

Examining the Effectiveness of Student Involvement
in the Functional Behavior Assessment and Intervention Process

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Abstract

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Social validity, in Applied Behavior Analysis (ABA) refers to the acceptance and importance that behavioral treatment has for the consumers of the work. Most often, social validity is assessed by examining the opinions and feelings of indirect consumers such as caregivers, teachers, or those implementing intervention services. Typically, the opinions of the direct recipient of ABA services (i.e. individuals with disabilities that have varying degrees of communication, academic, and cognitive skills) are not assessed or considered. Behavioral assessments and interventions that are conducted, designed, and implemented without assessing acceptability on the part of the direct recipient can create both practical and ethical concerns that can hinder the success and long-term effects of intervention services. This study included three

direct recipients in the assessment and selection of their own behavior interventions. Recipients were included in the descriptive assessment using the Student directed Functional Assessment Interview (SFAI; O'Neill et al., 2015). A video preference assessment was utilized to demonstrate the intervention options and allow the participants the opportunity to select their preferred procedure. The preferred interventions were then implemented and were successful at decreasing challenging behavior and increasing appropriate behavior for each of the three participants. Implications of these data for practice and future research are then discussed.

Keywords: social validity, direct recipient, student directed functional assessment, forced choice assessment, preference for intervention assessment, choice

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Dedication

I dedicate this project to all of the wonderful, intelligent, diverse, individuals that I have had the pleasure of working with. I will never stop fighting for your voices to be heard.

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Examining the Effectiveness of Student Involvement in the Functional Behavior Assessment and Intervention Process

Applied Behavior Analysis (ABA) is a science dedicated to solving problems of social significance (BACB, 2017; JABA, 2018). Wolf (1978) states that in order to achieve this objective, those practicing ABA must actively consider a number of factors. First, interventionists must consider the importance that chosen treatment goals have to the consumers of the work and how well those goals align with the consumers. Second, they should seek information regarding the acceptability of the procedures used in treatment, as determined by the consumers themselves. Finally, interventionists must determine the extent to which their selected behavioral intervention changed or improved the target behaviors and how satisfied the consumers are with those results. This collective information is often referred to as social validity (Wolf, 1978).

In general terms, social validity can be defined as consumer satisfaction in regard to the goals, treatment procedures, and results of any given behavioral intervention (Callahan et al., 2016; Wolf, 1978). The extent to which social validity is achieved within an intervention, is primarily determined by those experiencing it and/or responsible for implementing the procedures, not necessarily the people who designed the intervention (Schwartz & Baer, 1991; Wolf, 1978). In other words, the construct of social significance is inherently tied to the value system of the consumer and the ability of the clinician to design an intervention that fits within those values. The task of providing ABA related treatment therefore is to not only to improve behavior, but to do so in a socially acceptable manner, which is theorized to be related to the compliance with and sustainability of the intervention (Hanley, 2010; Schwartz & Baer, 1991; Wolf, 1978).

There are two primary methods available to assess the social validity of ABA related treatment procedures; subjective and objective assessments (Kennedy, 1992; Ledford, Hall, Conder, & Lane, 2016). Subjective measures are designed to gather data regarding private events such as feelings, opinions, and perceptions of the consumers, in relation to the treatment (Schwartz & Baer, 1991; Wolf, 1978). Subjective assessments can be delivered in a number of different ways including questionnaires, interviews, surveys, and rating scales. Objective assessments are designed to gather similar data regarding success, acceptability, and satisfaction using more observable or public events such as behavioral performance and demonstrated preferences (Hanley et al., 2010; Ledford et al., 2016). Some examples of objective assessment procedures include, normative comparisons, maintenance checks, participant choice, and consideration of consumer preferences (Ledford et al., 2016).

Social validity, despite its central role in ABA, is a relatively under examined construct in Single Case Design Research (SCD). In a recent review, Snodgrass, Chung, Meadan, and Halle (2018) examined 429 single case research studies across multiple Special Education (SPED) journals and found that only 27% of them included a measure of social validity. Similarly, other literature reviews in recent years have echoed that sentiment and found that consistently, less than half of SCD studies regularly report measures of social validity (Callahan et al., 2016; Ledford et al., 2016). When social validity data are reported, subjective evaluations are being used most frequently (Hanley, 2010; Kennedy, 1992; Ledford et al., 2016; Snodgrass et al., 2018). Heal and Hanley (2008) in a review of behavior change procedures for young children found that 90% of the studies they examined utilized subjective measures of social validity (Hanley, 2010). Snodgrass et al. (2018) identified that questionnaires were the most commonly utilized subjective instrument. Ledford et al. (2016) similarly stated that most common type of

social validity data reported was from interviews and questionnaires, typically gathered after the intervention was over. In addition, they found very few studies utilizing any kind of objective measurement.

Upon closer inspection it appears that most often, in agreement with Ledford et al. (2016) consumers are being assessed after the intervention has already been implemented (Callahan et al., 2016; Chan, 2015; Kennedy, 1992; Snodgrass et al., 2018). Kennedy (1992) found that subjective assessments were most commonly administered after the intervention was over and typically focused on the third tenet of social validity, satisfaction with behavioral change. Multiple reviews have echoed this sentiment regarding the typical timing and delivery of subjective social validity assessments (Chan, 2015??; Ledford, 2016; Snodgrass; 2018).

In a closer examination of the construct of social validity, it appears that the most common elements being analyzed are the alignment of treatment goals, and satisfaction with outcomes. Callahan et al. (2016) found that the elements of social validity most commonly assessed for were consumer satisfaction of outcomes, clinical significance of behavioral change procedures, and the social significance of the target behaviors. In addition, Ledford et al. (2016) reported in tandem with these findings but suggested that satisfaction was the only social validity construct being examined regularly. In an even closer evaluation, they found that only 14% of the articles they reviewed provided a choice of intervention goals and no articles identified provided a choice of intervention procedures. Snodgrass et al. (2018) found that of the 115 articles they examined which contained a social validity assessment, only 28 articles included an assessment of the total construct of social validity (i.e. goals, procedures, and outcomes) including an examination of procedural acceptability.

Given that social validity assessments are most often being delivered after the intervention procedures have already been implemented the focus on outcome satisfaction and the lack of attention to the acceptability of the procedures themselves, is not altogether surprising. This outcome is concerning however, especially given the direct impact that the actual treatment procedures could have on a consumer's everyday life. The right to choose and or/ refuse day-to-day activities for consumers with disabilities, has largely been debated in behavioral treatment (Bannerman, Sheldon, Sherman, & Harchik, 1990). These outcomes suggest that a closer examination of the consumer themselves, (i.e. who is being asked) may be necessary to determine why the other elements of the construct, goals and outcomes, have been prioritized.

Schwartz and Baer (1991) define four categories of consumers including the direct consumer, indirect consumer, members of the immediate community, and members of the extended community. The direct consumer refers to the individual(s) who is the direct target for change. In ABA services, this often refers to the individual, diagnosed with a disability, who is the direct recipient of the behavioral intervention (Hanley, 2010). Many researchers also reference parents or behavior change agents in this category (Ledford et al., 2016; Snodgrass et al., 2018). The indirect consumers, are those who may be affected by intervention through their association with the direct consumer. This can refer to parents, siblings, or teachers of the direct consumer(s) and/or the stakeholder that initiated the intervention services. Members of the immediate community include individuals that the direct consumer interacts with such as peers, friends, and colleagues who may be affected by the direct consumers' day-to-day behavior. Finally, members of the extended community may live within the same community environment but not have regular contact with the direct consumer. Examples could include members of

community organizations, local business employees, etc. who occasionally come into contact with the direct consumer and whose opinion regarding treatment can be influenced by those interactions (Foster & Mash, 1999; Schwartz & Baer, 1991).

Snodgrass et al. (2018) identified that of their three identified categories of consumers, direct participants, indirect participants, and external stakeholders that direct participants were most commonly identified as the participating consumer in social validity assessments with approximately 68% of the total construct studies examining their input. Many research articles define the direct consumer, as stated above, as both the individual experiencing the intervention and relevant behavior change agents, such as families and caregivers (Ledford et al., 2016; Snodgrass et al., 2018). This makes it difficult to parse out exactly who is being assessed, and what role the individual experiencing the intervention procedures, or the direct recipient (Hanley, 2010) has played in the assessment of social validity. Upon closer examination of Snodgrass et al. (2018) findings for example, it appears that approximately 45% of studies, rather than 68%, actually included the direct recipient while the remaining 23% referenced consumers that were implementing or directly impacted by the intervention. Even more limiting, the nature of the subjective assessments used in each of these cases required relatively advanced levels of verbal, reading, comprehension and/or written skills on the part of the recipient, in order to participate. In consideration of the direct recipient, Heal and Hanley (2008) in a review of social validity, found that only 3% of social validity assessments included the direct recipient (Hanley, 2010). Chan (2015) in a review of 52 articles examining student involvement in the behavior support process identified 26 studies that assessed for social validity of the intervention. Of those studies only 8 met their criteria for active student inclusion both before and after the intervention procedures.

Most often it appears that direct consumers, other than the recipient of the behavioral intervention, such as parents, caregivers, family members, or teachers are the ones being assessed regarding the social validity of goals and satisfaction with behavior change outcomes (Hanley, 2010; Snodgrass et al., 2018). This is not altogether surprising given the fact that these consumers are often the ones requesting and/or paying for intervention services. These individuals may have treatment goals already in mind when services are initiated and subsequently may have specific ideals regarding what the outcomes of those interventions should be. These consumers however, often require specific assistance and expertise regarding the treatment procedures needed to meet these goals, often fulfilled by a corresponding service provider.

In consideration of the direct recipient this idea may explain why they are largely ignored in assessment of social validity. As briefly discussed above, recipients of behavior change procedures may not be as actively involved in initiating or paying for the intervention services. They may or may not be participating willingly or doing so only at the request of other direct consumers (e.g., parents or guardians who have purchased these services) who are literally investing in the achievement of specific goals and outcomes. In examination of the word “consumer” itself, it seems that it refers to the person who “purchases” the service (Consumer, 2018). Logically, it follows that assessment regarding consumer satisfaction, may focus on the consumer that is paying, rather than directly receiving the service itself. If this is the case, assessing whether or not their goals were met and the outcomes are acceptable, would be a logical fit in terms of the specific elements of social validity most commonly assessed.

The types of assessments most commonly used might also explain the lack of participation on the part of the direct recipient. Subjective assessments often require a significant

amount of vocal, reading, or comprehension skills and the lack of any of those seems like an obvious exclusionary factor (Hanley, 2010; Snodgrass et al., 2018). Inability to meaningfully engage with a written or verbal assessment may particularly affect individuals with impairments in these areas. Given that the primary direct recipient of ABA services are typically individuals with disabilities, these limitations within the assessment itself may be significantly impacting such participation. These considerations would imply that even if a researcher wanted to include the direct recipient in the social validity assessment, they may not know how to do so, given the limitations of the subjective assessments most commonly used.

Other factors such as perceived incompetence, and lack of trust in recipient feedback may also be impacting the involvement of direct recipients, particularly those with a disability, in the assessment of social validity (Bannerman, Sheldon, Sherman, & Harchik, 1990; Finlay, Walton, & Antaki, 2008; Harchik, Sherman, Sheldon, & Bannerman, 1993; Smyth & Bell, 2006). Providing meaningful choices for individuals with disabilities, as mentioned above, has been widely debated. Smyth and Bell (2006) contend that when someone does not have the cognitive ability to assess long-term consequences, those individual's choices must be monitored and, in some cases limited. The choice to engage in harmful behaviors that may put individuals in harm's way, such as self-injury, is also cause for great concern and may limit the confidence in or belief in the veracity of input from a person with intellectual disabilities, often the direct consumers of behavioral interventions (Bannerman et al., 1990; Harchik et al., 1993). It is also possible that limited time and knowledge regarding the communication direct recipient preferences and how to adapt interventions accordingly, may be limiting the interventionists' motivation to include the direct recipient.

Despite the many potential difficulties gathering information from direct recipients might entail, one could contend that the assessment of social validity should begin with them since they are the individuals most directly impacted by the intervention procedures. Schwartz and Baer (1991) suggest that the purpose of social validity assessments is to avoid rejection of the intervention and anticipate changes that may make the intervention more successful. They also argue that direct consumers can affect the success of intervention procedures at any moment through their acceptance or refusal to participate in treatment procedures (Schwartz & Baer, 1991). Given that the purpose of social validity assessments is to strengthen the likelihood of success, and that social validity as a whole is a construct centered around consumer values, the potential that the direct recipient has to disrupt treatment procedures based on those values, cannot be ignored. This potential alone indicates that the preferences, and opinions of the direct recipient, should be a high priority for those designing and implementing ABA supports.

Additionally, Hanley (2010) posits that there may also be a moral responsibility in including or even prioritizing the direct consumer in the assessment of social validity. He contends that even consumer satisfaction among closely linked consumers, like interventionists or caregivers, is not enough to meet the demands of social responsibility. Hanley (2010) urges interventionists to consider what their own feelings would be as a direct recipient and the motivation each of us have to ensure our own values and preferences are honored, particularly when our personal behavior is being targeted. Logically, it seems, this same courtesy should be applied to those interventionists are tasked to serve and whose best interest they are ethically obligated to protect. Additionally, Hanley (2010), supports the notion that including the direct recipient in the social validation process may result in better treatment outcomes, but that doing so is not just a matter of usefulness but one of humanity.

Direct recipients themselves have voiced their own opinions regarding the need for more involvement in the social validity process (ASAN, 2018). Selection of their own goals, acceptability of treatment procedures used, and real-life usefulness of outcomes all seem to be of a high priority for self-advocacy organizations such as The Autistic Self Advocacy Network (ASAN: ASAN, 2018). ASAN contends that recipients who are involved in supportive therapies, must have a “say” in their own intervention plans and that goals should be geared towards what the individual recipient views as useful to their own lives (ASAN, 2018; ASAN, 2017). Additionally, they affirm that treatment procedures should promote, rather than abate, personal autonomy and self-determination.

The field of ABA as a whole has widely been criticized for their lack of sensitivity in regard to the consideration of the direct recipient (Freedman, 2016). Freedman (2016) encourages a distinct change in how modern behavior analysts are or should be discussing and promoting their services, with consumers. He continues that given the wide-ranging effectiveness of behavior analysis in improving behavior, it necessary to engage in practices that encourage both public and consumer acceptance. With this consideration in mind, including the direct recipient may not only have the benefit of increasing the success of treatment procedures, but also have the added effect of improving public perception and acceptance within mainstream assistance services for individuals with disabilities.

Despite the many potential benefits of including the direct receipt in the assessment of social validity, the barrier of how to do so still remains. Specific objective measures of social validity, although very rarely utilized, are available and have attempted to resolve some of the barriers discussed above (Hanley, 2010; Ledford et al., 2016). Hanley (2010) proposes that Stimulus Preference Assessments (SPA), which are commonly employed in an attempt to

identify individual's preferences for a wide variety of stimuli, could be utilized as a measure of social validity. Copious research has demonstrated that individuals with a wide range of disabilities can make meaningful choices and discriminate their preferences in the context of these assessments, regardless of their communication status (Fisher, Piazza, Bowman, Hagopian, Owens, & Slevin, 1992; Pace, Ivancic, Edwards, Iwata, & Page, 1985; Roane, Vollmer, Ringdahl, & Marcus, 1998; Windsor, Piche, & Locke; 1994). Even further, these measures could provide interventionists an avenue to assess for the acceptability of treatment procedures themselves, which has also been a difficult construct to capture within social validity. Given this potential to address multiple gaps in the current research, this concept deserves further examination.

One such SPA, a concurrent operant assessment, has been utilized as a measure of preference for intervention procedures (Hanley, 2010). These assessments are completed after two or more interventions have been implemented and sufficient data has been obtained to support their efficacy in achieving the desired behavior change. In a concurrent operant assessment, the direct recipient has access to at least two, concurrently available interventions. With the use of a selection response, such as flipping a switch, the direct consumer chooses which intervention they would like to experience. Repeated selection of the same intervention effectively determines an individual's preference for a specific intervention procedure (Hanley, 2010). After repeated selections have been made, the intervention chosen as the most acceptable by the direct recipient could then be continued and utilized by the intervention team moving forward.

For example, Hanley et al. (1997) used a modified concurrent chains assessment to determine the preferences of two participants for behavior interventions. Functional

Communication Training (FCT) and Non-Contingent Reinforcement (NCT) procedures were both implemented to address the participants challenging behaviors. The procedures were alternated with baseline sessions and both determined to be effective in the reduction of the identified challenging behaviors. The authors then implemented a modified concurrent chains assessment in which each of the two treatment conditions, along with an extinction condition were available. Colored switches associated with the varied treatment conditions were presented to the participants. Selection of a switch resulted in access to the chosen intervention for 2-minutes. Each treatment session was 20-minutes long and up to 10 selections of treatment procedures, could be made during that time. Repeated selections of the same intervention determined which intervention procedures were acceptable enough to continue. In both cases, FCT was the preferred intervention. This type of information allows the interventionist to then continue the procedure that the participant deemed acceptable. Utilizing SPAs in this way provides an avenue to assess social validity with direct recipients with a wide range of abilities and communication skills. It also allows intervention teams the ability to honor preferences and implement procedures that have a higher likelihood of long term success.

Hanley (2010) contends that the interventions must be implemented first, prior to the assessment of preference, because there is no value in a preferred, ineffective intervention. In accordance with subjective assessments, implementing the intervention(s) first and then assessing the consumers afterwards, seems to be the most common practice for social validity assessments in general (Hanley, 2010; Snodgrass et al., 2018). Beyond a demonstration of effectiveness, there are other practical reasons that this may be the case. Implementing the intervention first allows the recipient to experience the interventions first hand, so an informed choice can be made regarding acceptability of the intervention they would like to continue. This

may be particularly helpful when interventions are difficult to describe, or participants' capacity limits a thorough understanding of the proposed procedures (Hanley, 2010). This may also true for subjective measures in which experience with the intervention may be important to provide before a meaningful measure of social validity can be taken.

There are however disadvantages to assessing for social validity after an intervention has already been implemented, particularly in relation to construct of acceptable treatment procedures. Schwartz and Baer (1991) suggest that the purpose of social validity assessments is to avoid rejection of the intervention and anticipate changes that may make the intervention more successful. If social validity measures are being taken after an intervention has already been implemented, the opportunity to adapt and refine your procedure in a socially relevant way, to avoid said rejections, may be missed. Additionally, important opportunities to build self-determination skills, and make meaningful selections in the assessment and planning process are diminished (Brown, Hatton, & Emerson, 2013; Mcdougall, Evans, & Baldswin, 2010; Lachapelle, Wehmeyer, & Courbois, 2005; Shogren, Faggella-Luby, Bae, & Wehmeyer, 2004; Wehmeyer, Baker, Blumberg, & Harrison, 2004).

Speaking specifically to concurrent operant assessments, these procedures would also require that interventionists implement multiple procedures at the same time. The materials, training, time, and resources needed to do so might be really challenging in applied settings which often have limitations in each of these areas. Finally, and potentially most importantly, assessing afterwards puts the recipient in a position of potential exposure to repeatedly non-preferred procedures for an extended period of time. Given that there is ample evidence to support the success of function-based interventions across the literature (Ingram, Lewis-Palmer, & Sugai; 2005) one could assume, if a thorough and accurate functional assessment was

conducted, that two functionally matching interventions might have similar chances to produce a positive effect. This may be particularly true if the procedures had the opportunity to be assessed for acceptably beforehand and tailored accordingly. This assumption could indicate that repeated exposure may be altogether unnecessary if it were possible to orient a consumer to the available procedures beforehand.

Providing direct consumers with the experience necessary to make meaningful decisions regarding treatment acceptability may be challenging without first implementing the intervention. There are, however, demonstrated strategies in the SPA literature, that may accommodate this need. The use of a video-based preference assessment has been utilized to assess for complex stimulus preference such as social activities and interaction partners (Huntington & Higbee, in press; Huntington & Schwartz, 2017; Synder, Higbee, & Dayton, 2012). For example, Huntington and Higbee (2017) utilized video-based SPAs to identify the social preferences of three individuals, all with limited verbal ability. The videos portrayed various social interactions that were available to the participant. Participants would view two videos side-by-side and make selections regarding which social interaction they preferred. Repeated forced choice trials indicated preferences for specific social activities for each participant. In another example, Huntington and Schwartz (2017) used a similar video assessment with an adult with limited verbal skills to determine the extent to which the learning history or relationship with varied assessors, might affect the selection of varied social stimuli during a SPA.

Given the potential of videos to portray real life actions and their demonstrated ability to assess preference for complex stimuli, it is possible that videos might be utilized as a way to expose recipients to intervention procedures. This method would allow interventionists to

communicate the available options, without having to implement lengthy and complex procedures. The purpose of this study will be to utilize a video-based SPA prior to the start of an intervention, to measure preference for and acceptability of the intervention procedures. This study is intended to expand the capacity of the current social validity assessment options to include the direct recipient and examine ways in which interventionists can assess the acceptability of treatment procedures (i.e. the most understudied concept of social validity). The following research questions examined throughout the course of this study are:

- Will the inclusion of the direct recipient in the descriptive assessment of their own behavior, be beneficial in the development of a behavior intervention plan?
- Can a video-based preference assessment be utilized to identify a preferred intervention procedure for individuals with challenging behavior prior to the implementation of an intervention?
- Will the intervention identified as the most preferred in each individual preference assessment be successful in reducing challenging behavior and increasing appropriate behavior?
- Will preferences for intervention procedures change after the implementation of those procedures?

Method

Participants

Three participants were included in the current study. Ethan, Jacob, and Alex all attended a private, inclusive school in the Pacific North West that serves students from kindergarten to twelfth grade. Individuals were referred for participation because they demonstrated challenging behavior in the classroom and staff believed they would benefit from a functional assessment and

behavior intervention in the classroom setting. At the time of the study, Ethan was a 12-year-old male in a sixth-grade, junior high school classroom. He identified as Indian and was diagnosed with Autism Spectrum Disorder (ASD), Tourette's Disorder, ADHD, and Developmental Coordination Disorder. Jacob was also a 12-year old male in sixth grade in the same junior high classroom setting. He identified as Indian and was diagnosed with ASD and ADHD. Finally, Alex was a 10-year old male in a fourth grade, elementary school classroom. He identified as white and was diagnosed with ASD.

Classroom staff served as the primary interventionists for each participant. For Ethan, two paraeducators implemented behavior supports. One para was trained as a Certified Behavior Technician (CBT) and provided regular supports in the classroom setting. This para provided one-on-one supports for Ethan throughout his school day. The other para alternated between classes and served as a substitute in Ethan's class. The interventionist for Jacob was a para, also a CBT, who provided Jacob with one-on-one supports for half of his school day. Supports for Alex were implemented by his classroom teacher and the Board Certified Behavior Analyst (BCBA) assigned to support his classroom. All three participants use complex sentences to communicate and were referred for participation for varying forms of off-task behavior.

Design

This study utilized a reversal design (ABAB) (Cox, Griffin, Hall, Oakes, & Lane, 2011; Lane, Weisenbach, Little, Phillips, & Wehby, 2006; Lane, Weisenbach, Phillips, & Wehby, 2007). This design was employed in the intervention phase of the study and was selected to demonstrate the effect of the independent variable (i.e. intervention procedures) on each participants behavior. Differences in responding between baseline and intervention conditions

for each participant were closely monitored throughout study implementation and data was analyzed following the conclusion of the study.

Dependent Variables and Response Measurement

The dependent variable throughout the descriptive assessment was the target behavior selected for intervention. For all participants, this included some form of off-task behavior (for full definition see Appendix A; for summarized definition see table 2). During intervention procedures, the incompatible behavior, defined as on-task for each participant was monitored along with the target response (for full definition see Appendix A; for summarized definition see table 2). During baseline and intervention phases, data was collected using a 30-s momentary time sample. At the end of each 30-s interval, recorders noted if the incompatible behavior was accruing by marking a + and if the target behavior was occurring by noting a -. This data was then converted to a percentage by calculating the number of intervals marked with a + out of the total number of intervals observed. Data was then graphed according to session number.

Procedures

This study consists of six phases; a description of each phase and the data collected can be found in Table 1. Phase 1 includes a descriptive assessment; this was conducted to identify the variables associated with maintaining the participants target behavior. Phase 2 and 3 involved the planning and selection of the intervention packages. Additionally, in phase 3, pre-acceptability assessments were delivered to classroom staff. Phases 4 and 5 consisted of training and implementation of the selected interventions. Finally, phase 6 involved a re-assessment of preference for each participant and post-acceptability assessments for the classroom staff.

Table 1. Description of study phases and data collection tools

Phase	Steps	Procedures and Data collected
Phase 1: Descriptive assessment	1. Records review 2. Informant interviews 3. Screening tools	1. Review of the participant's school record, Individualized Education Plan (IEP), and any current or past

	4. Direct observation	<p>functional assessment and behavior intervention data was conducted.</p> <p>2. Functional assessment interview (FAI; O'Neill et al. 2015). Conducted with the classroom BCBA.</p> <p>Student directed functional assessment interview (SFAI; O'Neill et al., 2015). Conducted with the participant.</p> <p>3. The functional assessment screening (FAST; Iwata, DeLeon, & Roscoe, 2013). Conducted with the participant's classroom teacher.</p> <p>4. Direct observation were conducted using the Functional Assessment Observation Form (FAOF; O'Neill et al., 2015) and a narrative data collection sheet.</p>
Phase 2: Planning and development	<ol style="list-style-type: none"> 1. Review collected data 2. Develop summary statements 3. Plan interventions 	<p>Function based interventions were created using the competing behavior method described by O'Neill et al. (1997; 2015). This process includes diagramming the final summary statements, selecting alternative behaviors, and designing functionally matching intervention procedures.</p>
Phase 3: Preference for Intervention Assessments (PIA)	<ol style="list-style-type: none"> 1. Preference assessment conducted 2. Teacher acceptability ratings and questionnaire 	<ol style="list-style-type: none"> 1. A paired stimulus preference assessment (Fisher, et al., 1992). Conducted with the participant. 2. Intervention Rating Profile-15 (IRP-15; Martens et al., 1985). Conducted with interventionists and classroom BCBA's <p>Open-ended questionnaire (Adapted from Carroll & Peter 2014). Conducted with interventionists and classroom BCBA's</p>
Phase 4: Intervention training Phase 5: Intervention	<ol style="list-style-type: none"> 1. Training 2. Intervention 3. Return to baseline 4. Return to intervention 	<ol style="list-style-type: none"> 1. Interventionists were trained in pre-training meeting. First day of intervention was run with the direct support of the research team. Procedural fidelity data was also reviewed with interventionist daily. 2 & 4. The highest preferred intervention was implemented as outlined. 3. Removal of intervention services and return to typical classroom routines.

Phase 6: Post intervention	<ol style="list-style-type: none"> 1. Preference assessment 2. Teacher questionnaires and acceptability ratings 3. Participant questionnaire 	<ol style="list-style-type: none"> 1. Paired stimulus preference assessment (Fisher, et al., 1992). Conducted with the participants. Procedures mirrored Phase 3. 2. Intervention Rating Profile-15 (IRP-15; Martens et al., 1985). Conducted with interventionists and classroom BCBA's. Procedures adapted from Phase 3. Open-ended questionnaire (Adapted from Carroll & Peter 2014). Conducted with interventionists and classroom BCBA's. Procedures adapted from Phase 3. 3. Open-ended questionnaire. Conducted with each participant
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Phase 1: Descriptive assessment. A descriptive assessment was conducted for each participant utilizing the following components: a records review, informant interviews, screening tools, and direct observation (Iwata, DeLeon, & Roscoe, 2013; O'Neill, Albin, Storey, Horner, Sprague, 2015; O'Neill, Horner, Albin, Sprague, Storey & Newton, 1997). The purpose of this descriptive assessment was to clearly identify and define the target behavior and to describe the setting events, antecedents, and consequences, that typically accompanied it.

Record review. A review of relevant participant information was conducted (Janney et al., 2012). For each participant, treatment plans including demographic information and current levels of academic and behavioral performance were reviewed. Additionally, classroom wide and individual behavior support strategies being used for each participant were investigated. No functional assessment data was present for any participants, and only anecdotal data was available regarding the effectiveness of the current behavior supports.

Interviews. A Functional Assessment Interview (FAI; O'Neill et al. 2015) was conducted with the classroom BCBA assigned to each participant. For Ethan and Jacob, who were in the same classroom, the same BCBA was interviewed for both students in separate sessions. For

Alex, the BCBA assigned to his classroom was interviewed. The BCBA's each had daily interactions with the participants and had observed the target behavior regularly throughout the school year. Each participant was also interviewed using the Student Directed Functional Assessment Interview (SFAI; O'Neill et al., 2015). Interviews were conducted with each team member and participant separately and were facilitated by the primary researcher.

Functional assessment interview. The FAI was administered in a traditional question and answer format (O'Neill et al. 2015). The researcher reviewed all 11 sections of the FAI which are structured to assess the problematic behavior, the setting events, the antecedents, and the consequences that commonly accompany that behavior. In addition, other factors such as student communication, behavioral history, current skills, deficits, and preferences were assessed with respondents. Summary statements were developed at the conclusion of the interview and were reviewed with each respondent for accuracy. The amount of time needed to conduct these interviews ranged from 50 minutes to 1.25 hours.

Student directed functional assessment interview. The SFAI (O'Neill et al., 2015) was conducted with each participant. This interview was also administered using a typical question and answer format, along with some visual support of the student's daily schedule. Each of the 5 sections included in the SFAI, which are structured to define the behaviors of concern and the context in which it occurs, were assessed. Summary statements were then developed and reviewed with the participants. The amount of time needed to conduct these interviews ranged from 25 minutes to 40 minutes.

Functional assessment screening tool. The functional assessment screening (FAST; Iwata, DeLeon, & Roscoe, 2013) was used to gather information from each participant's classroom teacher. This tool assessed for details about respondent's current relationship with the

participant, challenging behaviors they had observed, and potential sources of reinforcement for the target behavior. The classroom teacher was provided information about the assessment tool and asked to fill it out and return it to the primary researcher. For Ethan and Jacob, the same teacher filled out the FAST form. For Alex, his participating classroom teacher, filled out this form. Data was summarized using the scoring summary and graphed to provide for visual analysis. Data was analyzed on its own and compared with other forms of descriptive data.

Direct observation. Direct observation data was collected using both narrative ABC data forms and the Functional Assessment Observation Form (FAOF; Kern, Dunlap, Clark, & Childs, 1994; O'Neill et al., 2015). The primary researcher began data collection with narrative recording forms and switched to the FAOF when predictable variables started to emerge. Data was collected for a minimum of three days for each participant and no more than six days of observation was conducted. Data collection continued until at least 15 occurrences of the target behavior were observed and a clear pattern of responding emerged (O'Neill et al., 2015). The most problematic class period or class activity, as stated above, was observed. For Ethan and Alex, this was language arts and for Jacob, it was math class. Observations lasted approximately 30-60 minutes per each observation session.

Across both forms of data collection, the time, observed antecedents, behavior, consequences, and perceived function associated with each incident were recorded. Data was then graphed and visually analyzed each day by the research team. Additionally, direct data was cumulatively compared with data from the record review, interviews, and screening tools.

Phase 2: Planning and development. Function based interventions were created using the competing behavior method described by O'Neill et al. (1997; 2015). This process includes diagramming the final summary statements, selecting alternative behaviors, and designing

functionally matching intervention procedures. In addition, direct observation and screening tool data were graphed and visually analyzed. The research team developed four to five intervention options for each participant, based on the information collected in the descriptive assessment. A planning meeting was then held with classroom staff to determine which interventions would be feasible in the classroom setting. For Ethan and Jacob, the planning meeting was held with the classroom BCBA who was in charge of treatment and behavior support decisions for the classroom. For Alex, the planning meeting was held with the classroom BCBA and classroom teacher.

During this planning meeting, the descriptive assessment data was reviewed, and the final summarizing statements were shared and checked for accuracy. Additionally, the behavior intervention options were presented. Intervention packages included setting event strategies, antecedent adjustments, reinforcement procedures, and extinction procedures as needed (Janney et al., 2012; O'Neill et al., 1997; 2015). Each package was presented and explained in the planning meeting. Classroom staff selected the interventions that they believed would be the best contextual fit in the classroom and modifications were made to procedures according to their suggestions (Janney et al., 2012; Turton, Umbreit, & Mathur, 2011). For Ethan and Jacob, three intervention packages were selected and adapted for use in the preference assessment. For Alex, four packages were selected and used in similar fashion.

Phase 3: Preference for intervention and social validity assessments.

Paired stimulus assessment. A forced choice Stimulus Preference Assessment (SPA) was conducted with each participant to determine their preferred intervention procedure (Fisher, et al., 1992). The intervention packages included a number of strategies, with the primary variable being the reinforcement procedures. These reinforcement procedures were available for

selection in the preference assessment. Each procedure was recorded for the participant to watch and experience prior to the intervention. Video recordings depicted an unknown classroom teacher interacting with a male student approximately the same age as the participants. Each video was 2-minutes long and included a brief description of the procedure and a model of what it would look like during a classroom work session. Environmental variables such as classroom work, expectations, and conversational style were replicated as closely as possible to observed participant variables. Additionally, the same intervention materials used in the forced choice assessment, were used in video representations.

The Preference for Intervention Assessment (PIA) began with a pre-exposure session. The assessment was briefly explained to each participant and they were informed that these procedures were designed to help them during the designated difficult class time. The interventions videos were then presented to each participant to watch. Participants were allowed to ask questions and were also shown the corresponding intervention materials as each video was presented. After the pre-exposure session, the intervention materials were then presented side by side for the participant to select. Each intervention was presented in the left and right position and repeated until all interventions had been paired together in each of the rotated positions.

For Ethan and Jacob, three reinforcement procedures were available and six total paired trials were conducted. For Alex, four procedures were available, and twelve trials were conducted. When a pair of intervention procedures were presented to the participant, the researcher gave the instruction to “choose the one you would like to do in your classroom.” Once the participant had selected the intervention, the materials were removed and the response was recorded. The trials were continued as outlined until all pairings and rotations had been completed.

The intervention options available for each participant are described in Table 2. For Ethan, a non-contingent reinforcement procedure and two differential reinforcement procedures were selected to potentially address the target behavior. The non-contingent reinforcement procedure involved scheduled breaks times throughout the difficult class period. Those break times included access to preferred conversation with the interventionist and were delivered at a set time regardless of the behavior observed during non-break periods. Break intervals were selected based on the duration of Ethan's on task behavior during baseline. The second procedure provided the participant with a functionally equivalent, alternative response that could be used to gain access to a break and preferred conversation as described above. In this intervention, the participant would be provided with a designated number of break opportunities in the form of break cards. The participant would then be allowed to self-select when he wanted to use them. Breaks would be honored regardless of the participant's behavior at that time. This intervention allotted the same number of breaks available in the first intervention. The final procedure involved reinforcing a behavior incompatible with the target behavior (e.g., on-task behavior). In this procedure, if a designated amount of on-task behavior was observed, the participant would then be reinforced with a break and access to preferred conversation, similar to the breaks explained above. The amount of work or time engaged in on-task behavior were also determined by his current baseline performance.

For Jacob, the three intervention options included one non-contingent reinforcement procedure and two differential reinforcement procedures. The non-contingent reinforcement system involved scheduled "check-ins" from the interventionist. These check-ins would involve brief social attention and the offer of academic support as needed. These check-ins would be provided according to a prearranged schedule regardless of the participant's current behavior and

would be scheduled at intervals determined by the participants current baseline. The first differential reinforcement option included reinforcing an alternative behavior that served the same function as the target behavior (i.e. to gain academic and social attention). For this procedure, the participant would be taught to raise his hand to recruit both academic support and praise and hand raises would be honored on an Fixed Ratio of 1 (FR1) schedule by the interventionist. The second differential reinforcement option was a reinforcement-based system geared towards increasing on-task behavior. In this option, the interventionist would monitor the participant's on-task behavior at regular intervals and provide social praise and a token if on-task behavior was observed during that interval. The tokens could then be exchanged for social activity time with a peer or adult.

Finally, for Alex, four interventions were accepted by the planning team as potential options for participant selection. A non-contingent break schedule was presented as the first choice. As a unique feature of this procedure, a value-added contingency in which the participant would gain access to more preferred types of breaks if he engaged in on-task behavior during the work interval, was added. Regardless of his behavior during the work interval, however, the participant was granted breaks on a regular time-based schedule. Second, a choice-based intervention was suggested in which the participant would be allowed to select one writing task from a list provided from the interventionist. The interventionist would also select one activity for the participant to complete. The remaining activities would not have to be completed by the participant that day. Third, a differential reinforcement system was proposed in which the participant would self-monitor his engagement in on-task behavior which was considered incompatible with the target response. This self-monitoring would occur at scheduled intervals and, after a certain number of intervals had been marked on-task, he would gain access to a break

from the academic writing demand. A final differential reinforcement procedure was also selected. In this procedure, the participant would be reinforced if he engaged in the incompatible behavior at a certain rate. If he completed a specified amount of work during a period of time, he would be reinforced with a break. This intervention was referred to as “beat the clock” and was used by other students in his classroom setting.

Table 2. Intervention options available and target and incompatible behaviors

Participant's target and incompatible behavior	Option 1	Option 2	Option 2	Option 4
Ethan. Off task. Out of seat, looking at or talking about off task materials, not completing assignments or responding to the teacher. On task. Seated in chair, looking at or talking about materials, completing assignments, responding to teacher.	NCR. Scheduled conversation breaks from work. Breaks would be delivered on a fixed interval of 5 minutes regardless of the behavior exhibited.	DRI. Reinforcing an alternative behavior “passing a break card” to gain access to a break and preferred conversation. The same number of break cards were provided as would be accessed in the NCR intervention.	DRI. If the on-task incompatible behavior was observed for 5 consecutive minutes, a break, with access to preferred conversation, was provided.	x
Jacob. Off task. Not sitting correctly, looking at or talking about off task materials, not completing assignments or complying with teacher directions. On task. Seated in chair, looking at or talking about materials,	NCR. Scheduled attention check-in's. Brief social and academic attention was delivered on a fixed interval schedule of 1 minute, regardless of the behavior begin exhibited.	DRA. Reinforcing an alternative behavior “hand raising” to gain access to social and academic attention. Reinforcement delivered on an FR 1 schedule.	DRI. Reinforcing an incompatible behavior “on-task” in 1-minute intervals. Interventionist monitors the participant's on-task behavior and provides social attention and token if incompatible was observed throughout the	x

completing assignments, complying with teacher demands.			interval. The tokens could then be exchanged for social activity time with a peer or adult.	
Alex Off task. Out of seat, looking at or talking about off task materials, manipulating off task object's, not completing assignments or complying with teacher directions. On task. Seated in chair, looking at or talking about materials, completing assignments, complying with teacher demands. Can also include a fidget item if other on-task behaviors are observed.	NCR. Scheduled breaks from work. Breaks would be delivered on a fixed interval of 5 minutes regardless of the behavior exhibited. If on-task behavior was observed throughout the whole interval, participant would be allowed to select a special leisure item for use during the break.	CHOICE. List of daily activities would be presented to the participant. Participant would select one activity to complete and teacher would select one item for him to complete. The other tasks would not be required for the day.	DRI. Participant would self-monitor his engagement in incompatible response (i.e. on-task behavior). Participant would monitor his on-task behavior and record on a fixed interval of 1-minute. After 5 on-task intervals were marked as on-task, a preferred break would be provided.	DRI. Participant would be reinforced if he engaged in on-task incompatible behavior at a fixed rate. If he completed a specified amount of work during a 5-minute time period he would be reinforced with a break.

Acceptability measures. Several acceptability measures were administered to classroom staff including participating BCBA's and all interventionists. An adapted version of the Intervention Rating Profile-15 (IRP-15; Martens, Witt, Elliott, & Darveaux, 1985) was delivered both pre and post intervention to determine the overall acceptability of intervention procedures. Additionally, an open-ended questionnaire adapted from Carroll and Peter (2014) was used to gather information from classroom staff regarding their perceptions and opinions about study procedures and the participants' involvement in the assessment and selection of their own

supports. Finally, an open-ended questionnaire was administered to each participant at the conclusion of the study to gain additional insight into their experiences as a study participant. Given the limited number of participants and classroom staff, the data collected from these measures was not anonymous.

Intervention rating profile-15. The adapted IRP-15 was administered to the classroom BCBA and participating interventionists (See Appendix B). The questionnaire was provided prior to intervention implementation and again after intervention concluded. This instrument included targeted questions about the acceptability of the treatment plan, perceptions surrounding implementation, and included components regarding treatment effectiveness. Interventionists used a Likert scale to answer the questions, scores were totaled, and the data was analyzed in terms of minimum acceptability. The scale ranges from 1-6 with response ranging from strongly disagree (1) to strongly agree (6). There were 90 total points possible if all scores were marked with the highest rating of 6.

Open-ended questionnaires. Two open-ended questionnaires were administered; one to classroom staff both pre and post intervention and the other to the participant at the conclusion of the study. Questionnaires for classroom staff were given to the respondents to fill out on their own and returned to the research team (See Appendix C). Questionnaires for the participants were delivered in an interview format; questions were provided by the primary researcher and responses were recorded exactly as stated by the participant (See Appendix D).

Phase 4: Intervention training. Prior to the start of the intervention, the researcher met with each interventionist and reviewed the intervention protocols. Procedural fidelity, along with intervention tools and materials were also introduced in this meeting. On the first day of the intervention, the researcher provided in the moment feedback to the interventionist as it related

to the fidelity checklist. The researcher then held a post-intervention meeting after class to provide feedback and clarity as needed on procedural fidelity items (Cox, et al., 2011).

Additionally, on the first day of the intervention, prior to starting class, the intervention procedures were reviewed with the participant and interventionist together in a brief meeting.

The procedures selected by the participants were reviewed and the participants were informed that intervention was going to begin (Cox et al., 2011).

Phase 5: Intervention. The two high preference intervention (HPI) conditions were alternated with baseline phases. Data collection began with baseline conditions and alternated with intervention in an ABAB pattern. Baseline data collection began after the descriptive assessment had concluded. Initial baseline data was collected for four to five days, depending on the participant, and continued until a stable trend was observed. The HPI phases were implemented similarly for four to five days until stable patterns were demonstrated.

Baseline. Initial baseline data collection was conducted in the classroom setting indicated above and typical classroom procedures were ongoing. The teachers and interventionists were instructed to complete daily tasks as usual and the participant was not informed that they were the target of direct observation or intervention. Observations lasted approximately 25-45 minutes depending on the participant and length of the class. During return to baseline conditions, Ethan and Jacob were told that intervention was not going to be done that day. For Alex, the BCBA who typically acted as interventionist, was not present in the classroom during the designated intervention period. Observation times were similar to initial baseline conditions. Return to baseline sessions were shortened to three to four days across participants due to requests from the classroom staff and the participants themselves.

High preference intervention. During the HPI conditions, intervention procedures were run according to individual participants' selections. Procedures were monitored via procedural fidelity and the primary researcher was present and monitored all intervention conditions.

Phase 6: Post intervention. Following the intervention phase, post intervention assessments were completed by the participant and classroom staff. For the participant, the PIA was repeated with the same procedures outlined above to assess for preference shift and preference for continuing intervention procedures. Post- acceptability measures were administered as indicated above.

Setting and Materials

Interviews. All interviews with the participants took place in hallway work spaces near their regular classroom setting. These spaces included a table with several chairs. When conducting the interviews, the researcher had a laptop, paper and pencil, and recording device present. Interviews with classroom staff were conducted in various locations including the classroom and hallway work spaces. Similar materials were present for these interviews.

Descriptive assessments. Direct observations were conducted in the classroom setting during the time and activity in which the target behavior was most likely to occur. For Ethan and Alex, this was their regular classroom during language arts. For Ethan, language arts lessons alternated between the regular classroom and an alternative classroom used when schedules permitted. For Jacob, this was a math class held in a nearby classroom. Some other class periods including science and social studies were also observed for comparison purposes. During direct observations, the researcher was seated near the participants with a number of materials including, clipboards and paper data sheets, laptop, and a camera with tripod.

Preference assessment. Preference assessment procedures were conducted in the same hallway work spaces as described for the above participant interviews. Materials for the preference assessments included a laptop computer, video recordings of each intervention, materials corresponding with those interventions, a recording device, data collection sheets, and pencils.

Intervention. Interventions were conducted in the classroom setting where the target behavior was most likely to occur, as indicated above. Intervention materials varied by participant. For Ethan, materials included a paper schedule, pencil, clock, and visual card indicating work vs. break time. For Jacob, materials included a visual tracker, timer, and pencil. For Alex, a visual card, and timer were used along with participant selected leisure materials. Additionally, data collection materials such as paper, pencil, recording equipment, laptop computers, and a timer were used throughout baseline and intervention conditions.

Preference for Intervention Assessment. The dependent variable in the PIAs was the total percentage of trials the participant selected an intervention over the number of trials it was offered. Each assessment produced a selection percentage and interventions were then ranked in descending order of preference. Selection responses included pointing, picking up materials, or verbally selecting intervention option.

Data Analysis

Data from the PIA and the interventions were graphed and analyzed using simple visual analysis. The reversal design data was analyzed using four-step visual analysis process (Single Case Design, 2010). Effects were observed over two baseline phases and two treatment phases. The following variables were assessed in the visual analysis, level of data lines, trend, variability, and consistency. Step 1, the baseline data was analyzed for stability. In step 2 the level,

variability, and trend of treatment and baseline conditions was analyzed and compared. Step 3 involved examining the data for overlap, and consistency within and outside of phase. The Percentage of Nonoverlapping Data (PND; Scruggs & Mastropieri, 2013) was also calculated to determine the effectiveness of treatment outcomes during step 3. PND was calculated by dividing the total number of intervention data points overlapping with baseline by the total number of intervention days and multiplying by 100. The total yielded the PND for each participant data set. Finally, step 4 included combining this information and making informed decisions regarding conclusions and outcomes.

Interobserver Agreement

Interobserver agreement (IOA) was assessed in 42% of all baseline and intervention sessions across participants. No less than 33% of sessions were monitored for IOA for each individual participant. The researcher collected data live in every session and acted as the primary data collector. IOA was collected via video recordings by trained observers. Observers were all graduate students in masters of ABA training programs. Observers were trained by the primary data collector. Primary data collector met with each observer individually, reviewed the behavioral definitions, and showed a 10-minute video clip of the participants behavior. Data collectors were then given a video to independently code on their own. All data collectors reached at least 80% agreement with primary data collector after this training video and were permitted to begin data collection.

IOA was calculated using the interval by interval method. The number of trials agreed upon was divided by the total number of trials and multiplied by 100 to create a percentage score. An agreement was considered when both the primary and IOA data collector marked a + or both marked a – for each interval.

Procedural Fidelity

Procedural fidelity data was collected in 62% of intervention sessions across all participants, with at least 33% of sessions monitored for each participant. Critical procedural components of the interventions were listed and monitored to ensure procedures are implemented correctly. If the component part was implemented as planned the item received a check mark, if not the item will be left blank. Percentage scores were then calculated to provide procedural fidelity scores. Procedural fidelity data was shared with interventionists as needed for training purposes throughout the study.

Results

Descriptive assessments

The data collected in the records review, interviews, screening tools, and direct observation were each individually and then cumulatively analyzed to create functional hypotheses for each participant. Descriptions of the target behaviors can be seen in Table 2 and Appendix A. Ethan was more likely to engage in off task behavior when a non-preferred task was presented. It was hypothesized that he engaged in the target behavior in order to escape the task and/or gain access to more preferred conversation. These behaviors were more likely to occur when a number of setting events were present such as lack of sleep, argument with family member before school, or when he was experiencing stomach or bowel issues.

Jacob's target behavior was also classified as off task. The target behavior occurred more frequently when a difficult task was presented, or adult or peer attention was removed. It was hypothesized that Jacob engaged in this behavior in order to gain social and/or academic attention from adults or peers. These behaviors were more likely to occur during large group

activities, independent work time, when other students were off task, or when the participant was hungry or tired.

Finally, Alex's off task behavior occurred more frequently when he was presented with a difficult or non-preferred task, specifically related to writing. It was hypothesized that he engaged in these behaviors to escape or delay the task. These behaviors were more likely to occur when setting events such as hunger or lack of sleep were present.

Each hypothesis statement was diagrammed using the competing behavior model (O'Neil et al., 1997). For each participant, the direct and indirect data collected were consistent with these hypotheses. Desired incompatible behaviors and functional replacement behaviors were added to each diagram with the support of classroom staff. Each participant's individual diagram can be seen below in Figures 1, 2, and 3. After the competing behavior pathway models were complete, they were shared with the classroom staff. The research met with the staff to discuss possible intervention strategies based on these models. Potential intervention strategies were then selected based on functional fit as well as evidence of effectiveness for similar functional behaviors (Geiger, Carr, & LeBlanc, 2010; Worcester & McLaughlin, 2013). Following a review of these treatment packages with the classroom team, the reinforcement strategies selected for each participant were presented in the PIA.

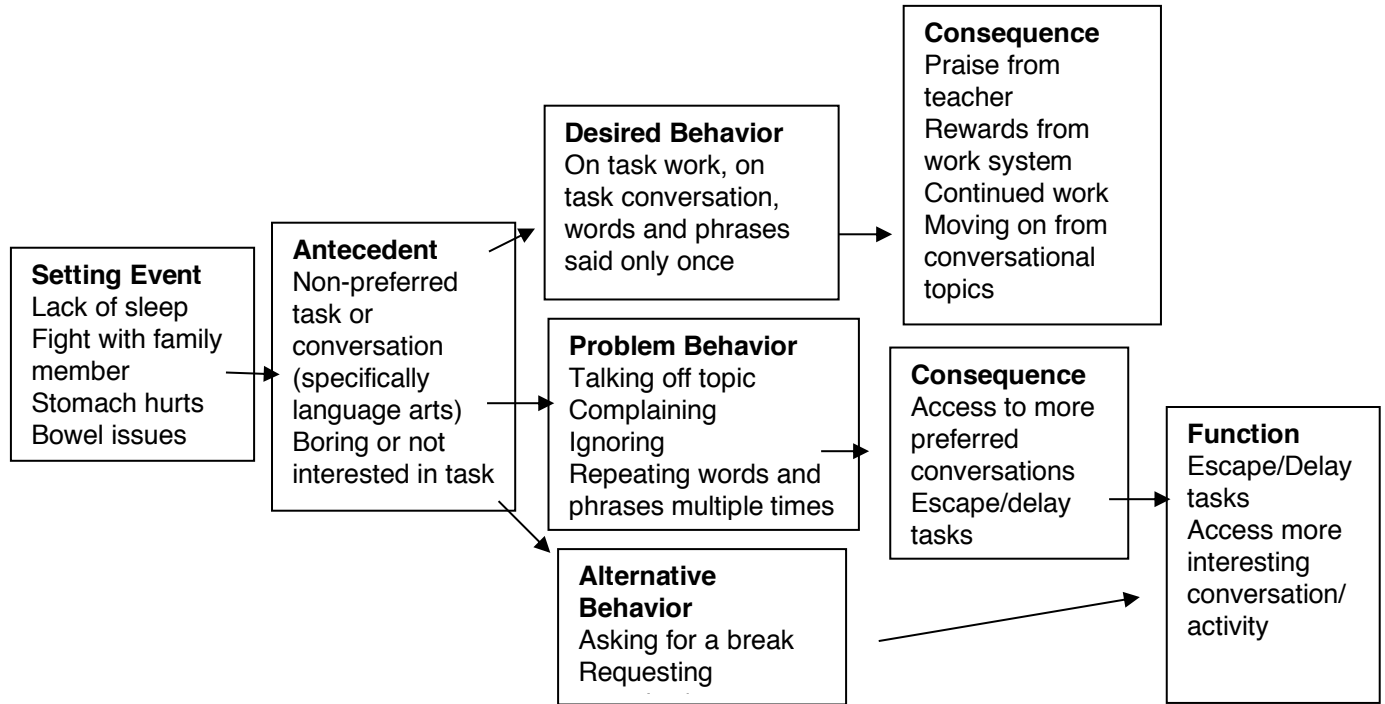


Figure 1. Competing behavior models for Ethan

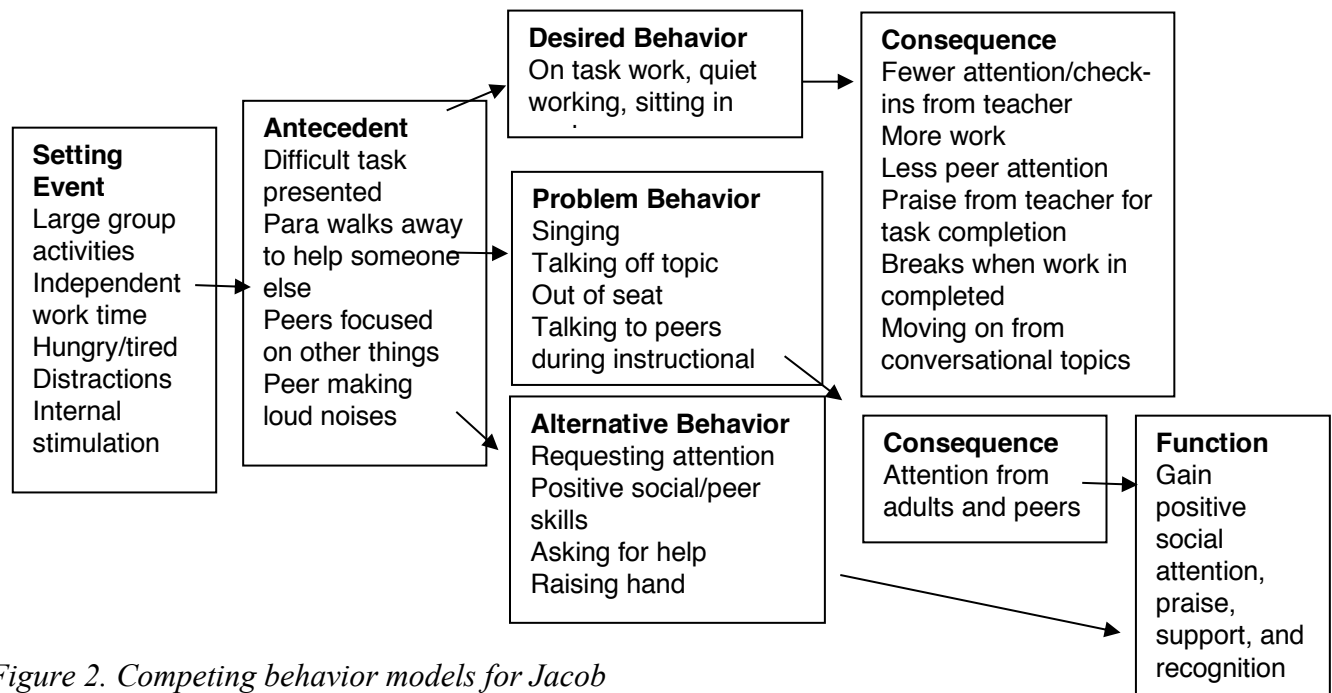


Figure 2. Competing behavior models for Jacob

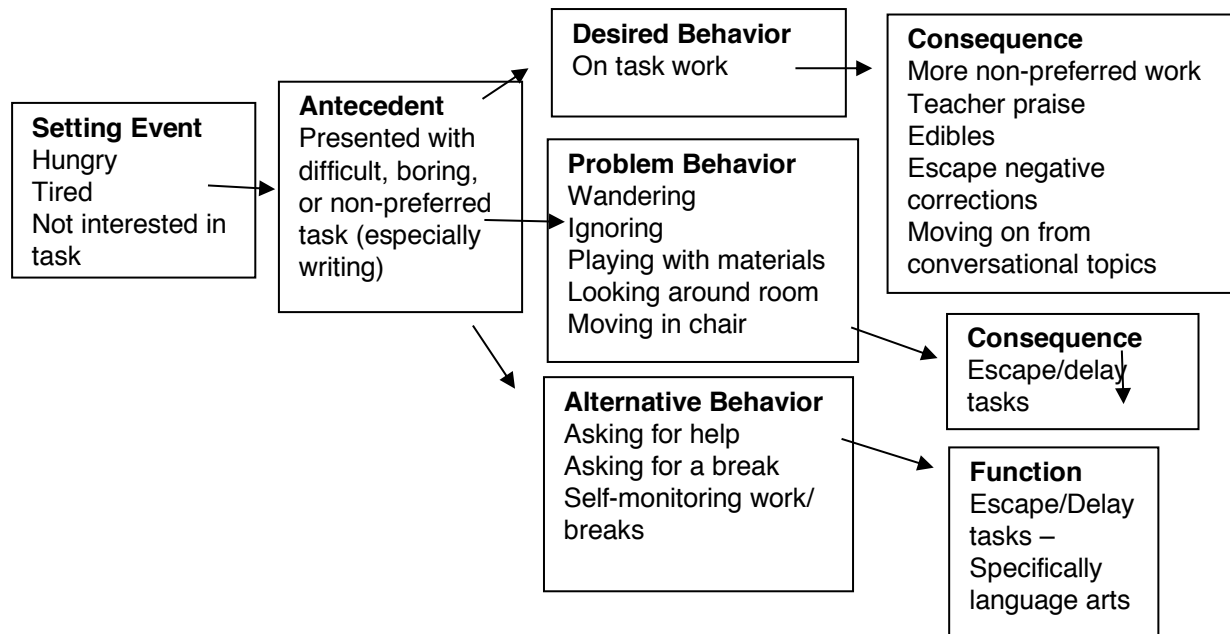


Figure 3. Competing behavior models for Alex

Preference for Intervention Assessment

PIAs were administered prior to intervention procedures and again at the conclusion of the final intervention condition. The results of the pre and post assessment for Ethan can be viewed in Figures 4 and 5. For Ethan, pre- and post PIA data were identical indicating that his preferences did not shift after the intervention procedures had been implemented. The NCR procedure was chosen 100% of the times it was offered in both assessments, the DRI procedure was selected 50% of the time, and the DRA procedure was selected 0% of the time.

The results of the pre and post assessment for Jacob can be viewed in Figures 6 and 7. Jacob selected the DRI procedure 100% of the time it was offered in pre-assessment, and the NCR and DRA procedures 25% of the time respectively. In the post- assessment Jacob selected the DRI procedures 100% of the time, and the NCR and DRA procedures 0% of the time

representing an unchanged high preference for DRI and slightly diminished preference for the other two options.

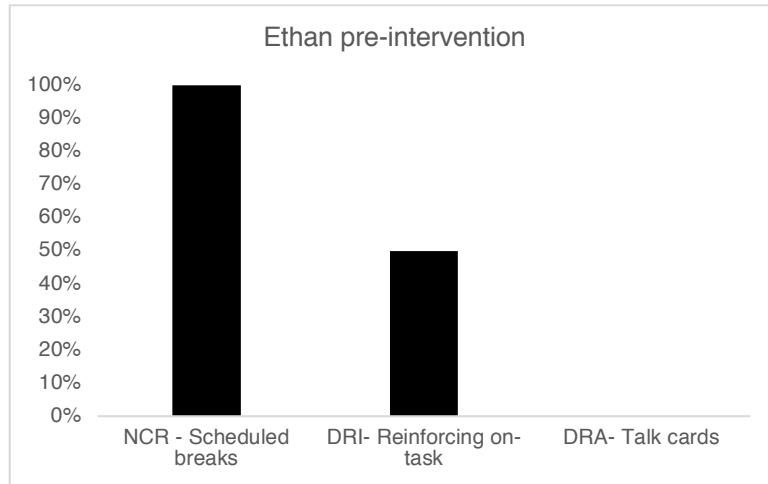


Figure 4. The results of the pre-intervention PIA for Ethan

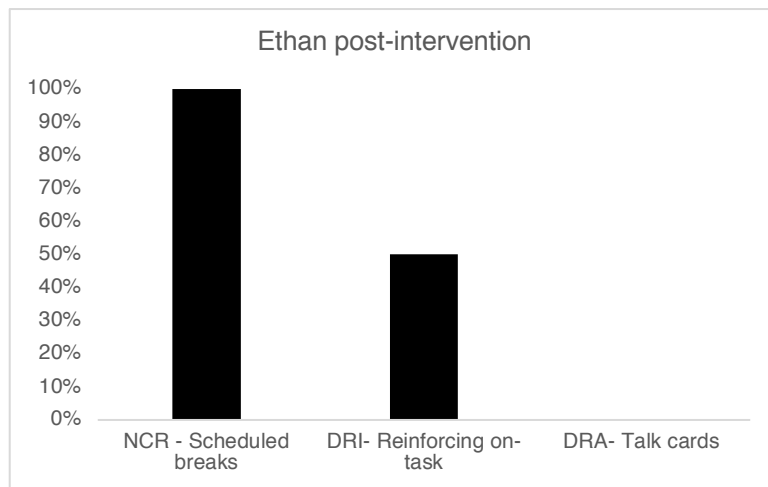


Figure 5. The results of the post-intervention PIA for Ethan

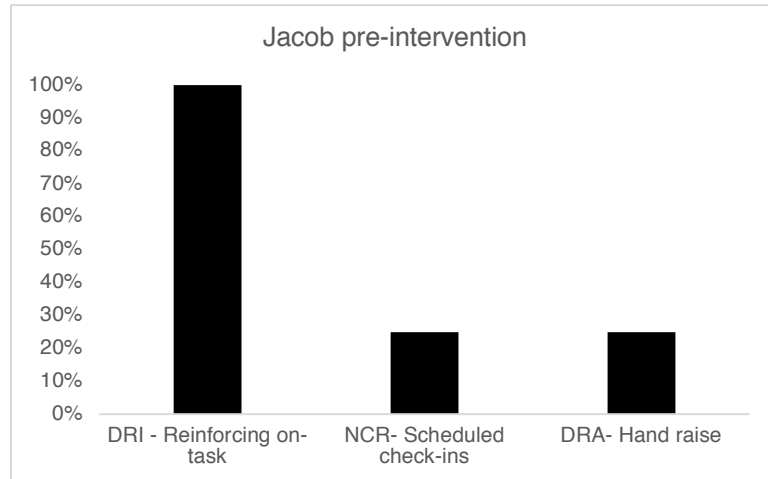


Figure 6. The results of the pre-intervention PIA for Jacob

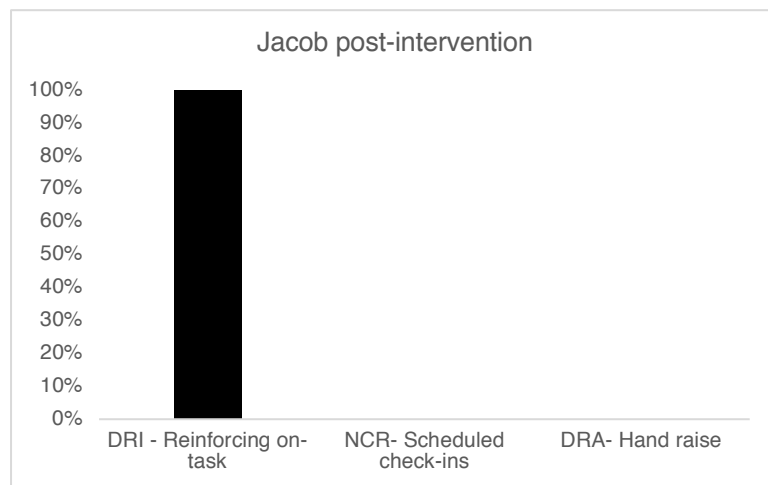


Figure 7. The results of the post-intervention PIA for Jacob

Finally, for Alex, the results of his pre and post assessment can be viewed in Figures 8 and 9. two options were selected at equally high rates of 83% in the pre-assessment, NCR and choice of activities. The other two interventions were selected 0% of the time. A second pre-assessment was conducted to determine which option, NCR or choice of tasks, Alex preferred more. A modified forced-trial assessment was conducted with these two intervention options only.

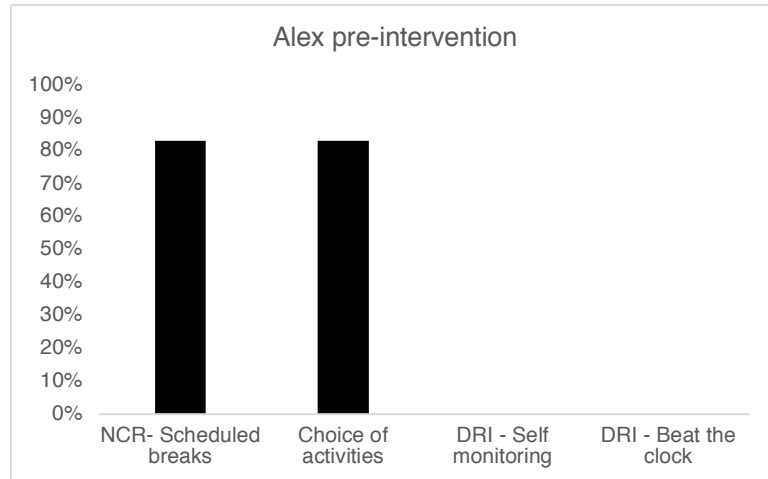


Figure 8. The results of the pre-intervention PIA for Alex

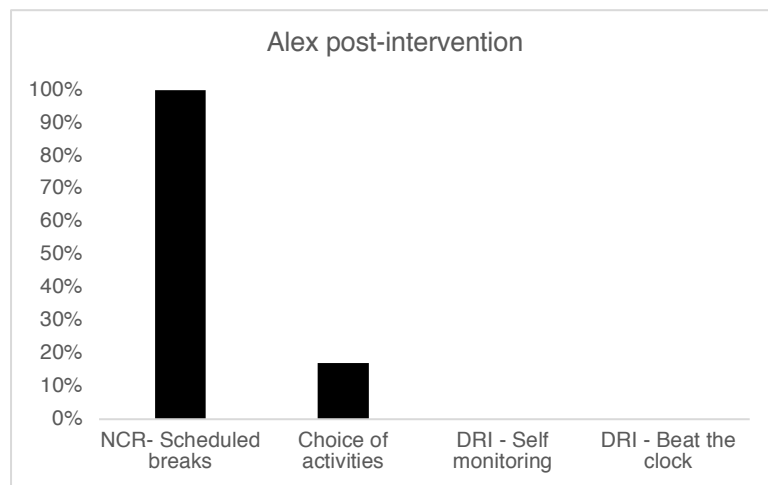


Figure 9. The results of the post-intervention PIA for Alex

Intervention

Following initial baseline conditions, the intervention with the highest percentage score in the pre-assessment was then implemented for each participant. For Ethan, an NCR with a fixed interval schedule of 5-minutes was put in place. Every five minutes, regardless of Ethan's behavior, he received a break from work and access to preferred conversation with the interventionist. Other environmental modifications were also added to this intervention package. A time was scheduled for Ethan time to eat a snack prior to class starting. In addition, during

break times the interventionist would write down things Ethan wanted to talk about during his next break to ensure those topics would not be forgotten. Finally, any attempts to engage in off-topic conversation or off-task behavior during work time were ignored and the interventionist would redirect Ethan back to the task. These modifications were only implemented during intervention conditions and along with the NCR procedure.

Results of the intervention for Ethan can be viewed in Figure 10. In examination of Ethan's data, the initial baseline phase (A) demonstrates that on-task behavior was occurring, on average, 50% of the time. The initial baseline phase produced a fairly predictable pattern of responding with four baseline data points within a range of 29% - 62% on task. The lack of variability and overall consistently low levels of on-task behavior prompted the research team to begin the first treatment phase (B) which for Ethan, was the NCR intervention package. In an examination of the first treatment phase, an immediate increase in level can be observed from the initial baseline condition. This level change remains constant across all four intervention sessions with on-task behavior ranging from 77%-100% with an average of 86%.

Similar patterns, levels, and trends were replicated in the return to baseline and return to intervention phases. In the return to baseline sessions, there was a similar range of on-task intervals from 35%-52% with the average being 46%. In the final intervention phase, similar treatment effects were observed. On-task behavior ranged between 77%-92% of intervals with an average of 82%. The PND (Scruggs & Mastropieri, 2013) was also calculated to determine the effectiveness of treatment outcomes. For Ethan, the PND was 100% indicating that there was no overlap between baseline and treatment conditions. The staff member implemented the intervention for Ethan changed after the first intervention phase. The first AB demonstration occurred with implementer 1 and the second AB demonstrated occurred with implementer 2.

These robust effects over time and implementers, PND, and the level, trend, and variability across phases should all be considered when interpreting the strength of this intervention.

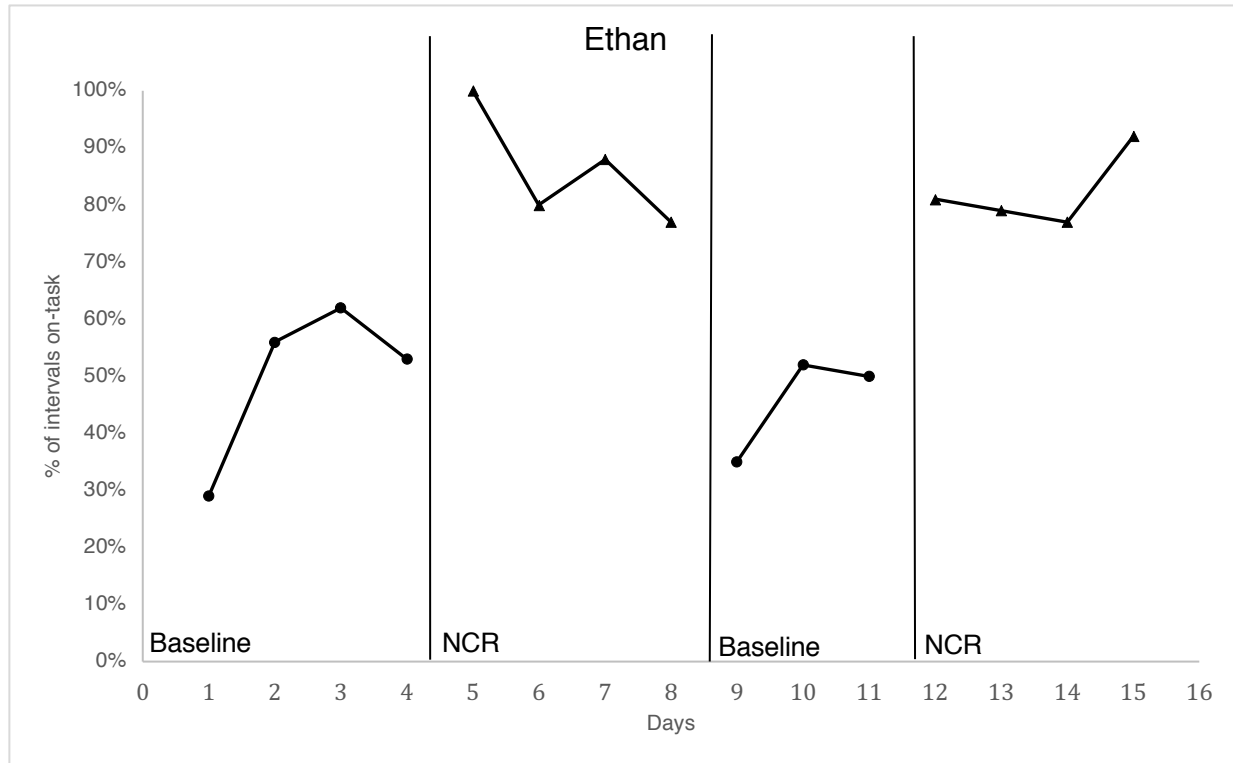


Figure 10. On task behavior for Ethan

Jacob's results are displayed in Figure 11. In his initial baseline phase (A) data ranged from 47% to 71% of intervals on-task with an average of 59% across 5 observations. This data path exhibits a neutral trend, although two fairly large drops at sessions 2 and 5 were observed. The DRI treatment package (B) was implemented on day 6 of data collection. An immediate treatment effect was observed on day 6 with a similar, consistent pattern being observed across the phase. On-task behavior increased to an average of 80% of intervals with a range of 78%-84%. In the return to baseline phase, an almost identical pattern of responding was repeated from initial baseline conditions. On-task behavior ranged from 44%-75% with an average of 64% on-task. A somewhat significant drop in on-task behavior was observed on day 11 with 44% of

intervals recorded as on-task. In the return to intervention phase, a fairly similar pattern was observed to the initial intervention phase with the exception of day 16. This phase demonstrated a range of 74%-90% on-task behavior with an average of 82% of intervals on-task.

On day 16 a drop below baseline conditions was observed with Jacob demonstrating on-task behavior in 74% of intervals. This overlap does impact the experimental control of the intervention procedures and limits some of the conclusions that can be drawn about these data. In regard to this data point, it should be noted that the participant walked into the math class already engaged in off-task behaviors (i.e. talking loud to himself about off-topic things). Similar behavior was observed as soon as the participant entered the room in baseline sessions 2, 5, and 11. In these sessions, the participant typically exhibited on-task behaviors at the lowest rates, between 40%-50% of intervals, indicating that walking into the classroom already engaged in this behavior may have been correlated to poor performance. On day 16, as noted, the participant walked into class exhibiting these behaviors but, under treatment conditions, was able to maintain on-task behavior in 74% of intervals. Despite this overall consistency of data trends, levels, and variability across both baseline conditions and repeated in intervention conditions was observed across all 17 days. Finally, for Jacob, the PND was calculated using the same method described above for Ethan. PND was 88% with 7 out of 8 intervention data points that did not overlap with baseline conditions.

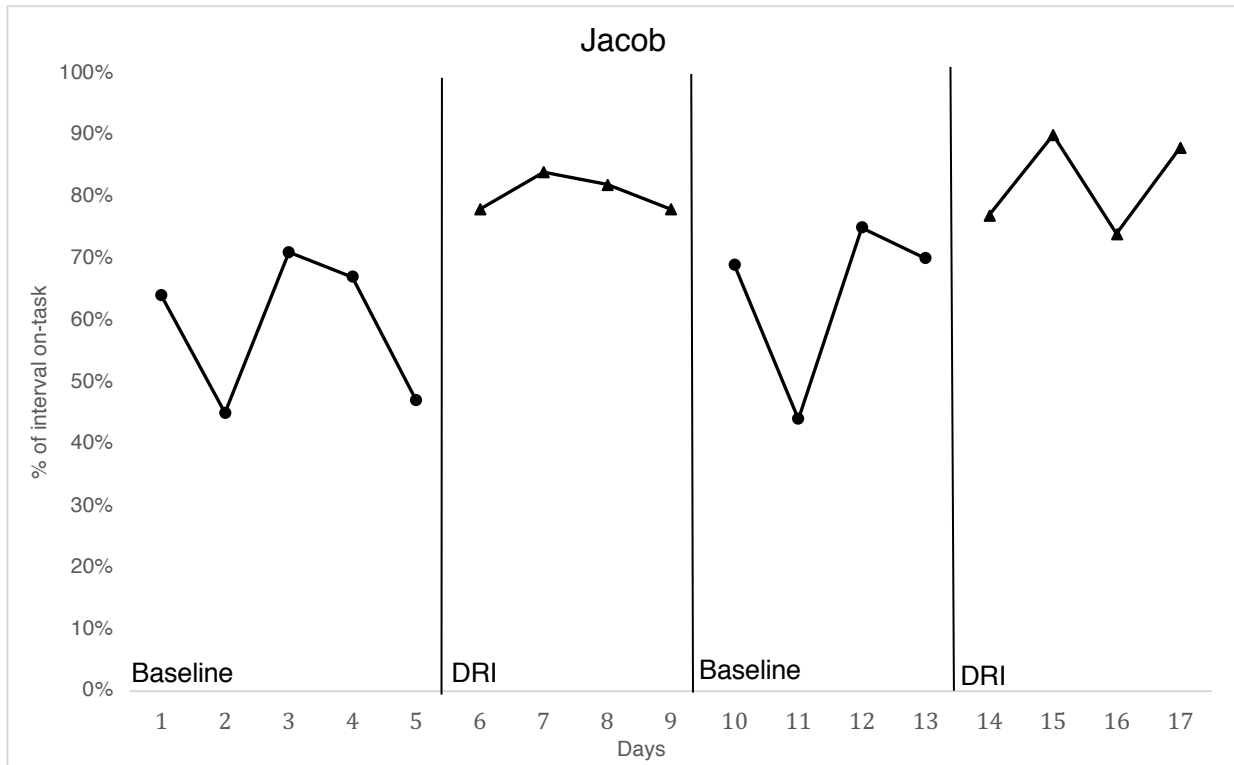


Figure 11. On task behavior for Jacob

The results for Alex are displayed in Figure 12. Alex's first baseline phase (A) demonstrates that on-task behavior was occurring at fairly stable and consistent rates with an average of 52% across intervals. This average was calculated within a fairly small range with 40%-61% of intervals observed as on-task. The stability of the data and fairly consistent low levels of on-task behavior prompted the beginning of the treatment phase (B) starting on day 6. For Alex, the implementation of the NCR treatment package showed an immediate and consistent increase in on task behavior across the first treatment phase. The 5 treatment days produced an average of 77% of intervals on task with a small range of 74%-80%.

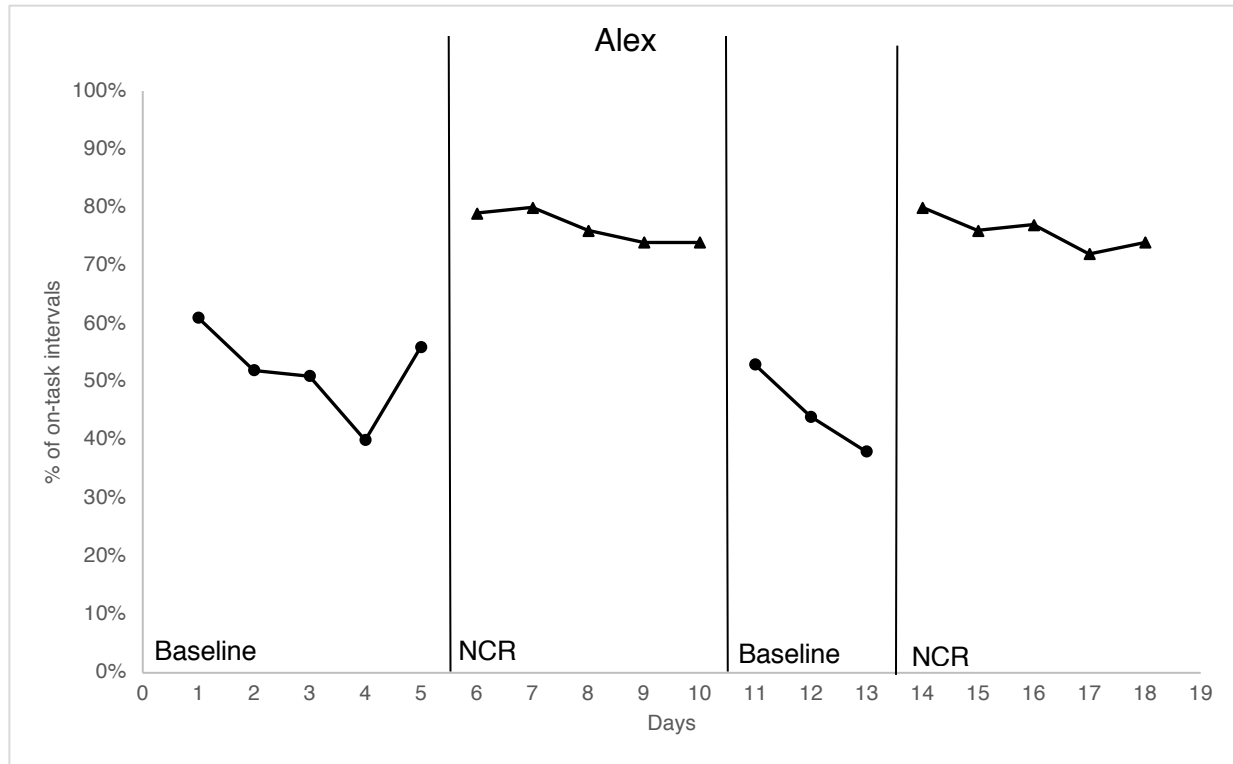


Figure 12. On task behavior for Alex

This increase in level was repeated in the second treatment phase, with an average on task performance of 76% within a range of 72%-80%. Return to baseline conditions saw a decreasing trend across each of the three data points. On average, Alex was on task for 45% of intervals with a range of 38%-53%. This decreasing trend prompted the research team to re-implement treatment conditions starting on day 14. For Alex, the PND was calculated at 100% with 0% of treatment days overlapping with baseline data points. Treatment was implemented by the classroom teacher and BCBA based on the availability of each interventionist. Data patterns across all intervention sessions remained fairly constant both over time, and interventionist.

Acceptability Assessments

Intervention rating profile. The results of the modified IRP-15 (Martens et al., 1985) are displayed in Table 3. The items for the pre-test are listed on the left side with the posttest

language embedded throughout in parentheses. Both the BCBA commonly responsible for treatment decisions in the classroom setting along with the interventionists responses are displayed below. The interventionist for Jacob did not return his post-intervention rating profile and therefore that data set is marked below with an x. The total score out of a possible 90 points is listed at the bottom along with a calculation of difference from the pre and posttest rating scales.

For Ethan, the BCBA scored the intervention as an 88 out of 90 in the pre-assessment with a drop to a score of 80 in the post assessment. An opposite pattern was observed by the interventionist for Ethan who scored the intervention an 80 in the pre-assessment and an 88 in the post assessment. Despite the changes, the scores remained fairly high indicating a high level of acceptability for the intervention procedures selected by the participant. The lowest item score received was in the BCBA's post assessment in which a score of 4 was given regarding the intervention's consistency with others that have been used in the same classroom setting.

For Jacob, the BCBA score remained constant across the pre-and post-test at 80. The para reported a score of 67 without a comparability score in the post-assessment. For Alex, the BCBA had a total rating score of 83 in the pre-assessment and 71 in the post assessment demonstrating a drop of 6 points. Similarly, the classroom teacher rated the intervention at a total of 71 in the preassessment with a drop in the post assessment to 65, a loss of 6 rating points. The classroom teacher providing the lowest item rating of a 3 in the post assessment in response to the item referencing the acceptability of similar procedures among other classroom teachers.

Table 3

Item	BCBA - Ethan		Para - Ethan		BCBA- Jacob		Para - Jacob		BCBA- Alex		Teacher- Alex	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
This would be (was) an acceptable intervention for the child's needs	6	6	6	6	5	5	5	x	5	5	5	5
Most teachers would find this intervention appropriate for children with similar needs	6	5	6	5	5	5	4	x	4	5	4	4
This intervention should prove (proved) effective in supporting the child's needs	6	5	5	6	5	5	4	x	6	6	5	4
I would suggest the use of this intervention to other teachers	6	6	6	6	5	5	4	x	5	5	4	4
The child's needs are (were) severe enough to warrant use of this intervention	6	6	6	6	6	6	5	x	6	6	4	5
Most teachers would find this intervention suitable for the needs of this child	6	5	5	5	5	5	5	x	5	5	5	3
I would be willing to use this intervention in the classroom setting	6	5	6	6	5	6	4	x	5	5	4	4
This intervention would (did) not result in negative side effects for the child.	6	6	6	6	6	6	5	x	6	4	6	5
This intervention would be appropriate for a variety of children	5	6	5	6	6	5	4	x	6	5	5	5
This intervention is (was) consistent with those I have used in classroom settings	5	4	5	6	6	4	4	x	6	5	5	5

The intervention is (was) a fair way to handle the child's needs	6	5	5	6	6	6	4	x	6	5	4	4
This intervention is (was) reasonable for the needs of the child	6	5	5	6	5	6	4	x	6	5	5	4
I like (liked) the procedures used in this intervention	6	5	6	6	5	6	5	x	5	5	5	5
This intervention would be (was) a good way to handle this child's needs	6	5	5	6	5	5	5	x	6	5	5	4
Overall, this intervention would be (was) beneficial for the child	6	6	5	6	5	5	5	x	6	6	5	4
Total score	88	80	80	88	80	80	67	x	83	77	71	65
Difference in pre and post test scores		-8		+8		=		x		-6		-6

Open-ended assessments. Open ended assessments were also delivered prior to the implementation of the intervention and after the intervention was over. Respondents included the classrooms BCBA's responsible for typical behavioral treatment decisions and Alex's classroom teacher who had similar responsibilities. Their responses are summarized and displayed below in Table 4. Items from the pre- assessment are listed in the top panel and the post assessment items are listed in the bottom panel. Responses left blank were marked with an x.

In the pre-assessment for each respondent, similar responses across participants were provided regarding the acceptability of including the student in the selection of their own supports. In general, positive opinions were expressed in favor of involving the participants in this manner. In addition, similar benefits to the participant were listed in regard to their

inclusion such as an increase in self-sufficiency, buy-in, and accountability of their own behavior. Similar concerns were also expressed regarding the potential risks of allowing the student to choose their own plan. Some general risks included the student choosing a plan that didn't work, or an increase in resistance to adult demands. Respondents were also asked about the plan that they preferred and if it differed from the plan selected from by the participant. For Jacob, a contrast was observed as the BCBA preferred the NCR plan and the participant selected the DRI. This was also observed in the responses of the classroom teacher for Alex who preferred the choice of task plan, but the NCR was chosen by the participant.

In the post-assessment respondents were questioned about any shift in opinion that might have occurred regarding the inclusion of the student in the assessment and selection of their own supports. In general, respondents were unanimous that involving the participant was beneficial and this was a practice they would consider continuing. Respondents were also asked about their willingness to continue the plan and generalize in other settings. Three out of four classroom staff, with the exception of the classroom teacher for Alex, responded that they would like to continue the intervention as designed and generalize to other class periods. For Alex's classroom teacher, she reported concerns about the time intensive nature of the intervention and mentioned that she would like to continue the intervention if modifications to the adult participation could be made.

Table 4

BCBAs pre and posttest responses to the open-ended questionnaire

<u>Item</u>	<u>BCBA – Ethan</u>	<u>BCBA- Jacob</u>	<u>BCBA- Alex</u>	<u>Teacher- Alex</u>
How do you feel about allowing students to choose which behavior support plan they will experience?	Really like this idea. Could increase self-sufficiency, choice making and quality of life	Really like this idea. Increase independence and quality of life	Could promote buy-in. Similar to a behavior contract	Great practice as it allows a student to be more involved and responsible. Could also ensure more success if plan is successful.
Which behavior support plan do you prefer with the options available?	NCR	NCR- Scheduled check ins	Choice or NCR	Choice of tasks. Still enable the student to get work done but have some control still
Which aspects of your preferred plan do you like the most?	Predictability of reinforcement	The non-contingent attention seems to match well with the function of his behavior	Building in dedicated time for student to do preferred activities. Could compete with wasted time during work.	Student is still completing work, could be easily maintained with minimal prep
Which aspects of your preferred plan do you like the least?	Not be able to talk when feeling anxious	He might satiate on attention. Also seems really involved for the para. Doesn't promote independence.	Amount of support he needs	The potential time intensive side, with the student making the task selection.
Which aspects of the student-preferred plan, if different, do you like the most?	Same plan	The lack of feedback given when he is not on track	Same plan	Type of break is contingent on focus during work time. Still able to complete work.
Which aspects of the student-preferred plan, if different, do you like the least?	Same plan	The potential for problems if he didn't get attention	Same plan	Transitioning back to work
How could we change the procedure to make it better, more acceptable, or	Taking a break outside of the schedule if needed	x	Adding a visual to go with work vs. break time	Implementation has been smooth but time intensive. Hard to say how it could be improved because teaching time is necessary

easier to implement?				
What positive side effects might giving students choices about behavior support plan have, both for the students given the choices and for other student in your classroom?	Self-empowerment and a feeling of positive choice. Other students will benefit from bx change	Self-empowerment – I think this will change behavior quickly which will benefit others	Could bring faster behavior change. Increase in personal responsibility and a more open dialogue between student and teacher	Allow student to feel responsible and a sense of control. Also create a more successful intervention.
What negative side effects might giving student choices about behavior support plan have, both for the students given the choices and for other students in your classroom?	May choose a plan that doesn't work. Could continue to distract others.	May choose a plan that doesn't work	Resistance to adult-driven instructions if it doesn't work. Distracting other students	Student could select a plan for the wrong reasons and it might not work. It could also lead to student wanting to make more choices in areas they don't have control
Have your feelings changed about allowing students to choose which behavior support plan they will experience now that the interventions have been implemented?	NO!	No, I do wonder if the plans they didn't choose would also be effective?	I was impressed by how genuinely invested the student was	Still think it could be beneficial. Our student has been very motivated.
Which aspects of the implemented plan do you like the most?	Writing down things he wanted to talk about	It was clear and he could tell when he was not on task	The increase in on-task behavior!	The expectation that he needs to work the whole time during work time

Which aspects of the implemented plan do you like the least?	Talking behaviors are still present	Was not as effective at getting rid of all behavior	The transition time between break and work	The transition time between break and work
How could we change the chosen procedure to make it better, more acceptable, or easier to implement?	Quick and easy instructions	Easy to implement. Would like a pretty package of instructions	Plan for fading of adult support	Rearrange when breaks occur. Minimize transition time.
Do you think you will keep this plan in place after the study concludes? Please explain	Yes! His time on-task increased	Yes! His overall time on-task has increased. Awesome!	Yes! It has been effective and we are looking to apply it across his day	It might be difficult to as the student requires support to transition. I don't know if we have enough staff support to do it consistently
If you answered <u>yes</u> on question 6, do you think you will implement the plan across other parts of the day?	Yes! He needs this throughout the day	Math and Language arts-when he has a BT for support	Yes	x
If you answered <u>no</u> on question 6, what do you think you will implement in place of this plan?	x	x	x	I would like to incorporate more breaks or opportunities to earn them throughout the day
Do you think including this student in the behavior support planning process had an effect on the success or	Yes, was more motivated to be on task. Helped the plan to work	Wanted to work harder because he picked the plan	Yes. He was excited about the plan from the first day and we saw an immediate change.	I think he had more-buy in because he picked it. I would like to see him run the plan more independently.

failure of the intervention?

Do you think you will be more likely to include students in the behavior support planning process in the future? Please explain

Yes, it gives them more choices and feelings of empowerment

Great idea to add choices and increase self-sufficiency

Yes, I would be interested in developing more strategies for including students opinions and ideas

Yes, I might structure the options differently or pick different options.

An open-ended interview was also delivered to the participants themselves at the conclusion of the research study. Responses from the participants are reported exactly as delivered below in Table 5. Overall, participants reported that they wanted to keep their plan and enjoyed the ability to select it for themselves. Participants noted no changes that they would make to their current plans and all wanted to continue doing them. For Ethan, he did report a level of discomfort with being videotaped which was implemented for data collection purposes throughout the study.

Table 5

Open-ended post-questionnaire for participants

<u>Item</u>	<u>Ethan</u>	<u>Jacob</u>	<u>Alex</u>
How did you feel being a part of this study?	Kinda good. I don't like being videotaped. I only like it with permission	It was good	Good. I liked doing it
How do you like your new plan?	Very good	I want to keep doing it. I just really like it	I like it, I like the whole thing
How does the plan help you at school?	I think it helps in language arts	Helps me in math	Yeah, yeah it helps me alot
Is there anything you want to change about it?	I like how it's going	No, I want to do the same thing	No, I want to keep it the same

How did you feel about picking it out yourself?	Pretty good – I really liked that	I'm happy I got to pick it	Good
Would you like to keep using the plan?	Yeah	I want to keep using it	Yes!

Interobserver agreement

In total, IOA was collected in 42% of sessions with an average score of 86%. Agreement ranged from 77%-100% across all participants. For Ethan, IOA was collected on 7 different days or 47% of total sessions. Data was collected at least once per phase with an average agreement of 89%. IOA was collected for Jacob on 7 different days or 41% of the total session days and at least once per phase. Average agreement for Jacob was 83%. Finally, for Alex, IOA data was also collected on 7 different treatment days or 39% of all sessions and at least once per phase. The average agreement for this final data set was 86%.

Procedural fidelity

Procedural fidelity (PF) was collected in 62% of all treatment phases. PF scores ranged from 83%-100% across all participants. For Ethan, PF was collected in 75% of intervention sessions with an average score of 92%. PF data was collected in 50% of intervention session for Jacob with an average score of 89%. Finally, for Alex, PF was taken in 60% of treatment phases with an average score of 95%.

Discussion

Across all participants, the intervention selected as the most preferred by the direct recipient themselves was effective. For all three of the participants, increases in on-task behavior and decreases in off-task behavior were observed across repeated implementations. Given these results, it appears that the descriptive behavioral assessments were also successful at identifying the variables maintaining the target behaviors for all participants. Although it cannot be directly

determined what effect including the participant in the descriptive assessment and selection of their own supports may have had, it can be determined that providing a choice in intervention procedures did not deter the behavior change process.

In the descriptive assessments data was collected from multiple sources, including the participants themselves. These data were fairly cohesive and consistent across informants, helping to strengthen the hypotheses about the function of the challenging behavior. Although there was consensus about the function of the behavior, there was notably less agreement about the setting events or triggers related to the challenging behavior. The direct recipients identified several setting events that they believed were related to the challenging behaviors that were not noted in any other respondent interview or checklist and were not directly observed. For example, Ethan identified stomach and bowel issues as a common setting event for the target behavior. Alex reported that fatigue and hunger were more likely to be present when his target behavior occurred which again. All three recipients also identified more setting events than did the BCBA or their classroom teachers.

These findings are consistent with others who have examined agreement between the direct recipient and adult provided responses on the FAI (Kinch, Lewis-Palmer, Hagan-Burke, & Sugai, 2001; Lewis-Palmer, Sugai, & Horner, 1999; Reed, Thomas, Sprague, & Horner, 1997; Wehmeyer et al., 2004). Direct recipients seem to commonly identify more setting events than adults when interviewed about their own behavior (Wehmeyer et al., 2004). Additionally, it is common for them to identify unique setting events that were not identified by any other source (Reed et al., 1997). There are several possible explanations that may shed light on this phenomenon. Direct recipients naturally have more insight into private events such as hunger or pain, than others who can only observe public events, could possibly have. With this perspective,

critical information regarding what circumstances might occasion the problem behavior, may be only accessed with assistance from the direct recipient themselves. Similarly, adult observers may only be able to observe the target behaviors in certain settings or particular times of day which may limit their ability to report all relevant environmental influences that could act as a setting event. The direct recipient themselves, as a participant in every setting, would most likely be the only one with all of this information.

In regard to the PIAs there are also several points that merit further discussion. First, in comparison of the pre and post assessment data each participant preferred the same intervention strategy prior to and after the implementation of the supports they selected. In the case of Alex and Jacob, preference for their selected plan seemed to strengthen in the post assessment as the selection of other plans reduced significantly. This data is congruent with similar findings that have demonstrated consistency over time in preferences identified via forced choice assessments (Carr, Nicolson, & Higbee, 2000; Hanley, Iwata, & Roscoe, 2006). It is encouraging on a number of accounts that preferences remained stable in the pre- and post- tests. First, the stimuli being presented in the PIA were complex and may have been difficult or confusing for the participants to interpret. After experiencing the intervention, however, participants choices mirrored those in the pre-assessment. This may indicate that participants were able to understand, interpret, and make distinct choices about their preferences in the pre-assessment, even without having to experience the intervention first hand. This hypothesis is supported by the clear differentiations that were observed across the PIA data sets, indicating clear preferences for one intervention in comparison with the other options.

The lack of preference shift is also encouraging on a practical level. In comparison with current methods of assessing direct recipient preference for intervention in which two plans are

systematically implemented prior to the assessment (Hanley, 2010), this greatly reduces the amount of resources, training, and materials needed to establish preferences for any given intervention. If preferences can be established prior to the start of the intervention, and those preferences can be maintained after it has been implemented, the need to run multiple interventions may be reduced. Finally, given that the interventions were successful at changing behavior, it is encouraging that the participants' preferences did not shift. It is a risk, as stated by the classroom teacher for Alex, that allowing recipients a high level of choice may lead to poor choices, or an increase in problematic behavior if choices are limited in other areas. In this case, all three participants chose to continue an intervention that increased the amount of on-task behavior they were engaging in. Although this is a small sample these choices are encouraging and support the idea that recipients, if given the choice, may select options that promote positive behavior.

While the participants' preferences for intervention did not shift, it appears that the acceptability on the part of the participating BCBA's and teachers may have done so, particularly for one participant. For Jacob, acceptability scores remained constant, however for Ethan the participating BCBA's scores dropped from 88 in the pre-assessment to 80 in the post assessment. The interventionists' scores for Ethan saw a reverse effect with a gain of 8 points in the post assessment. The acceptability scores for Alex's BCBA and classroom teacher perhaps had the most notable shift with both respondents scores dropping by 6 points in the post assessment. One possible explanation as to why these shifts may have occurred can be found in the open-ended assessment data. In both of these cases, the intervention that was implemented was not the intervention that was most preferred by the teachers and BCBA prior to the intervention.

In Alex's case, his teacher preferred the choice of tasks intervention and he selected the NCR. This disagreement may have affected her acceptability ratings in a number of ways, including dissatisfaction with her own lack of choice in the intervention selection. This same disagreement occurred for Jacob. The BCBA working with him preferred the NCR option and he selected the DRI. In this case, it did not seem to affect the BCBA's acceptability scores. Given the differences in responding across respondents, it is difficult to tell if this discrepancy played a role in the post assessment acceptability ratings.

Another possible explanation for the lower acceptability ratings post intervention by some classroom staff can be found in the open-ended assessment data. The time and resources needed to implement the intervention were mentioned by the classroom teacher and the participating BCBA. Alex was the only participant that did not receive one-on-one services and it is possible that an individual intervention of this nature was perceived to be too difficult for the classroom staff to monitor. Both the teacher and BCBA also noted dissatisfaction with the amount of transition time between work and breaks associated with this intervention. All of these factors may have impacted the acceptability ratings but, it should be noted, acceptability remained fairly high across classroom staff, despite these variations.

These data present an interesting point of practical discussion namely, what to do when the opinions of the person receiving the intervention and person implementing the intervention are different? The intervention put in place for Alex was effective and the participant stated that he wanted it to continue. The classroom teacher, however, expressed concerns about the time required to implement the intervention and suggested that she may not choose to continue the intervention unless alterations were made. Given that she was one of the primary

interventionists, the acceptability of these procedures for her is critically important in terms of sustainability and maintenance of the intervention in the long term.

Creating a behavior intervention that is acceptable to both the participant and the interventionist responsible for carrying it out, could pose several challenges. Available resources, differences in opinion regarding satisfactory behavior, acceptable reinforcement, and limitations in daily schedules and staffing are just a few potential sources of conflict that may arise when one is accounting for the preferences of a direct recipient and an interventionist. Historically, as discussed above, the preferences and opinions of the interventionists, caregivers, and other related stakeholder have been prioritized (Hanley, 2010; Snodgrass et al., 2018). In a final examination of the open-ended data however all of the classroom staff, including Alex's teacher, stated that allowing the participants to choose their own plans increased the overall effectiveness of intervention. Although direct conclusions cannot be made about a value-added effect from participant selection based on these data, the conclusions draw by the classroom staff and the participants themselves are worth noting. If in fact, allowing a direct recipient more choice in their intervention process can increase the overall effectiveness of the intervention itself, it seems that practically, more of an effort should be made to include the preferences of both those experiencing and running behavior intervention procedures. Practical strategies in how to do so, particularly when a disagreement arises seems to merit further investigation.

In addition to increasing the effectiveness of an intervention, there are several other potential advantages to including the direct recipient in the selection of their own supports. In relation to participant choice of intervention, interventionists commonly noted that the process also increased participant buy-in, empowerment, self-sufficiency, and participant responsibility as general outcomes. These themes correspond with the literature on increased choice

opportunities in the positive behavior support process (Heller, Miller, Hsieh, & Sterns, 2000; O'Reilly & Emmerson, 1996; Romaniuk & Miltenberger, 2001; Shogren et al., 2004; Wehmeyer et al., 2004). Increased choice making opportunities have been linked to the reduction and prevention of problematic behavior, increased functional skills, compliance, communication, and other pro social behaviors (Heller et al., 2000; O'Reilly & Emmerson, 1996; Romaniuk & Miltenberger, 2001; Shogren et al., 2004). Shogren et al. (2004) contends that the inclusion of choice is so beneficial and successful in supporting treatment goals that it is a recommended component for all intervention planning for individuals with disabilities. Given both benefits to the interventionist and the direct consumers themselves, future research should examine additional options for including the recipient in the design and selection of their own supports.

There are several limitations that should be discussed when examining these data. The second baseline condition for Ethan and Alex consisted of only 3 observations, not the 5 recommended by SCD methodologists. These shortened return to baseline conditions may also limit, although not significantly, the conclusions that can be made about the intervention in comparisons with baseline conditions. These shortened baselines were implemented with requests from the classroom staff and the participants themselves. The interventions were working successfully, and several classroom staff noted significant strain having to return to typical conditions. Additionally, Ethan himself noted that he wanted his intervention re-implemented and refused to be videotaped on the third return to baseline condition without the intervention. Although these data points do present a limitation, it also poses an interesting question for future study. If future research examines the social validity of intervention procedures from the point of view of the direct recipient, can alternative design options be selected that don't involve the removal of a self-selected, successful intervention.

Another limitation can be observed in the collection of IOA data, in three instances IOA scored dropped below 80% with a low of 77%. Data was collected live by the primary data collector and via video for the IOA data collectors which may account for this discrepancy. Video collection in a classroom environment proved to be difficult and was limiting for IOA data collectors. Several students in the classroom setting did not provide video permissions and therefore the placement of the camera sometimes made it difficult to hear the participants or observe specific actions. For example, Jacob was drawing pictures on his math paper for several minutes during one session which was considered off task. Because the camera could not capture what was being written on the paper, his behavior appeared to be on-task during these intervals. Overall, the average IOA was fairly high at 86% but these discrepancies should be noted in interpreting this data.

A final limitation in regard to the generalizability of this data should also be discussed. Participants in this study were required to engage with videos and discriminate highly complex stimuli being represented. Participants without these skills may not be able to participate in the discussed procedures or may require more training prior to the implementation of the PIA. Additionally, all of the participants had the benefit of asking questions and verbalizing confusion which may have provides necessary support as they selected interventions in the PIA. Although it has been demonstrated that video preference assessments can be successfully conducted with those who have more limited language abilities (Huntington & Higbee, 2017; Huntington & Schwartz, 2017) it is unclear to what extent these verbal skills would be necessary for future participants. Verbal language was required to participate in the descriptive assessment interviews and further research should examine methods to include those with a more limited repertoire in the assessment of their own challenging behavior.

Future studies should continue to pursue alternative methods for including the direct recipient in the design and selection of their own supports. This study demonstrated that inclusion of the direct recipient did not negatively impact the effectiveness of the intervention procedures. Given the many potential benefits of their inclusion, efforts should be made to include every direct recipient in their own supports, in meaningful and important ways. Future research could consider isolating the effects of including the direct recipient in the selection of their own supports and compare these results with a staff or caregiver chosen intervention. It is unknown what effect the other intervention options that were not selected, may have had on the behavior of the participants. It is possible that implementing these options would have been significantly less successful or even more successful, than the one selected. Future research demonstrating the value-added effect of including the direct recipient, could significantly support the idea of increased involvement for the direct recipient in applied settings.

Future studies could also examine practical methods of resolving conflicts that may arise when both the interventionist and recipient preferences for interventions are taken into account. This is a critically important issue to address as interventionists move forward with the inclusion of direct recipient preferences in behavior supports. Techniques to support shared control, increase communication, manage expectations, and balance multiple consumer values would be an incredibly valuable addition to the current research. In addition, future researchers could consider examining interventionists opinions in regard to the degree of behavior change observed, in relation to interventionists opinion.

Additional research could also expand examinations on the use of videos in relation to PIAs. Video based PIAs should be further examined with a variety of participants to further understand both their capacity and limitations with various populations. Future researchers could

also examine additional possibilities for those that cannot engage with videos or have more limited speech or cognitive abilities. Finally, researchers could examine the use of videos in the descriptive assessment process as a means of demonstrating behavior to recipients, or even allowing them to assist in the analysis of it. Benefits of including the recipient in the descriptive assessment itself should also be examined, particularly in relation to identified setting events.

Finally, future research could examine the social validity of the available SCD methods themselves. Exposing participants to multiple non-preferred treatments or reversing self-selected, successful interventions seems to impose upon the ideals of social validity itself and future discussion may be warranted in this area. Additional design methods, alterations, or modifications may be helpful for future researchers who are attempting to demonstrate experimental control in a socially valid way.

The inclusion of the direct recipient in the assessment, selection, and design of their own behavior supports has many potential benefits, both to the recipients themselves and to the interventionists and consumers responsible for treatment decisions. The overall lack of involvement from these direct recipients in the assessment of social validity as a whole, reflects a larger problem in relation to ABA and its ability to live up to its ideal of solving problems of social significance. Social validity, as this paper contends, cannot be fully addressed without the preferences, opinions, and feelings of the individual directly experiencing those interventions. The burden therefore is on the practitioners of ABA to discover ways of communicating with clients, regardless of their limitations, and honoring the information they receive from them in relation to intervention procedures.

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Appendix A

Participant	Target Behavior – Off Task	Alternative Behavior – On Task
Ethan	<p>To be considered off task student may be engaged in any of the following behaviors: (a) out of seat (excluding relevant out of seat permissions) farther than 0.5 feet (b) looking at off task materials, people, or parts of the room not related to the academic assignment, (c) not completing the assigned task and (d) not complying with teacher directions. Student is also considered OFF TASK when he does not (e) respond to a teacher initiation, when he is (f) talking about off-topic things to teacher or peers (g) repeating a question or phrase ON or OFF topic more than twice.</p> <p><i>Out-of seat examples</i> Student may engage walking out or around the classroom, standing in non-designated areas</p> <p><i>Off-topic examples</i> Student may talk to peers, teachers, or himself about things he doesn't like, (e.g. expectations, peers assignments, etc.), schedule for the day, facts and information not relevant to the topic at hand, etc.</p>	<p>To be considered on task student must be (a) seated in chair (excluding relevant out-of-seat permissions) with backside in seat, or standing within 0.5 feet from desk (b) looking at materials or teacher as requested, (c) completing the assigned task as instructed, and (d) responding to the questions or requests of teachers (Umbreit, Lane, & Dejud; 2004). On task behavior can also include (e) talking about the assignment to teachers or peers unless otherwise redirected by teacher.</p> <p><i>Relevant out of seat permission examples:</i> Students in the class are allowed to take water and bathroom breaks as needed. This student is also allowed to be out of seat to gather materials, such as a pencil or paper with permission. Student may also be out of seat if the assignment or activity warrants out of seat behavior.</p> <p><i>On-topic examples</i> On topic is defined as any verbal, written, or gestural behavior that aligns with the assignment or instruction provided by the teacher. Examples could include writing number or words related to a worksheet, book, or verbal question; answering questions with the correct answer or one that has to do with the academic subject; asking questions about the current academic lesson, etc.</p>
Jacob	<p>To be considered off task student may be engaged in any of the following behaviors: (a) out of seat (excluding relevant out of seat permissions) or not seated correctly as defined above (b) looking at off task materials, people, or parts of the room not related to the academic assignment, (c) not completing the assigned task and (d) not complying with teacher directions. Student is also considered off task when he is (e) talking about off-topic things out loud to himself, adults, or peers.</p> <p><i>Out-of seat examples</i></p>	<p>To be considered on task student must be (a) seated in chair (excluding relevant out-of-seat permissions) with backside in seat, (b) looking at materials, teacher, or peer whose turn it is to speak as requested, (c) completing the assigned task as instructed, and (d) complying with directions given by teacher (Umbreit, Lane, & Dejud; 2004). On task behavior can also include (e) talking out loud to himself, adult, or peer at a normal volume about on-topic things and (f) holding or manipulating teacher provided calming items (such as fidget, or music player).</p> <p><i>Relevant out of seat permission examples:</i></p>

Student may engage in stomping feet, jumping on the ground, jumping over chair, or walking around room

Off-topic examples

Student may talk to peers, teachers, or himself about music, social time, things he doesn't like about himself, etc. that do not relate the subject or assignment. Student may also engage in singing or rapping.

Students in the class are allowed to take water and bathroom breaks as needed. This student is also allowed to be out of seat to gather materials, such as a pencil or paper. Student may also be out of seat if the assignment or activity warrants out of seat behavior.

On-topic examples

On topic is defined as any verbal, written, or gestural behavior that aligns with the assignment or instruction provided by the teacher. Examples could include writing number or words related to a worksheet, book, or verbal question; answering questions with the correct answer or one that has to do with the academic subject; asking questions about the current academic lesson, etc.

Alex To be considered off task student may be engaged in any of the following behaviors: (a) out of seat (excluding relevant out of seat permissions) (b) looking at off task materials, people, or parts of the room not related to the current academic assignment, (c) manipulating materials in non-task related ways (d) not completing the assigned task and (d) not complying with teacher directions. Student is also considered off task when he does not (e) respond to a teacher initiation, when he is (f) talking about off-topic things to teacher or peers.

Off task materials

manipulations examples

Student may stack pencils and markers together, fidget with them, or play pretend with these items. Student may draw on materials in non-academic related ways. Student may also use recreational materials (such as books, or technology) during work time. Student may also play with fidget items instead of fidget while working.

Out-of seat examples

Student may engage in climbing or sitting under desk, walking out or around the classroom, standing in non-designated areas

Off-topic examples

Student may talk to peers, teachers, or himself about things he doesn't like, (e.g. expectations, peers, assignments, etc.),

To be considered on task student must be (a) seated in chair (excluding relevant out-of-seat permissions) with bottom in seat, (b) looking at materials or teacher as requested, (c) completing the assigned task as instructed, and (d) responding to the questions or requests of teachers (Umbreit, Lane, & Dejud; 2004). On task behavior can also include (e) talking about the assignment to teachers or peers unless otherwise redirected by teacher and (f) playing with a fidget item as long as other on task behaviors are present.

Relevant out of seat permission examples:

Student may be out of seat when given permission to gather materials, take a water break, or bathroom break. Student may also be out of seat if the assignment or activity warrants out of seat behavior.

On-topic examples

On topic is defined as any verbal, written, or gestural behavior that aligns with the assignment or instruction provided by the teacher. Examples could include writing number or words related to a worksheet, book, or verbal question; answering questions with the correct answer or one that has to do with the academic subject; asking questions about the current academic lesson, etc.

schedule for the day, facts and
information not relevant to the topic at
hand, etc.

Appendix B

PRE-INTERVENTION

Student _____ Rater completing this form _____ Date _____

Adapted Version of the Intervention Rating Profile-15

The purpose of this questionnaire is to obtain information that will aid in the selection of future classroom interventions. These interventions will be used by teachers of children with identified needs. Please circle the number which best describes your agreement or disagreement with each statement.

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1. This would be an acceptable intervention for the child's needs.	1	2	3	4	5	6
2. Most teachers would find this intervention appropriate for children with similar needs.	1	2	3	4	5	6
3. This intervention should prove effective in supporting the child's needs.	1	2	3	4	5	6
4. I would suggest the use of this intervention to other teachers.	1	2	3	4	5	6
5. The child's needs are severe enough to warrant use of this intervention.	1	2	3	4	5	6
6. Most teachers would find this intervention suitable for the needs of this child.	1	2	3	4	5	6
7. I would be willing to use this intervention in the classroom setting.	1	2	3	4	5	6
8. This intervention would <i>not</i> result in negative side effects for the child.	1	2	3	4	5	6
9. This intervention would be appropriate for a variety of children.	1	2	3	4	5	6
10. This intervention is consistent with those I have used in classroom settings.	1	2	3	4	5	6
11. The intervention is a fair way to handle the child's needs.	1	2	3	4	5	6
12. This intervention is reasonable for the needs of the child.	1	2	3	4	5	6
13. I like the procedures used in this intervention.	1	2	3	4	5	6
14. This intervention would be a good way to handle this child's needs.	1	2	3	4	5	6
15. Overall, this intervention would be beneficial for the child.	1	2	3	4	5	6

Total (sum all points circled; higher scores indicate higher acceptability; range = 15-90): _____

Comments: _____

Source: Adapted from Witt, J.C. & Elliott, S.N. (1985). Acceptability of classroom intervention strategies. In Kratochwill, T.R. (Ed.), *Advances in School Psychology*, Vol. 4, 251 – 288. Mahwah, NJ: Erlbaum. Reproduced under Fair Use of copyrighted materials for education, scholarship, and research. 17 U.S.C. § 107



2015-2016

POST-INTERVENTION

Student _____

Rater completing this form _____

Date _____

Adapted Version of the Intervention Rating Profile-15

The purpose of this questionnaire is to obtain information that will aid in the selection of future classroom interventions. These interventions will be used by teachers of children with identified needs. Please circle the number which best describes your agreement or disagreement with each statement.

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1. This was an acceptable intervention for the child's needs.	1	2	3	4	5	6
2. Most teachers would find this intervention appropriate for children with similar needs.	1	2	3	4	5	6
3. This intervention proved effective in supporting the child's needs	1	2	3	4	5	6
4. I would suggest the use of this intervention to other teachers.	1	2	3	4	5	6
5. The child's needs were severe enough to warrant use of this intervention.	1	2	3	4	5	6
6. Most teachers would find this intervention suitable for the needs of this child.	1	2	3	4	5	6
7. I would be willing to use this intervention in the classroom setting.	1	2	3	4	5	6
8. This intervention did <i>not</i> result in negative side effects for the child.	1	2	3	4	5	6
9. This intervention would be appropriate for a variety of children.	1	2	3	4	5	6
10. This intervention was consistent with those I have used in classroom settings.	1	2	3	4	5	6
11. The intervention was a fair way to handle the child's needs.	1	2	3	4	5	6
12. This intervention was reasonable for the needs of the child.	1	2	3	4	5	6
13. I liked the procedures used in this intervention.	1	2	3	4	5	6
14. This intervention was a good way to handle this child's needs.	1	2	3	4	5	6
15. Overall, this intervention was beneficial for the child.	1	2	3	4	5	6

Total (sum all points circled; higher scores indicate higher acceptability; range = 15-90): _____

Comments: _____

Source: Adapted from Witt, J.C. & Elliott, S.N. (1985). Acceptability of classroom intervention strategies. In Kratochwill, T.R. (Ed.), *Advances in School Psychology*, Vol. 4, 251 – 288. Mahwah, NJ: Erlbaum. Reproduced under Fair Use of copyrighted materials for education, scholarship, and research. 17 U.S.C. § 107



Appendix C

Pre-intervention open-ended assessment

Q1. How do you feel about allowing students to choose which behavior support plan they will experience?

Q2. Which behavior support plan do you prefer?

Q3. Which aspects of your preferred plan do you like the most?

Q4. Which aspects of your preferred plan do you like the least?

Q5. Which aspects of the student-preferred plan (if different) do you like the most?

Q6. Which aspects of the student-preferred plan (if different) do you like the least?

Q7. How could we change the chosen procedure to make it better, more acceptable, or easier to implement?

Q8. What positive side effects might giving students choices about behavior support plans have, both for the students given the choices and for other students in your classroom?

Q9. What negative side effects might giving students choices about behavior support plans have, both for the students given the choices and for other students in your classroom?

Post-intervention open-ended assessment

Q1. Have your feelings changed about allowing students to choose which behavior support plan they will experience now that the interventions have been implemented?

Q2. Which aspects of the implemented plan do you like the most?

Q4. Which aspects of the implemented plan do you like the least?

Q5. How could we change the chosen procedure to make it better, more acceptable, or easier to implement?

Q6. Do you think you will keep this plan in place after the study concludes? Please explain

Q7. If you answered yes on question 6, do you think you will implement the plan across other parts of the day?

Q8. If you answered no on question 6, what do you think you will implement in place of this plan?

Q9. Do you think including this student in the behavior support planning process had an effect on the success or failure of the intervention?

Q10. Do you think you will be more likely to include students in the behavior support planning process in the future? Please explain

Appendix D

Student final interview questions

Student:

Date:

Interviewer:

How did you feel being part of this study?

How do you like your new plan?

How does the plan help you at school?

Is there anything you want to change about it?

How did you feel about picking it out yourself?

Would you like to keep using the plan?