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# The Evaluation of Tablets to Increase Compliance and Decrease Problem Behaviors in Children Diagnosed with Autism Spectrum Disorder

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The Evaluation of Tablets to Increase Compliance and Decrease Problem Behaviors in Children  
Diagnosed with Autism Spectrum Disorder

by

Hongchau T. Vo

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Arts  
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Department of Child and Family Studies  
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## **ABSTRACT**

The purpose of this study was to replicate the effects of the study by Neely et al. (2013) and also determine if the tablet served as a reinforcer for three participants with escape maintained behaviors. A multiple baseline with an alternating treatment design was utilized in the first phase in which academic work was completed on either traditional materials or the tablet. The following phases for each participant were dependent on the prior phase, with a final choice phase. All participants showed lower levels of problem behaviors and higher levels of compliance when tablets were introduced contingent upon completing work. For all participants, the tablet was chosen 100% of the time, and two participants had 100% accuracy and compliance while using the tablet.

## **CHAPTER ONE:**

### **INTRODUCTION**

In the American Psychiatric Association, the DSM-5 defines Autism Spectrum Disorder (ASD) as a neurodevelopmental disorder recognized by a lack of social and communicative interactions as well as abnormalities related to learning, attention, and sensory processing. According to the Centers for Disease and Control Prevention (2010), in 2000 the prevalence of children diagnosed with autism was one in 150. In 2010, the overall prevalence for children diagnosed with autism was one in 68. One in 42 boys and one in 189 girls is diagnosed (Baio, 2010) with ASD every year. Due to increasing prevalence of children being diagnosed with ASD (Newschaffer, Falb, & Gurney, 2005), it is important to address the issue of children obtaining early intervention.

Research shows that over a 2-year time span, early intensive behavioral intervention is more beneficial than being placed in a non-intensive setting for increasing age-equivalent scores and daily skill acquisition (Magiati, Charman, & Howlin, 2007). However, it can be quite difficult at times for children diagnosed with ASD to increase skill acquisition, especially when they are faced with problem behaviors that may interfere with learning. These problem behaviors could be due to impairments in communication, social skills, and behavioral flexibility that are characteristics of the diagnoses of ASD (Cashin, 2009). Problem behaviors in the educational context could also result from a lack of choices (Romaniuk et al., 2002) resulting in the need for instructional adaptation (Moore, Anderson, & Kumar, 2005). Some interventions that have been

successful in reducing problem behaviors in the classroom include antecedent manipulations (Agosta, Graetz, Mastropieri, & Scruggs, 2004), which have included social stories and video modeling (Agosta et al., 2004, Buggey, 2005), and differential reinforcement (Braithwaite & Richdale, 2000). In the classroom, children often engage in escape maintained behaviors to delay or avoid completing academic tasks. Methods that have been used to reduce escape maintained behaviors within the school have included changes in instructional context, antecedent manipulations, self-management, differential reinforcement, and providing choice (Machalicek, O'Reilly, Beretvas, Sigafos, & Lancioni, 2007; Moore et al., 2005; Romaniuk et al., 2002). All of these methods have been successful in decreasing problem behavior and improving engagement in educational activities.

Although these methods have been established and implemented for quite some time, incorporating new technology might improve results and require less effort from implementers. Technology has become so prevalent in our society that not only is it more accessible to people, but there is an increase in usage as well. (CourseSmart Research Reveals College Students Love Their Digital Devices Educated Nation 2011, Survey on Students and Tablets 2011). Statistics from a survey show that at least 78% of teens have cell phones and as of 2006, 95% of teens had access to the Internet (Teens and Technology, 2013). Because society uses technology so much, behavior analysts should attempt to incorporate the technological advancements into their interventions. One device in particular, the tablet, is long overdue for attention. The tablet has only been around for a short time, yet its popularity has grown exponentially. There are many different types of tablets out there, but one in particular has become very popular. That is the iPad.

To date, interventions delivered via iPads have been evaluated with students with ASD for academic skills and communication (Flores et al., 2012; Ganz, Boles, Goodwyn, & Flores, 2014; Jowett, Moore, & Anderson, 2012; Kagohara, Van Der Meer, et al., 2012; Kagohara, Sigafos, Achmadi, O'Reily, & Lancioni, 2012; Murdock, Ganz, & Crittendon, 2013; Sigafos et al., 2013). For academic skill acquisition (Kagohara et al., 2012) researchers sought to teach two students with autism to use spell check with instructional video modeling presented on an iPad. The trainer had the participants watch an iPad, then type a word and check if it was correct. Results showed that video modeling on the iPad was not only effective in having the participants use spell check correctly, but also led to an immediate increase in the number of correctly performed steps. In a study by Ganz et al. (2014), a visual script was created with the iPad that resulted in an increase in noun and verb usage. Spontaneous language also resulted as a response to visual stories played from the iPad (Kagohara et al., 2012; Murdock et al., 2013). New skills were also acquired through treatment packages available for the iPad. These, along with a few other approaches, have allowed the introduction of the iPad to aid in improving skill acquisition with children with ASD (Jowett et al., 2012).

Research has also focused on increasing communication with speech generating devices downloaded to the iPad (Flores et al., 2012; Kagohara et al., 2012; Sigafos et al., 2013). A systematic instructional package, along with a speech-generating device, was shown to enable participants to correctly answer and name photos that were relevant to New Zealand. The pictures were broken into two categories: geography and community (Kagohara et al., 2012). Also, using the iPad as a speech generating device has been effective in encouraging children diagnosed with ASD to make more requests (Sigafos et al., 2013). Flores et al. (2012) conducted a study to determine whether a picture-based system or an iPad was the preferred

method of communication for children with ASD. The picture-based system used color picture cards created by the teacher. When the child communicated, he or she would take the picture card and place it on the Velcro strip located on their desk. The iPad, on the other hand, used a software program called “Pick a Word.” Pictures of items, as well as an “I want” symbol, were displayed on the iPad. The child then touched the “I want” button followed by an image of what he or she wanted. The results of the research varied as far as identifying the preferred method for communication because two participants communicated more with the iPad while the other two did not demonstrate more communication using it compared to using pictures. However, many of the students did find the iPad more appealing than the picture card system based on the teacher’s reports.

Because studies specific to communication have shown positive results, perhaps applying the iPad to other dependent variables may prove to be beneficial as well. For instance, the iPad could be used to decrease problem behaviors in academic settings. There has only been one known study to date that has evaluated the use of iPads to decrease problem behaviors. Neely, Rispoli, Camargo, Davism, and Boles (2013), conducted a study with two children diagnosed with ASD. Both of the children were engaging in aggression to escape academic tasks. Two conditions were utilized to determine which would have a better effect, traditional materials or demands placed on the iPad. Traditional materials included paper and pencil while the iPad included the same work as the traditional materials. The demands of the iPad were comparable to traditional material demands in order to maintain the equivalence of the two. The traditional materials had a higher percentage of intervals with problem behavior while the iPad had a remarkably lower percentage of intervals with problem behavior. Although the study had positive results, the explanation for the results is not clear. First, based on the learning history,

the use of traditional materials may have been an aversive task, thereby possibly explaining higher rates of problem behaviors during these sessions. On the other hand, if the child had previous noncontingent access to an iPad outside of the study, then there was a chance that the iPad was a highly preferred tangible item. A child's access to the iPad could be associated with reinforcing activities such as playing games or watching videos. Given that Neely et al. (2013) was the only study found that evaluated the iPad for decreasing problem behavior, more research is needed. Therefore the purpose of this study was to replicate the study by Neely et al. (2013) and to extend the literature by determining if the materials presented on the tablet were more reinforcing than traditional materials, even though the academic work completed was identical.

## **CHAPTER TWO:**

### **METHOD**

#### **Participants and Setting**

Three male students diagnosed with Autism Spectrum Disorder participated in the study. Teachers recommended these students due to their escape maintained behaviors when academic demands were placed on them. Two of the boys, Jon and Ben, attended a small, non profit school for elementary to junior high children on the spectrum and or other learning disabilities. Sessions took place twice a week for 30 minutes. They were first conducted in school but due to summer vacation, the remainder of the sessions took place in the home setting. The third participant, Justin, also attended a non profit school serving children on the spectrum and or other disabilities. Sessions took place within the school for Justin four days a week for 30 minutes.

Ben was 11 years old. He was at academic level for his age and was capable of communicating his wants and needs in complete sentences with vocabulary appropriate to his age level. His teacher recommended him for this study due to his escape maintained problem behaviors when asked to engage in academic work and his behaviors being harmful to himself. The academic work that had the most escape behaviors was reading. Thus academic demands for the study required Ben to read three sentences at a time from a passage on traditional materials or the same three sentences on the tablet.

Jon was also 11 years old. He was at academic level for his age and capable of communicating his wants and needs in complete sentences vocabulary appropriate to his age level. His teacher recommended him for this study due to his escape maintained problem

behaviors when asked to engage in academic work. Since his behaviors were disruptive to his peers, he was sent out of the class on a regular basis. The academic work that had the most escape behaviors was mathematics word problems. Thus academic demands for the study required him to complete one word problem at a time.

Justin was 12 years old. He was vocal but non-verbal and was below academic level for his age. His main form of communication was signing, but he did have a tablet to occasionally communicate with. He currently required hand over hand for all academic materials. He was recommended for this study due to his escape maintained problem behaviors that were occurring on a daily basis. The academic work that had the most escape behaviors was his bell work, which consisted of laminated sheets of paper that required him tracing different letters, his name, and numbers.

### **Target Behavior and Data Collection**

All sessions were five minutes in length and were recorded for data collection purposes. Both direct observations and interviews were conducted in the school and with the teachers and parents to determine the participant's problem behaviors. Ben's problem behaviors were skin picking and protesting. Skin picking was defined as the onset for a minimum of one to two seconds of two fingers coming together and coming into contact with the finger tips of the other hand and pulling away at the skin or the finger tips of one hand coming into contact with the mouth and the teeth chewing at the fingertips. Protesting was defined as any vocalization or gesture objecting to the demand (e.g. No, I don't want to, pushing papers away). John's problem behaviors were tantruming or protesting. Tantruming was defined as flopping to the floor, screaming, or the onset of crying. Protesting was defined as any vocalization or gesture objecting to the demand (e.g. No, I don't want to, pushing paper away). Justin's problem

behaviors were protesting and tantruming. Protesting was defined as gestures objecting to the demand (e.g. throwing materials, folding arms together and turning away, and walking or crawling away from the area). Tantruming was defined as flopping to the floor or the onset of crying.

Frequency within 10s interval data were collected on all participants problem behaviors. Data was also collected on percentage of compliance and accuracy for Ben and Jon, and compliance only for Justin. Accuracy was not collected for Justin because accuracy with academic work required hand over hand since he did not yet have the skill to complete the task accurately independently. Compliance was defined as any attempt to complete the demand on the verbal or gestural prompt. Compliance was not scored if physical guidance was needed to complete demands. A percentage of compliance was obtained by dividing the number of demands scored with compliance by the total number of demands. Accuracy was defined as answering the demand correctly on the verbal or gestural prompt. A percentage of accuracy was obtained by dividing the number of demands scored with accuracy by the total number of demands.

### **Interobserver Agreement**

Two additional therapists that were trained to record data on the target behaviors collected data during the functional analysis and treatment phases for 50% of all sessions for each participant. Interobserver agreement (IOA) for compliance and accuracy were calculated by comparing what was recorded by the first and second observer. For each demand, the first observer and the second observer marked whether the child complied with the demand and was accurate on the demand. A plus was recorded when the child complied with the demand and a minus was recorded when the child did not comply with the demand. IOA was calculated on

exact agreement and summed up and averaged across all demands. IOA scores for Ben for compliance and accuracy were 99%. IOA for Jon for compliance was 100% and accuracy was 96%. IOA for Justin's compliance was 100%. The IOA for frequency of problem behaviors was calculated by dividing the smaller number of responses in each interval by the larger number of responses in the interval and multiplying by 100, then averaging across all intervals. IOA for problem behaviors for Ben was 95%. IOA for Jon for problem behaviors was 98%. IOA for Justin's problem behaviors was 98%.

### **Experimental Design**

A multiple baseline across three participants was utilized. In addition an alternating treatments design comparing traditional materials and the tablet was utilized for the first phase of the study for all three participants. Additional phases were added based on the results of the alternating treatment design and included contingent tablet and choice phases.

### **Preference Assessment**

A multiple stimulus without replacement (MSWO) preference assessment (Carr, Nicholson, & Higbee, 2000) was conducted for all three participants. Initial formal interviews took place with both parents and teachers to generate a list of plausible preferred low technology items as well as preferred high technology items, one of which being the tablet. The preference assessment consisted of eight items, four high technology items and four low technology items. A total of three MSWO's were conducted. Eight items were placed directly in front of the participant with the verbal and or gestural directions to choose one. If the participant attempted to choose more than one item, they would be prompted to only choose one item and try again. When an item was selected, the participant had 30 s with the item before it was removed. When the 30 s were up, the item was then removed from the participant. The remaining items were

placed in a randomized order, and were presented once again. The entire process was repeated until no items were left.

### **Functional Analysis**

A modified functional analysis similar to the one conducted in the study by Iwata, Dorsey, Slifer, Bauman, and Richman (1994) was conducted for all three participants. The functional analysis was conducted in an empty area within the school for Ben and Jon, and in the classroom for Justin. Three conditions were conducted for each participant: play, tangible, and escape (Iwata & Dozier, 2008). Each condition lasted 5 min long. Before each condition, instructions were provided to the participants on what was going to happen, and what behaviors would result in a break. During the play condition, the participants had access to low to moderate preferred items during the entire session. The therapist provided a brief praise statement every 30 s. No demands were placed on the participants during this session. The therapist ignored (did not respond verbally or physically) all problem behaviors. During the tangible condition, the participants had access to the tablet for 2 min prior to the beginning of the session. The purpose of the tablet as the tangible in all escape sessions was to determine if the participant would engage in problem behaviors to gain access to it. Once the session began, the researcher removed the tablet from the participant and remained in close proximity. If the participants engaged in target behaviors, the researcher presented the tablet again for 30 s. For the escape condition, the researcher provided an initial verbal instruction “We’re going to start our work”, followed by a demand pertaining to the participant’s academic work. Least to most prompting was used following each demand given by the researcher. The researcher first prompted the student to do the task. If the student did not engage in the task, the researcher provided a gestural prompt along with restating the direction that was given initially. If at that point the participant still did not

complete the demand, the researcher physically guided the participant to complete the demand. Contingent upon problem behavior, the materials were removed from the table for 30 s and no demands were presented. After 30 s the therapist reintroduced the materials along with the demands once again.

## **Procedures**

Sessions were conducted in the same manner as the functional analysis escape condition. All sessions were 5 min long and video recorded. Across all phases, least to most prompting was used for all instructions. If the participant engaged in any problem behaviors, the demand was removed for 30 s, and then reintroduced. A brief praise statement was provided to the participant if the participant completed the demand on the verbal or gestural prompt.

### **Traditional Materials**

Traditional materials were identical to those used in the escape condition in the functional analysis. The materials consisted of pencil and paper. The therapist presented the verbal demand “time to work” and then the instructions that pertained to each participant’s academic work. For Ben, the traditional materials consisted of reading three sentences per academic demand on paper. For Jon the traditional materials consisted of completing one multiplication or division problem per demand on paper. Justin’s traditional materials consisted of a binder with work sheets where he had to trace one word with a dry erase marker per demand.

### **iPad**

This condition was identical to traditional materials except the participant used tablets to complete the demands. The apps used on the tablet closely resembled the traditional materials. For Ben, he read passages from different webpages. For Jon, an application called Math Word Problem: Multiplication and Division, was used for his academic work. For Justin, an application

called Word Work, was used for his academic work. Additionally the sound on the iPad was turned off to prevent any possibility of praise, instruction, or other noises being delivered via the tablet.

### **Contingent iPad**

This condition was identical to traditional materials except that for each academic demand the participants complied with on the traditional materials, they gained access to the tablet for 30 s. The participant was allowed to use the tablet to play games, watch shows, listen to music, etc.

### **Contingent iPad on Accuracy and Compliance**

This condition only occurred for Jon, since his compliance was high, however his accuracy was low. During this condition, for each academic demand Jon complied with and completed accurately on the verbal or gestural prompt, he gained access to the tablet for 30s (he was allowed to use the tablet to play games, watch shows, etc). If physical prompts were needed, Jon did not gain access to the tablet and the researcher continued delivering demands.

### **Participant Choice**

During this condition the participant had the opportunity to choose the materials they wanted to use to complete the academic demands (traditional or tablet). At the beginning of the session the researcher asked the participant if they would like to work using pencil and paper or using the tablet (the pencil and paper was displayed on one side of the desk and the tablet on the other side with the position of each rotated randomly for each session). Once the participant chose the material the session started. Consequences for problem behavior and the prompting procedure were identical to the escape condition in the functional analysis.

## **CHAPTER THREE:**

### **RESULTS**

Results from the MSWO are presented in Table 1. All participants had both high tech and low tech items in their top three items that were chosen. However, the iPad was chosen first for all three participants. Ben chose the iPad, Legos, and DS. Jons top three items were the iPad, puzzles, and coloring. Justin chose the iPad, Kinetic Sand, and DS. Figure 1 represents the results from the brief functional analysis. Ben engaged in a higher rate of problem behavior in both the escape and tangible conditions, but no problem behaviors occurred during the play condition. However, there was a much higher rate of problem behaviors during the escape condition overall. Jon had no problem behaviors for the initial sessions. However during the 19<sup>th</sup> session and onward Jon's problem behaviors increased during the escape condition and there was little to no problem behaviors during the play and tangible conditions. Justin engaged in problem behaviors during both the tangible and escape conditions, and did not engage in any problem behaviors during the play condition.

Figure 2 represents the frequency of problem behaviors across treatment phases for all participants. Jon had a high frequency of problem behaviors during the traditional materials and low rates during the tablet condition. For the other two participants, problem behaviors occurred across both the traditional materials and tablet conditions. Once the contingent tablet phase was implemented, problem behaviors dropped to near or at zero levels for all three participants. After reversing back to the traditional materials for Jon and Ben, problem behaviors remained

low. During the final phase, participant choice, Jon and Ben had no problem behaviors while completing work on the tablet. However, for Justin there was an increase in problems behaviors during the first two sessions, and then a decrease to near zero behaviors occurred when completing academic demands on the tablet.

Figure 3 represents the percentage of compliance across treatment phases for all participants. Jon had almost 100% compliance when he completed work on the tablet and on traditional materials during the first phase. Ben had opposite results and had near zero compliance when work was completed on either traditional materials or the tablet during the first phase. Justin had compliance for both traditional materials and tablet during initial sessions, but compliance was variable for the remainder of the sessions during the first phase. For all three participants, when the tablet was introduced contingent on completion of academic demands, there was an increase in compliance to almost 100%. During the reversal, effects were not replicated for either Jon or Ben. Also during the final phase of participant choice, there was high compliance for Jon and Ben. Compliance was variable during this phase for Justin, but still over 50%.

Figure 4 represents the percentage of accuracy across treatment phases for two participants, Jon and Ben. Accuracy was not collected for Justin because accuracy with academic work required hand over hand since he did not yet have the skill to complete the task accurately. For Jon, when work was completed on the tablet in the first phase, there was almost 100% accuracy compared to when work was completed on traditional materials with only 11% accuracy. The average accuracy that occurred during the contingent tablet phase was 7%. However, once the tablet was contingent on completing an academic demand accurately, there was an average increase in accuracy to 68%. When Ben was completing work on either

traditional materials or the tablet during the first phase, there was little to no accuracy. There was an average of 16% accuracy on the tablet and 17% on the traditional materials. Once contingent tablet for every demand was in place, there was almost 100% compliance. During the reversal for both participants, the effects were not replicated. In the final phase, both participants completed work on the tablet and had 100% accuracy when completing demands.

## **CHAPTER FOUR:**

### **DISCUSSION**

This study had two purposes. First, to replicate the Neely et al. (2013) study to determine if completing work on a tablet would result in decreases in problem behavior compared to completing work on traditional materials. The second purpose was to determine if the tablet might be more reinforcing to complete work on than traditional materials. Similar results to the Neely study were only replicated for one participant, Jon. During the traditional materials versus the tablet phase, there was a clear distinction in behaviors between the two materials. Like in the Neely et al. (2013) study, when work was completed using traditional materials there was a much higher frequency of problem behaviors than when work was completed using the tablet. There were almost no problem behaviors when work was completed on the tablet. For the other two participants, Ben and Justin, there was no clear distinction with either traditional materials or tablet conditions when the materials were alternated.

However, once the tablet was introduced and contingent on traditional materials for the first participant, Jon, there was little to no problem behavior. While there was still no clear distinction in problem behavior for the second participant, Ben, once tablet contingent on traditional materials was in place, there was also little to no problem behaviors for the remainder of the sessions. For the third participant, the same results occurred and once intervention was in place there were no problem behaviors.

Not only were there little to no problem behaviors, but also the percentage of compliance and accuracy was much higher once the tablet was introduced during intervention. During the final phase for the participants, all participants chose the tablet 100% of the time. For Jon and Ben, there was 100% accuracy and compliance while completing academic work on the tablet. While Justin did not have 100% compliance, he still had an average of 85% for compliance. Also when demands were completed on the tablet, twice as much work was completed. This suggests that the tablet might be more reinforcing than traditional materials.

A possible explanation as to why the tablets are more reinforcing could have been due to a history of reinforcement with the tablet. Results from figure one for all participants' showed that they engaged in problem behaviors during the brief functional analysis not only to escape academic demands but to also gain access to the tablet in the tangible condition. This suggests that there might be a positive history of reinforcement for all participants and completing work on the traditional materials may have been aversive. Also, problem behaviors occurred during traditional materials and once the tablet was in place for completion of academic work problem behaviors decreased. This further suggests that the tablet might have been reinforcing enough to reduce problem behaviors as well as increase compliance.

While this study shows the potential that tablets might be effective in decreasing problem behaviors and improving compliance for some individuals with ASD, more research needs to be done. First, future studies should broaden the age range and incorporate more functioning levels. In the Neely et al. (2013) study, there were only two participants, ages 3 and 7. Both participants were able to communicate, one verbally and the other through PECS. The participants in my study were between either 11 or 12 years old. By incorporating different ages and functioning levels, perhaps it may be possible to determine why there was no clear distinction. More research

also needs to be done with the tablet being contingent on academic work because once the tablet was in place for all participants, there was a decrease in behaviors for all participants. Like the Neely et al. (2013) study, future studies should attempt to control for the history of reinforcement of tablets. If it is not possible to control and isolate the reinforcement history for the tablet, future studies should attempt to make traditional materials more reinforcing or as reinforcing as the tablet and then compare the two. Future studies should look at instructions and praise being delivered via the tablet versus by a person to help determine if a person delivering praise is more or less preferred than praise delivered by the tablet. By doing so, it may be possible to pinpoint reasons as to why it is the tablet is more preferred.

## TABLES AND FIGURES

**Table 1**

*Results from MSWO for the top three items*

Item Number	Ben	Jon	Justin
1	iPad	iPad	iPad
2	Legos	Puzzle	Kinetic Sand
3	DS	Coloring	DS

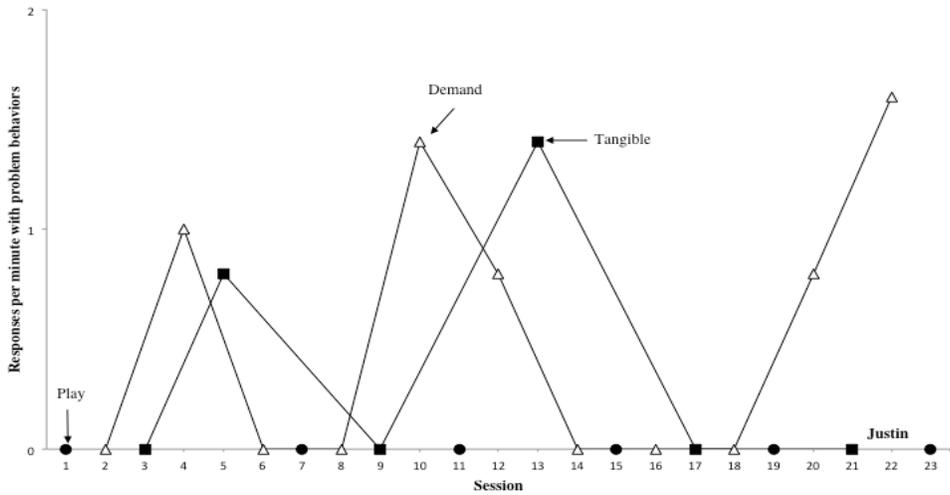
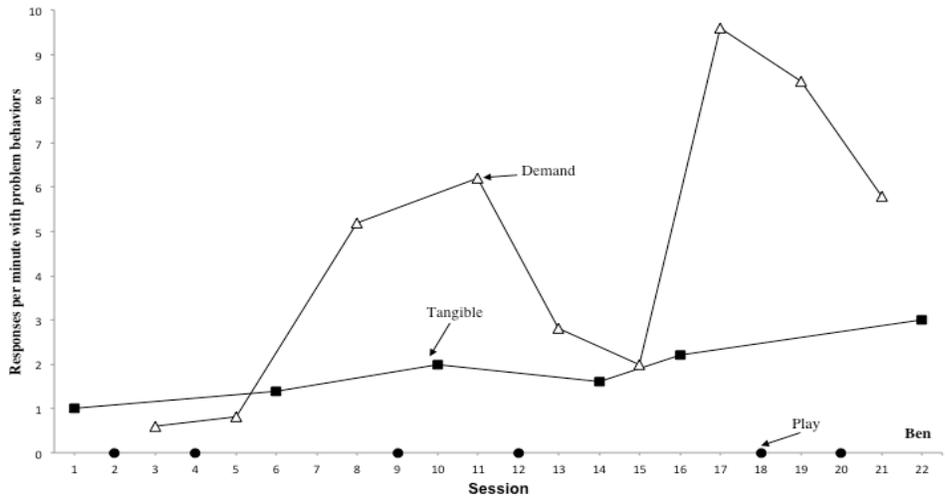
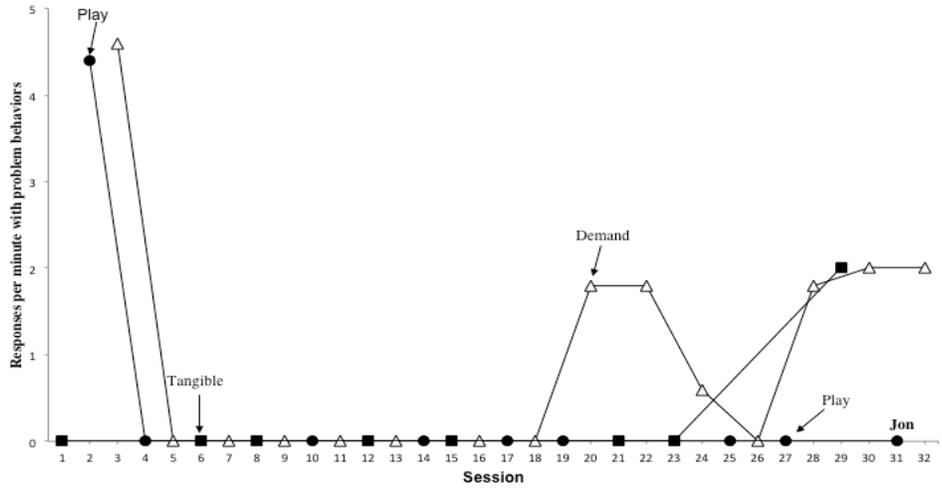


Figure 1. Responses per minute with problem behaviors during the brief functional analysis

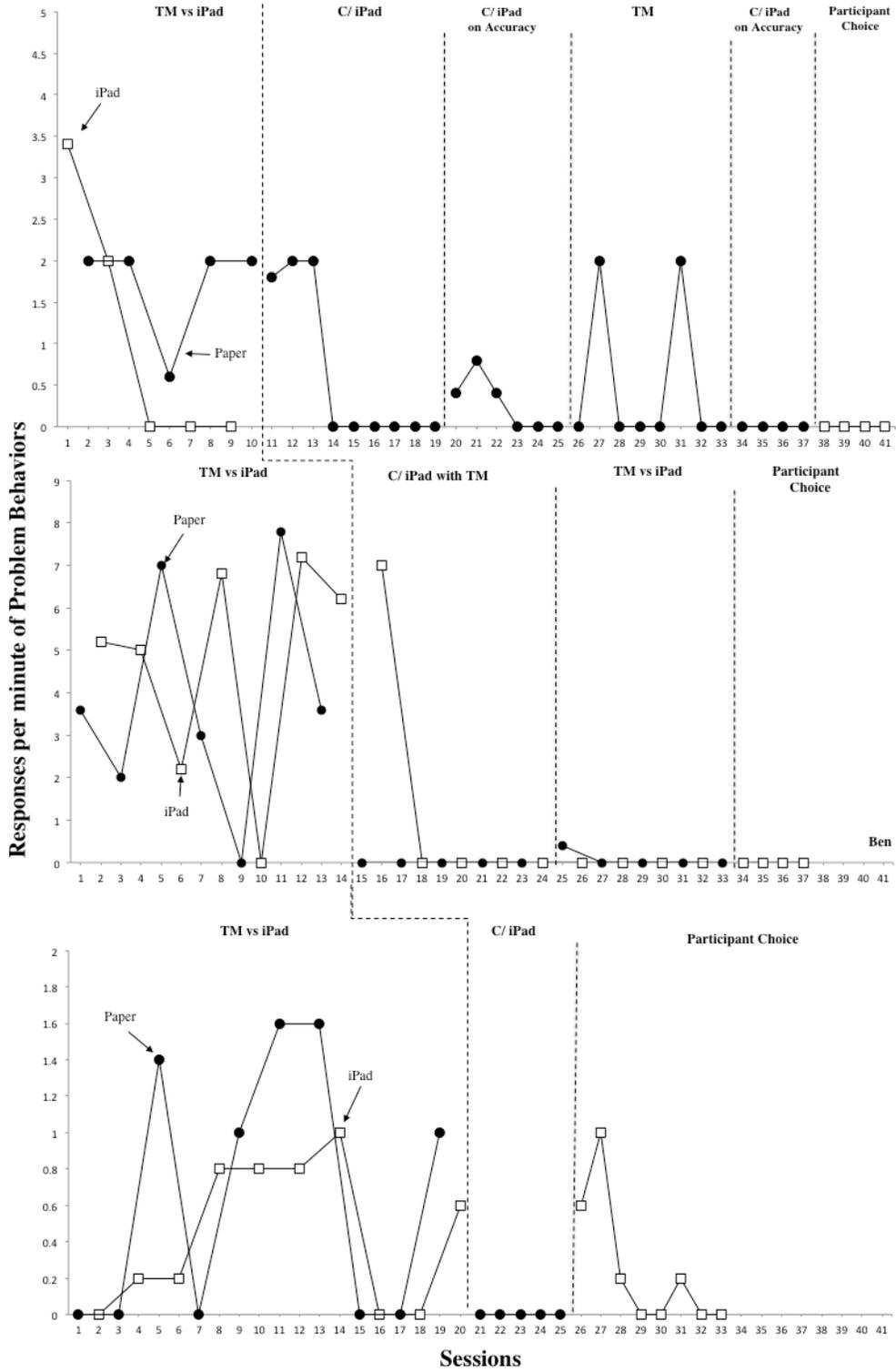


Figure 2. Responses per minute of problem behaviors across all phases for the three participants

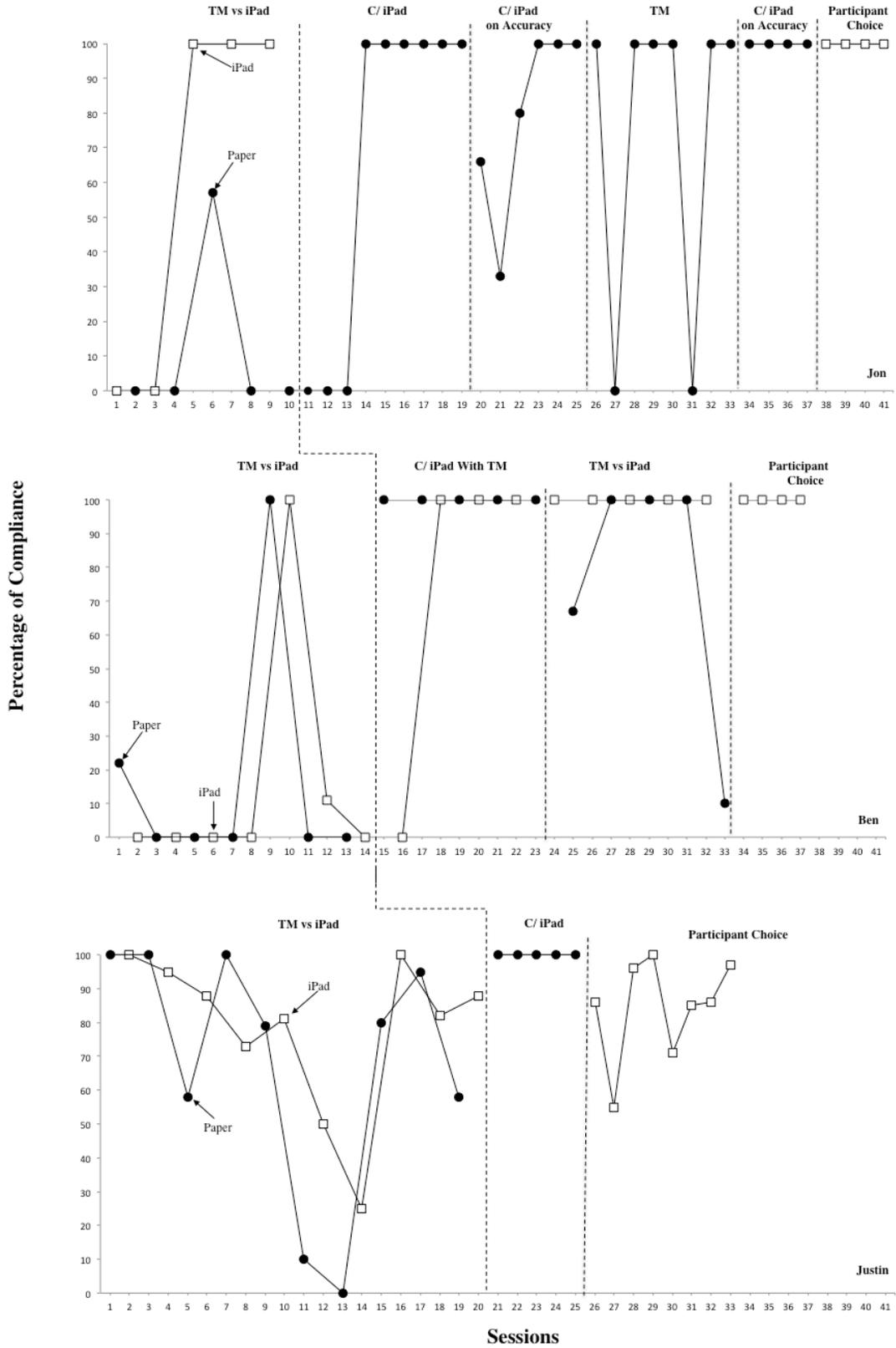


Figure 3. Percentage of compliance across all phases for the three participants

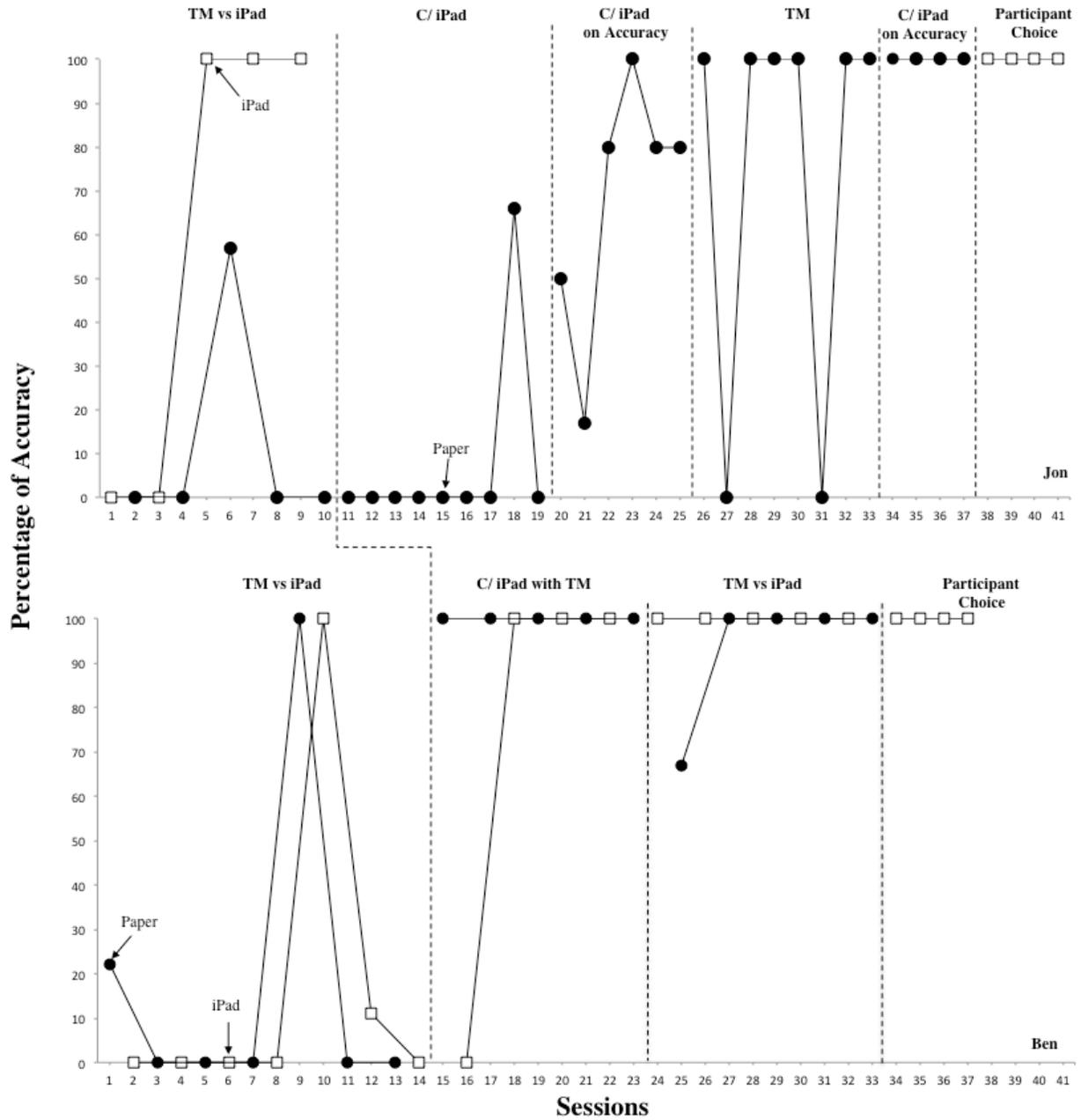


Figure 4: Percentage of accuracy across all phases for Jon and Ben

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## APPENDIX: IRB APPROVAL



RESEARCH INTEGRITY AND COMPLIANCE  
Institutional Review Boards, FWA No. 00001669  
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799  
(813) 974-5638 • FAX (813) 974-7091

2/11/2015

Hongchau Vo  
USF ABA-Applied Behavior Analysis  
13301 Bruce B Downs Blvd. MHC 2113A  
Tampa, FL 33612

RE: **Expedited Approval for Initial Review**

IRB#: Pro00020101

Title: The Evaluation of Tablets to Increase Compliance and Decrease Problem Behaviors in  
Children Diagnosed with Autism Spectrum Disorder

**Study Approval Period: 2/11/2015 to 2/11/2016**

Dear Hongchau Vo:

On 2/11/2015, the Institutional Review Board (IRB) reviewed and **APPROVED** the above application and all documents outlined below.

**Approved Item(s):**

**Protocol Document(s):**

[IRB protocol version 1.docx](#)

**Consent/Assent Document(s)\*:**

[parental consent.pdf](#)

\*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s).

**Research Involving Children as Subjects (45 CFR §46.404)**

Per CFR 45 Part 46, Subpart D, this research involving children was approved under the minimal risk category 45 CFR 46.404: Research not involving greater than minimal risk.

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kristen Salomon', with a horizontal line extending to the right.

Kristen Salomon, Ph.D., Vice Chairperson  
USF Institutional Review Board