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11-3-2021

# Physical Therapy/Occupational Therapy and Applied Behavior Analysis Forming an Interdisciplinary Bridge for Positive Patient Outcomes

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**Physical Therapy/Occupational Therapy and Applied Behavior Analysis Forming  
an Interdisciplinary Bridge for Positive Patient Outcomes**

An Honors Thesis submitted in partial fulfillment of the requirements for Honors in The  
Water's College Of Health Professions.

By  
Rachel Vaughn

Under the mentorship of Dr. David Bringman

**ABSTRACT**

Physical therapy, Occupational therapy, and Applied Behavior Analysis work within the pediatric population and are used to help children reach milestones throughout their development. This survey is meant to assess the amount of interdisciplinary collaboration that is occurring within these disciplines. The research team believes that this interdisciplinary collaboration could be beneficial to the pediatric population, but understands that this survey is a baseline and needs further research. Through a survey, there were 29 total participants, 22 PT/OT and 7 ABA therapists. The survey showed evidence of ABA techniques being used within PT and OT sessions for betterment of the therapeutic sessions. Qualtrics was the application used for the survey and data analysis for this project. There is potential for further research in the importance of this collaboration. It would be beneficial to look into the benefits of interdisciplinary training of ABA techniques for PT/OT to ensure that the best techniques are being utilized within therapy sessions.

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November 2021  
Water's College of Health Professions-*Rehabilitation Sciences*  
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### Physical Therapy/Occupational Therapy and Applied Behavior Analysis Forming an Interdisciplinary Bridge for Positive Patient Outcomes

#### INTRODUCTION

Physical, occupational, and behavior therapy can be crucial steps to the success and growth of children, especially in regard to those with developmental or physical disabilities. These therapies are focused around building a repertoire of skills that the client can use throughout their life to be able to accomplish goals and move towards independence. Physical therapy focuses on movement, motor development, and body function for the ability to reach maximum potential promoting a life of independence. Occupational therapy focuses on fine motor skills, sensory motor skills, and visual motor skills. Behavior therapy, also known as Applied Behavior Analysis (ABA), focuses on understanding behavior. ABA is centered around establishing and enhancing socially meaningful behaviors for the specific client. The main topic of this project is focusing on building an interdisciplinary bridge between PT/OT and ABA for positive patient outcomes. This is an important topic to be discussed because both fields have a main goal of providing the best therapy services to the client. Both fields have evidence-based practice and regulations to make sure that the client receives the best services for their specific case, but the integration and collaboration of fields could allow for even more progress and goal attaining.

Interdisciplinary collaboration has been researched in other fields, but there is not much research directly studying the collaboration between PT/OT and ABA. Research in this area is relatively limited, but it has become more of a topic of conversation. These conversations and research like this should spark the research world to dive into the interdisciplinary collaboration of PT/OT and ABA. Interdisciplinary collaboration was studied at Children's Centres for Early Childhood Development and Parenting, where this collaboration was defined as an opportunity "to provide an early intervention focus to support the child within the family, resulting in increased support for families, decreased vulnerability and better outcomes for the children" (West, 2016). The collaboration of the different disciplines was described as "desirable and necessary for successful patient outcomes" (West, 2016). The article focuses on how to have a collaborative team that functions smoothly and with the patient's best interest in mind at all times. One member of the study stated that the key to a successful team was a positive leader that "creates a shared vision, supports integrated working and having open and honest discussions with partners in facilitating collaborative practices" (West, 2016). Another article discussed the importance and the need of understanding between OT and ABA for interdisciplinary collaboration. A main point from this article about why this collaboration might not be happening is in regard to common myths about ABA. These myths include that the training and procedures are "limited to discrete trial training, which could be interpreted as repetitive trials, failure to consider generalization, and failure to consider client desires and interest" (Welch, 2016). The article continues to rebut all of these myths to show that ABA and OT could collaborate and work together quite well. ABA was described as a therapy that "focuses on building a behavioral repertoire to increase client choice by

increasing skills to draw from” (Welch, 2016). This definition fits into the definition of OT by the focus for OT regarding building a repertoire of daily living skills through increasing the client’s fine motor, sensory motor, and verbal motor skill sets. OT and ABA have a wider scope on therapy to achieve goals that not only make the client successful during the sessions, but also allows the client to be successful in multiple different cultural, social, environmental, and contextual settings. Throughout this research of the need for OT and ABA collaboration, it was found and understood that there would be a vast benefit to all the communities involved because collaboration “can bring improvement to OT practice and to ABA practice and, most importantly, can improve the outcomes for patients with ASD” (Welch, 2016). Interdisciplinary collaboration has been shown to benefit other disciplines, so the possibilities it could do for the PT/OT and ABA communities could truly be life changing for the clients.

Applied behavior analysis is a newer science, so therefore there is not as much research to back up the principles and techniques used. It is also more difficult to conduct group research studies in the field of ABA because of the specificity of each program and the specificity of the personal environments for the client. ABA is a data collecting heavy field that bases every treatment off of the data from that client. ABA therapists have to have a strong foundation of “basic principles of behavior and scientific method, be able to fully understand how to best arrange key elements of a protocol and know how to alter and individualize curriculum and treatment strategies” (Leaf, 2015). It is important to note that the practices and techniques of ABA are adaptable and centered around the client’s needs and desires. The study of ABA focuses on how each child behaves and learns, while taking into account the environment and reinforcers. ABAs are skilled in

being “able to adjust their teaching strategies based upon the ever-changing environment and child whom they are working with” (Leaf, 2015). As the famous behavior analyst, Lovaas, states “If a child cannot learn in the way we teach, then we must teach in the way the child can learn” (Leaf, 2015). The principles and techniques of ABA are client centered and focused with what will get the client to participate, respond, and grow. These techniques could be seamlessly implemented into PT/OT sessions with the proper training and collaboration. Therapy sessions could potentially run smoother with the help of ABA because of the assessments of motivation and reinforcement. When you have an item, like a toy or treat, that the client wants, it is easier to get them to do the motion or activity that you need them to complete to progress through therapy.

In a recent article, student outcomes of school-based physical therapy were measured by Goal Attainment Scaling that focused on the Goal Attainment Scaling (GAS) effectiveness and differences between age and gross motor ability. In all the school-based therapy setting, “individualized outcomes guide the delivery of educational services and reflect learning that is meaningful to student’s education and participation in the school environment” (Chiarello, 2016). The GAS was focused on four objectives that included posture/mobility, recreation/ fitness, academic, and self-care. It was determined that focusing on the data and the goal attainment allows the “PT to reflect on how students change and should provide guidance for establishing a monitoring progress on meaningful individualized outcomes” (Chiarello, 2016). This PT focus intertwines with the focus of ABA therapy being data driven and client centered. It was encouraged that PTs focus on the client’s needs for mobility and fitness, but also recommended that their expertise could be beneficial in supporting academic and functional outcomes.

The purpose of this project is to see how much interdisciplinary collaboration is happening between the PT/OT field and the ABA field. There are similarities between the fields that could potentially promote a great level of interdisciplinary collaboration that could produce positive patient outcomes. The main goal of these fields is centered around client success and growth towards independence. This project is also directed towards pointing out the potential and the need for more research of the collaboration possibilities. There will be survey research conducted to determine the amount of collaboration currently happening, the interest in potential collaboration, and overall knowledge of the fields within each field.

## METHODOLOGY

This research was conducted through surveys by using the Qualtrics application to format questions and collect data. The survey was created through collaboration between the primary researcher, Rachel Vaughn, and a faculty mentor from both the Physical Therapy Department, Dr. David Bringman, and the ABA Department, Dr. Denise Rios. The survey was sent out to licensed physical therapists, occupational therapists, and ABA therapists that worked with the pediatric population. The goal of this survey was to assess the amount of interdisciplinary collaboration that is currently occurring and the knowledge of the other discipline. As a student majoring in Rehabilitation Sciences and minoring in Applied Behavior Analysis, I felt as if the collaboration between the two disciplines would increase positive patient outcomes within the therapy setting. I participated in a practicum course for ABA, which gave me experience in the ABA therapy setting. I also completed shadowing hours within physical therapy that allowed me to understand how those therapy sessions also were conducted. I was intrigued to

assess the collaboration happening because with my experiences, I felt as if the collaboration would be necessary to promote the most independence for each client.

### *Instrument*

The survey was created and distributed through the Qualtrics application that is available through the student's MyGSU account. There were two surveys sent out for the purpose of this study. One survey was for Applied Behavior Analysis professionals and the other survey was for physical and occupational therapists. Both surveys were created by the primary researcher, Rachel Vaughn, and a faculty mentor from both the Physical Therapy Department, Dr. David Bringman, and the ABA Department, Dr. Denise Rios. This ensured that the questions were clear, concise, and had validity. The surveys can be found in the Appendix.

### *Participants*

In order to be a participant in this study, participants had to be a licensed PT, OT, or ABA therapist that currently and/or had previously worked within the pediatric population. The participants for the survey were found through a google search of PT, OT, and ABA therapists, connections with faculty members, and the use of snowball sampling. There was not a specific requirement of responses for each discipline. In total, there were 24 Physical/Occupational Therapists and 8 Applied Behavior Analysts that completed the survey.

### *Distribution*

The survey was distributed via email. The email had links to both the PT/OT and the ABA surveys with distinct labels to minimize confusion on which survey to complete. The email was formatted and worded the exact same for every potential participant. The



survey was also distributed via other participants forwarding the email to friends or colleagues that met the criteria. The email template can be found in the Appendix.

### *Data*

The Qualtrics application collects the data from each response, while also ensuring that survey responses remain anonymous. Through the application, each answer is recorded and added into the statistical analysis/distribution of each question. Once the survey is completed, Qualtrics takes the data and directly conducts statistical tests on the responses with different graphs and charts with the results.

## DATA ANALYSIS

The Qualtrics application analyzes the responses to each survey question, shows the distribution of responses, and gives percentile of each answer choice. All questions were multiple choice or select all that apply in nature. The main purpose of this study was to assess the thoughts, knowledge, and collaboration that is currently happening. This survey serves as a baseline for opportunities for future research on the collaboration between PT/OT and ABA. Each response can be viewed individually and as a group. For this analysis, it will be focused on the distribution of responses for the groups, with PT/OT and ABA.

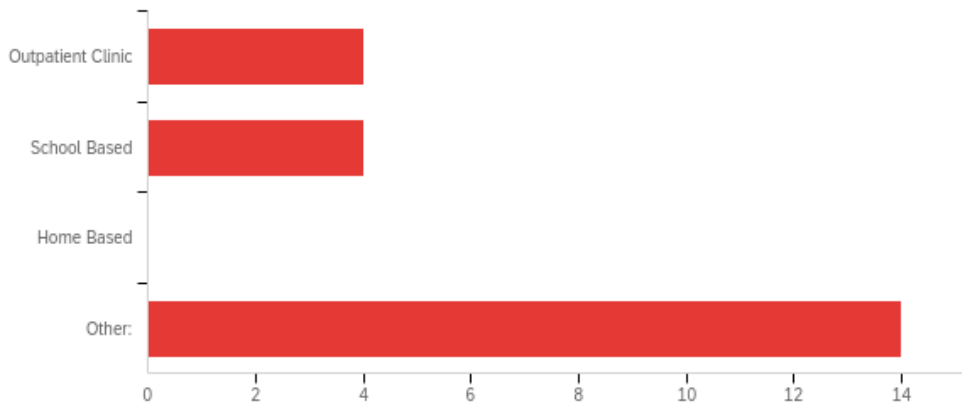
## RESULTS

For the PT/OT survey, there were 24 participants. Ten of the participants were physical therapists and twelve were occupational therapists. For PT/OT, there were only 22 participants that completed the entire survey, therefore the two incomplete responses were deleted. For question number two, the setting of where the PT/OT primarily treat

clients. Figure 1 shows the distribution of settings, with all the responses in the other category being the hospital and inpatient therapy. Question three states, “Do you know

Figure 1. Primary Setting of Client Treatment

what ABA (Applied Behavior Analysis) therapy is?”. All the PT/OT participants stated that they knew what ABA was. Figure 2 shows the distribution of how familiar the PT/OT were with ABA therapy. Most therapists, totalling 15 participants, rated their knowledge



of ABA within the “Minimal Knowledge” and the “Moderate Knowledge”. There were only three participants that stated to have “Extensive Knowledge” in ABA therapy, which is defined as having taken multiple courses/training or work closely in their setting.

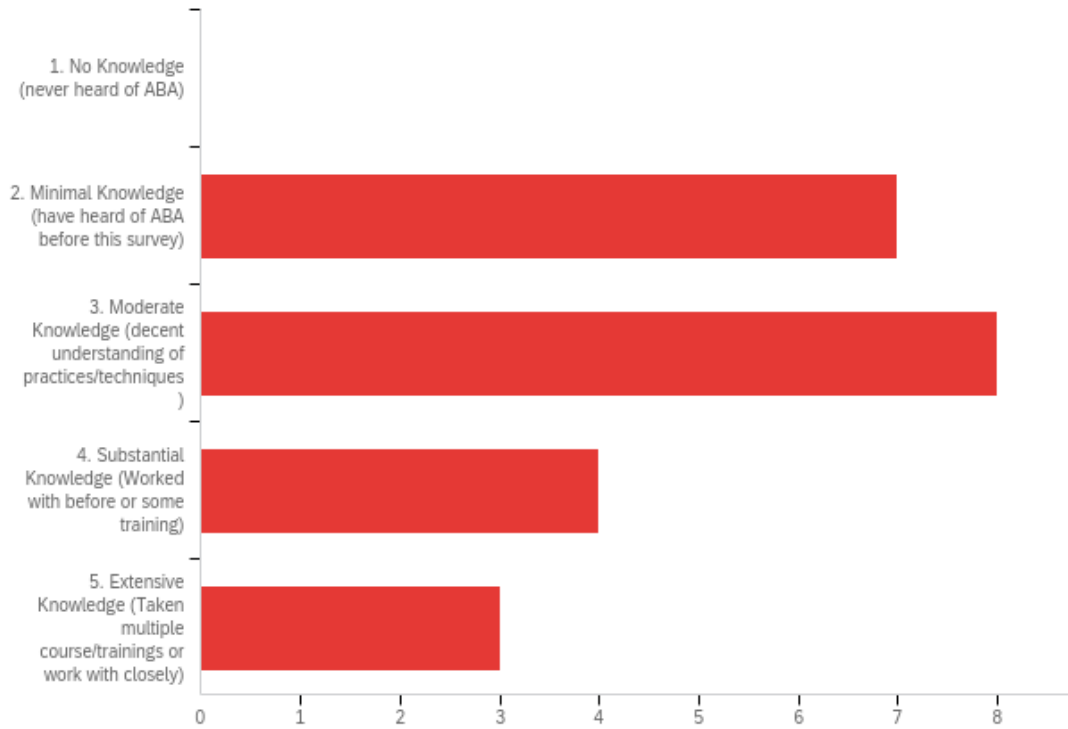


Figure 2. Familiarity of ABA Therapy

Another question stated, “If your clients receive ABA therapy, please estimate the percentage of your clients that receive ABA therapy.” The distribution of clients receiving ABA therapy is shown in Figure 3.

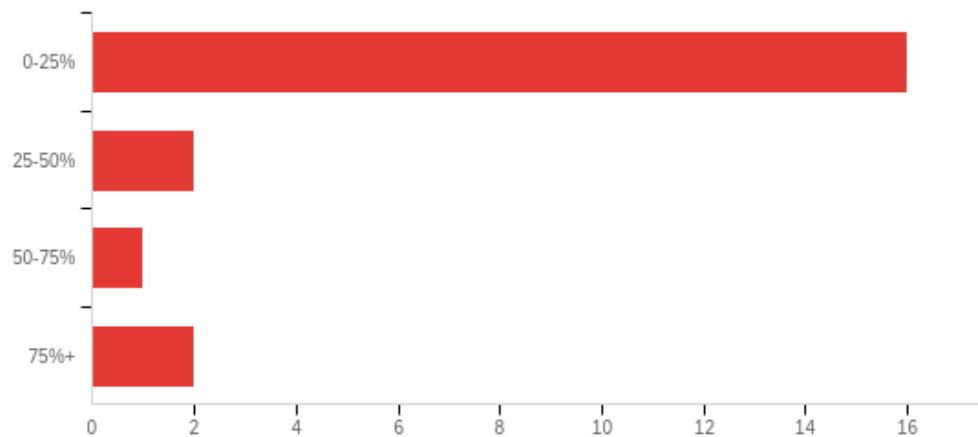


Figure 3. Distribution of Clients Receiving ABA

The PT/OT participants were asked to rate how closely they work with an ABA therapist to help researchers assess how much interdisciplinary collaboration is occurring. Figure 4

will show the distribution of the collaboration. Most therapists rated the collaboration as “Never” or “Slightly close”, which correlates to the occurrence of collaboration that was expected.

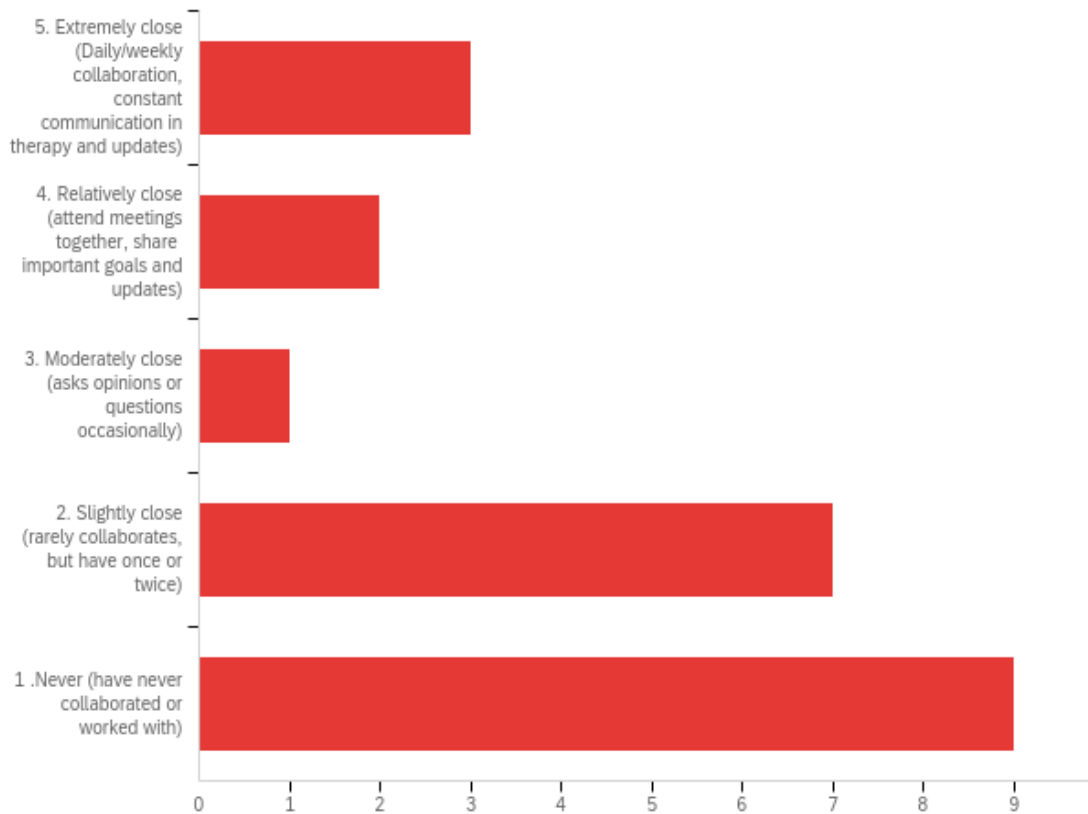


Figure 4. Distribution of Collaboration of PT/OT with ABA

The researchers were curious to see what ABA techniques were being used within PT/OT therapy sessions with or without ABA collaboration. Participants were given a list, with descriptions, and asked to select any techniques that are used within their sessions, as well as given an option to add additional techniques. Figure 5 and 6 shows the results of this question.

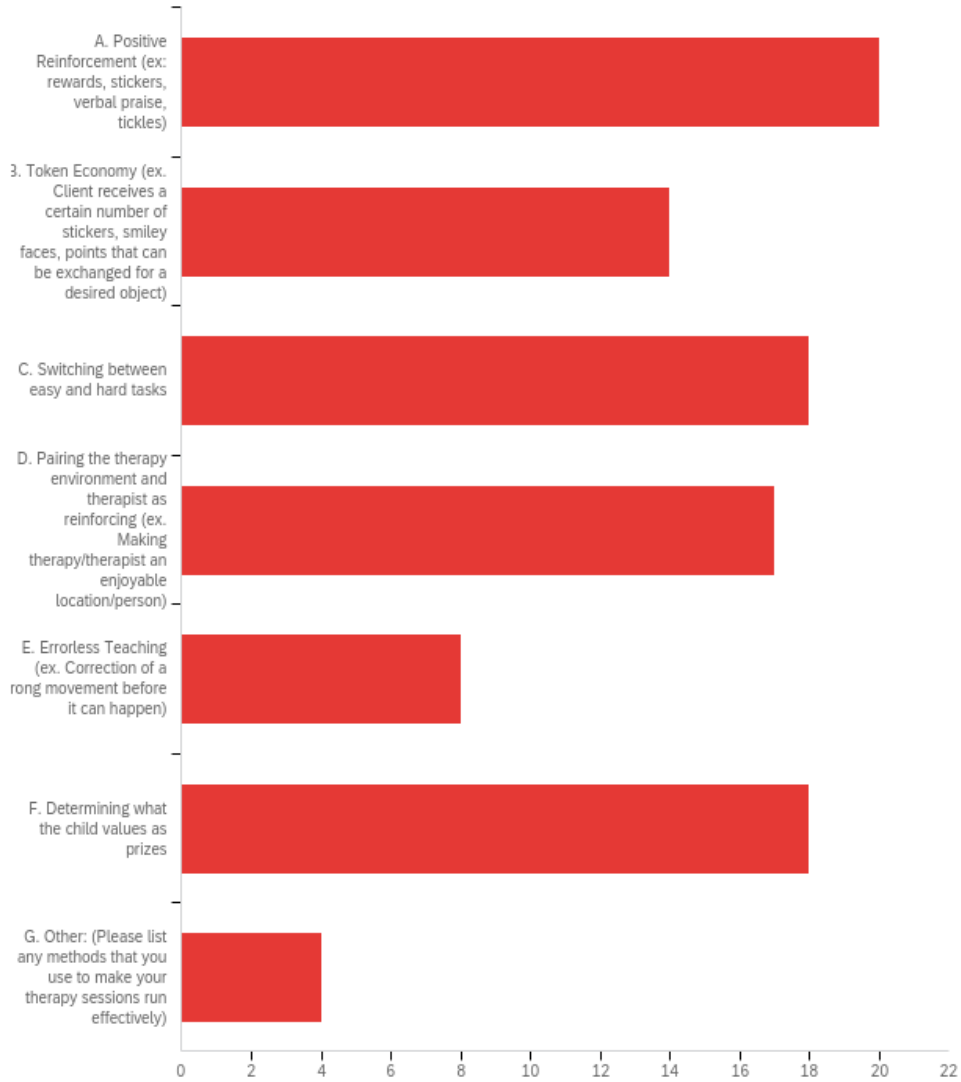


Figure 5. Distribution of tasks used within therapy sessions

#	Field	Choice Count
1	A. Positive Reinforcement (ex: rewards, stickers, verbal praise, tickles)	20.20% 20
2	B. Token Economy (ex. Client receives a certain number of stickers, smiley faces, points that can be exchanged for a desired object)	14.14% 14
3	C. Switching between easy and hard tasks	18.18% 18
4	D. Pairing the therapy environment and therapist as reinforcing (ex. Making therapy/therapist an enjoyable location/person)	17.17% 17
5	E. Errorless Teaching (ex. Correction of a wrong movement before it can happen)	8.08% 8
6	F. Determining what the child values as prizes	18.18% 18
7	G. Other: (Please list any methods that you use to make your therapy sessions run effectively)	4.04% 4
		99

Showing rows 1 - 8 of 8

Figure 6. Percentiles of each technique

In addition to these questions, PT/OTs responded at a 100% rate of yes when asked, “Do you think these techniques are crucial to your session’s success?”.

For the ABA therapists survey, there were 7 participants that completed the entire survey. Figure 7 shows the distribution of settings that the therapists worked in; the one other option was listed as within the hospital.

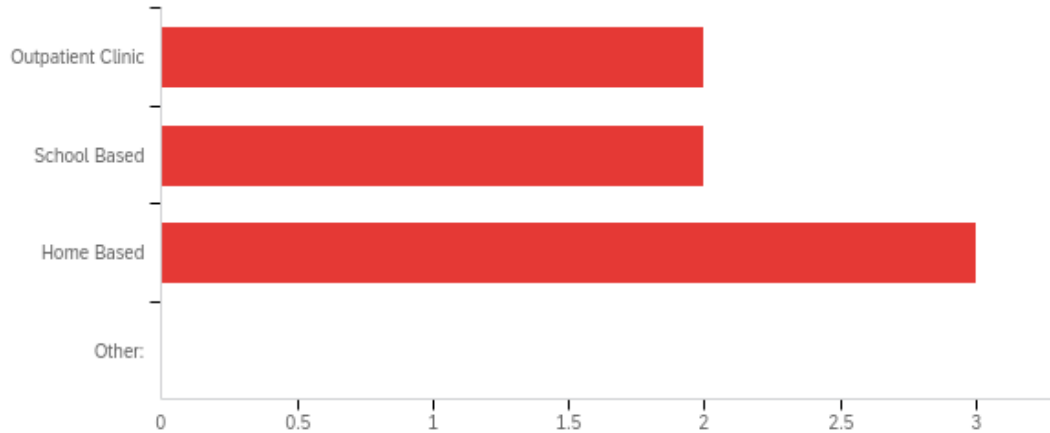


Figure 7. Distribution of Settings

ABA therapists were asked to rate their familiarity with PT/OT services, in the same manner that PT/OT were asked regarding ABA. The substantial knowledge option was selected by 57.14% of ABA therapists (4 therapists in total), which is shown in Figure 8.

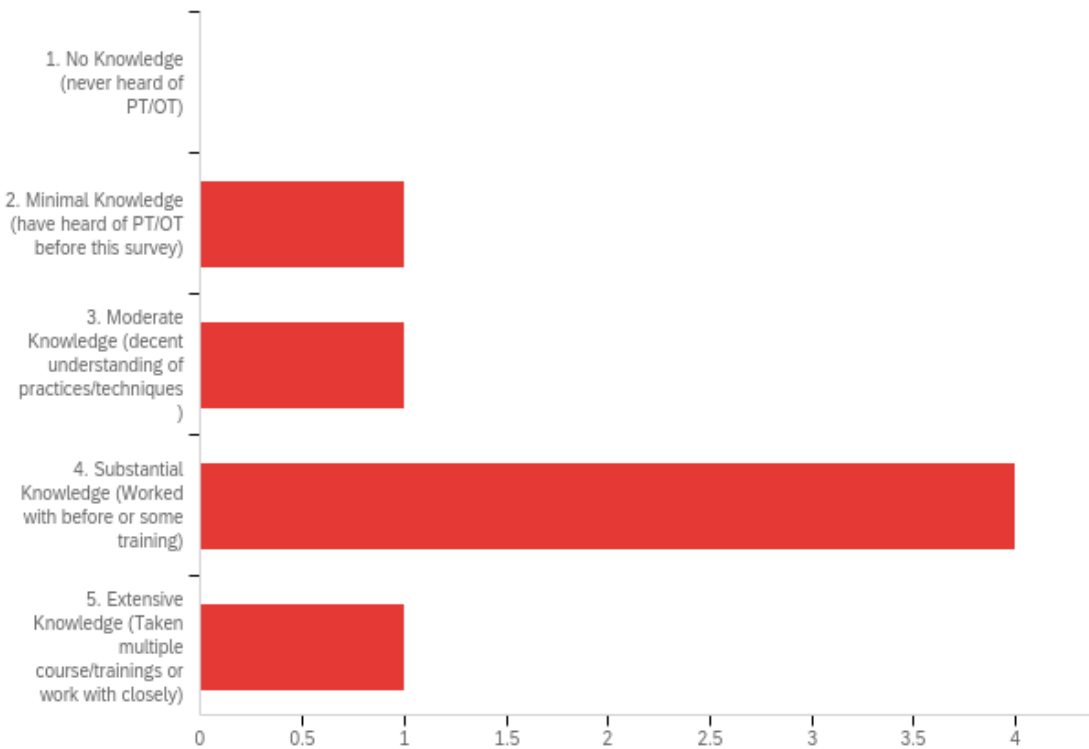


Figure 8. Familiarity with PT/OT

There was a 100% response rate of yes when asked if their patients receive either PT or OT. The percentages of clients that receive these therapies are shown in Figure 9.

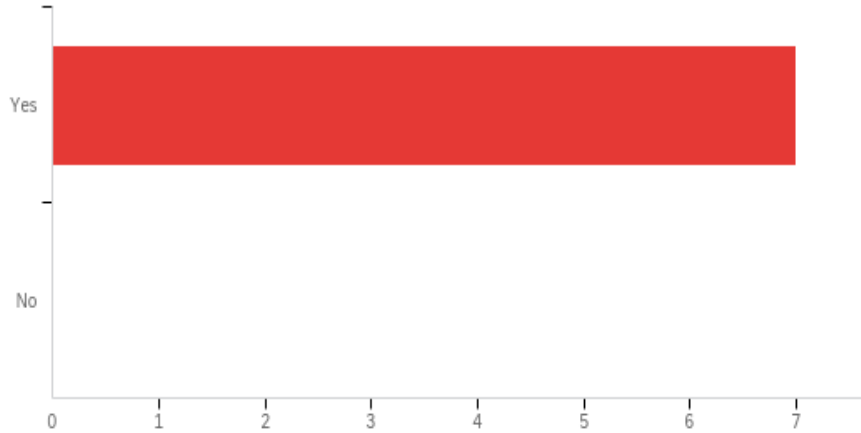


Figure 9. Percentage of clients that receive PT/OT

The ABA participants were asked to rate how closely they work with an PT/OT to help researchers assess how much interdisciplinary collaboration is occurring. Figure 10 will show the distribution of the collaboration.

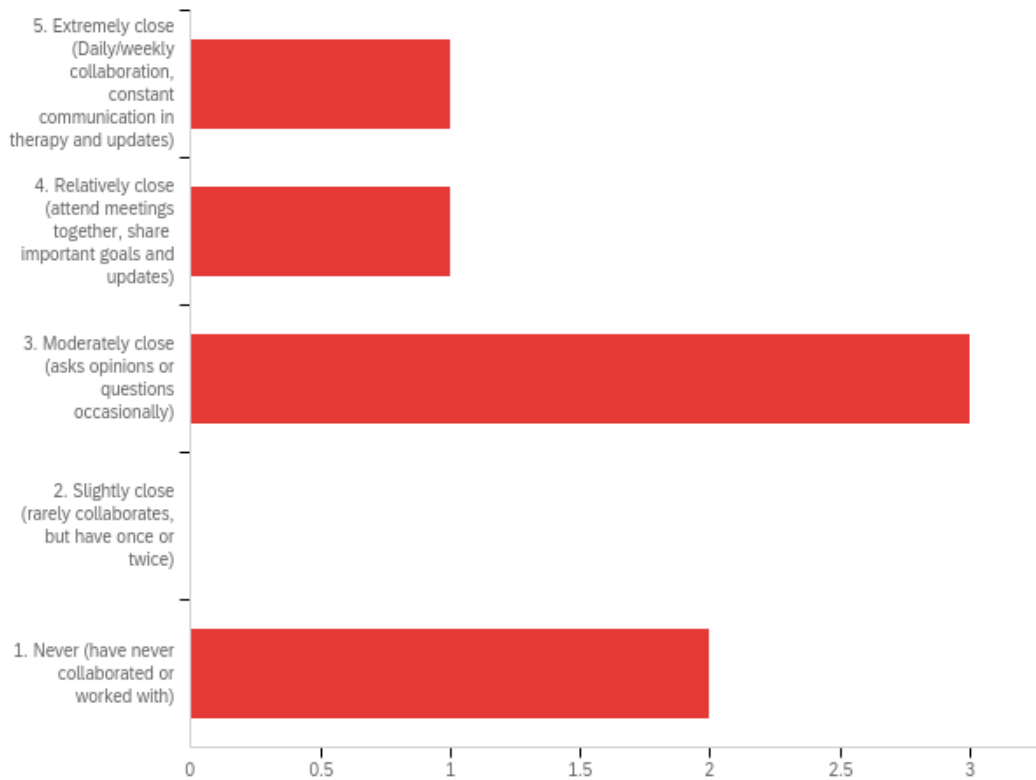


Figure 10. Distribution of Collaboration with PT/OT

Figure 11 shows the responses when ABA therapists were asked, “Do you believe that ABA therapy could benefit PT/OT therapy sessions? (Through the increasing

productivity, therapy flow, decrease of problem behaviors and other stimulatory blocks for therapy)”. Figure 12 shows the responses when ABA therapists were asked, “Do you believe that other therapies and services that work with children should implement or have a better understanding about ABA techniques?”

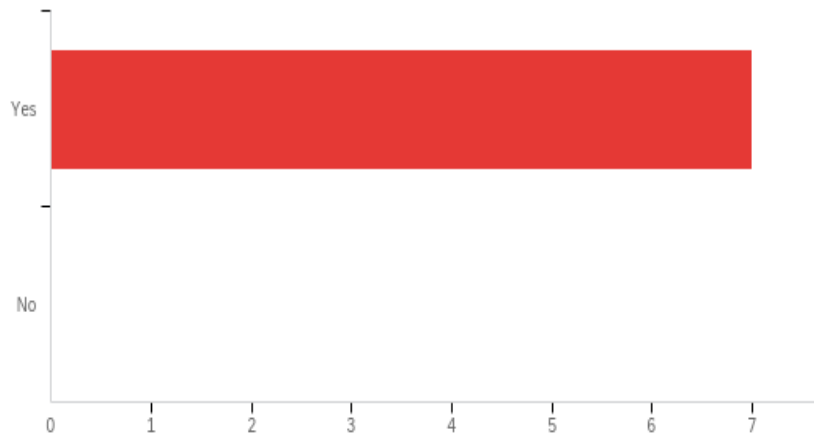


Figure 11. If PT/OT sessions could benefit from ABA

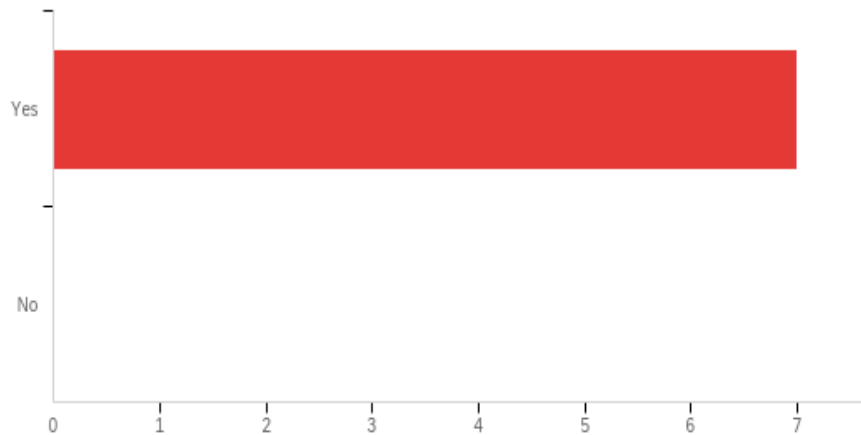


Figure 12. Should other therapy services have a better understanding of ABA

These graphs and responses were assessed and used to help the researcher determine how much, if any, interdisciplinary collaboration is occurring.

## DISCUSSION

The main goal of this research was to find a baseline for the amount of interdisciplinary collaboration that is occurring between PT/OT and ABA. The



limitations of this study include the small sample size and convenience method of gathering participants. This study should be used as a reason or motivation for further research to be conducted within the realm of interdisciplinary collaboration between PT/OT and ABA for positive patient outcomes. This research shows that within PT/OT sessions there are multiple ABA techniques that are being used and beneficial to the productivity of a session. This raises the question to be studied, if PT/OT are trained or provided courses in ABA techniques, then would the session run more smoothly and efficiently. Through the researcher's study, there seems to be a strong correlation between interdisciplinary collaboration and positive patient outcomes. The usefulness of ABA, when used correctly and tactfully, can provide motivation and reinforcement for appropriate behaviors within therapy sessions. It is possible that ABA technique training could be beneficial to ensure that PT/OT are implementing these techniques in the most effective way for each child.

## APPENDIX

### Survey Questions for PT/OT

#### Questions For All Participants:

I, \_\_\_\_\_, agree to participate in research investigating the effectiveness of interdisciplinary collaboration between PT/OT and ABA therapist on positive patient outcomes. This study is being conducted by Rachel Vaughn, David

Bringman, and Denice Rios. It has been explained to me that I will participate in an anonymous survey through the program Qualtrics. It has also been explained to me that this survey is completely voluntary. If during the survey, you wish to withdraw consent then you are able to click no for the consent of completion of the survey.

The following points have been explained to me:

- 1) The reason of the research is to take a baseline to determine how much interdisciplinary collaboration is happening between PT/OT and ABA to see if there seems to be a professional opinion on the correlation between the collaboration and the patient outcomes.
- 2) I will not receive any benefits from this study.
- 3) The procedure includes a single survey that will last approximately 10-12 minutes.
- 4) There are no expected discomforts or stresses that may be faced in this survey.
- 5) No risks are foreseen.
- 6) The results of this participation will be confidential, and will not be release in an individually identifiable form without my prior consent, unless required by law.
- 7) The investigator will answer any further questions about the research, either now or during the course of the project.

Check “Agree” or “Disagree” to provide consent to complete this survey. If you choose, “Disagree”, please select and exit the survey.

\_\_\_\_ Agree

\_\_\_\_ Disagree

Questions for PT/OT:

1. Are you a licensed PT or OT?
  - A. PT
  - B. OT
2. In which setting do you primarily treat clients?
  - A. Outpatient Clinic
  - B. School Based
  - C. Home Based
  - D. Other: \_\_\_\_\_
3. Do you know what ABA (Applied Behavior Analysis) therapy is?
  - A. Yes
  - B. No

IF YOU SAY YES TO QUESTION 3:

4. Rate how familiar you are with ABA therapy.

		3. Moderate Knowledge (decent understanding of practices/techniques)	4. Substantial Knowledge (Worked with before or some training)	5. Extensive Knowledge (Taken multiple course/trainings or work with closely)
1. No Knowledge (never heard of ABA)	2. Minimal Knowledge (have heard of ABA before this survey)			

5. Do any of your clients receive ABA therapy?

A. Yes

B. No

6. If your clients receive ABA therapy, please estimate the number of clients that receive ABA therapy.

A. 0-25%

B. 25-50%

C. 50-75%

D. 75%+

7. Rate on a scale of 1-5 how closely you work with a BCBA (Board-Certified Behavior Analyst), Behavior Technician, or ABA Therapist?

				5. Extremely close (Daily/weekly collaboration, constant communication in therapy and updates)
1. Never (have never collaborated or worked with)	2. Slightly close (rarely collaborates, but have once or twice)	3. Moderately close (asks opinions or questions occasionally)	4. Relatively close (attend meetings together, share important goals and updates)	

8. Do you use any of these techniques in your therapy sessions? (Please refer to the descriptions even if you use different terminology for the techniques listed)

Select all that apply:

A. Positive Reinforcement (ex: rewards, stickers, verbal praise, tickles)

B. Token Economy (ex. Client receives a certain number of stickers, smiley faces, points that can be exchanged for a desired object)

C. Switching between easy and hard tasks

D. Pairing the therapy environment and therapist as reinforcing (ex. Making therapy/therapist an enjoyable location/person)

E. Errorless Teaching (ex. Correction of a wrong movement before it can happen)

F. Determining what the child values as prizes

G. Other: (Please list any methods that you use to make your therapy sessions run effectively)

9. Do you believe that the techniques you use above are crucial to getting the most out of therapy time with the child?

A. Yes

B. No

10. If you have any comments on the collaboration and use of these techniques and ABA, then please leave them here.

#### IF YOU ANSWER NO TO QUESTION 3:

##### Explanation of ABA:

Applied Behavior Analysis (ABA) therapy is the scientific approach to understanding why a behavior is occurring. The techniques focus on how and why behaviors occur, how to change/adapt behaviors, and the understanding of how learning occurs for each client.

The overall goal of ABA therapy is to establish, teach, and enhance socially and personally important behaviors. Therapists evaluate behaviors and develop a treatment plan to improve communication, compliance, life skills, and other crucial skills for independent living.

5. Do you use any of these techniques in your therapy sessions? (Please refer to the descriptions even if you use different terminology for the techniques listed)

Select all that apply:

a. Positive Reinforcement (ex: rewards, stickers, verbal praise, tickles)

b. Token Economy (ex. Client receives a certain number of stickers, smiley faces, points that can be exchanged for a desired object)

c. Switching between easy and hard tasks

d. Pairing the therapy environment and therapist as reinforcing (ex. Making therapy/therapist an enjoyable location/person)

e. Errorless Teaching (ex. Correction of a wrong movement before it can happen)

f. Determining what the child values as prizes

g. Other: (Please list any methods that you use to make your therapy sessions run effectively)

6. Do you think that any of the techniques listed above could be beneficial to the success of your therapy sessions? (If currently being used or not being used)

A. Yes

B. No

7. If you have any comments on the collaboration and use of these techniques and ABA, then please leave them here.

#### Survey Questions for BCBAs, ABA Professionals

##### Questions for BCBAs:

1. In which setting do you primarily treat clients?

A. Outpatient Clinic

B. School Based

C. Home Based

D. Other: \_\_\_\_\_

2. Rate how familiar you are with Physical/Occupational therapy.

		3. Moderate	4. Substantial	5. Extensive
	2. Minimal	Knowledge (decent	Knowledge	Knowledge
1. No Knowledge	Knowledge (have	understanding of	(Worked with	(Taken multiple
(never heard of	heard of PT/OT	practices/technique	before or some	course/trainings or
PT/OT)	before this survey)	s)	training)	work with closely)

3. Do any of your clients receive physical therapy?

- A. Yes
- B. No

4. If your clients receive physical and/or occupational therapy, please estimate the percentage of clients that receive therapy.

- A. 0-25%
- B. 25-50%
- C. 50-75%
- D. 75%+

5. Rate on a scale of 1-5 how closely you work with a Physical Therapist/Occupational Therapist.

				5. Extremely close
	2. Slightly close	3. Moderately	4. Relatively close	(Daily/weekly
	(rarely	close (asks	(attend meetings	collaboration,
1. Never (have	collaborates, but	opinions or	together, share	constant
never collaborated	have once or	questions	important goals	communication in
or worked with)	twice)	occasionally)	and updates)	therapy and
				updates)

6. Do you believe that ABA therapy could benefit PT/OT therapy sessions? (Through the increasing productivity, therapy flow, decrease of problem behaviors and other stimulatory blocks for therapy)

- A. Yes
- B. No

7. Do you believe that other therapies and services that work with children should implement or have a better understanding about ABA techniques?

- A. Yes
- B. No

8. If you have any comments on the collaboration and use of these techniques and ABA with PT/OT, then please leave them here.

Email Template for Survey Distribution

**Hello,**

**My name is Rachel Vaughn. I am an undergraduate student at Georgia Southern University Armstrong campus. I am sending out a survey to determine the amount of interdisciplinary collaboration that occurs between Physical therapy/Occupational therapy and Applied Behavior Analysis. With my experience, I have noticed that collaboration between these areas could possibly promote positive patient outcomes. The two areas both serve the goal of promoting independence for their patients.**

**If you can participate in our study, then please complete this survey attached. There will be informed consent at the beginning of the survey.**

**The one-time survey will take 7-10 minutes.**

**To participate, you must be a Pediatric Physical Therapist, Pediatric Occupational Therapist, or Applied Behavior Therapist.**

**If you have any questions, please feel free to respond to this email.**

**PLEASE feel free to share this link with any other professionals in the field. I need as many responses as possible. Also, make sure to select the appropriate survey.**

**ABA Survey:**

[https://georgiasouthern.co1.qualtrics.com/jfe/form/SV\\_6ETJVr0OFrXpxvU](https://georgiasouthern.co1.qualtrics.com/jfe/form/SV_6ETJVr0OFrXpxvU)

**PT/OT Survey:**

[https://georgiasouthern.co1.qualtrics.com/jfe/form/SV\\_bIo4yiB9u86TmgC](https://georgiasouthern.co1.qualtrics.com/jfe/form/SV_bIo4yiB9u86TmgC)

**Thank you so much,  
Rachel Vaughn  
Georgia Southern University  
Undergraduate Student-  
Rehabilitation Sciences**