

Running head: RESEARCH TO PRACTICE GAP: AUTISM

REDUCING THE RESEARCH TO PRACTICE GAP IN AUTISM INTERVENTION:  
A PROFESSIONAL DEVELOPMENT DESIGN

By

JAMES C. MARAVENTANO

A dissertation submitted to the

Graduate School of Education

Rutgers, The State University of New Jersey

in partial fulfillment of the requirements

for the degree of

Doctor of Education

Graduate Program in Design of Learning Environments

written under the direction of and approved by

---

Sandra Tomlinson-Clarke, Ph.D.

---

Angela O'Donnell, Ph.D.

---

Robert H. LaRue, Ph.D., BCBA-D

New Brunswick, New Jersey

October 2018

RESEARCH TO PRACTICE GAP: AUTISM

© 2018

James C. Maraventano

ALL RIGHTS RESERVED

## RESEARCH TO PRACTICE GAP: AUTISM

### ABSTRACT

Diagnoses for students with autism spectrum disorders (ASD) in educational institutions are steadily rising. As a result, the need for effective educational, behavioral, and other beneficial services is required to ensure best outcomes for this population of learners. Federal legislations such as No Child Left Behind Act of 2001 (PL 107-110) and the Individuals with Disabilities Education Improvement Act of 2004 (PL 108-446) mandate educational institutions utilize evidence-based practices (EBP) for students with disabilities to improve and/or develop socially significant behaviors in the least restrictive educational environment. While EBPs informed by applied behavior analysis have substantial evidence supporting their use for educating learners with ASD, several barriers towards their regular implementation exist. These behaviorally based EBPs are reported to be used infrequently in mainstream classrooms (Morrier, Hess, & Heflin, 2010) and have been perceived negatively by educators who are expected utilize them (Allen & Bowles, 2014).

The purpose of this study was to examine the effects of professional development activities that incorporate active learning with ongoing coaching and feedback on treatment integrity and adherence to a behaviorally based EBP, prompting. Further, this study examined if educator perceptions of the behaviorally based EBPs for learners with ASD are affected by the proposed PD activities. Specifically, Behavioral Skills Training (Parsons, Rollyson, Iverson, & Reid, 2012) and side-by-side coaching and feedback (Kretlow, Cooke, & Wood, 2012) was implemented with educators of learners with ASD in an out-of-district educational program.

## RESEARCH TO PRACTICE GAP: AUTISM

### ACKNOWLEDGEMENTS

First and foremost, I would like to thank my dissertation committee for all their guidance and insight in the development and execution of this study. Their expertise, guidance, and patience with me have been invaluable throughout this process. Thank you, Sandra Tomlinson-Clarke, Angela O'Donnell, and Bob LaRue. Also, thank you to all of the participants at the Douglass Adult Program who donated their time towards this project.

My supervisors and colleagues at the DDDC are, by far, the greatest. Without them, I would not have the skills, abilities, or drive to pursue this task. Lara Delmolino, Donna Sloan, Cat Francis, and Jenna Budge, thank you for your support and guidance.

Thank you to my in-laws, Bill and Bernadette, who also always offer support and great advice. I appreciate everything more than you know.

To my mother, Kristine, and father, Jimmy, who provide unending support in all of my endeavors. I hope I've made you proud to this point and that I will continue to do so. Thank you for always being there and helping me stay true to myself.

To my incredible children, James and Elena, out of all things in my life, you two mean everything to me. I can't wait to see the heights you will reach in your lives. I will be there for them all. You two are the reason why I work hard and try to be my best. I am eternally proud of you both and love you more than anything.

Last, but certainly not least, to my wife Nicole. There is no imaginable way I could even comprehend getting to this point without you. All I try to do is live up to the example you provide me. Thank you for always pushing me to be my best. While it got tough sometimes, and you often absorbed the brunt of my frustration, you have been my lighthouse throughout this stormy trip. I love you and I hope I've made you proud.

TABLE OF CONTENTS

COPYRIGHT PAGE.....	ii
ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
I. INTRODUCTION.....	1
i. RESEARCH QUESTIONS.....	6
II. LITERATURE REVIEW.....	8
i. EDUCATOR PERCEPTIONS OF BEHAVIORALLY BASED EBPS.....	9
ii. METHODS OF EDUCATOR TRAINING.....	12
i.i. COMMON CONCEPTUAL FRAMEWORK.....	13
ii.i. KNOWLEDGE INTEGRATION FRAMEWORK.....	13
iii.i. BEHAVIORAL CONSULTATION.....	14
iv.i. EDUCATOR INCLUSION IN TRAINING.....	16
v.i. COACHING AND FEEDBACK.....	17
vi.i. BEHAVIORAL SKILLS TRAINING.....	19
vii.i. SUMMARY.....	21
III. METHODOLOGY.....	22
i. PARTICIPANTS AND SETTING.....	22
ii. EMBODIED CONJECTURE.....	23
i.i. SURVEY.....	24

## RESEARCH TO PRACTICE GAP: AUTISM

ii.i. PRODUCTIVE FAILURE.....	26
iii.i. BEHAVIORAL SKILLS TRAINING.....	27
iv.i. TREATMENT INTEGRITY.....	29
v.i. SIDE-BY-SIDE COACHING.....	30
iii. DATA COLLECTION.....	31
i.i. SURVEY.....	31
ii.i. TREATMENT INTEGRITY.....	32
iii.i. PRODUCTIVE FAILURE.....	32
iv.i. BEHAVIORAL SKILLS TRAINING.....	33
v.i. SIDE-BY-SIDE COACHING.....	34
vi.i. CORRELATIONAL ANALYSES.....	34
IV. RESULTS.....	36
i. DEMOGRAPHICS.....	36
ii. NEEDS ASSESSMENT.....	37
iii. SURVEY.....	37
iv. PRODUCTIVE FAILURE.....	39
v. BEHAVIORAL SKILLS TRAINING.....	40
vi. SIDE-BY-SIDE COACHING.....	42
vii. CORRELATIONAL ANALYSES.....	44
V. DISCUSSION.....	46
i. EFFECTIVENESS.....	48
ii. EFFICIENCY.....	50
iii. PERCEPTIONS.....	53

## RESEARCH TO PRACTICE GAP: AUTISM

iv. SUSTAINABILITY.....	53
v. CONCLUSION & RECOMMENDATIONS.....	54
REFERENCES.....	57
VI. APPENDICES.....	66
i. APPENDIX A: LETTER OF COOPERATION.....	66
ii. APPENDIX B: NEEDS ASSESSMENT.....	67
iii. APPENDIX C: SURVEY CONSENT FORM.....	68
iv. APPENDIX D: MODIFIED ATTITUDES TOWARDS BEHAVIOR MODIFICATION SCALE (SURVEY).....	70
v. APPENDIX E: PRODUCTIVE FAILURE CASE STUDY.....	71
vi. APPENDIX F: WRITTEN DESCRIPTION OF MOST-TO-LEAST PROMPT FADING.....	73
vii. APPENDIX G: PERMISSION TO REPRODUCE BST PROTOCOL.....	74
viii. APPENDIX H: TASK ANALYSIS FOR ‘DECORATE COOKIE’.....	76
ix. APPENDIX I: STUDENT SCRIPT FOR ROLE PLAY.....	77
x. APPENDIX J: TREATMENT INTEGRITY FORM AND CORRECT/ INCORRECT USE DEFINITIONS.....	78

LIST OF TABLES

TABLE 1: PRODUCTIVE FAILURE INTERACTIONAL UNIT CODING.....	33
TABLE 2: DEMOGRAPHIC INFORMATION.....	36
TABLE 3: MEAN EDUCATOR RESPONSE TO NEEDS ASSESSMENT.....	37
TABLE 4: MEAN EDUCATOR ATTITUDE SCORES TOWARDS BEHAVIOR MODIFICATION.....	38
TABLE 5: ANOVA STATISTIC – SURVEY .....	38
TABLE 6: DESCRIPTIVE STATISTICS FOR INTERACTIONAL UNITS (PRODUCTIVE FAILURE).....	40
TABLE 7: AVERAGE PERCENTAGE (AND RANGE) OF TARGET SKILL PERFORMED CORRECLTY BY INDIVDUAL PARTICIPANTS.....	41
TABLE 8: SIDE-BY-SIDE COACHING INTERACTION DIALOGUE UNITS.....	43
TABLE 9: DESCRIPTIVE STATISTICS FOR INTERACTIONAL UNITS (COACHING)....	43
TABLE 10: PEARSON CORRELATIONAL COEFFICIENT.....	44



LIST OF FIGURES

FIGURE 1: EMBODIED CONJECTURE.....	23
FIGURE 2: BEHAVIORAL SKILLS TRAINING PROTOCOL.....	29
FIGURE 3: MEAN PERCENTAGE CORRECT OVERALL TEACHING COMPONENTS....	42

## **Chapter I – Introduction**

Diagnoses for students with autism spectrum disorders (ASD) in educational institutions are steadily rising. As a result, the need for effective educational, behavioral, and other beneficial services is required to ensure best outcomes for this population of learners. Most recent statistics suggest that one in 59 individuals are diagnosed with ASD (Centers for Disease Control and Prevention [CDC], 2014). Further, federal legislations such as No Child Left Behind Act of 2001 (PL 107-110) and the Individuals with Disabilities Education Improvement Act of 2004 (PL 108-446) mandate educational institutions utilize evidence-based practices (EBP) for students with disabilities, such as ASD, to improve and/or develop socially significant behaviors in the least restrictive environment.

Approximately 70 percent of individuals with ASD are estimated to have a comorbid diagnosis of intellectual disability (Fombonne, 1999). This dual diagnosis increases the likelihood of extreme challenging behavior (e.g. aggression, self-injury, non-compliance). To promote the education of this population and reduce the likelihood of skill regression, educators need to employ specialized instructional practices (Scheuermann, Webber, Boutat, & Goodwin, 2003). These skill deficits and challenging behaviors increase the risk that a student with ASD will be excluded from their educational setting (Brosnan & Healy, 2011; Horner, Carr, Strain, Todd, & Reed, 2002).

Evidence-based practices (EBP) are defined as interventions and programs that, when tested experimentally, yield consistent positive results over time, participants, and environments (Simpson, 2005). Given this definition, interventions and strategies informed by applied behavior analysis (ABA) are supported as EBPs for developing social/communicative skills, improving academic and daily living skills, and assessment and treatment of maladaptive

behaviors of learners with ASD (Wong et al., 2013). Baer, Wolf, and Risley (1968) define ABA as “the process of applying sometimes tentative principles of behavior to the improvement of specific behaviors, and simultaneously evaluating whether or not any changes noted are indeed attributable to the process of application – and if so, to what parts of that process” (p. 91). Many EBPs have a basis in ABA (behaviorally based EBPs) and have been evidenced to display marked improvements for a variety of skills and or challenging behaviors. A widely employed behaviorally based EBP that has evidenced improvements in challenging behavior and acquisition of new skills for learners with ASD is an antecedent based intervention (ABI) called *prompting*.

ABI is defined as a group of practices implemented by educators that adjusts the learner’s environment in order to promote positive change to a particular response or behavior (Wong et al., 2013). Prompting is one such ABI. Learners with ASD often have difficulty developing and independently exhibiting new skills, as they may not respond to antecedent stimuli that evoke responses the same way as their neurotypical peers (MacDuff, Krantz, & McClannahan, 2001). Thus, prompts have improved the efficacy of teaching learners with ASD by facilitating a correct response which allows the learner to contact a reinforcing consequence (Libby, Weiss, Bancroft, & Ahearn, 2008). McClannahan and Krantz (1999) defined prompts as “instructions, gestures, demonstrations, touches, or other things that we arrange or do to increase the likelihood that a child will make correct responses” (p. 37). Prompts take many forms and have been applied verbally, as a model, physically, as a gesture, pictorially, or textually and are intended to be faded systematically (prompt fading) to shape an independent response from a learner with ASD (MacDuff et al., 2001).

Although there is substantial evidence to support the use of behaviorally based EBPs, such as prompt fading, several barriers exist towards their regular implementation in educational settings. Namely, behaviorally based EBPs are reported to not be widely used in mainstream classrooms (Morrier et al., 2010). In fact, Morrier et al. (2010) report from a sample of 234 educators (general and special education), fewer than 5% reported using behaviorally based EBPs for students with ASD in their classrooms. Limited use of behaviorally based EBPs have been related to negative perceptions by educators expected to apply said strategies (Allen & Bowles, 2014). Several reasons have been presented to explain these negative perceptions. First, negative perceptions held by educators may be related to the focus of behaviorally based being “on current environmental contingencies as the most salient determinants of behavior [which] fails to glorify the individual as a free and mysterious being. Instead it identifies humans essentially as a collection of behaviors controlled by the environment” (Austin & Marshall, 2008, p. 149). Another factor contributing to negative perceptions of behaviorally based EBPs is related to, as mentioned earlier, the special skill set required for educators who are to apply these interventions for individuals with ASD (Scheuermann et al., 2003). Domitrovich et al. (2008) assert the complexity and skill set required to implement behaviorally based EBPs can, likely, negatively affect the educator’s perception of the EBP and, as a result make it less likely that they will maintain the EBP over time.

In addition to these potential barriers, educators often do not consistently implement behaviorally-based strategies with integrity, nor do they maintain the skill over time (Axelrod, Moyer, & Berry, 1990; Stahmer et al., 2015), thus perpetuating a research to practice gap between the use of behaviorally-based EBP and educational environments where they are mandated for educating learners with ASD. DiGennaro, Martens, and Kleinmann (2007) define

treatment integrity as “the extent to which teachers implement school-based interventions consistently and accurately” (p. 447). Assessing treatment integrity, through direct observation of the educator engaging in the practice, has been evidenced to improve accurate implementation of behaviorally based EBPs, and subsequently result in improvements of the learner with ASD’s behaviors (DiGennaro et al., 2007; Sanetti, Collier-Meek, Long, Byron, & Kratochwill, 2015).

Despite this knowledge, behaviorally based EBPs are not implemented with integrity or reliably adhered to in practice. Several reasons for poor treatment integrity include the behaviorally based EBP being perceived as infeasible (Odom, McConnell, & Chandler, 1993) or unreasonable to implement given problem exhibited by the learner (Gresham, 1991), unwillingness for educators to seek out professional development related to ASD and EBP resulting from low confidence with this population and these practices (Brock, Huber, Carter, Juarez, & Warren, 2014), lack of ongoing coaching and feedback (Cornett & Knight, 2009), mandated use of practices by administrators without consideration of an educator’s beliefs, pedagogy, or alignment with the practice (Dingfelder & Mandell, 2011), and the design of behaviorally based EBPs not being conducive for implementation in school settings (i.e. designed for more controlled settings) (Stahmer et al., 2015).

Educator perceptions of individuals with ASD have also been examined as an explanation for poor adherence to and integrity implementing behaviorally based EBPs. For example, some studies have examined educator perceptions related to working with learners with disabilities. These studies sought to determine if said educators felt it necessary to devote their efforts towards teaching this population (Silberman, 1969). This attitudinal category held by educators, labeled by Silberman (1969) as “rejection”, can have significant implications for educating this population of learners. Cook (2004) found, in his investigation of “rejection” as an attitudinal

category, disabled learners presented a combination of challenging behaviors and low achievement. When coupled together, these learner traits facilitate the sentiment of “rejection”. This perception is particularly important considering students with ASD possess an increased likelihood to demonstrate challenging behavior and skill deficits in educational settings. As a result, students with ASD may be less likely to receive instructional attention and feedback and more likely to receive criticism from an educator compared to their classmates (Cook, 2004). For this reason, understanding educator perceptions for teaching learners with ASD is critical for understanding the integrity of and adherence to behaviorally based EBPs.

To attempt to narrow the research to practice gap, professional development (PD) is often conducted to support the provision of appropriate educational environments for learners with ASD. PD in special education incorporates topics encompassing a variety of interventions, from behavior management strategies to skill acquisition programming (Bergan & Caldwell, 1995; Wilczynski, Mandal, & Fusilier, 2000). However, commonly used models of PD, including one-day, “train-and hope” workshops, have little impact on special educators’ ability to implement and adhere to behaviorally based EBPs (Hall, Grundon, Pope, & Romero, 2010). Darling-Hammond, Wei, Andree, Richardson, and Orphanos (2009) assert that more intensive and ongoing PD is not only perceived to be more effective by educators but is also more likely to result in achievement gains of students. This assertion, however, is diminished by “the prevailing research culture of knowledge transfer in evidence-based research” (Guldberg, 2016, p. 154). Knowledge transfer PD is an educational practice which Freire (1972) would describe as “...an act of depositing, in which the students are the depositories and the teacher is the depositor. Instead of communicating, the teacher issues communiqués and makes deposits which the students patiently receive, memorize, and repeat” (p. 72). Because this type of PD minimizes

the unique professional experiences of educators and ignores the school environment within which students with ASD are educated, it becomes less likely that educators will buy-in to a particular EBP and, thus, not implement the practice (Guldberg, 2016).

Based on the implications of this problem, this study examined the effects of PD activities that incorporated active learning with ongoing coaching and feedback on treatment integrity and adherence to behaviorally based EBPs. Further, this study examined if educator perceptions of behaviorally based EBPs for students with ASD were affected by the PD activities, which included behavioral skills training (Parsons et al., 2012) and side-by-side coaching and feedback (Kretlow et al., 2012).

### **Research Questions**

Resulting from the requirement and benefits of utilizing behaviorally based EBPs in ASD intervention, the purpose of this study was to examine the effects of PD activities on perceptions of, integrity implementing, and sustained adherence to behavioral strategies for special educators. Behavioral skills training and side-by-side coaching and feedback were applied to examine special educators' treatment integrity measures and adherence to prompt fading strategies during instructional programming for learners with ASD. It was hypothesized that inclusion of participant input related to training topics and intervention methods, along with utilization of an evidence-based training methodology (Parsons et al., 2012), with follow-up feedback and coaching (Kretlow et al., 2012) effected the PD participant's integrity implementing and adhering to the behaviorally based EBPs on which they were trained. Also, this research incorporated strategies of design-based research, such as productive failure (Kapur & Bielaczyc, 2012) and reflection on processes related to work activities (Desimone, 2009),

within the professional development to advance the participant's cognitive understanding of the ABA strategy. Ultimately, this research attempted to answer the following questions:

1. Was there a relationship between the proposed PD activities for most-to-least prompt fading and special educator perceptions of behaviorally based EBPs?
2. What effect(s) did the proposed PD activities have in relation to educator integrity and adherence to prompt fading?



## **Chapter II – Literature Review**

To provide a foundation for conceptualizing and, subsequently, addressing the aforementioned research questions, several topics in literature were reviewed. Related the first research question, literature discussing educators' perceptions of behaviorally based EBPs (i.e. prompt fading) were examined. As there are several barriers to bridging the research-to-practice gap that stem from negative perceptions held by educators, it was important to understand how perceptions of behaviorally based EBPs affected educators' integrity and subsequent adherence to behaviorally based EBPs. Specifically, literature suggesting perceptions related to why educators did not adopt behaviorally based EBPs for students with ASD were reviewed. This established the importance of not only training educators through PD but also transforming educators by challenging their current meaning schemes (Mezirow, 2000) related to behaviorally based EBPs.

Next, teacher training methods and PD for educators discussed in the literature were reviewed to provide rationale for the selected components of the proposed PD package. A brief review of common methods of special educator training and PD are discussed then, the shortcomings of these approaches and how they can be addressed through the methods discussed in this study were discussed. As inclusion of educator opinions related to training topics, PD activities that promote active learning, and ongoing feedback and following-up coaching were hypothesized to be essential components of improving educators' treatment integrity and adherence to behaviorally based EBPs, studies employing these practices were reviewed to establish the basis for the second research question. Finally, studies which displayed the efficacy of behavioral skills training as an evidence-based PD method for training special educators on behaviorally based EBPs intervention methodologies were discussed. This review established

why BST with ongoing coaching were appropriate choices of PD for improving special educator implementation of behaviorally based EBPs for students with ASD, related to the second research question.

### **Educator Perceptions of Behaviorally Based EBPs**

Though a vast body of research demonstrates behaviorally based EBP for improving academic and behavioral outcomes for learners with ASD, many educators are reported to be reluctant to use ABA due to misconceptions and biases they hold (Copeland & Buch, 2013). Woolfolk, Woolfolk, and Wilson (1977) posed a theoretical claim that behaviorally based EBPs “ha[ve] been portrayed as inconsistent with freedom and dignity, and critics and media alike have associated it with frightening fantasies of the specter of brainwashing...and the hypothetical horrors of aversive control...” (p. 185). To emphasize this point as being misguided, the authors conducted two studies examining two college student groups’ perceptions towards behaviorally based procedures. Specifically, the two groups of students were shown identical videotapes of a teacher applying reinforcement-based procedures in teaching a student. The only difference was the video for one group was labeled *behavior modification* while the other group’s video was labeled *humanistic education*. Results demonstrated the video labeled behavior modification received significantly less favorable ratings compared to the humanistic education video. Further, humanistic education was reported significantly more likely to result in academic and emotional outcomes for the student. As a result the authors caution practitioners of behaviorally based EBPs to be mindful of the language they use when disseminating the practices (Woolfolk et al., 1977). While this study is not current and may not reflect current trends of perceptions, misconceptions of behaviorally based EBPs can greatly affect the ability for educators and

educational facilities to transform and adopt such practices. This transformation of practice is, thus, a slow progression and not an instantaneous change.

Dingfelder and Mandell (2011) applied diffusion of innovation theory to better understand factors affecting the adoption of behaviorally based EBPs. With diffusion defined as a means of disseminating an educational practice over a period of time to members of a large system (Dingfelder & Mandell, 2011), it was assumed that EBPs require a significant amount of time, exposure, and training before being adopted by educators. Dingfelder and Mandell (2011) posed a series of questions that educational administrators should consider when adopting a specific behaviorally based EBPs and how they intended to implement said strategies. In developing this line of questioning, the authors identified several perceptions, which could affect educator implementation of behaviorally based EBPs. Specifically, that behaviorally based EBPs are overly arduous to implement, require a high level of consistency, and command a significant level of training to achieve mastery. These perceptions reflect a “pipeline” model of information dissemination, which does not lead to successful implementation of EBPs. Dingfelder and Mandell (2011) claimed to address perceptions diminishing the likelihood educators will utilize behaviorally based EBPs: “autism intervention researchers must change current practice by (a) partnering with communities to facilitate successful adoption, implementation, and maintenance of interventions that have already been developed, and (b) developing new interventions in collaboration with these communities to ensure that the interventions meet the community’s needs and capabilities, thereby increasing the likelihood of successful diffusion” (p.10).

Domitrovich et al. (2008) fortified the argument that perceived value of an EBP is susceptible to modification following increased exposure and familiarity to the practice. The

authors claimed that educators were more likely to avoid the use of behaviorally based EBPs if the value of the practice, insofar as how the practice will affect the learner in a meaningful way, is not known or understood. This claim spoke to the importance of considering the needs and priorities of the educators and institutions they represent for educating their students with ASD. As stated earlier, with behaviorally based EBPs potentially complex to implement, the likelihood of integrity and subsequent maintenance places the use of the behaviorally based EBP in peril of being discarded. The authors concluded that consideration of the stakeholders needs when developing PD can be a predictor of the subsequent implementation of the EBP. Further, the PD must not only consider the stakeholder needs, but also promote active engagement directly relatable to classroom practice.

Educator attitudes towards inclusion of learners with disabilities (including ASD) in their classrooms have also been evidenced as a factor that has affected the use of behaviorally based EBPs. Cook (2004) suggested that educators worked differently with learners with disabilities based on how the educators' attitude "nominated" the learner with disabilities into a certain category. Suggested by Silberman (1969), these attitudinal nominations included attachment, concern, indifference, and rejection and are described by Cook (2004):

Students nominated in the attachment category received more process questions, more praise, and less criticism from teachers. Concern students were given more opportunities to answer questions and received more teacher praise than their classmates. Teacher interactions with indifference students were infrequent and brief. And, as might be expected, rejection students received fewer reading turns than their classmates, were more likely to be criticized by the teacher in comparison to their classmates, and frequently did not receive teacher feedback in response to incorrect answers. (p. 308)

During faculty meetings at the seven participating schools, the researchers asked educators to nominate three students in response to four prompts, which were read aloud. Each prompt linked to one of the four attitudinal nomination categories described by Silberman (1969). Results from this measure indicated that students with disabilities were overrepresented in the educator attitudinal nomination categories of *concern*, *indifference*, and *rejection*. Not understanding the learning traits of these individuals, challenging behaviors, low achievement, and instructional challenges are hypothesized explanations for this overrepresentation. Further, this finding can explain poor treatment integrity and subsequent adherence to behaviorally based EBPs as the educators may feel less dedicated to devoting their efforts towards teaching these learners with disabilities.

### **Methods of Educator Training**

The following section reviewed approaches of training educators through PD. These forms of PD promoted high treatment fidelity and maintenance of skills on which educators were trained. Frameworks that outlined considerations for enhancing PD outcomes and activities were discussed, including the core conceptual (Desimone, 2009) and the knowledge integration frameworks (Gerard, Varma, Corliss, & Linn, 2011). These frameworks established a general understanding for facilitating effective PD and educator training and proposed rationale for the proposed PD activities. A widely applied training strategy for educators of learners with ASD, Behavioral Consultation, was reviewed several shortcomings to this approach were identified. This strengthened the hypothesis that a push away from this model, towards the proposed PD activities for this study (behavioral skills training and side-by-side coaching), resulted in more effective application of behaviorally based EBPs and also improved educator perceptions.

**Common conceptual framework.** While the state of New Jersey provides a very extensive and broad definition of PD (N.J.A.C. 6A: 9C-3.2), the most common PD available to educators is one-day, workshop-style lectures (Garet, Porter, Desimone, Birman, & Yoon, 2001). However, these activities typically have little to no effect on sustainable change towards improved application of behaviorally based EBPs. An emphasis on student learning and improvement of educator effectiveness through strategies such as collaboration, consultation, and coaching are all noted within the standard. As PD has a critical role in the improvement efforts of educational institutions related to these outcomes, Desimone (2009) ventured to understand how the effectiveness of PD can be evaluated for learners and educators. She argues, that through the establishment of a core set of features of PD, a method for understanding and consistently implementing effective PD becomes possible. Specifically, she contends a consensus has begun to emerge in recent PD research as to what core concepts have evidenced improvements in educator and learner outcomes including “(a) content focus, (b) active learning, (c) coherence, (d) duration, and (e) collective participation” (p. 183). Desimone (2009) relates the presence of these features to a model for understanding educator change. Specifically, she proposes when educators experience effective PD, their knowledge/skills increase and results in an attitude change. Educators then apply their new knowledge and attitudes to improve their instruction or approach to pedagogy, which fosters learner growth. Garet et al. (2001) supported these core concepts as “best practice”, and added a focus on duration and collective participation during PD. Collective participation promoted coherence by linking experiences of educators through professional communiqué related to supporting change in teaching practices (Garet et al., 2001).

**Knowledge integration framework.** Inclusion of educator's knowledge offers a means of affecting change in their perceptions of behaviorally based EBPs. Enlisting educator's knowledge of pedagogical content derived from professional experiences is an important component for development, implementation, and evaluation of educational interventions (Garet et al., 2001). Gerard et al. (2011) discussed this constructivist-oriented learning framework in their examination of PD for technology-enhanced science inquiry:

The knowledge integration perspective emphasizes asking teachers to articulate [their] ideas, adding new ideas to teachers' repertoire in ways that make this new information accessible, enabling teachers to use multiple forms of evidence to distinguish among new instructional ideas and their existing views, and encouraging teachers to engage in an ongoing process of reflecting on and integrating new ideas to formulate a pedagogical framework... (p. 411)

In addition to the collective participation components, the duration of these PD activities was also emphasized. With duration defined as the amount of hours PD participants were engaged with an activity and the span of time which the activity occurs (Garet et al., 2001), it is important to ensure educators had enough time to cycle through several iterations of the PD and to reflect on the evidence-based practices to fortify their pedagogical knowledge (Gerard et al., 2011). This study further emphasized the importance of effective PD to encompass the core concepts described by Desimone (2009). While the content area of the above studies did not focus on behaviorally based EBPs, it is important to work towards widening the breadth of these practices in order to display improved and sustained practice across domain areas and specifically for the behaviorally based EBPs.

**Behavioral Consultation (BC).** This method of educator training is considered an indirect method of consultation, in that the trainer does not interact with the learner with ASD directly. Instead, the educator provides service delivery to their given learner(s) after receiving training from the trainer. The trainer (e.g. board certified behavior analyst [BCBA]) evaluates the educator only after they are trained on the intervention (Bergan, 1977). This process has four stages: 1) identification of the problem, 2) analysis of the problem, 3) implementation of a plan to address the problem, and 4) an evaluation of the implemented treatment (Kratowill & Bergan, 1990). BC is the most commonly applied training method for promoting the use of behaviorally based EBPs and it is considered to be effective for addressing educational concerns related to student achievement, challenging behaviors, teacher behavior, and parent-teacher relationships (Ruble, Dalrymple, & McGrew, 2010).

While there is evidence of BC's usefulness as a procedure for training and consultation, it is reported that ABA services, in general, are still abundantly underutilized (Axelrod et al., 1990; Skiba & Peterson, 2000). It has been argued that overreliance on indirect methods of training and a hierarchical, expert-driven approach are limitations of BC. Specifically, as it relates to the training the skills necessary to implement behaviorally based EBPs with integrity and in a manner which promotes continued adherence (Dufrene, Zoder-Martell, Dieringe, & Labrot, 2016). Consequently, alternative training models, involving active learning techniques and direct interaction with learners, have been developed in response to these findings and to improve this gap.

Dufrene et al. (2012) applied an extension of BC, titled direct behavioral consultation (DBC). The authors explained that the DBC process differed from BC in that DBC developed educators' skill sets implementing teaching practices through directly interacting with the student



in during normal classroom activities. Educator learning experiences have been evidenced to be robust when training occurs within the context of their own classroom with the learners they educate (Desimone, 2009). Putnam and Borko (2000) fortified this claim, in their study, that situating learning within the educators' normal classroom environment contributed to their professional knowledge. They asserted that educators developed their professional knowledge within the context of the physical environment within which they intended to apply the practice (Putnam & Borko, 2000). However, inclusion of educator beliefs and concerns related to the types of behaviorally based EBPs applied, is often neglected in BC and DBC models. These prescriptive models fostered the potential to nurture educator reluctance and skepticism towards changing classroom practices towards the use of behaviorally based EBPs (Lang et al., 2010).

**Educator Inclusion in Training.** To promote the use of EBP in special education, and bridge the research to practice gap, Boardman, Argüelles, Vaughn, Hughes, and Klinger (2005) conducted focus group interviews with 49 kindergarten through fifth grade special educators to determine their perceptions related to EBPs for students with disabilities. Of the 210 coded comments, 143 related directly to barriers towards implementing EBPs. One trend that emerged from these barriers related to the level of involvement special educators had in the treatment process. The authors asserted that inclusion of educators in collaborative groups with researchers and trainers could have positive results for educating students in special education.

Lang et al. (2010) further emphasized involvement of educators as part of the planning, implementation, and evaluation stages when treating/educating students with ASD. Lang et al. (2010) conducted a review and examined educator involvement in school-based research and evaluation of interventions for students with ASD. Several of the studies reviewed discussed the inclusion of educator beliefs to improve intervention acceptance. Specifically, in studies where

educators had input in the planning stage of research through participant selection, target behavior selection, and/or including their feedback on intervention procedures, results were more likely to evidence higher treatment integrity and maintenance from participants (McInerney & Hamilton, 2007).

During the implementation stage, teachers were regarded as principle managers for employing and maintaining instructional and behavioral goals (Lang et al., 2010). As a result, feedback from teachers, related to the feasibility of interventions, was an invaluable source of information related to the potential effectiveness of an intervention (Boardman et al., 2005). During the evaluation stage of intervention implementation, educator behaviors about implementing EBPs emphasized the potential benefits or detriments of the intervention. Lang et al. (2010) asserted that this information could be helpful when determining broader effects in their assertion, “if an intervention [was] found to be successful in decreasing problem behavior in one student, but at the cost of the teacher spending significantly less time with other students then the intervention may be too time consuming for continued use in the classroom” (p. 277). Thus, the limitations of BC, such as limited follow up, prescriptive practices, little educator input, and indirect methods of PD perpetuate a history of ineffective practices for developing and integrating participant knowledge in a manner that is coherent and promotes active engagement from educators.

**Coaching and Feedback.** Kretlow and Bartholomew (2010) discussed the use of coaching and feedback as a means of improving integrity of interventions. These techniques involved individualized follow-up visits from an expert, who provided feedback to the educator regarding their performance implementing the strategies on which they were trained. Two methods of coaching have demonstrated positive results, related to treatment integrity, in

professional development literature. The first method, supervisory coaching, involved a supervisor (e.g. school administrator) observing an educator implementing an intervention which they were taught. It was then noted which aspects were and were not applied correctly. Following the observation, the expert then provided feedback to the educator regarding their performance (Kretlow & Bartholomew, 2010). The second method, side-by-side coaching, involved an expert providing in vivo feedback, meaning, during actual teaching, the educator was provided with feedback. Coaching from the expert included direct intervention with the educator's lesson to model particular responses, with rationale, and to allow for further practice opportunities and another opportunity for direct feedback from the expert. Both strategies have resulted in improved educator accuracy and acquisition of new teaching behaviors. Specific to side-by-side coaching, greater adherence to accurate educator behaviors is evidenced in literature as well (Kretlow & Bartholomew, 2010).

O'Reilly and Renzaglia (1992) examined the effectiveness of immediate and delayed feedback during side-by-side coaching following training on behaviorally based EBPs (prompting and providing positive reinforcement) to the learners in their classrooms with severe disabilities. After receiving training on the behaviorally based EBPs targeted, a within-subject alternating treatments design was utilized for implementation of the immediate and delayed feedback conditions provided to the educators. Findings from the study indicated side-by-side coaching and feedback, following training, resulted in improved educator instruction based on the percent of correct responses per session. Further, in follow-up "unobtrusive observations", educators were observed to adhere to the skills on which they were trained, reporting the coaching strategies to be beneficial in the development of their professional skills.

Another study which incorporated follow-up side-by-side coaching activities, was conducted by Filcheck, McNeil, Greco, and Bernard (2004). The researchers examined the effects of training educators The Level System, which is a classroom-wide approach for managing challenging behavior. The Level System employed behavioral management strategies (e.g. token economy, response cost, stimulating rewards, strategic attention) to address disruptive behaviors displayed by preschoolers. Coaching and feedback were implemented for two sessions following the initial educator training on The Level System, for 1 hour per session. Results indicated decreased rates of learner challenging behavior, increased positive behaviors from the educators (labeled praises), and continued adherence on an 18-week follow-up visit. This study echoed the assertion that educator PD activities, which included subsequent coaching sessions with expert feedback, resulted in high measures of treatment integrity and greater educator adherence to behaviorally based EBPs.

Kretlow et al. (2012) applied side-by-side coaching as a follow up PD activity to an in-service training for three first grade math teachers to implement three EBPs of mathematics instruction. Following a three-hour group in-service and an individual planning meeting with the researchers, teachers received side-by-side coaching, which included models, praise, and non-evaluative error correction. Following coaching, teachers and researchers held a post-conference to review the observations of the teachers' implementation of the EBP. Results of this study demonstrated increased teacher accuracy implementing EBP across all participants. The ability to train teachers to implement EBP with in-service and follow-up coaching and feedback aligns directly with the methods meant to address the research questions.

**Behavioral Skills Training.** Parsons et al. (2012) described an evidence-based procedure for training human service staff to implement behaviorally based EBPs for individuals

with intellectual and developmental disabilities. The describe behavioral skills training (BST), a data based training procedure, consisting of performance and competency-based strategies, which the trainees must demonstrate before mastery is achieved. To ensure effective training of educators on behaviorally based EBPs, it was important for these strategies to be disseminated by individuals with advanced experience applying behaviorally based EBPs across learners who presented a variety of educational and behavioral needs (Parsons et al., 2012).

Sarokoff and Sturmey (2004) implemented BST to train 3 educators to implement discrete trial teaching (DTT). DTT is a one-to-one behaviorally based EBP characterized by repeated trials of instructional targets with a definitive start and end. Included within this practice is the effect use and fading of prompts in order to support independent responding from the learner. Employing a single-subject multiple-baseline across subject design, the researchers demonstrated significant improvements in the percentage of correct implementation of DTT by all educators from baseline measures. Specifically, mean percentage correct scores for educators were 43%, 49%, and 43% correct during baseline, where educators were provided only with a written list of definitions of DTT components. Mean percentage correct scores for educators improved to 97%, 98%, and 99%, respectively, in post-BST sessions.

Another study by Iwata et al. (2000) implemented BST to train undergraduate students to implement functional analysis procedures with mock clients (graduate students). Functional analysis (FA) is a method of assessing the function, or why, of a learner's challenging behavior to inform intervention selection for remediating the behavior (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994). This study employed the same methodological procedures for training undergraduate students FA procedures as described by Sarokoff and Sturmey (2004). Results from this study demonstrated improvements in mean percentage responding scores for

undergraduate students implementing FAs. During baseline conditions, the mean percentage correct score across the sample was 69.9% with a range of individual means between 50% - 89.5%. Following BST, the mean percentage correct score improved to 97.5% with a range of individual means between 92.1% - 100%. This study, while promising regarding the ability to teach basic FA skills using BST, is limited in that the conditions were simulated, not allowing for an assessment of intervention validity via on-the-job training (Parsons et al., 2012). That said, these applications of BST provide evidence of its effectiveness as a PD model for training educators to employ behaviorally based EBPs.

### **Summary**

Through understanding the effects of negative perceptions of behaviorally based EBPs and ASD, effective practices for remediating these attitudes, limitations of other educator training models, and the effectiveness of side-by-side coaching and feedback, and BST, the need for addressing the aforementioned research questions becomes clear. Specifically, the combination of criteria-based PD and ongoing feedback and evaluation, was hypothesized to be a potential method for positive change in educator implementation of most-to-least prompt fading. In the following section, I described the methodologies employed in this study to better understand educator perceptions of behaviorally based EBPs and how they affected their implementation and adherence to said EBPs.

### **Chapter III – Methodology**

To examine the problem of practice related to educator adherence and maintenance of behaviorally based EBP and related perceptions as a mitigating factor, a mixed methods approach, measuring both quantitative and qualitative data (Creswell, 2014) was conducted. Using multiple data sources, I examined how the proposed PD activities affected adherence to an ABA strategy (most-to least prompt fading) and if a relationship existed between an educator's perception of and their adherence to the ABA strategy on which they are trained.

#### **Participants and Setting**

An educational program at Rutgers University, the Douglass Developmental Disabilities Center (DDDC), employed all research participants. The DDDC utilizes behaviorally based EBPs informed by ABA for developing and/or improving skill deficits and challenging behaviors of school-age students and adults with ASD. While in-service trainings are built into the DDDC's calendar, these trainings are workshop style, center-wide, for all of the approximately 130 staff employed at the DDDC. Further, as Adult Program staff accounts for approximately 11% of staff members ( $n=14/130$ ) represented at the DDDC, training topics of center-wide in-services, often, are not relevant for their day-to-day responsibilities, due to the strong focus on the activities of school-aged learners, where a majority of the DDDC's resources are employed.

Prior to seeking consent from participants, permission was received from the Executive Director of the DDDC to conduct this study (Appendix A). The staff of the entire staff Douglass Adult Program ( $N=11$ ) voluntarily participated in this study. Demographically, participants had diverse backgrounds and experiences. Specifically, varied supervisory levels (entry-level to mid-level supervisors), ages (25 – 60), educational backgrounds (high school diploma to Master's degree with credential), years of experience in the field of ABA and education (1 – 22

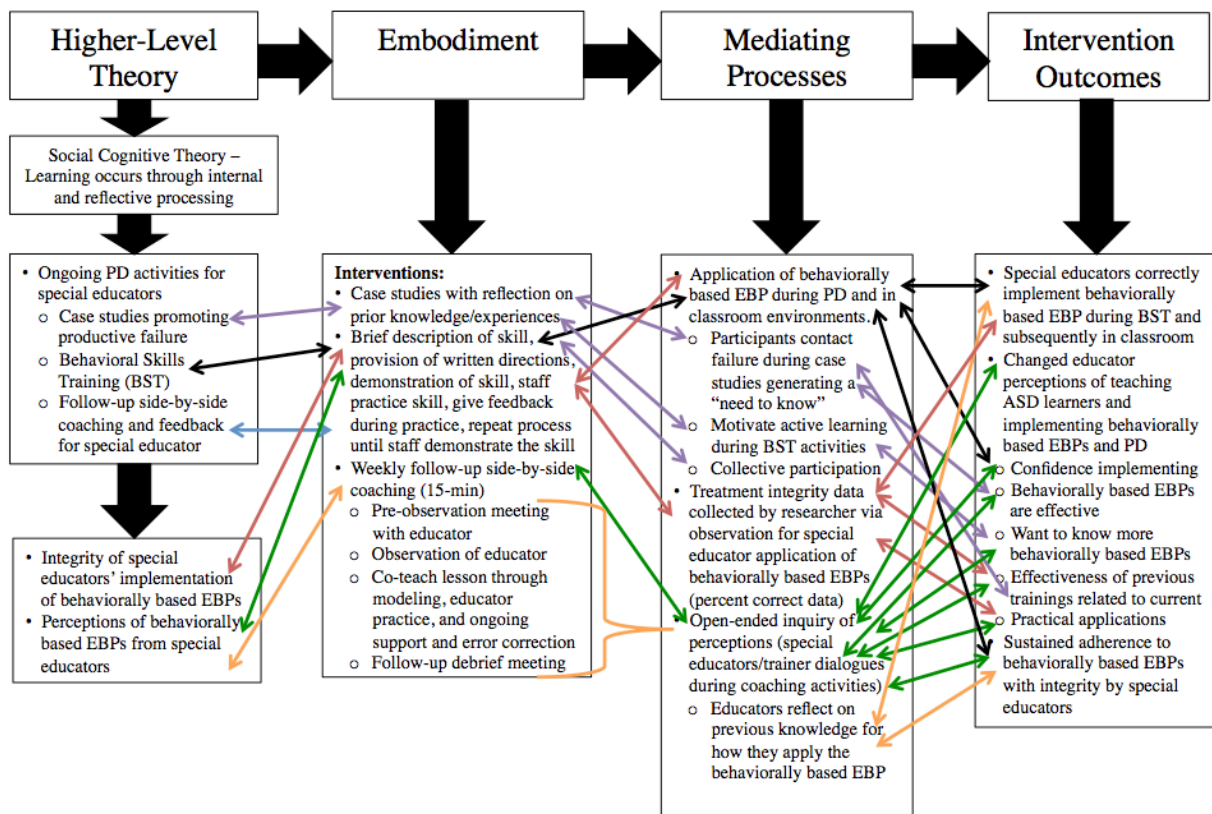
years), genders (i.e. three male, eight female), and ethnicities participated in this study.

Participants for this study were selected through purposeful sampling (Patton, 2002) as the interventions were meant to address issues related to their professional experiences which they routinely encountered.

### Embodied Conjecture

The theory driving this conjecture map (Figure 1) is social cognitive learning theory, in that the expectation of learning and subsequently applying the behaviorally based EBP (most to least prompt fading) occurs through reflective processes followed by application of the skill (Bandura, 1971). Social cognitive theory ties to the main elements of the PD (BST, case studies/productive failure, and side-by-side coaching) as all methods involve observation of

Figure 1  
*Embodied Conjecture Map*





practices, require participants to internally reflect, relate to their own personal experiences, and apply to their work setting.

The embodiments of BST were evidenced through the classroom application of the studied behaviorally based EBP (most-to-least prompt fading) on which participants were trained. It was hypothesized that role-play with feedback during the BST session would result in improved integrity. It was further hypothesized that the use of side-by-side coaching would result in improved adherence to the behaviorally based EBPs. The mediating process of open-ended inquiry during feedback meetings further exemplified the effectiveness of BST through analysis of qualitative data related to participants' perceptions of behaviorally based EBPs and the PD training. The embodiment of PD participants to work through cases and a) name the most effective prompting procedure, b) identify the target behavior being addressed, and c) how to apply the procedure, was evidenced in the mediating process of the classroom application of the strategy. The data that represented the effectiveness of PD activities were treatment integrity measures, which support the outcome of applying the behaviorally based EBP with integrity. The embodiments of this conjecture included three sets of activities: BST PD for training participants to implement prompt fading strategies, pre- and post-observations of treatment integrity as displayed by participants, and side-by-side coaching and feedback.

**Survey.** Prior to conducting the PD activity, a needs assessment was distributed to assess the training needs related to prompt fading strategies for participants of the PD activity. This assessment was sent via online medium (Google Forms) and requested participants to rank their preference for a training activity based on three different prompting strategies provided. Specifically, participants were asked to rank most-to-least, least-to-most, and graduated guidance prompt fading strategies from one to three (one highest preference, three lowest preference)

(Appendix B). This information provided data to assist in making decisions regarding the specific topic for the professional development activities provided (Queeney, 1995). The survey was sent participants' professional email address, which I acquired through professional correspondences related to routine work activities. The survey was conducted anonymously following acquisition of consent to participate in the study, to promote uninhibited responding to survey items. Anonymity of all responses was ensured through provision of detailed descriptors that were communicated in participation consent forms (Appendix C). Prior to sending out to participants, the survey was piloted with other professionals (e.g. teachers, BCBAs), who did not participate in the study. The purpose of piloting the study was to ensure survey items are clear and reduced the likelihood of measurement errors (Brener, Billy, & Grady, 2003). After addressing issues related to content validity from piloting (Creswell, 2014), the surveys were sent to the participants of the study.

The survey was adapted from Allen and Bowles (2014) *Modified Attitudes towards Behavior Modification Scale* (ABM) (Musgrove & Harms, 1975). This survey consisted of 21 total items. These items consisted of 13 positive and seven negative statements, on which, participants were expected rate their level of agreement with each statement. One survey item was an inquiry of the participant's likelihood to utilize behaviorally based EBPs in their classroom ('I would use ABA principles in my classroom'). A five-point Likert scale was employed with potential responses ranging from strongly agree ("1") to strongly disagree ("5"). Musgrove and Harms (1975), who developed the original ABM scale, reported "a standard error of measurement of 3.25 and a Kuder-Richardson reliability coefficient of 0.95, suggesting that the ABM [as] psychometrically reliable" (Allen & Bowles, 2014, pp. 65-66). This survey was

sent out to participants of this study prior to and following the PD activities investigated (Appendix D).

**Productive failure.** Productive failure was utilized in the form of an ill-structured case study (Appendix E) meant to not provide a structured order for a problem, but instead a problem that requires the learners to develop conceptions, representations, and understandings which, will not necessarily correct, could result in problem solving to develop an appropriate solution to the problem (Kapur & Bielaczyc, 2012). Cases were deliberately calibrated to the participants' resources related to the subject area as to not frustrate them and deter their motivation to engage with the case study (Kapur & Bielaczyc, 2012). In other words, the answer for how to address the problem presented in the case was not perfectly clear. Instead, participants needed to dissect the case as a group and determine what variables were affecting the mock learner's educational progress. As the purpose of these case studies was to prime motivation to learn how to implement said strategies, it was important that the activity was authentic, creating a *need-to-know situation* (Blumenfeld, Kempler, & Krajcik, 2006). Thus, situations, which the participants were likely to encounter, were considered when developing the case study. Specifically, as all participants work with adults with ASD who present functional skill deficits and challenging behavior, the case study reflected a learner that presented these characteristics.

This activity occurred at the onset of the BST PD activity and was meant to act as a scaffold for development of their differentiated knowledge, as the onus lies in learner's prior knowledge of the intervention for conceptualizing the requirements of the task (Schwartz & Bransford, 1998). Participants were expected to read the case study, then, discuss their impressions of the mock learner, educational strategies, and their perceptions of the mock staff person employing said strategies as a group. As facilitator, I provided no input regarding how to

participate in the group discussion, aside from benign comments and prompting questions (e.g. “What are your overall impressions of the case described?”, “What do you identify as the problems with this case?”, and/or how would you go about solving the problems presented in this case study?”).

Structurally, the case study addressed a mock learner who presented skill acquisition and behavioral issues related to prompt dependency as a result of inconsistent application of prompt fading strategies. The case study consisted of a mock interview with the learner’s “team” and the new “teacher” where they expressed their concerns regarding working with the learner. The printed case study was distributed and participants were given approximately 10 minutes to read the case study and, according to the directions provided on the print out, attempt to develop solutions to address the problem described. It was not explicitly stated in the case study that the learner would be responsive to a more consistent prompt fading strategy, however, clues were provided to lead the participants to see that prompts were provided inconsistently or not at all due to the mock staff members’ perceptions about the learner’s challenging behavior.

In addition to the mock interview, participants were provided with a mock behavioral observation form which described an educator implementing a program developed utilizing most-to-least prompt fading to teach the learner to “fold towels”. The behavioral observation provided a descriptive account of a staff member implementing the aforementioned program. It was hypothesized that participants would be able to, eventually, discern that prompting was not implemented correctly, thus negatively effected the learner’s ability to display the target response. Data collected during this activity were qualitative, from recorded dialogues of participants related to their findings of the case study and solutions related to remedying the case.

**Behavioral skills training (BST).** BST was a one-hour group activity. Groups consisted of three to four participants across three separate sessions. Meeting in small groups was a conscious decision as I wanted to ensure the ability to focus on each individual during their role play and practice sessions. These sessions included a review of most-to-least prompt fading (+/- 10 minutes) followed by the components of BST which consisted of performance and competency-based strategies. PD participants were required to demonstrate said strategies, specifically related to most-to-least prompt fading. The protocol consists of six steps. First, as described above, most-to-least prompt fading was concisely reviewed using a PowerPoint slideshow with videos displaying the appropriate use of most-to-least prompt fading. Then, a written description of the skill was distributed for participants to read and review (Appendix F). Following participant review of most-to-least prompt fading as described in the handout, each participant was required to demonstrate the skill in role play with a partner. The participants were then offered the opportunity ask any questions they had, and then practiced the target skill with another participant in the group. Educators were provided with individualized feedback during practice sessions until the participant displayed mastery of the skill (Figure 2).

In their groups, during practice and feedback, the skill that was to be “taught” was “decorate a cookie with icing”. In these sessions, one participant was assigned the role of *educator* and the other participant was assigned the role of *learner*. A task analysis for the skill was distributed to all group members. The task analysis not only included the steps of the chain required to decorate a cookie, but also provided instructions related to prompt fading, the cue to provide the *learner* to engage in the response, and the number of trials the *educator* was expected to run (Appendix H). For the *learner* role, the participant was given a script of how they should respond to the *educator* during the role play practice. Specifically, there were three

Figure 2  
*Behavioral Skills Training Protocol*

*Table 1. Behavioral Skills Training Protocol for Conducting a Training Session With a Group of Staff*

Training step	Trainer action
Step 1	Describe the target skill
Step 2	Provide a succinct, written description of the skill
Step 3	Demonstrate the target skill
Step 4	Require trainee practice of the target skill
Step 5	Provide feedback during practice
Step 6	Repeat Steps 4 and 5 to mastery

*Parsons, Rollyson, Iverson, & Reid, (2012). Reprinted with permission (Appendix G).*

scenarios the *learner* was to act out. This information was not disclosed to the *educator* to observe uninhibited responding to the *learner's* varied responses (Appendix I).

**Treatment integrity.** The treatment integrity instrument was employed to determined “the degree to which treatments [were] implemented as planned, designed, or intended” (McIntyre, Gresham, DiGennaro, & Reed, 2007, p. 659). The treatment integrity instrument that was developed measured participant responses following the guidelines for treatment integrity as outlined by DiGennaro et al. (2007) and the protocol utilized in Parsons et al. (2012). The treatment integrity instrument included a task analyzed breakdown of the key components of most-to-least prompt fading procedures on which the participants were trained during BST (Appendix J). Integrity observations varied between approximately 10 to 15-minutes in length and were conducted utilizing the same instrument prior to, during, and following BST. Following the BST activity, and contingent on all participants meeting criteria for skill mastery

of correctly performing 100% of the five teaching components across two consecutive sessions, participants were asked to apply the strategy with a learner with ASD following a pre-implementation meeting with the participant. This meeting was part of the side-by-side coaching PD component.

Most-to least prompt fading was evaluated across three different “lessons”. Specifically, for the sessions conducted prior to PD, participants were asked to display most-to-least prompt fading for teaching a mock learner to wipe their mouth with a napkin. For the sessions conducted following PD (i.e. BST), participants were asked to display most-to-least prompt fading for teaching a mock learner to decorate a cookie with frosting. For the sessions conducted in-vivo (i.e. in the classroom setting with the clients of the Douglass Adult Program), participants were asked to select a skill to teach a learner of their choice to incorporate their input in the program development process and enhance motivation to apply most-to-least prompt fading.

**Side-by-side coaching.** Side-by-side coaching was implemented as designed in Kretlow et al. (2012). This model of coaching involved an initial group in-service where the training topic is explored in detail (e.g. BST). Due to the logistical inability to keep participants from their work responsibilities for three hours as described by Kretlow et al. (2012), the group in-service was one hour. Within two weeks, following the in-service, participants met individually with me, prior to their classroom observation, to receive feedback about their strengths and weakness, observe me modeling techniques, and collaboratively plan the application of most-to-least prompt fading with a learner of their choice. Within one-day of the pre-observation meeting, the coaching session took place in the participants’ actual work context. Observations ranged between 10 and 30 minutes and included direct intervention with the participants’

implementation of the behaviorally based EBP. This took the form of model particular responses with rationale and to allow for more practice opportunities with feedback. Finally, a 15-minute post-observation conference, within one day of the observation, was be conducted to provide specific feedback related to the participant's performance of the skill. This process occurred once per week, per participant for four weeks. Pre- and post-conferences were audio recorded for the purposes of transcription and coding of dialogues.

### **Data Collection**

Data collection occurred during three stages: prior to, during, and following PD activities. It was hypothesized that the data would evidence three outcomes for the participants of the PD activities: (1) PD participants will be able to implement prompt fading strategies with integrity, (2) perceptions of behaviorally based EBPs will be positively affected following participation in PD activities, and (3) sustained adherence to behaviorally based EBP after BST, coaching, and feedback would be displayed by participants in their follow-up maintenance checks.

**Survey.** Demographic information was collected on the pre-survey. Information collected included gender, years-experience, and highest credential held. Demographic data were collected to identify trends in perceptions across these categories. For the needs assessment, data were collected for areas of greatest training need use a one-to-three hierarchical ranking scale. The mean was calculated for the responses from this scale to determine the highest importance training topic area reported by participants. Following the needs assessment, the *Modified Attitudes Towards Behavior Modification Scale* (Allen & Bowles, 2014). This instrument contained 21 items using a five-point Likert scale ranging from "strongly agree" to "strongly disagree" related to statements about ABA. This survey was administered prior to and following all PD activities.



Descriptive statistics were computed for all participants' responses on the survey. Further, Cronbach's alpha was calculated to measure the internal consistency of the 20 items representing the participant's perceptions of behaviorally based EBPs on the survey. A paired sample t-test was calculated to determine if pre- and post-survey mean scores differed for participants' perceptions of behaviorally based EBPs. Bivariate cross-tabulation was calculated to determine ordinal responses to the survey item 'I would use ABA principles in my classroom' across both surveys.

**Treatment integrity.** Following the analysis of the data from the needs assessment and the determination of the training topic, the treatment integrity form was generated from the methods described in Parsons et al. (2012), and data were collected for each of the PD participant during their workday. The treatment integrity instrument was a dichotomous rating scale measuring whether or not the strategy was executed correctly (Creswell, 2014), represented as a percent of steps correct score. These data represented the participants' ability to implement the behaviorally based EBP, prior to, following the PD activities, and during in-vivo coaching sessions. These data sets were compared to see if any improvement was evidenced following the PD activities, coaching, and feedback. This mediating process provided evidence to explain the effectiveness of the BST embodiment. The percentage of correct responses related to the implementation of most-to-least prompt fading measurement reflected the hypothesized outcomes related to correct implementation of behaviorally based EBPs, sustained adherence, and provided evidence related to shifts in perceptions pertaining to the effectiveness and practicality of the utilizing behaviorally based EBP.

**Productive failure.** Data collected for productive failure were intended to measure discussions that occurred during group interactions related to the ill-structured case study. The

interactions were audio recorded, transcribed, and coded using the six interactional units described by Kapur (2008) (Table 1). Interactions were coded into units that were quantifiable. These results were communicated using descriptive statistics and were related to professional development activities applying bivariate correlational analyses to post-survey mean responses for each participant. This analysis was meant to deepen understanding of the role productive failure played in shaping participants' perceptions of behaviorally based EBPs. The mediating processes that emphasized this embodiment was evidenced in the interactional units coded during the case study discussions during the in-service activity.

**Behavioral skills training (BST).** Following a brief lecture related to the given topic area, participants were trained to implement the procedure on which they were trained following a BST protocol by Parsons et al. (2012). After completing the first three steps a BST (1. Describe the skill, 2. Provide a succinct, written description of the skill, 3. Demonstrate the target

Table 1

*Productive Failure Interactional Unit Coding*

Code	Definition
Problem Analysis (PA)	Statements that define or state the causes behind a problem.
Problem Critique (PC)	Statements that evaluate problem analysis statements.
Orientation (OO)	Statements that attempt to orient or guide the group's process, including simple repetitions of others' statements or clarifications; Statements that reflect on or evaluate the group's process or progress.
Criteria Development (CD)	Statements that concern criteria for decision making or general parameters for solutions.
Solution Development (SD)	Suggestions of alternatives, ideas, proposals for solving the problem; Statements that provide details or elaborate on a previously stated alternative. They are neutral in character and provide ideas of further information about alternatives.
Solution Evaluation (SE)	Statements that evaluate alternatives and give reasons, explicit or implicit, for the evaluations; this also included statements that simply agreed or disagreed with criteria development or solution suggestion statements; Statements that state the decision in its final form or ask for final group confirmation of the decision.

skill), participants partnered up and role played the skill following the scripts provided. Data were collected for each participant following a task-analysis of the steps related to the successful implementation of the target skill. These data were calculated as a percent correct across opportunities for participants to demonstrate the skill.

**Side-by-side coaching.** Treatment integrity data were collected following the recommendations described in Parsons et al. (2012). Specifically, percent correct data were collected using “+” or “-” for each of the task analyzed steps of most-to-least prompt fading described in Parsons et al. (2012) (see Appendix J), then calculated into percent correct responses. Further, dialogue during coaching sessions were recorded, then transcribed and coded to provide correlational data to relate said dialogues to perceptions of behaviorally based EBPs and treatment integrity implementing most-to-least prompt fading. Specifically, these data were analyzed utilizing descriptive statistics and bivariate correlational analysis, for categorical units of dialogue. These categories included the participants’ input for the development of the program teaching a skill applying most-to-least prompting, the actual skill selected by the educator to teach their learner, the frequency of corrective feedback statements provided, and any additional input the participant had related to the use of most-to-least prompt fading within the session.

**Correlational analyses.** Correlational analyses between survey responses and PD activities were calculated using Pearson correlation. The Pearson correlation coefficient was calculated to examine several relationships. For the survey, the summed scores of the 20 items assessing educator perceptions of behaviorally based EBPs were correlated to mean treatment integrity measures for each participant and for each condition within which treatment integrity measures were collected. Specifically, pre-survey sums per participant were correlated to

baseline treatment integrity measures and post-survey sums per participant were correlated to BST, in-vivo, and maintenance treatment integrity measures.

The purpose of calculating the Pearson correlation coefficient was to determine the extent to which the participants perceptions were affected following the PD activities. As mentioned earlier, reverse coding was applied to the survey items representing negative perceptions of behaviorally based EBPs. Scores on the survey had a potential range of 20 to 100. Thus, a lower value represented a more positive attitude, a neutral score would be represented by a score of 60, and a higher value would indicate a more negative attitude. A negative correlation was hypothesized in this study as improved treatment integrity measures along with a lower score on the survey would indicate more positive perception of behaviorally based EBPs following the PD activities, as a result of the Likert scaling.

Further, survey sums per participant were correlated using Pearson coefficient to the frequency of observed combined interactional units during productive failure (pre-survey) and coaching sessions (post-survey) to evaluate the effects of said PD activities on reported perceptions of behaviorally based EBPs. Interactional units for both productive failure and coaching were summed as it was hypothesized that greater participation and *a voice* in the development and implementation of programming employing most-to least prompt fading from participant would result in improved perceptions of behaviorally based EBPs. Thus, the total interactional units between the participant and researcher were of interest for understanding the correlation between perceptions of behaviorally based EBPs and educator participation.

## Chapter IV – Results

### Demographics

Demographic information was collected during the pre-PD survey in the following areas: gender, highest educational degree held, and years-experience working in the field of educating learners with developmental disabilities (Table 2). In sum, 11 participants consented to involvement in this study. However, following the in-service training component, Participant #1, submitted their resignation and revoked their participation from this study. However, they allowed permission for dissemination of the data collected on their involvement prior to their departure from this study. Specifically, 27.27% of participants were male ( $n=3$ ) and 72.73% of participants were female ( $n=8$ ). Highest degree level attained ranged from high school diploma to master's level degree. Specifically, 18.18% of participants ( $n=2$ ) held a high school diploma, 63.64% held a bachelor's degree ( $n=2$ ), and 18.18% held a master's degree ( $n=2$ ). Additionally,

Table 2  
*Demographic Information*

	Frequency (N)	Percentage
Gender		
Male	3	27.27%
Female	8	72.73%
Highest Degree Held		
High school diploma	2	18.18%
Bachelor's degree	7	63.64%
Master's degree	2	18.18%
Years-Experience		
0-4 years	4	36.36%
5-9 years	1	9.09%
10-14 years	3	27.27%
15+	3	27.27%

years-experience was collected and varied from one to 21 years-experience educating individuals with developmental disabilities. Specifically, 36.26% of participants ( $n=4$ ) held zero to four years-experience in the field, 9.09% ( $n=1$ ) held five to nine years-experience in the field, 27.27% ( $n=3$ ) held 10 – 14 years-experience in the field, and 27.27% ( $n=3$ ) held 15 or more years-experience in the field. One participant, however, did not complete this study, as they resigned from their position at the DDDC prior to this study's completion. This participant submitted their resignation shortly after the BST PD component. As a result, this participant's data was not included in the post survey or correlational analyses.

### Needs Assessment

Mean scores determined the topic of the PD activity. Specifically, hierarchical ranking scores of one (highest preference topic) through three (lowest preference topic) were summed and divided by the number of participants ( $n=11$ ). Results of needs assessment determined most-to-least prompt fading as the highest reported training need ( $M=1.27$ ), followed by least-to-most prompt fading ( $M=2.09$ ), and, last, graduated guidance ( $M=2.64$ ) (Table 3). Thus, most-to-least prompt fading was chosen as the PD topic.

### Survey

Mean teacher attitude scores were calculated for all participant responses to the pre- and post-survey measures (Table 4). Further, descriptive statistics were calculated for all participant responses to the survey prior to and following the PD activities. As there were items reflecting negative perceptions ( $n = 7$ ) and positive perceptions ( $n = 13$ ) of behaviorally based EBPs,

Table 3  
*Mean Educator Response to Needs Assessment*

Prompting Strategy	Most to Least	Least to Most	Graduated Guidance
Mean Ranking	1.27	2.09	2.64

Table 4

*Mean Educator Attitude Scores Towards Behavior Modification: Survey*

Teacher Attitudes	<i>N</i>	Min	Max	<i>M</i>	<i>SD</i>
Prior to Study	10	28	47	36.6	6.38
Post Study	10	20	46	31.6	7.46

reverse coding was applied to calculate internal consistency among the 20 items representing educator attitudes towards behaviorally based EBPs. Specifically, two-factor without replication ANOVA measures were calculated for scores of the 20 items for participant perceptions of behaviorally based EBPs utilizing reverse coding for both pre- and post-administrations (Table 5). A paired sample t-test was conducted to compare the means from the group across pre- and post-survey measures. The t-test indicated the difference in the pre- and post-surveys results for the 20 items measuring attitudes towards behaviorally based EBPs as significant ( $p < .001$ ). The null hypothesis of “there is no significant difference in perceptions of behaviorally based EBPs following the PD activities” was rejected due to participant responses prior to the PD activities indicating a statistically significant difference ( $p < .05$ ) from the overall mean of educator perceptions prior to the PD activities ( $t = 2.24, p = .04$ ).

Table 5

*ANOVA Statistic – Survey*

Pre-Survey						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Items	18.32	9.00	2.04	4.65	0.00002	0.61
Participant	27.02	19.00	1.42	3.25	0.00002	0.72
Error	74.88	171.00	0.44			
Total	120.22	199.00				
Post-Survey						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Items	25.02	9.00	2.78	6.50	0.0000001	0.55
Participant	18.52	19.00	0.97	2.28	0.003	0.68
Error	73.18	171.00	0.43			
Total	116.72	199.00				

Cronbach's alpha was calculated for both the pre- and post-surveys to determine overall internal consistency. The alpha for the pre-survey was 0.79 and in the post-survey 0.84. These scores fell in the "acceptable" range for overall internal consistency among the 20 items representing educator perceptions of behaviorally based EBPs. This suggests that the survey was internally consistent during both administrations (Tavakol & Dennick, 2011). Bivariate cross-tabulation was used to investigate pre- and post-survey responses between the pre- and post-survey item ('I would use applied behavior analysis principles in my classroom'). Bivariate cross-tabulation demonstrated a positive attitude change between pre- and post-survey administrations ( $\chi^2 [n = 10] = 3.53, p = .04, \eta^2 = .64$ ). Eight (72.7%) participants selected *Strongly Agree* during the pre-survey. During the post survey 10 participants (100%) selected *Strongly Agree*, reflecting the percentage of participants that *Strongly Agreed* with this item increased by 27.8% between pre- and post-surveys. These data indicate that the PD activities had a positive effect on the participants' willingness to implement behaviorally based EBPs with their learners regardless of gender, years-experience, or highest degree held.

### **Productive Failure**

Descriptive statistics were generated for the proportion of interactional units displayed during productive failure with the ill-structured case study to understand how interactional units were allocated across participants. To calculate the proportion of each interaction unit, the total number of coded units was summed ( $n = 85$ ). Then, each participant's responses per interactional unit was summed and divided by the total coded units. Descriptive statistics were calculated for summed measures of proportional interactional units for all participants (Table 6) to better understand the relationship between the displayed categories of interactional units and pre-survey measures. Pre-survey measures were targeted for correlational analyses as



Table 6

*Descriptive Statistics for Interactional Units (Productive Failure)*

Interactional Category	<i>M</i>	<i>SD</i>
PA: Problem Analysis	.02	.02
PC: Problem Critique	.02	.02
OO: Orientation	.00	.01
CD: Criteria Development	.01	.01
SD: Solution Development	.03	.02
SE: Solution Evaluation	.01	.01

participants did not have prior exposure to the content of the training (most-to-least prompt fading).

In the Kapur (2008) study, the author evidenced found that participants assigned to an ill-structured group (as was generated for the present study) focused a greater proportion of their interaction units with PA, PC, and CD. This indicated that their discussions facilitated the problem-solving skills to generalized activities. However, participants in this study focused the greatest proportion of the interactional units on SD ( $M=.03$ ), followed by PA ( $M=.02$ ) then PA ( $M=.02$ ). While this pattern is similar to those data presented in Kapur (2008), less time was spent during CD in this study ( $M=.01$ ). These results suggested productive failure helped participants develop salient and concise solutions to address the problems in the case study. Additionally, these qualitative data supported the hypothesis of productive failure, in that presentation of unscaffolded, ill-structured problems to collaborative groups resulted in improved efficacy in problem solving. It is arguable that productive failure aided participants to develop and implement most-to-least prompt fading and address issues that arose during in-vivo sessions.

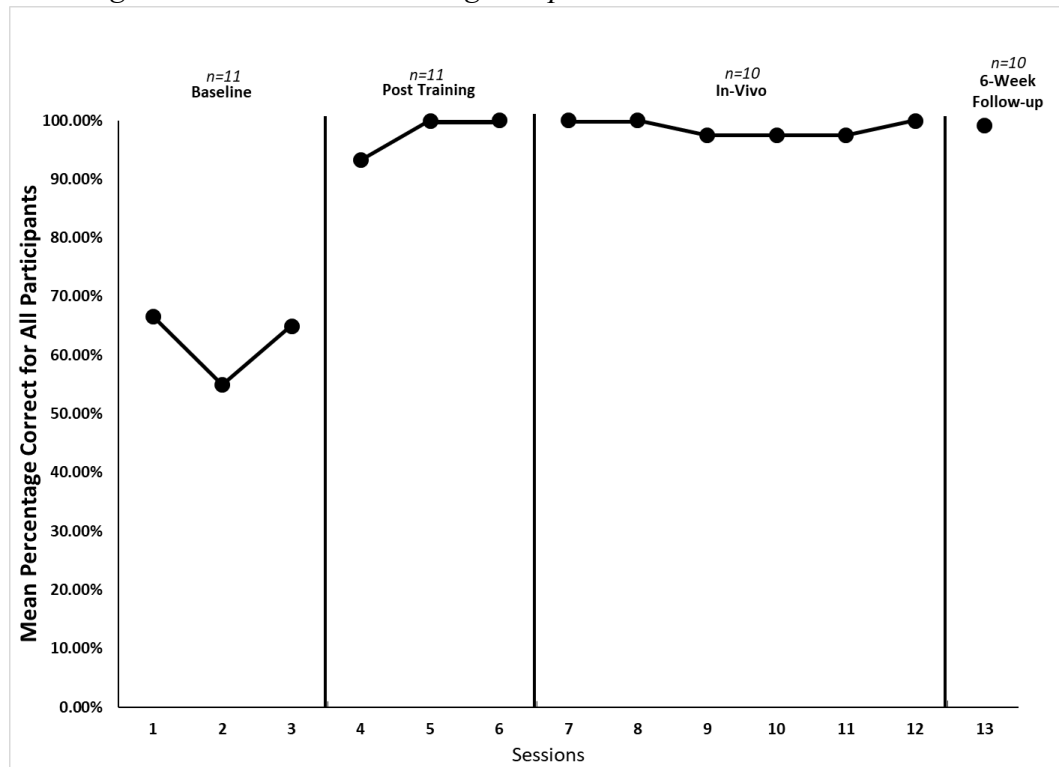
### Behavioral Skills Training

The results are presented in tabular form (Table 7) for individual participants and in graphic form (Figure 3) for the entire group. Overall, the BST component of the PD package displayed clear improvement in participants' accurate implementation of most-to-least prompt fading strategies. During baseline, mean percentage correct implementation of most-to-least prompt fading components ranged between 52.78% to 83.33% and group mean 62.22% of components performed correctly. During post-training, averages for correct implementation of most-to-least prompt fading components increased, ranging between 83.33% to 100% and group mean 97.78% of components performed correctly. During in-vivo sessions, averages for correct implementation of most-to-least prompt fading components increased again, ranging between 95.83% and 100% and group mean 98.75% of components performed correctly. Finally, during six-week follow up sessions, averages for correct implementation of most-to-least prompt fading components ranged from 95.83% and 100% and group mean 99.17% of components performed correctly.

Table 7  
*Average Percentage (and Range) of Target Skill Performed Correctly by Individual Participants for Each Experimental Condition*

Participant	Baseline	Post Training	In-Vivo	Six-Week Follow-up
1	75 (50-100)	83.33 (50-100)	N/A	N/A
2	72.22 (66.67-75)	88.89 (66.67-100)	100	100
3	47.22 (25-66.67)	88.89 (66.67-100)	100	100
4	55.56 (25-75)	100	95.83 (75-100)	95.83 (75-100)
5	55.56 (25-75)	100	100	100
6	52.78 (33.33-75)	100	100	100
7	83.33 (75-100)	100	100	100
8	55.56 (50-66.67)	100	100	100
9	55.56 (50-66.67)	100	95.83 (75-100)	100
10	72.22 (66.67-75)	100	100	100
11	72.22 (66.67-75)	100	100	95.83 (75-100)

Figure 3  
*Mean Percentage Correct Overall Teaching Components*



### Side-by-Side Coaching

As discussed in the previous section, integrity implemented during side-by-side coaching (in-vivo) sessions increased by between 16.67% and 43.05% from baseline measures of correct implementation of most-to-least prompt fading. Data were also collected from dialogues that occurred during coaching sessions. Several themes of conversation emerged during these dialogues, and specific interaction units were specified into these categories. Specifically, units of interactions were operationalized by this researcher and coded under the following categories: *Participant Input for Program Selection, Target Skill Selected, Frequency of Corrective Feedback, and Miscellaneous Input for Programming* (Table 8). These categories were selected as they address key components related to improved perceptions of and adherence to EBPs, specifically, teacher involvement in goal selection and program development (Lang et al., 2010) and ongoing and developmental feedback (Filcheck et al., 2004).

Table 8  
*Side-by-Side Coaching Interaction Dialogue Units*

Code	Definition
Target Skill Selected	Statements related to the target skill the participant intended to teach the learner (e.g. “I would like to target making pasta as the skill”).
Participant Input for Program Development	Statements related to the specific instructional components selected to facilitate teaching the learner the target skill selected (e.g. “Maybe we don’t need to use a gesture prompt in this most-to-least prompt fading hierarchy”).
Corrective Feedback	Statements provided by the researcher which offered feedback towards correcting an erred component of most-to-least prompt fading (e.g. “Make sure your initial trial uses full physical prompting throughout”).
Miscellaneous Input for Programming	Statements related to learner specific modifications or observations during the implementation of the target skill selected (e.g. “Now that I’m prompting her to clip her nails, I can see that she will probably need some additional support for holding her fingers out straight. I think we need to include this into the task analysis”).

As with the productive failure interactional units, descriptive statistics were calculated for the proportion of interactional units displayed during side-by-side pre-meetings, coaching sessions, and post-meetings (Table 9). To calculate the proportion of each interaction unit, the total number of coded units was summed ( $n=57$ ). Then, each participant’s number of responses per interactional unit was totaled and divided by the total coded interactional units. Mean and

Table 9  
*Descriptive Statistics for Interactional Units (Coaching)*

Interactional Category	<i>M</i>	<i>SD</i>
Target Skill Selected	.019	.006
Participant Input	.051	.017
Corrective Feedback	.014	.018
Miscellaneous Input	.016	.015

standard deviations were calculated using the proportioned measures of interactional units for the entire group. This mediating process positively affected the participant's adherence to and perceptions of behaviorally based EBPs (reflected in positive change in responding to item 21 in the survey) as it was hypothesized active engagement, coherence, and content focus, collectively, could ensure shifts in perceptions and sustained adherence (Desimone, 2009).

### Correlational Analyses

Results from Pearson correlational analyses are presented in Table 10. Although not all correlations were significant, all relationships between reverse coded survey and treatment integrity measures were negative. Specifically, the relationship between pre-survey summed individual responses and baseline treatment integrity measures was non-significant ( $r = -.336, p < .148$ ). The relationship between post-survey summed individual responses and BST treatment integrity measures also was non-significant ( $r = -.134, p = .533$ ). There was a significant relationship between post-survey summed individual responses and in-vivo treatment integrity measures ( $r = -.685, p = .001$ ), indicating that as participants displayed higher treatment integrity during in-vivo sessions, mean survey scores decreased (i.e. perceptions improved). Also, the

Table 10  
*Pearson Correlational Coefficients*

Measures Correlated	Pearson Coefficient	p-value	Significance ( $p < .01$ )
Pre-Survey to Baseline Treatment Integrity	$r = -.336$	.148	Not significant
Post-Survey to BST Treatment Integrity	$r = -.134$	.533	Not significant
Post-Survey to In-Vivo Treatment Integrity	$r = -.685$	.001	Significant
Post-Survey to Maintenance Treatment Integrity	$r = -.558$	.008	Significant
Pre-Survey to Productive Failure Interaction Units	$r = .349$	.132	Not significant
Post-Survey to Coaching Interactional Units	$r = .021$	.93	Not significant

relationship between post-survey summed individual responses and maintenance treatment integrity measures was significant ( $r = -.558, p = .008$ ), indicating that as participants displayed higher treatment integrity during maintenance sessions, mean survey scores decreased (i.e. perceptions improved). The Pearson correlation coefficient for pre-survey summed individual responses and summed productive failure interaction units was non-significant ( $r = .349, p = .132$ ). The relationship between post-survey summed individual responses and coaching interaction units also was non-significant ( $r = .021, p = .93$ ).

The most notable correlations gleaned from these data suggest that treatment integrity increased for implementing most-to-least prompt fading following the BST sessions. As treatment integrity increased, scores on the survey subsequently decreased indicating improved perceptions towards the use behaviorally based EBPs. Further, no significant correlations were discovered between survey responses and productive failure or coaching interactional units suggesting that perceptions of behaviorally based EBPs were not significantly affected in relation to these interventions. These findings, along with several other limitations and strengths of this study will be examined in the following chapter.

## Chapter V – Discussion

Results of the study reflected sustained integrity implementing and adherence to the behaviorally-based EBP of most-to-least prompt fading. Further, perceptions of behaviorally based EBPs improved following the PD activities as discerned from pre- post-survey scores. It is reasonable to claim that the PD activities positively impacted the participants' integrity implementing most-to-least prompt fading and also their sustained adherence to said practices, with integrity. This claim was evidenced in treatment integrity measures demonstrating improved integrity implementing most-to-least prompt fading strategies from baseline measures following BST. Further, these improved results continued following the coaching intervention, as evidenced during maintenance probes at six weeks.

Research question one addressed the relationship between PD activities and perceptions of behaviorally based EBPs: *Was there a relationship between the proposed PD activities for most-to-least prompt fading and special educator perceptions of behaviorally based EBPs?* A comparison of the perceptions of behaviorally based EBPs reported on the ABM pre and post-survey showed mean response scores decreasing from 36.6 to 31.6, indicating a positive gain. These data indicated that following the PD activities, participants reported they would be more likely to apply behaviorally based EBPs in their classrooms. Participants who indicated they *strongly agree* with the item 'I would use ABA principles in my classroom' increased by 27.8% in post survey measures. Additionally, correlational analyses indicated negative correlations between pre- post-surveys and all treatment integrity measures. This suggested that survey scores decreased, meaning, improved perceptions of ABA. However, correlational analyses between post-survey measures and coaching ( $r = .021, p = .93$ ) and pre-survey responses and number of interactional units observed during productive failure ( $r = .35, p = .13$ ) were non-

significant. These findings indicate that specific PD activities did not significantly affect the participants' perceptions of behaviorally based EBPs during these PD activities, suggesting perceptions were not affected by these interventions.

Research question two addressed the effects of PD activities on treatment integrity implementing behaviorally based EBPs: *What effect(s) did the proposed PD activities have in relation to educator integrity and adherence to prompt fading?* Treatment integrity results as indicated consistent increases in treatment integrity following PD activities. Specifically, mean percentage correct scores for participants during baseline was 62.22%. Subsequently, mean percentage correct scores increased following BST and PF to 97.78% correct (35.56% increase from baseline). Following coaching and in-vivo session, percentage correct scores increased to 98.75% correct (36.53% increase from baseline). Finally, mean percentage scores for participants following maintenance check increased again to 99.17% (36.95% increase from baseline). These data suggest that proposed PD activities positively affected treatment integrity measures based on increased percentage correct scores across session and after a six-week maintenance check.

While the effects of the PD activities showed a positive direction on treatment integrity and perceptions of behaviorally based EBPs, several discussion themes emerged from this study that require further investigation and more pointed analysis. Specifically, discussion points will be grouped under four categories: *effectiveness, efficiency, perceptions, and sustainability*. These themes will be discussed in relation to the results found in this study and their implications for future practice in special education. Further, limitations for this study will be discussed within these categories.



**Effectiveness**

The primary finding of this study was the effectiveness of the PD activities related to treatment integrity, sustained adherence, and perceptions of the behaviorally based EBP taught (most-to-least prompt fading). The literature discussed in the above review evidences the effectiveness of each intervention independently, however, this study ventured to investigate how a combination of evidence-based PD activities affected integrity, adherence, and perceptions. An important finding is the bridging of the gap between treatment integrity, adherence perceptions, and future intentions to apply behaviorally based EBPs in the participants' classrooms. This finding is important as the relationship between educator perceptions and the likelihood to utilize said practices was established in the literature review. However, what distinguishes this study from those reviewed is the inclusion of educator opinions and experiences in the selection of and implementation of programming employing most-to-least prompt fading. This information can guide future PD facilitators to ensure the inclusion of PD participants previous experiences and opinions related to training topic selection.

A limitation within this category is the participants' previous experience utilizing and expectation to utilize behaviorally based EBPs as part of their daily work activities. As explained earlier, the DDDC is a program that primarily applies educational interventions and strategies informed by ABA. As a result (and evidenced in the survey results), most participants perceptions of behaviorally based EBPs were high compared to the participants in Allen and Bowles (2014). Specifically, in their study, only 8% of participants ( $n = 15$ ) had reported knowledge of ABA. In this study, all participants had knowledge and experience employing ABA routinely. However, there were perceptual improvements as indicated in the increase of participants reporting intended future use of behaviorally based EBPs (i.e. 'I would use ABA

principles in my classroom’). It is surmised, based on the review of literature, from the results of this study and of Allen and Bowles (2014), that the use of the aforementioned PD activities could effect similar results for a population of subjects with less experience implementing behaviorally based EBPs. Future studies should employ the methods applied in this study with populations with less experience employing behaviorally based EBPs to determine the relative effects on their implementation and sustained adherence to said behaviorally based EBPs.

Another discussion point related to the effectiveness of the intervention was the correlation between the improved treatment integrity measures and post-survey perceptions reported. Despite the previously discussed limitation of a higher level of exposure to and experience implementing behaviorally based EBPs, improvements in treatment integrity, sustained adherence, and perceptions of behaviorally based EBPs were still evidenced in this study. This study differed from previous ones in the methodological choice to utilize a combination of evidence-based PD activities to improve the dependent variables defined in this study. Correlation measures indicated PD activities positively impacted most of aforementioned dependent variables examined. While evidence of coaching was not highly correlated with improved perceptions on the post-survey measures, it can be surmised that the majority of activities resulted in positive results related to treatment integrity, adherence, and perceptions of behaviorally based EBPs.

Two limitations were observed in relation to the correlational data. First, the sample size for this study was relatively small for correlational data (as evidenced in similar studies). Further, the population of participants sampled was likely not a representative sample of educators who provide instruction to learners with ASD. Specifically, the was evidenced related

to demographic variables of years of experience, degree level held, and experience implementing behaviorally based EBPs.

However, it is arguable that the methods applied in this study rendered the sample size moot. Specifically, as the study design was based on evidence based approaches conducted with a high level of justification from previous literature (Lenth, 2001), it is possible that the a larger sample would display the same results. Further, the correlational data between the post-survey perceptions reported and coaching data collected were not significant. It is plausible that the measure applied to determine the effectiveness of the intervention was not sufficient. The measure of summed interactional units was selected as it was hypothesized that increased participation from subjects would be evidenced from their interactions within the coaching sessions. Future studies would benefit from more in-depth analyses of the interactional units operationalized for the coaching PD strategies in order to determine the individual correlational affects said activities had the participants' perceptions of behaviorally based EBPs following the PD activities. Additionally, further analyses related to demographic variables that were not available during this research (e.g. less experience implementing behaviorally based EBPs), due to purposeful sampling, would help to understand the generalizability of these results to other educational settings.

### **Efficiency**

Overall, the PD interventions occurred within an eight-week period of time. As evidenced earlier, much of the professional development received by educators is conducted as a lecture-style, "once-and-done" format. While evidence is clear that this style of PD is ineffective for sustained practice, it is utilized primarily due to the convenience and efficiency within which the information is disseminated. While eight weeks is a far stretch from "efficient" related to the

current state of PD in educational institutions, this research furthers the evidence base that PD must be ongoing (Cornett & Knight, 2009; Darling-Hammond et al., 2009; Gerard et al., 2011), and involve feedback provided as an iterative process for developing educators' skills (Kretlow & Bartholomew, 2010). That being said, it is important to acknowledge that *lack of time* was a highly reported barrier by educators related to their use of behaviorally based EBPs (Bambara, Nonnemacher, & Kern, 2009) and makes efficient (yet effective) PD activities so important.

While it was hypothesized that the time frame scheduled for the implementation of this study was efficient, it would be important to collect social validity data related to this assertion to confirm this hypothesis for future studies. Further, future studies would benefit from attempting to find ways to shorten the length of the time for implementation of these evidence-based PD activities, in order to better understand the time constraints presented in public school and educational settings, without compromising the integrity of the PD activities. One method to reduce the time to conduct PD activities could be the use of videos that demonstrate target skills during PD instead of the in-person demonstration of the skill with another individual. For example, Macurik, O'Kane, Malanga, and Reid (2008) evidenced less training time and similar effective results related to the use of BST as a PD activity for training special educators utilizing video examples. While the development of the video would require, potentially, more time to generate from the perspective of the PD administrator, once completed, the video would save a significant amount of time in future staff training utilizing BST (Macurik et al., 2008). Further, this would allow for more time for educators to complete other activities related to their daily responsibilities through shortening the length of the PD in-service.

Considering the effects of productive failure on participants' perceptions of behaviorally based EBPs, it is interesting to consider the results through the lens of demographics. The

present study's application of productive failure yielded similar results to Kapur (2008), however, posed some interesting differences. As stated earlier, Kapur (2008) found highest levels of interactional units (from most to least emitted) for problem analysis (PA), problem critique (PC), then criteria development (CD). The present study found highest levels of interactional units (from most to least emitted) for CD, solution development (SD), then PA. It is plausible that years' experience utilizing behaviorally based EBPs of participants in the present study, through their work at the DDDC, could explain this discrepancy in their primary use of CD and SD. Specifically, participants' prior experience could explain why less PC statements and more CD and SD statements were emitted, as participants felt more confident in their knowledge to more freely offer solutions to the problem as opposed to critiquing it.

As this relates to efficiency, a concern is raised in that those who practice ABA in public school and/or other non-clinical settings, likely, do not have possess the same in-depth exposure as did the participants of this study. Thus, it is feasible to expect that productive failure may need to be a more iterative process, requiring several cycles of review and discussion on a particular presenting problem before developing a clear and salient solution based on best practice, thus requiring more time involved in groups and PD (Kapur, 2015). It is also possible that with a small sample size and an abbreviated training session, the measures in the survey did not measure the effect of this PD activity.

Another concern related to the efficacy of the PD activities presented in this study is reflected by Parsons et al. (2012), and acknowledges that, "[T]ime to conduct training sessions that involve disruption to consumer services is a noted concern of agency administrators" (p. 9). As a result, trainings are often neglected. As was done with this study, but still warranting future investigation, it would be important to continue to evaluate the efficacy of abbreviated PD

activities to better coordinate other agencies applying the methodologies described in this research. Further, the data collected from these studies should be compared to literature which employed the similar strategies over greater lengths of time to determine the relative efficacies of the interventions as in relation to treatment integrity measures and sustained adherence to behaviorally based EBPs.

### **Perceptions**

Perceptions in this study were, generally, positively impacted following the PD activities employed. Research implies that long-term adherence to behaviorally based EBPs with integrity is greatly impacted by how those who implement said practices perceive the EBP (Wolf, Kirigin, Fixsen, Blasé, & Braukmann, 1995). A focal point of this research intended to evaluate the effects said PD activities had on the likelihood of sustained adherence, with integrity, to behaviorally based EBPs. Thus, this research contributes to the literature supporting the integration of the participants' experiences, preferences, and involvement in the development of training activity. Several factors included in BST and side-by-side coaching have been evidenced to improve educator perceptions of behaviorally based EBPs (e.g. the acquisition of skills based on competency assessments, extensive feedback, active participation/role play) (Parsons et al., 2012). Future studies would benefit to deepen the evidence-based related to the PD activities employed in this study. Further, social validity measures would be beneficial in corroborating the claims related to participant perceptions of behaviorally based EBPs for educating individuals diagnosed with ASD.

### **Sustainability**

This theme was deliberately placed last, as it is (at least in the opinion of this researcher) to be the most important and anticipated result of the PD activities. If the educators trained are

not able to sustain the implementation of behaviorally based EBPs with integrity, the research to practice gap is further widened. Thus, the benefits of the combined PD activities became evident in this study. Specifically, all participants of the study displayed sustained implementation of most-to-least prompt fading strategies as evidenced by treatment integrity measures. Further, as educator involvement and perceptions of behaviorally based EBPs have been evidenced to result in sustained adherence to said EBPs. This research contributes to the literature supporting these claims. Further, this research provides evidence to support the combination of evidence-based PD practices to promote sustained practices which apply most-to-least prompt fading for individuals ASD.

As with the findings communicated in the Parsons et al. (2012) results of PD activities were maintained. While this study did not employ a multiple baseline design, results were maintained across participants following a six-week absence of any feedback or coaching. This could explain the low Pearson score ( $r = .021$ ) in that the effects of BST were enough to elicit the behavioral change utilizing most-to-least prompt fading during in-vivo and maintenance checks. Future studies would benefit from conducting explicit component analyses to determine the individual components of this intervention to determine if all components are necessary to affect positive change in integrity implementing behaviorally based EBPs in educational settings.

### **Conclusion and Recommendations**

While several limitations to this study exist (e.g. participants' prior experience with ABA, limited sample size, inability to collect inter-observer agreement data, and amount of time required to reevaluate participant integrity), the methods of this study suggest a way to further lessen the research to practice gap in ASD intervention, ultimately improving results for this population of learners. Several recommendations can be gleaned from the results of this study.

First, this research contributes the growing literature supporting the use of the criteria-based PD activities (specifically BST) for teaching educators to apply complex behaviorally based EBPs to improve the skills of the learners they serve. Future studies would benefit from examining the growth of the learners benefitting from the training received by educators following this model of PD. In other words, future studies that examine the effects of the proposed PD activities on measures such as frequency of skills acquired and latency to mastery of a target skill from the onset of training could provide further support for the use of the PD activities for training educators to apply best practices.

Another recommendation for future studies would be to conduct the PD activities presented in this study with a sample of educators who have had less exposure to applying behaviorally based EBPs with the learners they serve. The majority of participants of this study reported positive perceptions of behaviorally based EBPs prior to any of the PD activities. This could suggest, as the sample regularly applied behaviorally based EBPs with their learners, a biased group of participants. Future studies that provide these PD activities with individuals with little to no experience with behaviorally based EBPs could, potentially, demonstrate greater statistical significance related to improvement in perceptions, integrity, and adherence to behaviorally based EBPs. Further, in relation to the previous recommendation, it would be prudent for future research to examine the proposed PD activities within the context of an educational environment that has less support from experts in the field of ABA. Many public educational environments do not possess the resources as the DDDC and would, likely, benefit the most from the proposed PD activities for improving outcomes of their learners with ASD and other intellectual/developmental disabilities. Thus, if generalized responding across subjects is observed between specialized and more general educational environments, further support for the



use of the proposed PD activities will be evidenced.

One final recommendation would be for the consideration of educator inclusion in the process of developing and implementing instruction to the learners they serve. Lang et al. (2010) suggest that educator involvement in planning, implementing, and evaluating interventions can be very useful in assuring sustained implementation of behaviorally based EBPs with integrity. They further caution that trainers of educators must consider that the educators may not be accurate or fully independent to implement all procedures of implementation, including data collection which represents instructional gains. They further imply that ongoing coaching and feedback has demonstrated improvements to efficacious implementation of behaviorally based EBPs. It is recommended that future studies include social validity measures to correlate and examine methods for promoting sustained and generalized behavioral change in educators applying behaviorally based EBPs through the proposed PD activities. The social validity measure could provide a unique statistic that can be correlated to survey responses and treatment integrity measures for developing a further understanding of factors that affect perceptions, adherence, and treatment integrity.

The problem of low educator perceptions of and sustained adherence to behaviorally based EBPs with integrity in educational settings has sizeable implications for providing educational services mandated for students with ASD. Further, this problem perpetuates a research-to-practice gap for the provision of ASD interventions. Through use of BST, productive failure, and follow-up coaching and feedback, this research provides a PD model that not only positively affected participants' integrity implementing behaviorally based EBPs, but their perceptions of implementing behaviorally based EBPs, thus, providing a potential way to reduce the research to practice gap in autism intervention.

### References

- Allen, K. A., & Bowles, T. V. (2014). Examining the effects of brief training on the attitudes and future use of behavioral methods by teachers. *Behavioral Interventions, 29*, 62-76.  
doi:10.1002/bin.1376
- Austin, J. L., & Marshall, J. A. (2008). Bridging the marketing gap: A review of how to think like a behavior analyst: Understanding the science that can change your life by Jon Bailey and Mary Burch. *Journal of Applied Behavior Analysis, 41*(1), 149-154.
- Axelrod, S., Moyer, L., & Berry, B. (1990). Why teachers do not use behavior modification procedures. *Journal of Educational and Psychological Consultation, 1*(4), 309-320.
- Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*(1), 91-97.
- Bambara, L. M., Nonnemacher, S., & Kern, L. (2009). Sustaining school-based individualized positive behavior support: Perceived barriers and enablers. *Journal of Positive Behavior Interventions, 11*(3), 161-176.
- Bandura, A. (1971). *Social learning theory*. New York: General Learning Press.
- Bergan, J. R. (1977). *Behavioral consultation*. Columbus, OH: Merrill.
- Bergan, J. R., & Caldwell, T. (1995). Operant techniques in school psychology. *Journal of Educational and Psychological Consultation, 6*(2), 103-110.
- Blumenfeld, P. C., Kemppler, T. M., & Krajcik, J. S. (2006). Motivation and cognitive engagement in learning environments. In R. K. Sawyer (Ed.), *The Cambridge Handbook of Learning Sciences*. New York, NY: Cambridge University Press.

- Boardman, A. G., Argüelles, M. E., Vaughn, S., Hughes, M. T., & Klinger, J. (2005). Special education teachers' views of research-based practices. *The Journal of Special Education*, 39(3), 168-180.
- Brener, N. D., Billy, J. O. G., & Grady, W. R. (2003). Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents: Evidence from scientific literature. *Journal of Adolescent Health*, 33(6), 436-457.
- Brock, M. E., Huber, H. B., Carter, E. W., Juarez, A. P., & Warren, Z. E. (2014). Statewide assessment of professional development needs related to educating students with autism spectrum disorder. *Focus on Autism and Other Developmental Disabilities*, 29(2), 67-79.
- Brosnan, J., & Healy, O. (2011). A review of behavioral interventions for the treatment of aggression in individuals with developmental disabilities. *Research in Developmental Disabilities*, 32, 437-446.
- Centers for Disease Control and Prevention [CDC]. (2014). *Community report on autism*. Retrieved from [http://www.cdc.gov/ncbddd/autism/states/comm\\_report\\_autism\\_2014.pdf](http://www.cdc.gov/ncbddd/autism/states/comm_report_autism_2014.pdf)
- Cook, B. G. (2004). Inclusive teachers' attitudes toward their students with disabilities: A replication and extension. *The Elementary School Journal*, 104(4), 307-320.
- Copeland, L., & Buch, G. (2013). Early intervention issues in autism spectrum disorders. *Autism*, 3(1), 109-116.
- Cornett, J., & Knight, J. (2009). Research on coaching. In J. Knight (Ed.), *Coaching: Approaches and perspectives* (pp. 192-216). Thousand Oaks, CA: Corwin Press.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009).

*Professional learning in the learning profession: A status report on teacher development in the United States and abroad.* Dallas, TX: National Staff Development Council.

Desimone, L. M. (2009). Improving impact studies of teachers' professional development:

Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181-199.

DiGennaro, F. D., Martens, B. K., & Kleinmann, A. E. (2007). A comparison of performance

feedback procedures on teachers' treatment implementation integrity and students' inappropriate behavior in special education classrooms. *Journal of Applied Behavior Analysis*, 40(3), 447-461.

Dingfelder, H. E., & Mandell, D. S. (2011). Bridging the research-to-practice-gap in autism

intervention: An application of diffusion of innovation theory. *Journal of Autism and Developmental Disorders*, 41(5), 597-609.

Domitrovich, C. E., Bradshaw, C. P., Poduska, J. M., Hoagwood, K., Buckely, J. A., Olin, S., . . .

Ialongo, N. S. (2008). Maximizing the implementation quality of evidence-based preventive interventions in schools: A conceptual framework. *Advances in School Mental Health Promotion*, 1(3), 6-28.

Dufrene, B. A., Parker, K., Menousek, K., Zhou, Q., Harpole, L. L., & Olmi, D. J. (2012). Direct

beahvioral consultation in head start to increase teacher use of praise and effective instruction delivery. *Journal of Behavioral Education*, 19, 239-256.

Dufrene, B. A., Zoder-Martell, K. A., Dieringe, S. T., & Labrot, Z. (2016). Behavior analytic

consultation for academic referral concerns. *Psychology in the Schools*, 53(1), 8-23.

- Filcheck, H. A., McNeil, C. B., Greco, L. A., & Bernard, R. S. (2004). Using a whole-class token economy and coaching of teacher skills in a preschool classroom to manage disruptive behavior. *Psychology in the Schools, 41*(3), 351-361.
- Fombonne, E. (1999). The epidemiology of autism: A review. *Psychological Medicine, 29*, 769-786.
- Freire, P. (1972). *Pedagogy of the oppressed* (Vol. New rev. 20th Anniversary ed.). New York: Continuum.
- Garet, M. S., Porter, A. C., Desimone, L. M., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Association, 38*(4), 915-945.
- Gerard, L. F., Varma, K., Corliss, S. B., & Linn, M. C. (2011). Professional development for technology enhanced inquiry science. *Review of Educational Research, 81*(3), 408-448.
- Gresham, F. M. (1991). Conceptualizing behavior disorders in terms of resistance to intervention. *School Psychology Review, 20*(1), 23-37.
- Guldborg, K. (2016). Evidence-based practice in autism educational research: can we bridge the research and practice gap? *Oxford Review of Education, 43*(2), 149-161.
- Hall, L. J., Grundon, G. S., Pope, C., & Romero, A. B. (2010). Training paraprofessionals to use behavioral strategies when educating learners with autism spectrum disorders across environments. *Behavioral Interventions, 25*, 37-51.
- Horner, R. H., Carr, E. G., Strain, P. S., Todd, A. W., & Reed, H. K. (2002). Problem behavior interventions for young children with autism: A research synthesis. *Journal of Autism and Developmental Disorders, 32*(5), 423-446.

- Iwata, B., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1982/1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis*, 2(1), 3-20.
- Iwata, B., Wallace, M. D., Kahng, S., Lindberg, J. S., Roscoe, E. M., Conners, J., . . . Worsdell, A. S. (2000). Skill acquisition in the implementation of functional analysis methodology. *Journal of Applied Behavior Analysis*, 33(2), 181-194.
- Kapur, M. (2008). Productive failure. *Cognition and Instruction*, 26, 379-424.
- Kapur, M. (2015). Learning from productive failure. *Learning: Research and Practice*, 1(1), 51-65.
- Kapur, M., & Bielaczyc, K. (2012). Designing for productive failure. *The Journal of Learning Sciences*, 21(1), 45-83.
- Kratochwill, T. R., & Bergan, J. R. (1990). *Behavioral consultation in applied settings: An individual guide*. New York: Plenum Press.
- Kretlow, A. G., & Bartholomew, C. C. (2010). Using coaching to improve the fidelity of evidence-based practices: A review of studies. *Journal of Special Education*, 33(4), 279-299.
- Kretlow, A. G., Cooke, N. L., & Wood, C. L. (2012). Using in-service and coaching to increase teachers' accurate use of research-based strategies. *Remedial and Special Education*, 33(6), 348-361.
- Lang, R., Sigafoos, J., Rispoli, M., Chan, J. M., Lancioni, G., O'Reilly, M. F., . . . Hopkins, S. (2010). Review of teacher involvement in applied intervention research for children with autism spectrum disorders. *Education and Training in Autism and Developmental Disabilities*, 45(2), 268-283.

- Lenth, R. V. (2001). Some practical guidelines for effective sample size determination. *The American Statistician*, 55(3), 187-193.
- Libby, M. E., Weiss, J. S., Bancroft, S., & Ahearn, W. H. (2008). A comparison of most-to-least and least-to-most prompting on the acquisition of solitary play skills. *Behavior Analysis in Practice*, 1(1), 37-43.
- MacDuff, G. S., Krantz, P. J., & McClannahan, L. E. (2001). Prompts and prompt-fading strategies for people with autism. In C. Maurice, G. Green, & R. M. Foxx (Eds.), *Making a difference: Behavioral intervention for autism* (pp. 37-50). Austin, TX: Pro-ed.
- Macurik, K. M., O'Kane, N. P., Malanga, P., & Reid, D. H. (2008). Video training of support staff in intervention plans for challenging behavior: Comparison with live training. *Behavioral Interventions*, 23, 143-163.
- McClannahan, L. E., & Krantz, P. J. (1999). *Activity schedules for children with autism: Teaching independent behavior*. Bethesda, MD: Woodbine.
- McInerney, M., & Hamilton, J. L. (2007). Elementary and middle schools technical assistance center: An approach to support the effective implementation of scientifically based practices in special education. *Exceptional Children*, 73(2), 242-255.
- McIntyre, L. L., Gresham, F. M., DiGennaro, F. D., & Reed, D. D. (2007). Treatment integrity of school-based interventions with children in the Journal of Applied Behavior Analysis 1991-2005. *Journal of Applied Behavior Analysis*, 40(4), 659-672.
- Mezirow, J. (2000). Learning to think like an adult: Core concepts of transformation theory. In J. Mezirow & Associates (Eds.), *Learning as transformation: Critical perspectives on a theory in progress* (pp. 1-33). San Francisco, CA: Jossey-Bass.

- Morrier, M. J., Hess, K. L., & Heflin, L. J. (2010). Teacher training for implementation of teaching strategies for students with autism spectrum disorders. *Teacher Education and Special Education, 19*(3), 401-412.
- Musgrove, W. J., & Harms, R. (1975). Teachers' attitudes toward behavior modification. *Journal of the Student Personnel Association for Teacher Education, 13*, 133-137.
- O'Reilly, M. G., & Renzaglia, A. (1992). Teaching systematic instruction competencies to special education student teachers: An applied behavioral supervision model. *Journal of the Association for the Severely Handicapped, 17*, 104-111.
- Odom, S. L., McConnell, S. R., & Chandler, L. K. (1993). Acceptability and feasibility of classroom-based social interaction interventions for young children with disabilities. *Exceptional Children, 60*(3), 226-236.
- Parsons, M. B., Rollyson, J. H., Iverson, J., & Reid, D. H. (2012). Evidence-based staff training: A guide for practitioners. *Behavior Analysis in Practice, 5*(2), 2-11.
- Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher, 29*(4), 4-15.
- Queeney, D. S. (1995). *Assessing needs in continuing education: An essential tool for quality improvement*. San Francisco: Jossey Bass.
- Ruble, L. A., Dalrymple, N. J., & McGrew, J. H. (2010). The effects of consultation on individualized education program outcomes for young children with autism: The collaborative model for promoting competence and success. *Journal of Early Intervention, 32*(4), 286-301.



Sanetti, L. M. H., Collier-Meek, M. A., Long, A. C. J., Byron, J., & Kratochwill, T. R. (2015).

Increasing teacher treatment integrity of behavior support plans through consultation and Implementation Planning. *Journal of School Psychology, 53*, 209-229.

Sarokoff, R. A., & Sturmey, P. (2004). The effects of behavioral skills training on staff

implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis, 37*(4), 535-538.

Scheuermann, B., Webber, J., Boutat, E. A., & Goodwin, M. (2003). Problems with personnel

preparation in autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 18*(3), 197-206.

Schwartz, D. L., & Bransford, J. D. (1998). A time for telling. *Cognition and Instruction, 16*(4),

475-522.

Silberman, M. L. (1969). Behavioral expression of teachers' attitudes toward elementary school

students. *Journal of Educational Psychology, 60*(5), 402-407.

Simpson, R. L. (2005). Evidence-based practices and students with autism spectrum disorders.

*Focus on Autism and Other Developmental Disabilities, 20*(3), 140-149.

Skiba, R. J., & Peterson, R. L. (2000). School discipline at a crossroads: From zero tolerance to

early response. *Exceptional Children, 66*(3), 335-347.

Stahmer, A. C., Reed, S., Lee, E., Reisinger, E. M., Connell, J. E., & Mandell, D. S. (2015).

Training teachers to use evidence-based practices for autism: Examining procedural implementation fidelity. *Psychology in the Schools, 52*(2), 181-195.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of*

*Medical Education, 2*, 53-55.

- Wilczynski, S. M., Mandal, R. L., & Fusilier, I. (2000). Bridges and barriers in behavioral consultation. *Psychology in the Schools*, 37(6), 495-504.
- Wolf, M. M., Kirigin, K. A., Fixsen, D. L., Blasé, K. A., & Braukmann, C. J. (1995). The teacher-family model: A case study in data-based program development and refinement (and dragon wrestling). *Journal of Organizational Behavior Management*, 15, 11-68.
- Wong, C., Odom, S. L., Hume, K., Cox, A. W., Fettig, A., Kucharczyk, S., . . . Schultz, T. R. (2013). *Evidence-based practices for children, youth, and young adults with autism spectrum disorder*. Chapel Hill: The University of North Carolina: Frank Porter Graham Child Development Institute, Autism Evidence-Based Practice Review Group.
- Woolfolk, A. E., Woolfolk, R. L., & Wilson, G. T. (1977). A rose by any other name...: Labelling bias and attitudes towards behavior modification. *Journal of Consulting and Clinical Psychology*, 45(2), 184-191.

**Chapter VII – Appendices****Appendix A****Letter of Cooperation****RUTGERS**Douglass Developmental  
Disabilities CenterDivision of Adult & Transitional Services  
Rutgers, The State University of New Jersey  
151 Ryders Lane  
New Brunswick, NJ 08901-8557

gsappweb.rutgers.edu/dddc

(848)-932-4500  
Fax 732-932-0077

October 31, 2017

Institutional Review Board  
Rutgers, The State University of New Jersey  
Office of Research Regulatory Affairs  
335 George Street/Liberty Plaza/Suite 3200  
New Brunswick, NJ 08901

Re: PROTOCOL #E18-126

To Whom It May Concern:

James Maraventano has requested permission to collect research data from employees at the Douglass Developmental Disabilities Center Adult Program. I have been informed of the purposes of the study and the nature of the research procedures. I have also been given an opportunity to ask questions of the researcher.

His study, titled "Improving the Research to Practice Gap in Autism Intervention: A Professional Development Design", utilizes several empirically validated professional development activities meant to improve employee's integrity for implementing prompt fading strategies. These strategies are utilized for teaching adults with autism functional and daily living skills. Further, his study intends to examine how the employees of the Douglass Developmental Disabilities Center Adult Program perceive strategies and techniques informed by Applied Behavior Analysis and if the professional development activities have any effect on said perceptions.

As the Director of the Douglass Developmental Disabilities Center, I am authorized to grant permission to have the researcher recruit research participants and collect associated data at the DDDC. Pending receipt of his final IRB approval, James Maraventano has my permission to recruit participants from the DDDC Adult Program and collect research data for use in the abovementioned study during the hours which the Douglass Developmental Disabilities Center Adult Program employees are present.

If you have any questions, please contact me at 848-932-4500.

Sincerely,

Lara Delmolino Gatley, Ph.D., BCBA-D  
Director and Clinical Professor  
Douglass Developmental Disabilities Center  
Graduate School of Applied and Professional Psychology

## Appendix B

## Needs Assessment



Douglass Developmental  
Disabilities Center

Division of Adult & Transitional Services  
Rutgers, The State University of New Jersey  
151 Ryders Lane  
New Brunswick, NJ 08901-8557

[dddc.rutgers.edu](http://dddc.rutgers.edu)

848-932-4500  
Fax 732-932-0077

To: Douglass Adult Program Staff  
From: Jim Maraventano  
Re: Dissertation Study Professional Development Topic

---

Thank you for agreeing to participate in my study! Before we delve into the actual professional development activities, I am interested to understand what methods of prompting you feel you would like to learn more about. Please rank the following options in order, with "1" indicating your highest preference to be trained on and "3" indicating your lowest preference to be trained on. Based on these results, I will chose the topic that was selected most (on average) for highest preference.

Subject Number: \_\_\_\_\_

Most-to-Least Prompt Fading \_\_\_\_\_

Least-to-Most Prompt Fading \_\_\_\_\_

Graduated Guidance \_\_\_\_\_

Thank you!!!

Jim

## Appendix C

## Survey Consent Form

**Informed Consent:  
Anonymous Data Collection**

You are invited to participate in a research study being conducted by James C. Maraventano, a student in the Graduate School of Education at Rutgers University. The purpose of this research is to examine the effects of evidenced-based professional development activities on the integrity of and adherence to behaviorally based evidence based practices. Further, I hope to examine what effects these professional development activities have on educators' feelings towards learners with autism and behaviorally based evidence based practices.

During this study, you will be asked to participate in a series of professional development activities related to implementing most-to-least prompt fading strategies. The purpose of the study will be to examine the effects of the professional development activities on your application of most-to-least prompt fading strategies. Also, the purpose of this study is to examine the effects of the professional development activities on your perceptions of behaviorally based evidence-based practices and your future likelihood to adhere to the strategies you were trained on. In order to test these hypotheses, data will be collected on your implementation of most-to-least prompt fading strategies and correlated to your perceptions of this and other behaviorally based evidence-based practices. Further, data will be collected from surveys related to your perceptions of behaviorally based evidence-based practices. You will be asked to complete this survey online from a link I will send to you.

This research is anonymous. Anonymous means that I will record no information about you that could identify you. There will be no linkage between your identity and your response in the research. This means that I will not record your name, address, phone number, date of birth, etc. If you agree to take part in the study, you will be assigned a random code number that will be used on each questionnaire and during professional development activities. Your name will appear only on a list of subjects, and will not be linked to the code number that is assigned to you. There will be no way to link your responses back to you. Therefore, data collection is anonymous.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for five years.

There are no foreseeable risks to participation in this study. In addition, you may receive no direct benefit from taking part in this study.

Use of the data collected on you in this study is voluntary. You may choose not to have your data used, and you may withdraw your consent at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

If you have any questions about the study or study procedures, you may contact me at [jmara@dddc.rutgers.edu](mailto:jmara@dddc.rutgers.edu) or 908-917-4888. You may also contact my faculty advisor, Dr. Saundra Tomlinson-Clarke at (848) 932-0815.

If you have any questions about your rights as a research subject, please contact an IRB Administrator at the Rutgers University, Arts and Sciences IRB:

Institutional Review Board  
Rutgers University, the State University of New Jersey  
Liberty Plaza / Suite 3200  
335 George Street, 3<sup>rd</sup> Floor  
New Brunswick, NJ 08901

*For IRB Use Only. This Section Must be Included on the Consent Form and Cannot Be Altered Except For Updates to the Version Date.*

IRB Stamp Box

IRB Stamp Box

Version Date: v1.0

Page 1

**Informed Consent:  
Anonymous Data Collection**

Phone: 732-235-2866

Email: [humansubjects@orsp.rutgers.edu](mailto:humansubjects@orsp.rutgers.edu)

Please retain a copy of this form for your records. By participating in the above stated procedures, then you agree to participation in this study.

Thank you for your consideration!  
James Maraventano

You will be given a copy of this form for your records. **Please choose one (1) statement below and sign/date:**

- You have read this consent form and you AGREE to allow the use of your data for research purposes.

Agree—Subject's Signature \_\_\_\_\_

\_\_\_\_\_ Date

- You have read this consent form and you DO NOT AGREE to allow the use of your data for research purposes and would like your data to be immediately withdrawn and destroyed (where possible).

Disagree—Subject's Signature \_\_\_\_\_

\_\_\_\_\_ Date

Subject Name (Print) \_\_\_\_\_ Subject ID/# \_\_\_\_\_ (if applicable)

Principal Investigator Signature \_\_\_\_\_ Date \_\_\_\_\_

*For IRB Use Only. This Section Must be Included on the Consent Form and Cannot Be Altered Except For Updates to the Version Date.*

IRB Stamp Box

IRB Stamp Box

Version Date: v1.0

Page 2

## Appendix D

## Modified Attitudes towards Behavior Modification Scale (Survey)

Maraventano: Survey for Dissertation

**MODIFIED ATTITUDES TOWARDS BEHAVIOR MODIFICATION SCALE (Allen & Bowles, 2014):**

Please do not put your name or any other identifying information on this questionnaire. YOUR RESPONSES ARE TO BE KEPT ANONYMOUS.

We are interested in your feelings about the following statements concerning applied behavior analysis. Read each statement carefully and decide how you feel about it. PLEASE respond to each item whether or not you have had direct experience with applied behavior analysis.

If you strongly agree with the statement, encircle 1.

If you agree, encircle 2.

If you are undecided, encircle 3

If you disagree, encircle 4.

If you strongly disagree, encircle 5.

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. The benefits of applied behavior analysis have been exaggerated   | 1 | 2 | 3 | 4 | 5 |
| 2. Applied behavior analysis has unlimited possibilities   | 1 | 2 | 3 | 4 | 5 |
| 3. I wish my education was accomplished under applied behavior analysis methods.   | 1 | 2 | 3 | 4 | 5 |
| 4. Applied behavior analysis is unable to meet the demands of a complex school system  | 1 | 2 | 3 | 4 | 5 |
| 5. The extra time involved in dispensing rewards is worth the improvement seen as a result of using applied behavior analysis. | 1 | 2 | 3 | 4 | 5 |
| 6. Applied behavior analysis causes too much friction among the children in the classroom.                                     | 1 | 2 | 3 | 4 | 5 |
| 7. Applied behavior analysis helps the child learn how to cope with the world.   | 1 | 2 | 3 | 4 | 5 |
| 8. More money should be spent on applied behavior analysis programs.   | 1 | 2 | 3 | 4 | 5 |
| 9. Applied behavior analysis makes a child stop working when rewards are not available.  | 1 | 2 | 3 | 4 | 5 |
| 10. Applied behavior analysis strengthens learning.  | 1 | 2 | 3 | 4 | 5 |
| 11. Applied behavior analysis will advance education to a higher level.  | 1 | 2 | 3 | 4 | 5 |
| 12. More people would support (favor) applied behavior analysis if they knew more about it.                                    | 1 | 2 | 3 | 4 | 5 |
| 13. Applied behavior analysis enables us to make the best possible use of our school environment.                              | 1 | 2 | 3 | 4 | 5 |
| 14. All teachers should be prohibited from using applied behavior analysis in their classrooms.                                | 1 | 2 | 3 | 4 | 5 |
| 15. Applied behavior analysis is just another name for tyranny.  | 1 | 2 | 3 | 4 | 5 |
| 16. The added expense involved in purchasing rewards is not worth the eventual gain from a program of ABA.                     | 1 | 2 | 3 | 4 | 5 |
| 17. Applied behavior analysis improves overall classroom conditions.   | 1 | 2 | 3 | 4 | 5 |
| 18. Applied behavior analysis aids learning.   | 1 | 2 | 3 | 4 | 5 |
| 19. Applied behavior analysis helps improve relationships between children.  | 1 | 2 | 3 | 4 | 5 |
| 20. Applied behavior analysis helps to produce desired behaviors.  | 1 | 2 | 3 | 4 | 5 |
| 21. I would use applied behavior analysis principles in my classroom.  | 1 | 2 | 3 | 4 | 5 |

Allen, K. A., & Bowles, T. V. (2014). Examining the effects of brief training on the attitudes and future use of behavioral methods by teachers. *Behavioral Interventions*, 29, 62-76. doi:10.1002/bin.1376

## Appendix E

## Productive Failure Case Study

Instructions: Read, then discuss the below case study in your group. Develop some potential solutions to address the problem described. You will have 15 minutes to read independently and develop solutions as a group.

Mabel is an educator, working in an ABA program for adults with autism spectrum disorder. She recently started at the program and is charged with improving the outcomes for her adult consumers. Most of her consumers are lower functioning and require significant levels of support to complete functional activities required for everyday life (e.g. hygiene, self-help, cleaning, etc.). One learner, Bertram, has had consistent challenges acquiring instructional goals. Informally, staff members who work with him have reported Bertram's issues of skill acquisition related to his prompt dependency, defined as "when a learner responds to prompts instead of responding to the cues that are expected to evoke a target behavior" (Cameron, Ainsleigh, & Bird, 1992). Specifically, that his prompt dependent behavior interferes with his ability to acquire skills because, according to one staff account, "Whenever you give Bertram a task to do, he just waits for you to do it for him."

Mabel is considering a course of action for better understanding some of Bertram's skill acquisition issues. To do so, she has decided to conduct staff interviews and behavioral observations:

**Group Staff Interview (Mabel, Staff 1, Staff 2, & Staff 3):**

Mabel: So what do you all see as the biggest issues with Bertram's skill acquisition?

Staff 1: For me, I feel like Bertram just knows how to get out of doing work. You know, he knows that eventually someone will help him so he just waits it out.

Staff 2: I agree with [Staff 1]. It just seems like he doesn't want to do the work. Besides, he's so big and everyone is afraid to push him. I mean, what if he decides to aggress towards me? I don't want to chance that!

Mabel: Does Bertram have a history of aggressive behavior?

Staff 3: I've seen him become very agitated when doing jobs that are hard or complex. You know, like a long behavior chain such as brushing teeth or doing laundry.

Mabel: What do you mean when you say "agitated"?

Staff 3: He will bite his shirt, yell, and stomp his foot on the floor.

Staff 2: He might also cry, I've seen that happen a few times.

Mabel: Okay, so what types of supports have you seen as being effective for helping him to complete tasks and acquire skills?

Staff 1: Well, we pretty much just provide 1-to-1 support when running his instructional programs. And we also help him through the steps of the task analyses for his programs.

Mabel: When you say "help him through the steps" what does that look like?

Staff 2: I mean, we pretty much move his hands and body around to help him finish the task. He pretty much complies, letting us do everything for him. When he finishes we give him time to play on his iPad. He loves watching videos on it!

Staff 4: To be honest, I think we all feel that he has just reached his peak. Like, he's plateaued, you know? And besides, it's just easier for us to pretty much do most of the heavy lifting for him.

Staff 3: I don't know... Programs for him just seem kind of...pointless? I think he'd be much happier if he could just relax and have people support him when he needs it.



**Behavioral Observation of Bertram:** *Fold Towels Program with Staff 1*

<b>Program Name:</b>	<b>Fold Towels</b>
<b>SD:</b>	<b>"Fold towels" or similar</b>
<b>Teaching Strategy:</b>	<b>Forward chain</b>
<b>Prompt Hierarchy:</b>	<b>FP, MP, PP, G, I</b>
<b>Prompt Fading:</b>	<b>Most to least: 3 consecutive successful trials on target step and all previously acquired steps. 100% on all active steps for 4 out of 5 sessions to move to next teaching step.</b>
<b>Reinforcement Schedule:</b>	<b>FR 1 – Verbal Praise</b>
<b>Task Analysis:</b>	<ol style="list-style-type: none"> <li><b>1. Lay hand towel flat on table horizontally</b></li> <li><b>2. Bring bottom corners to meet top corners</b></li> <li><b>3. Bring right corners to meet left corners, folding in half</b></li> <li><b>4. Bring right corners to meet left corners, folding again in half</b></li> </ol>

Bertram entered the classroom and sat at his desk with Staff 1 seated beside him. Two other adult consumers were in this class with Bertram. Staff 1 provided brought 3 hand towels over to Bertram's desk, laid one towel down flat in front of him, and provided an instruction to "fold the hand towels". Attending behavior had not been established prior to Staff 1 providing the instruction. Almost immediately following the instruction, Staff 1 tapped the towel and said, "C'mon Bertram, pay attention. It's time to fold the towel". Bertram reached his hand towards the towel, at which time Staff 1 took Bertram's wrist in their hand and put it on the towel. Bertram then picked up the towel and wiped his mouth with it. Staff 1 took the towel from Bertram and modeled how to fold the towel. Staff 1 stated after she completed folding the towel, "That's how we fold the towel. We can try this again later". Staff 1 marked on Bertram's data sheet a "-" for all steps of the task analysis and put the towels back to the hamper they were taken from. Staff 1 then gave Bertram a puzzle to play with and began writing in his communication log.

## Appendix F

## Written Description of Most-to-Least Prompt Fading

Parsons, Rollyson, & Reid (BAP, 2012). Evidence-Based Staff Training: A Guide for Practitioners

## Appendix

## Correct and Incorrect Use of Most-to-Least Prompting

## 1. Steps trained in order.

**Correct:** all steps trained in sequence listed on task analysis.

**Incorrect:** all steps not trained in sequence listed on task analysis (e.g., steps out of order or a step is skipped)

2. 1<sup>st</sup> trial full guidance.

**Correct:** instructor physically guides student through all steps on task analysis.

**Incorrect:** instructor does not physically guide student through all steps on task analysis.

## 3. Prompts on successive trials are less assistive.

**Correct:** after the first trial, physical prompts are less assistive on a given trial relative to the preceding trial; less assistive means (1) *for at least one step* on the target trial the instructor begins by *guiding* the learner through the step but then stops the guidance at a point earlier than on the previous trial for that step, and (2) there is *not more assistance on any step* for the target trial relative to the preceding trial (i.e., the instructor must not stop the guidance past the point where the guidance was stopped on the previous trial – if this happened it would mean that the instructor is providing more manual guidance for a given step relative to the previous trial); also, if the learner does not complete a respective step (but does not make an error), the instructor then guides the learner through the remaining part of the step. **Note: the controlling prompt must be the physical guidance (full or partial).**

**Incorrect:** prompts are not less assistive on a given trial relative to the preceding trial as described above.

**NA (Not Applicable):** no prompting is needed due to the learner completing respective steps independently.

## 4. Error correction.

**Correct:** if a learner makes an error on a step, the instructor immediately interrupts the learner action and provides increased assistance to complete the step correctly; the assistance provided during the correction must be sufficient such that the learner correctly completes that step correctly on the second attempt (such assistance usually will be full guidance by the instructor).

**Incorrect:** if a learner makes an error on a step and the instructor does not (1) immediately interrupt the learner action, (2) does not provide increased assistance on the next attempt, and/or (3) the assistance is not sufficient such that the learner does not complete the step correctly on the second attempt.

**NA (not applicable):** learner makes no mistakes such that no error correction is necessary.

## 5. Positive consequences.

**Correct:** the instructor provides a positive consequence when the learner correctly completes the last step in the task; positive consequences can be provided following correct completion of task steps prior to the last step but this is not required to be correct.

**Incorrect:** the instructor does not provide a positive consequence when the learner correctly completes the last step in the task and/or a positive consequence is provided following a step that was not correctly completed prior to the last step in the task.

## Appendix G

## Permission to Reproduce BST Protocol

**James Maraventano**

---

**From:** drhmc@vistatech.net  
**Sent:** Saturday, May 14, 2016 7:01 AM  
**To:** James Maraventano  
**Subject:** Re: Permission for reproduction

**Categories:** INBOX/Ed.D. Program/Completed/Inquiry II

>  
 James,

Thank you for your kind words about our research in the staff area. You certainly have my permission as corresponding author on the the article you mentioned to reproduce the table; thanks for checking in this regard.

I fully agree with you regarding the need to enhance the perceptions of public school teachers about ABA strategies as well as adherence to use of the strategies. I have certainly faced this issue numerous times in my consulting work. Sometimes the teachers seem to have been pre-taught to be anti ABA before even coming into contact with any behavior analysis applications and sometimes they have developed a negative impression of ABA due to the way some poorly trained or motivated "behavior analysts" have interacted with them. Anyway, good luck with your work and I would be real interested in how it proceeds.

Denny Reid

Hello Dr. Reid,  
 >  
 > My name is James Maraventano, and I am a doctoral student at Rutgers  
 > University. I am in the process of writing my research proposal on  
 > the subject of public school teacher perceptions of and adherence to  
 > ABA strategies. My research hopes and dreams are to develop a  
 > professional development activity (using a Behavioral Skills Training  
 > Method), which, in conjunction with ongoing behavior analytic  
 > consultation, incorporates other professional development activities  
 > (e.g. side-by-side coaching, teacher  
 > mentoring) to improve upon, hypothesized, poor perceptions of and  
 > adherence to ABA in the public schools, which I consult to.  
 >  
 > The reason for this email is, for my research proposal, to request  
 > permission to reproduce Table 1 (with proper citation) published in  
 > the following citation:  
 >  
 > Parsons, M. B., Rollyson, J. H., Iverson, J., & Reid, D. H. (2012).  
 > Evidence-based staff training: A guide for practitioners. \*Behavior  
 > Analysis in Practice, 5\*(2), 2-11.  
 > I have attached a screenshot of the table for your reference. If you  
 > require more context it's use within the paper, I would be happy to  
 > share what I have written with you.  
 >  
 > Full disclosure, I've never requested permission to reproduce material  
 > before, so I hope I'm making sense. Thank you for your time and

> consideration.  
>  
> James  
>  
> PS - I wanted to take a moment to let you know how influential your  
> research has been at ensuring efficacious and productive treatment of  
> the clients we serve. As a BCBA and the Adult Program supervisor,  
> employed by the Douglass Developmental Disabilities Center at Rutgers  
> University, I thought you would like to know that your research has  
> been influential to the training of staff on evidence-based practices.  
> The clients and families we serve have benefited greatly from your work. Thank you!  
>  
> J  
>  
> --  
>  
> James C. Maraventano, Ed. M., BCBA  
> Ed.D. Candidate, Design of LEarning Environments Concentration  
> Graduate School of Education Rutgers, The State University of New  
> Jerseyjmara@scarletmail.rutgers.edu  
>  
> This email and any and all attachments contain information which is  
> confidential, belongs to the sender, and is legally privileged. This  
> information is intended only for the use of the individual or entity  
> named in this email. It cannot be disclosed for use by any other  
> party. If you are not the intended recipient, you are hereby notified  
> that any disclosure, copying, distribution, or the taking of any  
> action in reliance on the contents of this information is strictly  
> prohibited. If you receive this email in error, please notify the  
> sender by telephone immediately.  
>  
> [image: Inline image 1]  
>  
>

## Appendix H

## Task Analysis for 'Decorate Cookie'

**Task Analysis for "Decorate a cookie with icing"**

Instructions: teach all steps listed on this task analysis using a most-to-least prompting strategy. Assume independence prior to each trial:

SD: "Frost the cookie"

Steps:

1. Pick up tube of icing
2. Squeeze dime-sized amount of icing onto cookie
3. Put down tube of icing
4. Pick up plastic knife
5. Hold outside edge of cookie with empty hand
6. Spread icing to all edges of cookie

Run three trials using most-to-least prompting, fading your prompts across each successive trials

## Appendix I

## Student Script for Role Play

“Student” Script (Parsons, Rollyson, Iverson, & Reid, 2012)

1. Require full physical guidance for all steps of the task analysis
2. Require full physical guidance to initiate a step during the second trial and then complete that step independently and subsequently require full physical guidance to complete the other steps on the second trial
3. Complete the first step independently on the third trial and then make an error on a subsequent step and require partial physical guidance on the remaining steps

**References**

Parsons, M. B., Rollyson, J. H., Iverson, J., & Reid, D. H. (2012). Evidence-based staff training: A guide for practitioners. *Behavior Analysis in Practice*, 5(2), 2-11.

## Appendix J

## Treatment Integrity Form and Correct/Incorrect Use Definitions

Treatment Integrity for Most to Least Prompt Fading  
See "Correct and Incorrect Use of Most-to Least Prompting" form for details

Subject #: \_\_\_\_\_

Date: \_\_\_\_\_

Skill: \_\_\_\_\_

	Yes	No
1. Steps trained in order		
2. 1 <sup>st</sup> trial full guidance		
3. Prompts on successive trials are less intrusive		
4. Error correction		
5. Positive consequences		

Subject #: \_\_\_\_\_

Date: \_\_\_\_\_

Skill: \_\_\_\_\_

	Yes	No
1. Steps trained in order		
2. 1 <sup>st</sup> trial full guidance		
3. Prompts on successive trials are less intrusive		
4. Error correction		
5. Positive consequences		

Subject #: \_\_\_\_\_

Date: \_\_\_\_\_

Skill: \_\_\_\_\_

	Yes	No
1. Steps trained in order		
2. 1 <sup>st</sup> trial full guidance		
3. Prompts on successive trials are less intrusive		
4. Error correction		
5. Positive consequences		

Subject #: \_\_\_\_\_

Date: \_\_\_\_\_

Skill: \_\_\_\_\_

	Yes	No
1. Steps trained in order		
2. 1 <sup>st</sup> trial full guidance		
3. Prompts on successive trials are less intrusive		
4. Error correction		
5. Positive consequences		