2. Include elementary, secondary, or pre-service teachers as participants in the research study,

3. Include peer coaching as a dependent measure,

4. Employ a single-subject, experimental, or quasi-experimental research design.

First, all possible truncations of the following descriptors were entered into PyscINFO, PsycART, and ERIC computerized databases: *peer coaching*. The search yielded 366 articles of which seven met initial criteria. An ancestral search of relevant literature reviews and all articles

meeting criteria generated two additional articles; one more article resulted from the hand search. Articles were separated into two categories: currently certified teachers and pre-service teachers. The author then coded for participants, location, training, feedback, and outcomes and numbered the studies (Table 1).

2.5   RESULTS OF LITERATURE SEARCH

2.5.1   Participants and settings

2.5.1.1 General/Special education teachers.   Seventy-four certified teachers participated across seven (3, 4, 5, 7, 8, 9, 10) studies in 16 schools with only one (8) specifically identifying the inclusion of special education teachers. Two principals also served as trainers (5).

Table 1. Peer coaching

Study	Setting	Participants	Training	Feedback
1. Bowman (2000)	Unidentified number of elementary schools in a large urban school district	32 Pre-Service elementary education majors at a large Midwestern University	3-hour orientation: simulated lesson and post conference with 3 questions provided to provide a context for organizing subsequent post conferences.	Post observation via a 3 question framework/90 minute weekly seminar focusing on skill
2. Hasbrouck (1997)	1 Elementary School and 1 Middle School	22 Undergraduate Pre-Service Teachers; 7 consulting teachers and 15 classroom teachers	4 hour training on SCIE using video taped lesson	Post observation using SCIE
3. Kohler et al. (1997)	Unidentified number of elementary schools	4 General Education Teachers	Full Day In-Service	7 Post observation sessions lasting 30-45 minutes using a checklist
4. Kohler et al. (1999)	3 Kindergarten classes at an unidentified number of	3 Kindergarten Teachers	Half-Day In-Service	Post observation using checklist

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	Elementary Schools			
5. Licklider, B. (1995)	2 Secondary Schools in a Midwest school (grades 7-12)	11 teachers and 2 Principals	Principal In-service Workshop from research team then Principals provided In-service to Teachers	Post observation
6. Morgan et al. (1994)	3 Elementary Schools	5 Pre-Service Teachers, 3 Undergraduate Students	8-10 hours of training in observation and recording, evaluation, and feedback procedures	Post observation twice per week
7. Murray et al. (2010).	1 K-8 School, 3 Middle Schools, 2 High Schools from 4 districts	6 Teachers	Professional Development	Post observation
8. Scheeler et al. (2010)	Unidentified number of Elementary Schools	3 dyads of a general education teacher and a special education teacher in an inclusion setting	30-45 minute training on bug in ear and providing feedback.	Immediate via bug in ear
9. Stichter et al. (2006)	2 Public Elementary Schools	16 Elementary School Teachers	2 hour in service on OTR, additional 3 hour training provided on peer coaching, supplemental literature provided	Post Observation with conferencing form
10. Zwart et al. (2009)	4 High Schools	28 High School Teachers	2 Day Workshop	Post Observation

Schools varied per study from elementary (3, 9) and secondary (5, 10) to multiple grade levels (7).

2.5.1.2 Pre-Service Teachers. Sixty-four pre-service teachers participated across three studies (1, 2, 6). Studies occurred in elementary (1), middle and secondary classrooms (2, 6). Two of the three studies (2, 6) identified the specific settings where the study took place. Settings contained students with identified special needs (6) or a specified remediation program for students (1).

2.5.2 Training

Across the ten studies training varied but primarily consisted of two parts (a) training on the intervention for targeting either teacher or student behavior and (b) training on peer coaching as a professional development model for implementation of the intervention.

2.5.2.1 General/special education teachers. Three (5, 8, 9) of the seven studies provided specifics regarding the model for training teachers on elements of peer coaching while the remaining four studies (3, 4, 7, 10) simply indicated that participants received training on elements of peer coaching through a workshop, professional development session, or training with the experimenter. Two of the three studies (5, 10) targeted debriefing during a post-observation conference that not only consisted of providing feedback on the instructional session but also on collecting data and setting goals for future lessons. One study provided participants with supplemental literature on incorporating peer coaching for improvements in instruction and student learning (9). Participants in this study also had access to ongoing email assistance from the lead author throughout the duration of the study. The experimenter did not provide specific information on what this email assistance consisted of or how it was used.

The second study providing specific information on their training model incorporated principals as trainers with the goal of creating a more sustainable model of professional

development (5). Researchers first provided a workshop to two principals on peer coaching cycles and effective questioning techniques. Effective questioning served as the targeted improvement area for teachers by way of peer coaching as a professional development model. After the principals received workshop training they then provided the same training to 11 teachers in their building. The objectives of the training can be split into two parts; first teachers were trained on elements of effective questioning. Objectives of this training included (a) enabling teachers to develop effective teacher delivered questions for class discussions, (b) recognizing the criteria associated with effective questioning, and (c) adapting effective questioning for use in their own classrooms. The second part of the training targeted peer coaching as an ongoing professional development model to support teachers implementing effective questioning into their classrooms. Elements of this training included (a) observing a lesson, (b) recording data, and (c) having opportunities to practice giving feedback.

The principals first provided teachers with information on the theory behind effective questioning, then modeled how to use elements of effective questioning. Teachers then had the opportunity to write their own questions and receive immediate feedback from principals. Following this, teachers discussed the ten elements used to recognize effective questioning techniques, observed a video of a teacher instructing students in a classroom, and used the ten elements to identify effective questioning. Teachers used a rating instrument to score the teacher in the video on their effectiveness.

After teachers completed the training on elements of effective questioning the principals introduced them to the peer component of this professional development model. Similarly, to the first portion of the training, the principals provided the theory behind peer coaching and described how peer observation and feedback enhances knowledge and transfers of skills. An

outline of the procedures that would be used was then provided. Teachers then had the opportunity to watch another video, use the rating tool to identify and rate questions, outline a post-conference, do a mock conference, and select the peer they would work with throughout the study.

2.5.2.2 Pre-service teachers. Similar to the studies focusing on currently certified teachers, the three studies (1, 2, 6) targeting pre-service teachers varied in their methods for training teachers on elements of peer coaching. The studies remained consistent in that they all in some way addressed evaluation of targeted behaviors and providing positive and constructive feedback in a post-observation session. Two of the three studies (1, 2) used a videotaped observation in their training to simulate how they would observe, collect data, and provide their peer with feedback in a post-observation conference.

Experimenters in one study (1) provided pre-service teachers with three questions as a context for organizing post conferences. The questions included (a) what were the strengths of the lesson? (b) what were the weaknesses of the lesson? (c) if you were to teach this lesson again what would you do differently? Another study used the Scale of Coaching Effective Instruction (SCIE) as a tool for facilitating peer coaching by guiding observation of a lesson and providing feedback for improvement. The SCIE is comprised of 51 items that are then divided into 51 sub-items and grouped into three categories; (a) planning and organization, (b) instruction, (c) classroom management. The pre-service teachers received training on how to use the SCIE in peer coaching using a videotaped lesson of a pre service teacher's 40-minute language arts lesson. This training covered anecdotal note taking during an observation, coding the observation using the SCIE, and provided pre-service teachers with a protocol for presenting the ratings to their observed peer as a way to facilitate improvement rather than criticism (2).

2.5.3   Peer coaching/feedback sessions

All of the peer coaching sessions followed a similar outline and had a primary focus of providing peers with constructive, positive feedback with improved classroom practices as a goal. Six of the seven studies targeting currently certified teachers involved a post observation component where participants debriefed with one another on their observation (3,4,5,7, 9,10). All of the studies focusing on pre-service teachers involved a post observation debriefing session (1,2,6).

2.5.3.1 General/special education teachers.   Only one of the studies involving currently certified teachers did not include a post observation conference between the teacher and their coach as a component of the peer coaching session (8). Rather, this study took an alternative approach to peer coaching by having the coach provide their peer with immediate feedback through bug in ear (BIE) technology. Prior to the study the participants received training on the targeted intervention (e.g. completion of three term contingency and providing immediate corrective feedback via BIE). Participants in this study were grouped into dyads that included a special education teacher and a general education teacher who co-taught in the same classrooms. Observations lasted between ten and 20 minutes per teacher in each dyad, teachers would switch mid-way through the lesson and the teacher who had previously been providing feedback would now receive feedback (8).

The remaining six studies targeting currently certified teachers all involved a post-observation session; however, these debriefings varied across studies (3,4,5,7 9, 10). Only three of the six studies provided specifics on the elements of the post-observation session (3,4, 9) while the remaining three studies indicated that a post-observation session occurred but did not

provide any specifics (5,7,10). All of the studies outlining their post-observation session included components that evaluated performance in a constructive manner. Two of the three studies involved an element of goal setting for areas of improvement (3,9) while the remaining study only indicated that peers could discuss future goals but were not required to do so (4). One of the studies (9) followed a scripted protocol designed to ensure that the debriefing included all outlined elements. The participants followed a conference sheet and recorded their responses.

2.5.3.2 Pre-service teachers. The three studies targeting pre-service teachers outlined specifics of the pre-service teachers' peer coaching session. All three studies followed a protocol for providing their peer with feedback during the debriefing session (1,2,6). One study (2) used the SCIE protocol as a way to facilitate peer coaching and feedback. Another (1) provided pre-service teachers with three scripted questions that served as the foundation for their post-observation debriefing and feedback session. The final study (6) differed in that three undergraduate students with superior performance in their coursework served as the coach for 21 pre-service teachers. The debriefing session included four outlined components including (a) evaluating trainees' teaching behaviors from videotaped sessions, (b) assisting trainees in evaluating performance from the tapes, (c) comparing evaluations of performance, and (d) establishing objectives with the trainees for improved performance.

2.5.4   Outcome measures/results

The ten studies in this review examined the effectiveness of peer coaching as a professional development model for improving teacher behaviors that in turn impact student learning and behavior. Experimenters across all of the studies in this review indicate that peer

coaching as a professional development model had a positive and or statistically significant effect on participants' behavior. Variations in targeted teacher behavior across the ten studies led to varying outcome measures used to evaluate the effectiveness of the independent variable (e.g. peer coaching) on the dependent variable.

2.5.4.1 General/special education teachers. Experimenters across the seven studies who targeted currently certified general and special education teachers as participants reported positive outcomes as a result of peer coaching as an intervention. The outcome measures varied across the seven studies; however, experimenters most often used percentages to represent improvement (4,5,7,9,10). Experimenters often examined teacher behavior that could be divided into a number of sub-categories (3,4,5,7,9,10). Only one study (8) focused on one targeted behavior; the three-term contingency. Experimenters measured the percentage of three-term contingency trials completed by the participants. The start of a three-term contingency trial was measured by the teacher presenting an antecedent to the student, most often a question necessitating a student response. Following the student response if the teacher either praised or error corrected the student the experimenter would count this as a completed three-term contingency trial. During baseline participants' trial completion ranged from 0-50, after intervention all participants reached criterion (i.e. 90%) within three sessions. All participants maintained intervention levels of behavior during fading and at a maintenance follow up two weeks post-intervention.

Experimenters in one study (3) used duration as a measure to evaluate the effectiveness of peer coaching on teacher behavior. For example, after debriefing with their peer coach, participants in this study increased the duration of their mini lesson that ranged between two and five minutes to nearly double and triple that time. A primary focus of one of the teachers in this

study involved reducing the length of reciprocal learning activities. Following peer coaching sessions this teacher reduced their activity length from 19 minutes to 11 minutes and maintained this through maintenance.

2.5.4.2 Pre-service teachers. Experimenters across the three studies found peer coaching to be an effective component of a pre-service teacher's training. In two of the three studies, experimenters used a pre-established rating instrument to both guide their observations and evaluate treatment effects on teacher behavior (1,2). One study (1) used the Clarity Observation Instrument (Metcalf, 1989) to evaluate treatment effects on seven clarity skills (e.g. stating objectives, repeating points, using examples, repeating items, asking questions, student questions, and practice time). The Clarity Observation Instrument provides measures of frequency of occurrence, quality, and overall demonstration or the degree to which the pre-service teacher demonstrated all clarity skills in a lesson (1989). Post-conference content was assessed via the six pedagogical reasoning and action processes from Shulman's (1987) model (e.g. comprehension, transformation, instruction, evaluation, reflection, new comprehension). The experimental group (i.e. peer coaching) outperformed their peers in the control group at a statistically significant level on post-treatment evaluation. Following the study, participants were also given an attitude measure that evaluated their perceptions of how peer coaching impacted their overall growth. Students in the peer coaching group reported feeling that they had experienced overall professional growth and made more favorable comments about their experience compared to their peers who did not participate (1).

2.6   DISCUSSION OF LITERATURE REVIEW

Teacher training has received considerable attention in the past decade. The attention to teacher training may be due in part to federal initiatives (e.g. NCLB, IDEA) that address teachers' use of instructional practices that grounded in research along with accountability

standards. Certain types of training hold different levels of promise. The current review examined research concerning the use of peer coaching as a professional development and training model for both currently certified general and special education teachers and pre-service teachers. Specific questions addressed (a) variance in settings and participants, (b) key components of training and intervention, and (c) outcome measures used to evaluate the effectiveness of peer coaching as an intervention. While a comprehensive literature base exists that has examined peer coaching with teachers and pre-service teachers, most of the research is descriptive in nature rather than providing empirical evidence on the effectiveness. This review identified ten empirical studies, seven targeting current general and special education teachers (3,4,5,7,9,10) and three focusing on pre-service teachers (1,2,6). Study outcomes suggest that peer coaching as a method of professional development for current teachers and a training tool for pre-service can lead to improvements teacher behavior.

2.6.1   Participants and settings

The settings featured in the ten reviewed studies depict a comprehensive range of traditional K-12 environments. Researchers who provided specific details on the studies' settings included 21 schools that ranged from elementary K-4 buildings through high schools grades 9-12 (2,4,5,6,7,8,9,10). A combination of the requirements from NCLB and the recommendations of IDEA have opened the doors for students with disabilities to spend an increasing amount of time in an inclusive environment. Promoting inclusive practices, many schools have implemented a co-teaching model to support students' access to the general education curriculum (Cook & Friend, 1995; Scruggs, Mastropieri, & McDuffie, 2007). However, only 1 of the 10 reviewed studies explicitly noted general and special education teachers collaborating and working as peer

coaches in an inclusive environment (8). Recent reviews on the co-teaching literature suggest that co-teaching generally produces positive gains, but more research is needed on ways to develop truly collaborative partnerships (Scruggs et al., 2007). Researchers' findings on peer coaching in inclusive environments may enhance current collaborative efforts and contribute to the growing body of literature on co-teaching as a collaborative process.

Conversely, none of the studies occurred in an alternative education placement. Alternative schools and programs are educational environments designed to meet the needs of students who are typically at risk for educational failure as indicated by poor grades, truancy, disruptive behavior, involvement in the juvenile justice system, or similar factors associated with temporary or permanent withdrawal from school (Carver, Lewis, Tice, 2010). Districts most often report students transferring to an alternative education program or school due to possession or use of a fireman, possession or use of a weapon other than a firearm, possession, distribution, or use of alcohol or drugs, arrest or involvement with the criminal justice system, physical attacks or fights, disruptive verbal behavior, chronic truancy, continual academic failure, pregnancy, or mental health needs (Carver et al.). Nearly all school districts (e.g. 99%) report having a policy that allows all or some of their students to return to their home school with the number one factor for approval being improvement in the student's attitude and/or behavior (Carver et al.). Further research that supports teachers working in alternative education environments may lead to increases in student performance leading to students returning to their home school and decreases in poor post-school outcomes.

Participants in the ten studies exclusively involved either current general and special education teachers or pre-service teachers involved in a University-based teacher preparation program. While current and pre-service teachers may seem like the most critical group of

participants another integral group of service providers in special education include paraprofessionals (Brock & Carter, 2015). More than 400,000 full-time paraprofessionals work with school-aged children who receive special education services in the United States and report spending considerable time working directly with students (Brock & Carter). However, even with the considerable amount of direct contact paraprofessionals have with students their training is limited most often to a single event workshop (e.g., faculty in-service). Research points to single event professional development workshops as ineffective in providing sufficient training for paraprofessionals to generalize content without follow up training or support (Hall, Gurndon, Pope, & Romero, 2010). An ongoing professional development model such as peer coaching may be a more appropriate method of providing training for these providers.

2.6.2   Training

Training plays a critical role regardless of the profession. Education, however, has not had a clear focus or guiding principal behind professional development (Garet et al., 2001). At a minimum, teachers should learn the specific skills associated with the professional development in question. The ten-article literature base showed that training primarily consisted of two specific and important parts (a) training on the targeted intervention for improving either teacher or student behavior and (b) training focused on peer coaching as a professional development model for implementation of the intervention. Nine of the ten studies (1,2,3,4,6,7,8,9,10) involved providing the participants with training on the peer coaching model. One study (5) incorporated the school principals as participants who then provided the training to teachers on the peer coaching model. The goal of training principals who in turn provided training to their staff was to create a more sustainable model of professional development. Three (2,5,6) of the

25

ten studies indicated the use of video as part of their training. None of the studies incorporated the use of online modules. With teachers' busy schedules and a lack of substantial local resources, online professional development models may assist in providing teachers with meaningful and accessible training (Dede, Ketelhut, Whitehouse, Breiet, & McCloskey, 2009) If future research were to incorporate online modules, this may offer greater sustainability for training and the implementation of peer coaching as a long term professional develop and training model in schools and universities.

2.6.3   Session/feedback

Teachers require performance feedback when implementing a new instructional strategy (Scheeler, Ruhl, & McAfee, 2004). Researchers have organized feedback into three categories; nature of feedback, temporal dimensions, and personnel delivering feedback (Van Houten, 1980). In a review of the literature, Scheeler and colleagues (2004) found three general conclusions that should be adopted in practice; feedback is better than no feedback, immediate feedback is better than delayed, and feedback that is immediate, specific, positive, and corrective is most promising in establishing a lasting change in teacher behavior. Unfortunately, only one study on peer coaching met criteria for the review on attributes of effective feedback, thus inhibiting comparisons of feedback from a peer versus a supervisor.

In the current review, nine of the ten reviewed studies involved a post-observation feedback component as part of the peer coaching session (1,2,3,4,5,6,7,9,10). Six of the ten studies provided specific information on the format of the peer coaching feedback sessions. The three studies (1,2.6) focusing on pre-service teachers provided participants with specific format and rating instruments for guiding their post-observation debriefing and discussion. Only one

study (8) involved the use of immediate feedback via the use of bug in ear technology, researchers in this study did not include a follow up component. The literature does not suggest when feedback delay may result in behavioral decay; however, researchers recommend within the same half day may be almost as effective as immediate feedback (Scheeler et al, 2004). _

2.6.4   Results/outcomes

Unknown outcomes of professional development opportunities for teachers may result from a lack of systematic research on the various programs (Dede et al. , 2009). The currently reviewed empirical research, though small, does suggest teachers improve aspects of their academic instruction and behavior management as a result of effective professional development. However, none of the reviewed studies measured to what fidelity participants followed the peer coaching protocol. An analysis of research and its outcomes suggests that an evaluation of implementation fidelity may best determine the true effect of the intervention (Caroll, Patterson, Wood, Booth, Rick, & Balain, 2007). Caroll and colleagues (2007) suggest that this evaluation is critical because it may both moderate the relationship between the intervention and outcomes and potentially prevent false conclusions. Focusing more on what elements of peer coaching participants incorporated and to what fidelity they participated in peer coaching may provide greater insight into the effectiveness of this intervention. Additionally, comparisons across studies demonstrated a challenge due to the various measures of behavior (i.e., percentage, likert scale rating, frequency) and types of behavior measured. Researchers may want to consider more precise measures of progress when evaluating the effectiveness of peer coaching as a professional development model and training tool. Experimenters most often used percentages and rating scales as a means of determining the effects of the intervention on the dependent

variable. Although an increase in percentage may show growth, researchers may want to consider other more precise measures of progress in the future. Frequency is a measure of count of behavior divided by a time interval. With human behavior occurring in time, frequency provides the most precise and sensitive measure of behavior change (Kubina & Yurich, 2012). This may be one area for future research to expand upon.

2.7   IMPLICATIONS FOR PRACTICE

The legislative mandates of NCLB and IDEA have increased the responsibilities of general and special education teachers alike to provide research based instruction for students (Cook et al., 2012; No Child Left Behind Act of 2001). However, despite the calls for general and special education teachers to adopt evidence-based practices in the classroom, research points to a concerning gap between research and practice (Brock &Carter, 2015; Cook & Schirmer, 2003). In addition, teachers may not believe that their current practices are ineffective and specific evidence-based practices are not relevant to their individual classroom circumstances (Truscott et al., 2012). In response to state and federal mandates school districts are often adopting multiple academic, behavioral, and discipline programs leaving teachers feeling overwhelmed (Farmer, Reinke, & Brooks, 2014). One shot professional development opportunities (i.e. faculty in-service) do not often focus on contextual responsiveness and consultation, leaving teachers feeling unequipped to implement such interventions (Farmer et al.). Peer coaching as a professional development model may offer an alternative solution to the problems associated with one-day workshops (i.e. faculty in-service) and offers teachers ongoing support as part of a sustainable model.

In a similar focus from the federal level on reforming current teacher practices to include evidence-based instruction, policymakers are also looking to pre-service teacher preparation programs' effectiveness (Goldhaber & Cowan, 2014). Recently, policymakers at the federal level have opened the door for future policies that would tie financing for tuition to the performance of program graduates (Aldeman, Casey, Dillion, Miller, &Silva, 2011; Henry, Kershaw, Zulli, &Smith, 2012; U.S. Department of Education, 2011). A proposal from the U.S. Department of Education would shift financial assistance provided through the existing Teacher Education Assistance for College and Higher Education (TEACH) Grant program toward teacher preparation programs at colleges and universities that have historically graduated more effective teachers (U.S. Department of Education, 2011). Teacher preparation programs may want to consider peer coaching as a training tool for pre-service teachers to enhance their focus on self-reflection, collaboration, and their pedagogical practices.

2.8   FUTURE DIRECTIONS

With a persisting gap between research and practice in the field of education, the dissemination of instructional practices grounded in evidence-based research to school personnel is of utmost importance. Professional development opportunities exist for teachers but are most often a single-event training workshop. These one shot professional developments may be ineffective in equipping school personnel with the tools to implement evidenced based practices into their daily programming (Brock &Carter, 2015). An alternative and sustainable solution to the traditional faculty in-service is peer coaching as a professional development model and training tool. An expansive literature base on peer coaching exists; however, much of the

research is descriptive in nature rather than providing empirical evidence. The ten reviewed studies point to peer coaching as a promising training and professional development model for pre-service and currently practicing general and special education teachers alike. However, comparisons across studies proved to be difficult due to the variability in methodological components of the research. The context of the ten studies ranged considerably leaving gaps in the literature and preventing generalization of the effectiveness of peer coaching as an evidenced-based professional development model and training tool. To extend the literature researchers should continue to examine peer coaching as a professional development model and training tool.   Additional studies may want to look to expand on three various elements of peer coaching (a) participants, (b) settings, (d) training and implementation. First, researchers may want to expand the participant base and examine peer coaching as a training model for paraprofessionals and for special education teachers between transition grades (i.e. K-2 special education teachers peer coaching with 3-5 special education teachers) and among co-teachers (i.e. special education teacher and general education). Opportunities that support ongoing professional growth of paraprofessionals and collaborative opportunities between special education teachers and co-teachers are limited.

With an increasing focus on inclusion of students with disabilities into the general education classroom with access to the general education curriculum, researchers may want to consider further studies that examine peer coaching in inclusive classrooms (Goodman, Hazelkorn, Bucholz, Duffy, & Kitta, 2011). Conversely, researchers may also want to consider focusing on alternative education placements and programs. By examining peer coaching in alternative education placements and programs experimenters may assist in providing teachers in

these settings with techniques that will allow for their students to return to their home school with the goal of school and post-school success.

Finally, peer coaching offers a sustainable and cost effective alternative to the traditional professional development model offered in most school districts (i.e. one day in-service). To make this model even more sustainable and cost-effective, researchers may want to consider two routes (a) training staff (i.e. principals, teachers) to provide the training on peer coaching and (b) the use of online modules as a source of training. Both of these avenues of training may provide a context for long term follow through beyond the research study.

2.9   CONCLUSIONS AND RESEARCH QUESTIONS

Research points to peer coaching as a professional development and training tool for current and pre-service teachers may potentially improve teacher behavior. However, variability in the methodological components of the studies has affected the reliability, quality, and general outcomes of the research (Horner et al., 2005; Odom, Brantlinger, Gersten, Horner, Thompson, & Harris, 2005). Further research that addresses these methodological concerns across the peer coaching literature may aid in determining if peer coaching constitutes a critical component of training and professional development for current and pre-service teachers. Also, experimenters may want to consider conducting further, refined research in this area aimed at improving teacher and pre-service teacher behavior given the increasing focus on teacher preparation and education reform at the local, state, and federal level, (U.S Department of Education, 2015). Therefore, the purpose of the current study evaluates the effectiveness of expert peer coaching as

an ongoing professional development model for special education teachers. Specific questions include:

- What is the effect of expert peer coaching on special education teachers' use of praise, providing students with academic choice, and increasing students' opportunities to respond?

- How does teachers' use of the above interventions impact teachers use of coercive statements during instruction?

3.0   METHODS

3.1   PARTICIPANTS & SETTING

Two special education teachers working in an alternative education program served as study participants following University and School Consent procedures (See Appendix A). Both teachers primarily serve students with an emotional disturbance diagnosis that maintain a current involvement with the juvenile justice system. The first teacher, Pat, is a 37 year old, Caucasian male in his third year of teaching. All three years have occurred at the current placement. The second teacher, Jill, is a 36 year old, Caucasian female in her first year at the current placement. Overall, Jill has a total of 5 years of classroom teaching experience with students in K-12. Both teachers maintain a certification in secondary special education and English by the State Department of Education and have a Masters degree.

The alternative education program is located one mile outside of a large, urban city in the North Eastern portion of the United States. The program serves students in grades kindergarten through 12 who have been identified by their home school district as having significant behavioral needs that are unable to be met in their home school. The alternative education program serves as both an academic and therapeutic setting that is often a more structured environment than a typical public school setting. The class sizes are smaller, holding a maximum of 10 students who receive services from not only a dual certified special education/ content

teacher but also a behavior specialist and counselor. The experimenter provided training to participating teachers in a sequestered area (e.g. special education teacher's office, empty classroom) and conducted all observations of teacher behavior in each teacher's primary classroom.

3.2   MATERIALS

3.2.1   Training modules.

Participants received three in person training modules provided by the experimenter. These modules covered three topics: providing behavior specific praise, providing choice, and providing opportunities respond. Training outlines appear in Appendices B, C, and D.

3.2.2   Debriefing form.

The experimenter used a modified version of Stitcher et al. (2006) conferencing sheets as the written form of feedback (i.e. expert peer coaching) for each observation (See Appendix E). The sheet contained spaces for three appropriate examples of the observed behavior in question, one thing to change, a goal for the next observation, and a suggestion on how to meet that goal. The behaviors of focus changed depending on condition.

3.3   DEPENDENT VARIABLES

Dependent variables consisted of the frequency of three teacher behaviors (increasing behavior specific praise statements, providing students with choice, and increasing opportunities to respond) and one secondary measure of teacher behavior; coercive statements. The experimenter measured teacher behaviors continuously during the same daily 10-minute observation.

3.3.1   Behavior specific praise statements

Behavior specific praise statements comprised contingent positive verbal interactions provided by the teacher that name the behavior (Hawkins & Hefflin, 2011). Examples of behavior specific praise (BSP) include statements such as, "great job working on your math assignment" or "I like the way you walked quietly to line." Behavior specific praise statements do not include directives such as "Put your pencil down" or "Sit in your seat" or more general praise statements such as "good job" or "excellent."

3.3.2   Providing academic choice

Each instance of an academic choice provided by a teacher consisted of 1) providing two or more options for a student to choose from (Guess, Benson, & Siegel-Causey, 1985) and 2) the options must directly or indirectly link to an academic activity (Von Mizener & Williams, 2009). The choices could relate to an antecedent (before the academic behavior) or a consequence (following the academic behavior). Specific examples include choice of order (e.g. students

select the order their assignments are completed), medium of presentation (e.g., iPad or worksheet), and consequences earned (e.g. break or attention). If any of the offered options did not link to an academic activity (e.g., you can do the assignment on your iPad, at the computer, or you can leave my room immediately), the entire sequence did not meet the criterion as providing academic choice.

3.3.3 Opportunities to respond

An opportunity to respond (OTR) is described as a teacher behavior that either prompts or solicits a student response (Simonsen, Fairbanks, Briesch, Myers, Sugai, 2008). For the purposes of the current study, the experimenter limited OTR to verbal or gestural prompts soliciting students' academic behaviors. Written OTRs as well as OTRs focused on social behavior (e.g. student lines up when teacher requests student to line up) were not tallied.

3.4   INDEPENDENT VARIABLE

The experimenter assessed two independent variables; training and expert peer coaching. Training occurred via one in-person session per condition. Expert peer coaching involved the experimenter observing and providing written feedback to participants via a post-observation debriefing form. Specifics on training and peer coaching are detailed below.

3.4.1 Training

For each targeted teacher behavior (i.e., BSP, choice, and OTR), the experimenter provided each participant with a one-on-one training lasting between 20 and 25 minutes based on one of the training outlines (Appendices B,C,D). Table 2 provides a step-by step approach for each training and the trainings were identical for each evidence-based behavior for each participant. Participants then completed a post training assessment (See Appendix E) and were required to meet a criterion of 100% in order to move into intervention.

3.4.2 Expert peer coaching

Following training and starting on the same day training occurred, the experimenter provided written feedback (Appendix F) at the conclusion of each subsequent daily observation. During the observation, the experimenter would note three appropriate examples of teacher behavior, one thing to do differently, and provided a goal for future instruction with a suggestion for how to meet the goal. The experimenter would use the information from the daily observation to fill out the form and deliver the completed sheet to the teacher immediately following the observation. Each day of feedback corresponded only to the behavior currently in intervention for that teacher but the overall feedback process was the same for both teachers across all three behaviors.

Table 2. Training Steps

Step	Description
Initialize Training	Experimenter confirms a convenient time to meet with the participating teacher and arranges a quiet setting. Experimenter also provides the teacher with a copy of the training outline.
Description	Experimenter provides: 1) a definition of the targeted behavior (OTR,

of Skill	choice, or BSP), 2) information on previous research on the intervention including teacher and student outcomes, 3) step-by-step walkthrough of implementing the skill, and 4) a brief summary.
Model	Following the description of the skill, the experimenter modeled three different ways to implement the targeted behavior.
Practice	Participants had the opportunity to practice implementing the targeted intervention with the experimenter playing the role of a student. Participants practiced three different ways to implement the intervention
Feedback	The experimenter provided, immediate verbal feedback to participants following each practice opportunity. The experimenter always provided a minimum of 3 positive statements and a targeted area for growth.
Questions	Participants always had the opportunity to ask any additional questions.
Assessment	At the conclusion of the training, participants completed a brief written assessment on the targeted skill area. Participants were required to meet a criterion of 100% on the assessment in order to move in to intervention. Once 100% was met participants moved into intervention that day. Participants not meeting 100%, continued to receive model-lead-test opportunities with feedback until reaching 100% on the assessment.

3.5   EXPERIMENTAL DESIGN AND DATA ANALYSIS

The experimenter evaluated the effect of expert peer coaching on teacher behavior using a multiple baseline design across behaviors (Kennedy, 2005). Unlike an A-B-A-B or multielement design, multiple baseline designs do not require the experimenter to withdraw, reverse, or repeat any alternation of conditions (Kennedy, 2005). Rather, three or more baselines occur concurrently with the introduction of the independent variable introduced sequentially after stable baselines have been established (Kennedy, 2005). A stable baseline was indicated by a celeration value of a x1.0 or less after five or more sessions for the first behavior. After an initial experimental effect (i.e., x1.10 celeration) following a minimum of five sessions, the next behavior received the intervention and the behavior currently in intervention entered

maintenance. The processed repeated until participants have received training on all three behaviors.

Data in the current study appear on Standard Celeration Charts (SCC). Unlike equal-interval line graphs, SCCs show relative rather than absolute differences in the data, provide a standardized template for data display, normalize variability and place behavior in real time (Kostewicz & Kubina, 2011; Kubina & Yurich, 2012; Lindsley, 2005). SCCs also allow for the calculation of celeration (Kennedy, 2005), a quantitative measure of learning across time; one of three measures used for the within condition data analysis. Two other measures, level and bounce, enhance the analysis of data per condition.

Celeration, or behavior over time divided by time, quantifies how a behavior grows (i.e., accelerates) or decays (i.e., decelerates; Kubina & Yurich, 2012). Thus, a X2.00 celeration means the behavior doubles weekly and a ÷2.00 celeration means the behavior decreases by half each week. Level represents the central tendency of the data within a condition (Kennedy, 2005). Finally, bounce measures the variability of the data around the celeration (Kubina & Yurich, 2012).

Three measures evaluated between condition changes. Directly based on the within condition measures, three measures evaluated between condition changes: level change, celeration multipliers and bounce changes. Level change refers to the changed in average responding between conditions. To calculate level change, divide the larger level by the smaller and affix the sign of change. A level change from lower to higher receives an X and from higher to lower a ÷. Celeration multiplier measures the change in celeration from one condition to the next (Pennypacker, Gutierrez, & Lindsley, 2003). To calculate the celeration multiplier for celerations that share a sign, divide the larger by the smaller and affix the sign of change. When

different, multiply and affix the sign of change. Therefore, X2.00 celeration followed by a X4.00 celeration would have a 2 (4/2) with an X as the second celeration is faster for a final celeration multiplier of X2.0. However, a X2.00 followed by a ÷4.00 would have a ÷8.00 (2*4=8 with ÷ signifying a decrease in speed). Bounce change quantifies the change in variability from one condition to the next and follows the same formula as level change.

3.6   PROCEDURES

3.6.1   Baseline

Following recruitment and upon receiving consent, the experimenter initiated 10 minute daily classroom observations and followed the same procedures for each participating teacher During each observation, the experimenter used a recorder to video the observation. The time of each observation was held consistent during the entire study, regardless of activity. The experimenter discarded the recordings for the first three sessions to allow for acclimation. Baseline started during the fourth session. The experimenter measured behaviors continuously using a frequency count during the same 10-minute observation daily. Once a behavior stabilized in baseline at a celeration value of x1.0 or less, the experimenter implemented the intervention for the stable behavior while the other two did not receive the intervention.

3.6.2 Intervention

For the initially identified behavior, the experimenter provided the corresponding training (See Independent Variable – Training). At the completion of training and starting on the same day, the experimenter provided expert coaching for the initial behavior (See Independent Variable – Expert Coaching). Expert Coaching occurred on the initial behavior until reaching the criterion (i.e., 1) a minimum of 5 observations elapsed and 2) the behavior maintained a celeration of x1.1 or higher). If the teacher also had one of the other behaviors not in intervention that had a celeration of x1.00 or lower, the intervention shifted. The experimenter provided the training for the new behavior during the next possible day and provided expert coaching on the newly trained behavior. Expert coaching on the first behavior ceased. The process repeated itself for the third behavior.

3.6.3 Maintenance

Once the third behavior reached the criterion, the experimenter ceased all Expert Coaching as all three behaviors entered maintenance. After five observations, the teacher ceased participation in the study.

3.7   TREATMENT FIDELITY AND DEPENDENT MEASURE ASSESSMENT

The experimenter assessed treatment fidelity on both the experimenter in-person training and coaching. The experimenter assessed in-person training and coaching by the use of a

checklist to determine if the experimenter followed all necessary steps (See Appendix G). Treatment fidelity was assessed during 20% of sessions and reached a score of 100% of steps completed.

The experimenter assessed the accuracy of the measurement of all dependent variables by comparing observed to true values (Johnson & Pennypacker, 2009). The procedure compared observed measures in classroom to video files taken during observations – special efforts to minimize measurement error (Johnson & Pennypacker). The assessment procedures resulted in 100% accuracy.

3.8   SOCIAL VALIDITY

Following the experiment, participating teachers completed a survey addressing the use of expert peer coaching as an ongoing professional development model. The social validity survey used an adopted version of the IRIS Center Social Validity Questionnaire (See Appendix H). Participants ranked survey questions on a six-point Likert scale ranging from strongly agree to strongly disagree. Questions focused on their perceptions of the importance of the targeted behaviors, effectiveness of the intervention, and how plausible it is they will continue to use the intervention in the future. A second measure of social validity included anecdotal observation and participant communications.

4.0   RESULTS

Figures 1 and 2 display Jill's and Pat's behaviors on Standard Celeration Charts (SCC), respectively.   Each figure contains four SCCs. Successive calendar days occur across the horizontal axes in an equal-interval format with count occurring on ratio-scaled vertical axes. Dotted lines demarcate condition changes. Three solid lines lay on each data path per condition with the middle representing a celeration line (i.e., trend) formed via regression analysis. The parallel lines above and below each celeration line shows the up and down bounce (i.e., variability). The top three connected SCC show the evidence-based teaching behaviors that served as the target of the intervention. The unconnected bottom figure presents coercive teacher interactions. Dots represent one of the three evidence-based teaching behaviors with X's showing coercives.

4.1   JILL'S RESULTS

4.1.1   Baseline

Jill did not display one instance of choice or behavior specific praise (BSP) during baseline (Figure 1) before entering intervention. Jill did, however, provide opportunities to respond (OTR) during baseline accelerating to x1.68 with a median level (i.e., average

responding across the condition) of one (Table 3). Over the final six days of baseline, Jill's OTR did stabilize at approximately x1.00 prior to intervention (Figure 1).

4.1.2   Intervention

Jill showed accelerating, but variable, behaviors during the intervention condition (Figure 1) with values ranging from x3.34 (OTR) to x6.35 (BSP; Table 3). Levels occurred at either 2 (BSP and choice) or 9 (OTR). Critical changes in responding appeared when comparing results from baseline to intervention.

Jill displayed all target behaviors more quickly and at higher levels (Table 3). Jill increased the speed of delivery by approximately 100% (OTR) to 500% (choice) with training and feedback (Table 4) quantified with a celeration multiplier. Average responding also improved from 0 (BSP and choice) and 1 (OTR) to 2 and 9, respectively; x2.00 and x9.00 level change measures (Tables 3 and 4. Bounce increased for the two behaviors that did not occur in baseline (BSP and choice), but decreased for OTR.
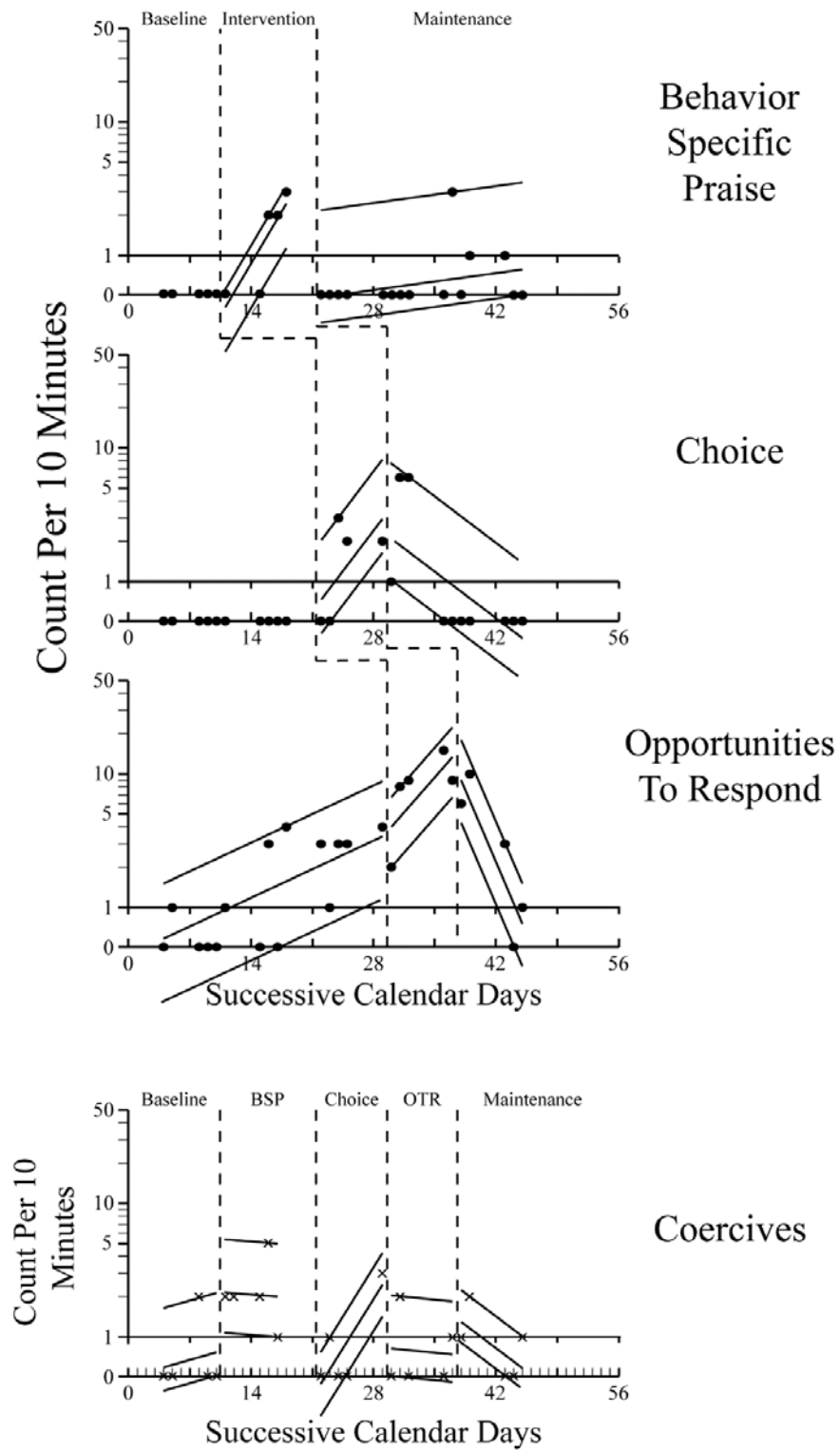
Figure 1. Jill's Teaching Behaviors

Figure 1. Jill's teaching behaviors

Table 3. Jill's behaviors -- within condition analysis

	Measure	Baseline	Intervention	Maintenance
Behavior Specific Praise	Level	0	2	0
	Celeration	X1.00	X6.35	X1.16
	Bounce	X1.00	X3.00	X6.00
Choice	Level	0	2	0
	Celeration	X1.00	X3.81	÷2.21
	Bounce	X1.00	X5.00	X7.20
Opportunities to Respond	Level	1	9	3
	Celeration	X1.68	X3.34	÷11.96
	Bounce	X6.80	X3.50	X4.00

4.1.3 Maintenance

Jill did not display consistency across behaviors during maintenance. Choice and OTR behaviors decayed considerably (Table 3) with BSP slightly accelerating. Bounce varied from x4.00 to x7.20 with average responding between 0 and 3 (Table 3). Jill's behaviors in maintenance varied considerably from intervention. In all three cases, target behaviors slowed, decreased in average responding, and increased in variability (Table 4).

Table 4. Jill's Behaviors - Between Condition Analysis

	Measure	Baseline-Intervention	Intervention-Maintenance
Behavior Specific Praise	Level Change	X2.00*	÷2.00*
	Celeration Multiplier	X6.35	÷5.47
	Bounce Change	X3.00	X2.00
Choice	Level Change	X2.00*	÷2.00*
	Celeration Multiplier	X3.81	÷8.42
	Bounce Change	X5.00	X1.44
Opportunities to Respond	Level Change	X9.00	÷3.00
	Celeration Multiplier	X1.99	÷40.19
	Bounce Change	÷1.94	X1.14

4.2   PAT'S RESULTS

4.2.1   Baseline

Pat's behaviors in baseline shared similarities to Jill. He also failed to display an instance

of choice or BSP but did demonstrate OTRs. Unlike Jill, Pat averaged 7 OTR decelerating

across the condition (÷1.03, Table 5)

Table 5. Pat's Behaviors – Within Condition Analysis

	Measure	Baseline	Intervention	Maintenance
Choice	Level	0	1	0
	Celeration	X1.00	X1.31	÷1.02
	Bounce	X1.00	X3.30	X2.00
Behavior Specific Praise	Level	0	6.5	1.5
	Celeration	X1.00	X1.23	÷1.48
	Bounce	X1.00	X4.50	X3.50
Opportunities to Respond	Level	7	18	*
	Celeration	÷1.03	X2.00	*
	Bounce	X6.00	X1.80	*

Note. * = Not enough observations occurred during the condition to calculate the measure

4.2.2   Intervention

During intervention conditions, Pat established accelerating celerations for all three

targeted behaviors (Table5). Levels ranged from 1 (choice) to 18.5 (OTR) with some variability

in responding (Table 5). Improvements aside, a slight procedural change occurred within the

BSP condition. Until the final two days of data collection during the condition, Pat exhibited

decelerating BSP. At the same time, he expressed his desire to leave the study and school. The

experimenter implemented a prompting procedure for the final two days during the condition.

After speaking with Pat, the experimenter would raise her hand every 45 seconds during the 10-minute observation. The raised hand served as a prompt for Pat to provide an instance of BSP. With the change, Pat established a x1.23 celeration score for BSP meeting the criteria to exit intervention.

Pat showed consistent improvement on between condition measures when comparing baseline to intervention scores. Other than behaviors becoming more variable (i.e., increasing bounce change scores), Pat provided more target behaviors with increasing speed (Table 6).

Table 6. Pat's Behaviors - Between Condition Analysis

	Measure	Baseline-Intervention	Intervention-Maintenance
Choice	Level Change	X1.00*	X1.00*
	Celeration Multiplier	X1.31	÷1.34
	Bounce Change	X3.30	X1.65
Behavior Specific Praise	Level Change	X6.50*	÷4.33
	Celeration Multiplier	X1.23	÷1.82
	Bounce Change	X4.50	X1.29
Opportunities to Respond	Level Change	X2.57	**
	Celeration Multiplier	X2.06	**
	Bounce Change	X3.33	**

Note: * = The 0 in the formula was replaced with a 1, ** = No measures were taken in maintenance.

4.2.3 Maintenance

When collected, Pat's behaviors decelerated during maintenance and remained variable (Table 5). Average responding occurred at either 0 (choice) or 1.5 BSP). No maintenance data occurred following the OTR condition due to scheduling conflicts.

Unlike the transition between baseline and intervention, Pat's behaviors decayed transitioning between intervention and maintenance. Behaviors occurred at lower levels, more slowly, with increased variability (Table 6).

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4.3   COERCION ANALYSIS

Both teachers demonstrated a low level of coercive interactions with high bounce that decelerated across the entire study (Table 7). A closer examination per condition did reveal some differences. In baseline and during the choice experimental condition, both teachers showed accelerating coercives (Figures 1 and 2). A deceleration of coercives occurred for both teachers in the other experimental conditions (BSP and OTR) as well as maintenance for Jill (Figures 1 and 2).

Table 7. Coercion analysis

Jill	*Level*	*Celeration*	*Bounce*
Overall	1	÷1.05	X9.00

	Conditions				
	Baseline	*BSP*	*Choice*	*OTR*	*Main*
Level	0	2	0	0	1
Celeration	X1.34	÷1.08	X5.07	÷1.08	÷2.17
Bounce	X4.10	X5.00	X3.00	X4.00	X2.50

Pat	*Level*	*Celeration*	*Bounce*
Overall	1	÷1.48	X10.00

	Conditions				
	Baseline	*Choice*	*BSP*	*OTR*	*Main*
Level	3	1	2	0	*
Celeration	X3.52	X1.36	÷1.11	÷1.96	*
Bounce	X2.60	X8.30	X6.40	X1.80	*

Note: * = Not enough data during the condition to determine measures, Main = Maintenance.

4.4   TEACHER BEHAVIOR SUMMARY

Following the introduction of intervention, both teachers displayed improvements to all three behaviors. Teachers provided more instances of choice, OTR and BSP that also increased across the intervention condition.   However, both teachers did not maintain gains with the majority of responding returning to baseline levels. Although the experimenter did not target coercion within the intervention, both teachers decreased the behavior across the study.

4.5   SOCIAL VALIDITY

The experimenter conducted a social validity survey with both special education teachers who participated in the study. The social validity survey (See Appendix F) was comprised of six questions with respondents answering on a Likert scale between 1 and 6 with 1 indicating I strongly disagree and 6 indicating I strongly agree. Overall, both participants agreed strongly with all of the statements on the social validity assessment.

Anecdotally, Jill reported throughout the study how much she enjoyed receiving feedback. Once entering into her final maintenance phase and no longer receiving any feedback, Jill said to the experimenter, "…but can't you just give me some feedback, I am going to miss this!" Jill also stated that she felt the effects of her improving on the targeted behaviors led to an overall shift in her classroom structure and dynamic. Additionally, Jill asked the experimenter for the materials from the trainings to keep as a resource. Pat reported enjoying the intervention, but also feeling a sense of frustration knowing that his administration would in his opinion never provide any constructive feedback to him for the sole purposes of improving his practice.

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5.0   DISCUSSION

A focus from state, local, and federal officials on education reform has brought professional development and training models for pre-service and currently certified teachers alike to the forefront (McGuinn, 20016). Peer coaching is one model of training that has an extensive literature base (e.g., Ackland, 1991; Joyce & Showers, 2002). The resulting studies mostly reported effective results through descriptive rather than controlled, experimental results. The purpose of the current study sought to experimental analyze the effects of expert peer coaching with practicing special educators. –The specific research question addressed the effect of expert peer coaching on special education teachers' use of behavior specific praise, providing students with academic choice, and increasing students' opportunities to respond.

5.1   INITIAL INTERVENTION EFFECTS

Participating teachers displayed mixed results, immediate versus long-term, when receiving training and expert peer coaching. Following the implementation of the intervention, teachers showed an immediate experimental effect across all three behaviors: behavior specific praise, providing academic choice, and opportunities to respond. The immediate and positive effects of training and expert peer coaching reported in the current study hold consistent across the literature base. For example, Scheeler et al. (2010) reported that teachers improved their

completion of three-term contingencies trials due to a combination of effective training and coaching/feedback. Licklider (1995) reported similar outcomes when providing training and feedback; teachers demonstrated more effective questioning. Other studies suggest similar outcomes within a variety of settings (e.g., Bowman, 2000; Murray et al., 2010). While combined in the current study, each of the effective interventions (i.e., training and feedback) may also explain the initial positive effects.

Instructional practices conducted by teachers rely heavily on the quality of the training teachers receive (McCormick et al., 1995; Perry, Murray, & Griffin, 1990; Rohrbach et al., 1993). Markle and Tiemann (1990) outlined three basic principles of instructional programming: 1) training occurs in understandable terms, 2) training involves errorless learning, and 3) the participant receives immediate feedback. Training that does not contain each of the three components, at minimum, potentially provides a less than optimal experience (Markle & Tiemann).

The intervention in the current study incorporated the all three critical elements of instructional programming. Participating teachers received training in an understandable format. The experimenter stressed each target behavior and outcomes of using the new behaviors in non-technical terms allowing teachers to reality relate to the material. Errorless learning occurred via a model-lead-test format of evidence-based classroom interactions with each participant on each behavior. Teachers also had multiple opportunities to discuss and practice each skill. Finally, participating teachers received multiple instances of immediate corrective feedback during training. While the effective alignment of training may have set the stage for behavior change in the classroom, evidence suggests, didactic training alone may be insufficient in ensuring long-

term implementation (Han & Weiss, 2005). Coupling didactic training with performance feedback may further gains (Han & Weiss).

Feedback has an extensive literature base of support. When provided under ideal conditions feedback has a considerable effect on behavior change (Hattie & Timperley, 2007). Ideal conditions for feedback directly relate to timing, wording, and the meaning behind each instance of feedback. Researchers have stressed four essential components of performance feedback: immediacy (e.g., at minimum the day of the observation), specific, positive, and directly relate to the observed behavior that extends to participant goals for growth (Cornelius & Nagro, 2014; Hattie & Timperley, Scheeler 2004). Feedback delivered through expert coaching in the current study followed ideal feedback parameters. Each day teachers received directed, positive, and constructive feedback about the behavior in question. Without the combination of effective didactic training and feedback, teachers may not have demonstrated such immediate experimental effects.

5.2   LONG-TERM INTERVENTION EFFECTS

While both teachers demonstrated a clear initial experimental effect, neither teacher maintained initial gains. All targeted behaviors returned to baseline levels with the removal of daily expert peer coaching via feedback. Other teacher training studies also reported less robust or a loss of intervention effects over time (McCormick et al., 1995; Rohrbach et al., 1993). One factor within the intervention and one outside the study may better explain the lack of maintenance.

The intervention in the current study combined didactic training and expert peer coaching via daily feedback. Per behavior, teachers had to meet a mastery criterion prior to completing didactic training and had to display over a minimum of five sessions a minimum of x1.1 celeration prior to moving into maintenance and onto another behavior. Even though the experimenter could determine an experimental effect from the results, neither criteria allowed the teachers firmly establish the behavior change. In other words, the teachers did not reach fluent levels on any of the three evidence-based behaviors during assisted practice (i.e., initial training) or in daily implementation.

The ability to display skills fluently, or with both speed and accuracy, allow individuals to display critical learning outcomes such as retention, endurance, maintenance, and application (Binder, 1996, 2005; Fabazio & Moors, 2003; Kubina, 2005; Kubina & Yurich, 2012). Fluency occurs once individuals reach a performance standard, a set frequency or range of frequencies defined by the display of the aforementioned critical learning outcomes (Binder; Kubina & Yurich). Often, individuals work toward a performance criterion via systematic frequency building practice (Kubina & Yurich)

The two criteria in the current study did not require participants to reach a performance standard during training or during implementation. Training simply relied on a display of mastery (i.e., accuracy) and intervention relied on improvement. The lack of a performance criterion may explain the rapid decline in maintenance. Although, no clear performance standard exists for any of the three behaviors. The majority of studies (e.g., Bowman & McCormick, 2000 Kohler, Crilley, Shearer, & Good, 1997; Scheeler; Cogdon,& Stansbery, 2010) on teacher behaviors report changes via discontinuous measurement which do not allow for the establishment of a performance standard. To promote retention and maintenance of behavior

specific praise, opportunities to respond, and providing choice, researchers may work to establish working performance standards. Once established and incorporated into training, teachers may better persevere in classroom situations similar to those in the current study.

The school and situations associated with the school may also explain the rapid decline of teacher behaviors in maintenance. Experimenters conducted the study within an alternative education setting. Most alternative schools and programs serve students who have or likely will experience education failure due to a variety of factors not limited to poor grades, truancy, significant disruptive or violent behaviors, involvement in juvenile justice system, or other associated factors (Carver et al., 2010). Teachers in alternative settings struggle with a variety of issues such as inconsistent numbers of students, high rates of disruptive/dangerous student behaviors, and a variety of academic levels. Teachers in the current study experienced all three which may also explain the inability of maintaining intervention gains.

The number of students in each classroom ranged anywhere between two to nine students per observational session because of absenteeism. The absenteeism related, not to illnesses, but to physical altercations, meetings with a law enforcement official or probation officer, court hearings, meetings with home school team, or refusal to enter the classroom. The reasons for absenteeism entered the classroom when the students did attend. Students demonstrated a high number of disruptive behaviors ranging from annoying to formal assault. Finally, given constant changing numbers of students and high instances of inappropriate student behaviors, teachers had considerable difficulties providing academic instruction; the situation that would allow for the greatest demonstration of the three evidence-based teaching behaviors.

5.3   COERCION

The experimenter collected another measure of teacher behavior: coercion. Commonly referred to as a negative teacher behavior, coercion is compelling someone to do something through questioning, arguing, sarcasm, force, threat, criticism, pleading/despair, and logic/lecture (Hawkins & Hefflin, 2011; Latham, 1998). Relying on coercive interactions for behavior change promotes a negative, coercive cycle and decreases the value of other more positive, proactive interactions (Latham). The experimenter measured, but did not intervene on coercive interactions to verify that the participating teachers maintained the same level of coercion across the study. However, both Jill and Pat displayed a steady decline ($\div 1.48$ for Pat and $\div 1.05$ for Jill) of coercives across the study. The decline may have resulted from the increased use of evidence-based classroom instructional strategies.

5.4   LIMITATIONS

The current study does contain some limitations. First, the nature of an alternative education setting presented experimenters with logistical problems that impact data collection and teacher training. For example, teachers had to meet with administration and law enforcement at unplanned intervals. Additionally, the meetings stemmed from dangerous behaviors that occurred in the classroom.

Second, and aligning with the nature of the setting, both Jill and Pat expressed on multiple occasions their displeasure with their positions as teachers at the current alternative school. Both Jill and Pat informed the experimenter of an active search for other employment

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and pending departure from the school and study. While the displeasure may have affect both Jill's and Pat's behavior during the study, the experimenter also developed a time sensitivity for study completion prompting certain decisions that may not have occurred otherwise. For example, a modification was made during intervention for Pat when targeting behavior specific praise real time feedback (e.g., experimenter hand raise as a reminder to provide behavior specific praise). Pat only received the modification for two observational sessions, rather than five, to establish stable responding and move on in the study.

5.5   IMPLICATIONS FOR PRACTITIONERS

The use of peer coaching as a professional development and training tool continues to hold promise for both certified and pre-service teachers. The current study upholds the outcomes of an analysis conducted by Joyce & Showers (1980) pointing to practice and feedback as the most effective form of training in relation to skill acquisition and transfer of training to teacher behavior in the classroom. This analysis led to the concept of peer coaching that Ackland (1991) would differentiate into two types; expert and reciprocal, this study examined the effects of expert peer coaching.

Data from the current study suggests that expert peer coaching may increase the likelihood that teacher will acquire and implement evidence based practices into their daily programming if training is followed up by ongoing, daily performance feedback that focuses primarily (i.e. 3:1 ratio) on positive feedback with one area for growth. Given the logistical concerns expressed by many school district administrators regarding reciprocal peer coaching (e.g. finding substitutes, union issues, the use of video) school districts may want to consider

training designated expert coaches within each content area. The expert coaches' primary responsibility would be on providing staff with daily performance feedback to enhances their classroom practices.

5.6   FUTURE DIRECTIONS FOR RESEARCHERS

Given the ease of implementation and positive outcomes in intervention, peer coaching as a professional development and training tool may find ease of acceptability. However, questions regarding the intervention and gaps in the literature remain open. The current examination of peer coaching is the first to occur within an alternative education setting. Direct or systematic replication of expert peer coaching within an alternative education setting or examination of alternative methods of peer coaching (i.e. reciprocal peer coaching, bug in ear) within this setting seem paramount.

Another direction for experimenters involve the targeted behaviors and outcome measures. Due to limitations within the setting, the current study singularly targeted teacher behavior. Researchers may want to consider adding a student behavior and academic outcome sub-measure. A correlation between student outcomes and teacher behavior may further solidify the effectiveness of peer coaching as a professional development and training tool within an alternative education setting.

In addition, questions remain on what criterion teachers should meet prior to peer coaching being removed as an intervention. In practice, a goal would be for teachers to reach a level of behavioral fluency that allows for their levels of behavior to maintain after peer coaching is removed as an intervention for a specific behavior. The current study demonstrates a

functional relationship between intervention and an improvement in teacher behavior but more information is required to determine to what levels would allow for a teacher to see the benefits of reaching behavioral fluency (i.e. retention, application, endurance).

5.7   CONCLUSION

Since the adoption of The Elementary and Secondary Education Act (ESEA) in 1965, there has been an increasing emphasis in public schools in the United States on student outcomes (McGuinn,2006). While policy makers may have operated under the assumption that aligning curriculum to standards will increase the probability of students' performing well on accountability measures, teachers often believe that student performance is more broadly directed by situational factors (e.g. student demographics, funding, resources) that are out of their control. However, research points to classroom variables (i.e. teacher interactions) as having a direct impact on student performance (Plank & Clondliffe, 2013). Even with a strong research line pointing to the effectiveness of teacher mediated intervention, a persistent gap exists between researchers and implementation of evidence based practices into daily classroom programming (Burns & Ysseldyke, 2009). This gap between research and practice may be related to the type of training (i.e. one-time professional development with no follow up) teachers most often receive once they are already in the field.

Peer coaching is an alternative to traditional professional development options. Joyce and Showers (2002) offered guidelines for the implementation of peer coaching that include structured observations, descriptive recording of teacher behavior, measurable feedback, and training. Research points to this method of training and professional development as having the

capacity to improve teacher behavior (Joyce & Showers). However, considerable variability in the methodological elements of the science coupled with a more subjective evaluation of the intervention presented the need for a more objective analysis of peer coaching.

The current study objectively identified peer coaching as having a functional relationship on the increased use of teacher mediated interventions. Given the success of the intervention. school districts may want to consider identifying teachers within their building as expert peer coaches. The expert coaches within school buildings may provide a more sustainable and effective alternative to traditional, one-time professional development sessions.

APPENDIX A

RESEARCH APPROVAL LETTER FROM THE UNVERSITY OF PITTSBURGH

INSTITUTIONAL REVIEW BOARD

University of Pittsburgh

Institutional Review Board

Memorandum

To: Kaitlyn Brennan

From: IRB Office

Date: 8/11/2016

IRB#:   PRO16050341

Subject: Examining the Effects of Peer Coaching on Special Education Teacher Behavior

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The above-referenced project has been reviewed by the Institutional Review Board. Based on the information provided, this project meets all the necessary criteria for an exemption, and is hereby designated as "exempt" under section

45 CFR 46.101(b)(1)

Please note the following information:

- Investigators should consult with the IRB whenever questions arise about whether planned changes to an exempt study might alter the exempt status. Use the "**Send Comments to IRB Staff**" link displayed on study workspace to request a review to ensure it continues to meet the exempt category.
- It is important to close your study when finished by using the "**Study Completed**" link displayed on the study workspace.
- Exempt studies will be archived after 3 years unless you choose to extend the study. If your study is archived, you can continue conducting research activities as the IRB has made the determination that your project met one of the required exempt categories. The only caveat is that no changes can be made to the application. If a change is needed, you will need to submit a NEW Exempt application.

Please be advised that your research study may be audited periodically by the University of Pittsburgh Research Conduct and Compliance Office.

APPENDIX B

TRAINING MODULE: BEHAVIOR SPECIFIC PRAISE

Behavior Specific Praise

KAITLYN M. BRENNAN
UNIVERSITY OF PITTSBURGH

Behavior Specific Praise

- DEFINITION?
- Gives students specific, positive, verbal feedback indicating approval of social or academic behavior
- Teacher attention is one of the most powerful consequences available in the classroom.
- Attention is often invested in "negative" (i.e. inappropriate) behavior
- We need to maximize our attention in classrooms
- Positive outcomes, decreasing problem behaviors and increasing levels of task engagement

---

Behavior Specific Praise

- Overall decrease in problem behaviors
- Increase in academic instructional time
- Increase in task engagement
- Improve academic outcomes
- Fosters a positive relationship between teachers nad students
- Decrease in teacher time spent focusing on inappropriate behaviors

---

Measures of Social Validity

- Teachers reported that they believe using increased amounts of behavior specific praise is effective in supporting assignment completion
- Teacher reported intervention was easy to implement and would consider doing it with the class beyond the study

---

What does this look like?

- Non intrusive way to reinforce the specific, desired behaviors of your students.
- Can be differentiated based on age of students, development, and settings.
- BSP Should Be:
  - A description of desired Behavior (social or academic)
  - Specific to the student or class
  - A positive Praise Statement
  - Good job alone is not a behavior specific praise statement, rather it is a general praise statement
  - Johnny, I like the way you got right to work on the assignment after I passed it out, great job. This is behavior specific

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Conclusion

- Behavior specific praise is a non-intrusive way to direct teacher attention to student positive behavior.
- Teacher praise describes the specific behavior displayed by the student, coupled with a praise statement.
- Shown to increase student positive behavior and thus time on task.

APPENDIX C

TRAINING MODULE: CHOICE

Choice

KAITLYN M. BRENNAN
UNIVERSITY OF PITTSBURGH

Choice

- DEFINITION?
- First used with students with students with developmental disabilities
- Promising results led to researchers incorporating choice as an intervention for students in segregated settings and more recently inclusive settings
- Positive outcomes, decreasing problem behaviors and increasing levels of task engagement

---

Choice as an inclusive intervention

- Overall decrease in problem behaviors
- Increase in task engagement
- Increase in accuracy
- Decrease in amount of time students needed to complete their academic task when provided with choice

---

Measures of Social Validity

- Teachers and students alike reported that they believe choice as an intervention was effective in supporting assignment completion
- Students reported that they felt this intervention helped them complete the given tasks
- Teacher reported intervention was easy to implement and would consider doing it with the class beyond the study
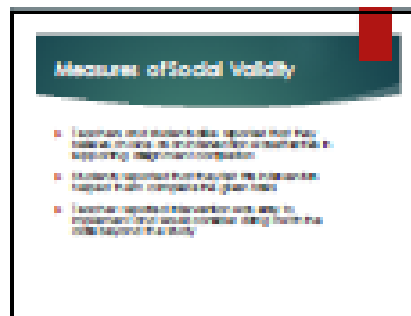

How to?

- Who you will work with?
- What content?
- When will students complete specific task?
  - Task order
- Where student will work?
- Medium of presentation?
- How will they complete the assignment
  - Worksheet
  - iPad
- Consequence for completion
  - What happens after?

Conclusion

- Choice involves the active selection among two or more options.
  - Use positives rather than negatives
- Choice may assist in improving students' academic and behavioral performance

APPENDIX D

TRAINING MODULE: OPPORTUNITIES TO RESPOND

Opportunities to Respond

Opportunities to Respond

Opportunities to Respond as an Inclusive Intervention

Measures of Social Validity

Critical Components: Opportunities to Respond

How to?

APPENDIX E

POST MODULE ASSESSMENTS

Behavior Specific Praise

Please mark either True or False for each of the following questions:

1. Behavior specific praise involves giving a student specific, positive, verbal feedback indicating approval of only academic behavior not social.

2. Behavior specific praise is a non intrusive intervention with a history of positive effects on student behavior.

3. Good job is an example of a behavior specific praise statement

Opportunities to Respond

Please mark either True or False for each of the following questions:

1. Opportunities to respond involves providing students with the opportunity to engage in instruction either through verbal, gestural, or written responses.

2. Increasing opportunities to respond has a history of positive effects on student behavior.

3. Class unison responses are not an example of an opportunity to respond, only individual responses are an example of an opportunity to respond.

Choice

Please mark either True or False for each of the following questions:

1. Choice involves the active selection of two or more options.

2. A good example of the use of choice in the classroom is saying to a student, "You can complete your work in the classroom or you can go to the Principal's office."

3. Examples of choice include all of the following: order, location, content, who you work with, consequence, and medium of presentation.

APPENDIX F

DEBRIEFING/ FEEDBACK FORM

Debriefing Form

3 Positives…

1.

2.

3.

1 Thing to do differently…

Targeted area to work on tomorrow…

APPENDIX G

TREATMENT FIDELITY ASSESSMENT

Implementation Fidelity Checklist

Experimenter:
Observer:
Date:

Training Steps	Yes	No
Video Uploaded		
Description of Skill		
Model Skill		
Practice Skill		
Questions		
Post Module Assessment		
Reassessment if necessary (below 100%)		

Participant:
Observer:
Date:

Intervention Steps	Yes	No
Video Uploaded		
Expert Peer identifies three positives		
Expert Peer identifies one thing to do differently		
Expert Peer provides a goal for tomorrow		
Expert Peer provides participant with feedback		
Peer views feedback form		

APPENDIX H

SOCIAL VALIDITY SURVEY

Social Validity

The items below illustrate the types of topics assessed on a social validity questionnaire. The items might be ranked using a five-point scale in which *1=Strongly Disagree* and *6=Strongly Agree*.

1. The intervention focused on important behaviors.

2. I believe the continued use of this intervention will produce effective results.

3. The intervention was easily incorporated into my classroom system.

4. The time requirements of this intervention are reasonable.

5. If I had the necessary materials and supports I would likely continue to use this intervention (expert peer coaching).

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