

ABSTRACT

Choice-making Interventions to Reduce Challenging Behavior for Individuals with Intellectual and Developmental Disabilities

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A systematic literature review was conducted to summarize the current literature on interventions incorporating choice to reduce challenging behavior. Current literature supports the effectiveness of choice-making interventions on reducing challenging behavior. However, choice-making interventions can vary by the type of choices offered, such choice of activity and choice of materials. Few studies have compared these various approaches to choice-making interventions. The purpose of this study was to compare the effectiveness of choice of activity and choice of materials on both challenging behavior and task completion with two children with developmental disabilities. The two choice-making interventions were compared within an alternating treatment design embedded within an ABAB design. Both choice-making interventions resulted in a decrease in challenging behavior and increase in task completion, relative to baseline. However, choice of activity resulted in less challenging behavior relative to choice of materials for one of the two participants. Implications of the results will be discussed.

Choice-making Interventions to Reduce Challenging Behavior for Individuals with Intellectual and
Developmental Disabilities

by

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A Thesis

Approved by the Department of Educational Psychology

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Submitted to the Graduate Faculty of
Baylor University in Partial Fulfillment of the
Requirements for the Degree
of
Master of Arts

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Accepted by the Graduate School
December 2018

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ACKNOWLEDGMENTS

To my mentor Dr. Tonya Davis, thank you for your dedication, guidance, and for advising me throughout this process. You have provided me with the opportunity to grow academically and professionally. Your continued support as an invaluable tool to my success and I am beyond grateful. I am honored to have you as my role model.

To Dr. Jessica Akers and Dr. Clay Polson, thank you for lending me your time. Your willingness to provide me feedback and participate as members of my committee is greatly appreciated. I am thankful for the opportunity to work with you and for access to your expertise.

To my fellow cohorts, Suzy Avery, Vida Canestaro, and Kristen Williams, thank you for your support, feedback, and friendship. Thank you for your willingness to assist me throughout this process and providing me someone to brainstorm with. You have provided me with encouragement, words of kindness, and inspiration when I needed it the most. I am lucky to have shared this experience with all of you.

To Suzy Avery, Vida Canestaro, and Nicole O'Guin, thank you for your assisting me with countless hours of data collection, treatment fidelity, interobserver agreement, and session assistance. Without you, I would not and could not have finished this endeavor. I am forever grateful for your assistance in an ever-changing project that I could not have completed without you.

CHAPTER ONE

Introduction

Intellectual and Developmental Disabilities

Intellectual disabilities have been defined as restrictions in intellectual rationale while developmental disabilities have been defined as constraints that impede common developmental operations (Hallahan, Kauffman, & Pullen, 2009). According to Boyle et al. (2011) about 15% of children are diagnosed with a form of intellectual or developmental delay by the age of 12 years. While variations within specific diagnoses exist, generally more males than females are diagnosed with an intellectual disability and developmental disability (National Collaborating Centre for Mental Health, 2015). The CDC estimates these individuals' diagnoses vary from, but are not limited to, Down syndrome, pervasive developmental disorder not otherwise specified (PDD-NOS), Asperger syndrome, autism, and fragile X syndrome and each diagnoses is singular, affecting the individual and their family uniquely. For some individuals the limitations are temporary and treatment is very effective. However, others, with more severe disabilities, experience permanent restrictions and are exposed to numerous treatment procedures (National Collaborating Centre for Mental Health, 2015).

There are several common characteristics indicative of an intellectual or developmental disability. The National Academies of Sciences, Engineering, and Medicine (2015) identifies these characteristics as impairments in IQ, generally a score of less than 70; limitations in recollections; difficulties with task completion and

generalization; low drive; and acquired dependency. The World Health Organization (2010) recognizes additional impediments in individuals diagnosed with developmental disorders including, but not limited to, rigidity in behaviors as well as, restrictions in communication and social skills. Furthermore, the American Psychiatric Association (2013) recognizes barriers in individuals diagnosed with an intellectual disability within three specific domains. These domains are academic, community, and behavioral management. A variety of interventions to improve the quality of life for individuals diagnosed with an intellectual disability exists within the three domains; however, behavioral management interventions tend to focus on altering behaviors, especially challenging behavior.

Challenging Behavior

Challenging behavior is a socially-inappropriate behavior in response to an event within the environment (National Collaborating Centre for Mental Health, 2015).

Challenging behaviors present unique complications to individuals with intellectual and developmental disabilities, their caregivers, and their community. As a result, these individuals face numerous restrictions within their environment and tend to encounter a decrease in their life experiences (Murphy, 2009).

Function of Behavior

Challenging behavior can be conceptualized in terms of topography and function. Topography refers to the physical form of the challenging behavior. Individuals with an intellectual or developmental disability may engage in a variety of topographies of

challenging behavior. These include, but are not limited to, aggression towards others, destruction of property, and self-injury (Smith & Fox, 2003). The severity of challenging behavior may vary across topographies and individuals.

The function of challenging behavior refers to the purpose the behavior serves for the individual emitting the behavior. In order to truly understand why an individual engages in a particular behavior a functional analysis should be performed. According to Skinner (1953), a functional analysis indicates the type of relationship between the behavior and the setting in which it is taking place. The individual's behavior may be maintained by gaining access to stimuli (e.g., attention, tangibles) or escaping and avoiding stimuli (e.g., aversive activities). Moreover, the behavior may be maintained by stimuli not controlled by others (i.e., automatic reinforcement).

Impact on the Individual

Understanding the function of a behavior can help decrease the frequency of the behavior and thereby increase the individual's quality of life. This is critical because challenging behavior is associated with a myriad of negative outcomes. Such outcomes may include restricted treatment, limited interaction with peers, or even psychiatric hospitalization (Mandell, 2008). Mandell, Novak, and Zubritsky (2005) examined the prevalence of hospitalization of individuals diagnosed with autism spectrum disorder that exhibited challenging behavior and discovered that roughly 25% of individuals within this population are hospitalized due to their challenging behavior. Hospitalization alone can result in a decrease in effective treatment for challenging behavior, as many facilities

tend to lack the resources to provide the individual care that many of the patients need (Saraceno, 2007).

Impacts on Caregivers

Although a variety of negative outcomes are associated with the individual engaging in challenging behavior, negative outcomes are not limited only to the individual. Caregivers encounter numerous negative side effects when caring for this population, particularly those from single-parent homes. Mandell (2008) found that the stressors associated with an individual that engaged in challenging behavior increase the chances for hospitalization in single parent homes.

One such factor that affects a majority of families with individuals diagnosed with an intellectual or developmental disability is financial taxation. Anderson, Dumon, Jacobs, and Azzaria (2007) report families spend an estimated \$8,000 annually out of pocket for care, therapy, and other necessities. In addition to the annual amount spent on individuals, there is the financial loss that families must take into consideration. Caregivers and parents may face unexpected events that may require them to miss work or even change their job to be more accommodating for their families' need.

Such losses take more than just a financial toll on families. The mental health of a family that is caring for an individual with an intellectual or developmental disability may suffer due to the stressors associated with such care. Hastings (2003) examined the effects of caring for a child within this population and found that while there is no difference between the degree of stress in which a mother or father may feel, both parents report feeling significantly stressed or depressed.

Impact on the Community

In addition to caregiver stress, the communities in which individuals reside may also experience residual side effects of challenging behavior. Nichols and Sosnowsky (2002) found that many special education teachers suffer from burnout due to a lack of preparation within their degree programs to deal with challenging behavior.

In addition to the lack of preparation, Nichols and Sosnowsky (2002) discovered that many special education teacher turnover rates were due to a lack of continuing education intended to address their specific classroom needs. As a result, many teachers are unaware of various effective teaching strategies that may be used within the classroom to aid in reducing stressors related to students' challenging behavior. Instead, they may turn to social media for guidance discovering trending solutions that lack research or promise quick results within their classroom.

This lack of evidence-based practice may be due to the financial needs required to provide such services to special education teachers. States rely on government funding in order to provide services to students in public schools. As a result, schools must allocate the received funds to the areas in most need. The Individuals with Disabilities Education Act (IDEA) provides such funding to states; however, states do not receive the amount they require in order to fully provide their students with the best education (New America Ed Central). The estimated financial need for states to be considered fully funded averages almost \$30 billion a year, but they only receive about a third of that from IDEA.

Applied Behavior Analysis

Due to the numerous lasting effects an individuals' challenging behavior can have, it is important to consider the different treatment options and procedural approaches available to families, individuals and their communities. As previously stated, the consequences of an individual's challenging behavior can have lasting effects. A common approach to reducing challenging behaviors involves implementing treatment strategies based on the principles of applied behavior analysis (ABA).

ABA is an applied science that focuses on the environment and the influence it has on the behaviors of individuals (Cooper, Heron, & Heward, 2014). ABA specifically targets behaviors that are socially significant to the individual and the treatment procedures are used to improve the deficits associated with the identified behavior(s). To verify behavior-analytic treatments are responsible for influencing behavior change, treatments should be scientifically evaluated utilizing rigorous experimental design. This ensures interventions are created from evidence-based research and practices.

Background

Baer, Wolf, and Risley (1968) identified seven dimensions of ABA that in turn have become the basis that many rely on as a guide when conducting research and deciding how they manage their practice.

Applied The first dimension addressed is applied. The focus of this dimension is on how the behavior will be beneficial overall to the individual and to society. Emphasis is given specifically to what the purpose of the behavior is and why the individual

engages in said behavior (Baer, Wolf, & Risley, 1968). From this emphasis analysts are able to evaluate the potential intervention to calculate how advantageous treatment will be to the individual and those around them.

Behavioral The second dimension addressed is behavioral. This dimension focuses on observable and measurable behaviors. Baer, Wolf, and Risley explain that as humans, the behavior of both the observer and the observed can alter during the intervention. Thus, it is important to ensure the behavior being measured is done in a consistent manner that allows the data to be calculable during analysis (Baer, Wolf, & Risely, 1968).

Analytic The third dimension addressed is analytic. If the behavior was measured correctly, then decisions can be made in research and in an applied setting based on these data. Analyzing the data goes beyond looking at the numbers since researchers and clinicians rely on the results to show that the intervention had an effect on the target behavior (Baer, Wolf, & Risely, 1968). There are times when it may look like an intervention has had an effect; however, when the data are analyzed it can be determined that a confounding variable may be present causing the change rather than the intervention.

Technological The fourth dimension addressed is technological. This dimension focuses on the type of techniques that are used in an intervention. These techniques include, but are not limited to, the type of language used, implementation of the

intervention, and the applicability of the intervention outside of a clinical or research type setting (Baer, Wolf, & Risely, 1968). This dimension helps reduce unnecessary complex procedures and increases awareness for more user-friendly terms and training.

Conceptual systems The fifth dimension addressed is conceptual systems. Conceptual systems rely on the ability to build on previously produced research. Having this capability aids in replicability, furthering the reliability of the treatment procedures used with the population (Baer, Wolf, & Risely, 1968). This allows data to be collected, examined, taught and expanded upon within the field. In turn, this ensures children are exposed to empirically supported treatment procedures.

Effective The sixth dimension addressed is effectiveness. This dimension focuses on the “so what” aspect of ABA (Baer, Wolf, & Risely, 1968). It is important that interventions produce strong, socially-important effects. These effects will be scrutinized by a multitude of personnel outside of the clinic or research lab in which the treatment procedures take place. Thus, it is important for researchers and clinicians to think about how the treatment procedure will benefit the lives of not only the participants or clients, but also those around them.

Generality The seventh dimension addressed is generality. This is arguably one of the most important dimensions Baer, Wolf, and Risely address. They argue that target behaviors should occur in different environments with different people, even when that environment was not specifically targeted in the treatment procedure. Researchers and

clinicians strive to establish an increase or decrease in the target behavior which maintains once the treatment has ended.

Interventions

There are several types of interventions analysts can choose from. These interventions can be organized into (a) consequence interventions and (b) antecedent interventions.

Benefits

Everyone has the right to effective treatment grounded upon evidence-based research (Bailey & Burch, 2016). Evidence-based practices allow professionals to make decisions based on previously conducted research providing clients with the best possible treatment (Slocum et al, 2014). In addition to adhering to the seven dimension laid out by Baer, Wolf, and Risely, behavior analysts must follow a code of ethics when implementing any type of treatment procedure. Like medical professionals, behavior analysts are bound by ethical guidelines when treating individuals, adding another layer to why ABA treatment is beneficial for this population.

Consequence Interventions

Consequence interventions are implemented contingent upon a target behavior and consist of reinforcement, extinction, and/or punishment. Reinforcement-based interventions alter the schedule of reinforcement for specific behaviors to ensure more reinforcement is provided for appropriate behavior as opposed to inappropriate behavior.

Extinction refers to no longer providing reinforcement when the individual is engaging in an inappropriate behavior (Cooper, Heron, & Heward, 2014). Reinforcement-based interventions are often implemented in conjunction with extinction, such that appropriate behaviors are reinforced and the inappropriate behavior no longer results in reinforcement. Lastly, punishment procedures are either implemented by presenting a stimulus or by removing a stimulus contingent upon a target behavior that results in the decreased likelihood of future occurrences of that behavior (Cooper, Heron, & Heward, 2014). Although effective, punishment procedures tend to be perceived negatively due to the society undertones associated with some forms of punishment, particularly those that involve physically aversive consequences (e.g. spanking).

Antecedent Interventions

Antecedent interventions are frequently used to prevent challenging behavior from occurring. Two factors must be identified in order to properly implement an antecedent intervention, (a) the discriminative stimulus and (b) motivation for the behavior (Cooper, Heron, & Heward, 2014). There are a variety of antecedent interventions that involve manipulating discriminative stimuli or motivating operations, including embedding choices into an individual's routine.

Choice-making interventions allow an individual to make a selection from an assortment of options presented to the individual (Shogren, Faggella-Luby, Bae, & Wehmeyer, 2004). These interventions may include (a) within-activity options, such as a choice for the materials that can be used to complete the task or a choice for the setting in which the task takes place, or (b) across-activity options, such as a choice for which

activity to engage in or the choice to arrange the order in which activities will be completed. Some interventions contain only a within-activity or across-activity choice; others include both within- and across-activity choices within the intervention.

Offering choices is important for individuals with and without disabilities as it has the potential to serve as a reinforcer. According to the National Childcare Accreditation Council (NCAC, 2009) choice-making promotes independence throughout an individual's development, allows an individual to have a voice even if they are nonverbal and is essential in fostering self-regulating, functioning adults. All in all, offering choices goes beyond the simplicity of selecting a desired item, it is vital to the development of one's personality and individuality. In regards to individuals with challenging behavior, offering choices has the potential to reduce challenging behaviors.

CHAPTER TWO

Review of Literature

Purpose

In order to better understand the possible relationship between choice-making and challenging behavior, a systematic review of the literature was conducted.

Search Procedures

A systematic search consisting of electronic databases was conducted. A total of six databases were searched during the literature review. These databases were Educational Resources Information Clearinghouse (ERIC), Academic Search Complete, Education Research Complete, PsycARTICLES, Psychology and Behavioral Sciences Collection, and PsycINFO.

Several search terms were used to identify articles within the six databases. These terms were broken down into three groups. Group one consisted of *choice**, *preference**, and *choice* or preference**. Group two consisted of “*problem behavior*”, *disruptive**, and “*challenging behavior*”. Group three consisted of “*develop* disab**”, “*intellect* disab**”, *autis**, “*mental retard*”, and “*intellectual disab**”, or “*develop* disab**” or *autis** or “*mental retard**”.

Inclusion and Exclusion Criteria

Studies were included in the review based on six inclusion criteria. These inclusion criteria were (a) problem behavior was measured and reported as a dependent variable, (b) participants(s) were individual(s) diagnosed with an intellectual or developmental disability, (c) the independent variable was reported as a choice-making intervention, (d) the study utilized a single-case research design, (e) the articles were published in English, (f) the articles were published in peer-reviewed journals. For the purposes of this literature review, an intellectual disability was any disability or diagnosis described as “mental retardation”, “intellectual disability”, or “cognitive disability”, as well as any report of any IQ test with a score below 70. Similarly, a participant was considered to have a developmental disability if the described diagnoses matched the definition provided by the Centers for Disease Control and Prevention which specifies a group of conditions due to impairment in physical, learning, language, or behavior areas; beginning in the early development period; and impacts day-to-day functioning. If a study contained participants with and without an intellectual or developmental disability, then the study was only included if the data for the participants with intellectual or developmental disability could be extracted and analyzed. In regards to the third inclusion criterion, a choice-making intervention was defined as having the ability to control what materials are used, the setting, order of activity/activities, or selection activities in which to engage.

Data Extraction

Data were extracted based on three categories: (a) participant characteristics, (b) Functional behavior assessment (FBA) and (c) intervention characteristics. Participant characteristics consisted of (a) number of participants, (b) gender, (c) age, and (d) diagnosis. The FBA consisted of (a) problem behavior topography, (b) type of FBA, and (c) FBA results. Intervention characteristics consisted of (a) activity domain, (b) treatment setting, (c) treatment implementer, and (d) intervention choice.

Results

The data search results were 955 articles with duplicates removed. An abstract and title screening resulted in the elimination of 913 articles. Full text screening resulted in identification of 11 articles that met inclusion criteria. Upon further investigation, ancestral searches resulted in another three articles that met inclusion criteria. A total of 14 articles were included in this review (Cole, C. L., & Davenport, T. A., 1997; Cole, C. L., & Levinson, T. R., 2002; Dunlap, G., et al., 1994; Dyer, K., Dunlap, G., & Winterling, V., 1990; Foster-Johnson, L., & And, O., 1994; Harding, J. W., Wacker, D. P., Berg, W. K., Barretto, A., & Rankin, B., 2002; Kern, L., Mantegna, M. E., Vorndran, C. M., Bailin, D., & Hilt, A., 2001; Moes, D. R., 1998; Peterson, S. P., Caniglia, C., & Royster, A. J., 2001; Rispoli, M., et al., 2013; Romaniuk, C., et al., 2002; Seyber, S., Dunlap, G., & Ferro, J., 1996; Smeltzer, S.S., Graff, R. B., Ahearn, W. H., & Libby, M. E., 2009; Umbreit, J., & Blair, K., 1996). Table 1 summarizes the 14 studies that were identified to have implemented choice-making to reduce challenging behavior among individuals with intellectual and developmental disabilities.

Participant Characteristics

A total of 39 participants were identified within the 14 studies. Participants consisted of 28 males (71.79%) and 11 females (28.21%). Of these 39 participants, six participants were between the ages of 3 and 5 years old (15.38%), 26 participants were between the ages of 6 and 12 years old (66.67%), six participants were between the ages of 13 and 18 years old (15.38%) and one participant was in the age range of 19 to 22 years old (2.56%).

Sixteen participants (41.03%) were diagnosed with an intellectual disability (formerly known as *mental retardation*), nine participants were diagnosed with PDD-NOS (23.08%), and six participants were diagnosed with attention deficit hyperactivity disorder (15.38%). Five participants (12.82%) were diagnosed with autism spectrum disorder/autism, four participants (10.26%) were diagnosed with a physical disability, three participants (7.69%) were diagnosed with seizures, and two participants (5.13%) were diagnosed with Down syndrome. One participant (2.56%) was diagnosed with Asperger syndrome, Down syndrome, fragile x syndrome, cerebral palsy, behavior disorder, mood disorder, communication disorder, and developmental language disorder. Three participants (7.69%) were described to have an “unknown” diagnosis.

Functional Behavior Assessments

Six studies (42.86%) conducted an FBA prior to the intervention. Three studies (21.43%) conducted an indirect interview. Peterson, Caniglia, & Royster (2001) and Umbreit & Blair (1996) conducted interviews with individuals close to the participants (e.g., parent, teacher, caretaker, etc.). Rispoli et al. (2013) conducted an interview using

the Questions About Behavior Function (QABF) behavioral checklist (Vollmer & Matson, 1995). Two studies (14.29%) conducted direct observations. Peterson, Caniglia, & Royster (2001) and Umbreit and Blair (1996) conducted direct observations within the classroom after conducting indirect interviews. Three studies (21.43%) conducted a functional analysis. Harding, Wacker, Berg, Barretto, & Rankin (2002) and Kern, Mantegna, Vorndran, Bailin, and Hilt (2001) used a functional analysis based on Iwata, Dorsey, Slifer, Bauman, and Richman (1994).

Intervention Characteristics

Intervention characteristics include activity domain, treatment setting, treatment implementer, and type of choice intervention.

Activity domain. Across the included studies, choice-making interventions were applied across a variety of activity domains. The majority of studies (n=13; 92.86%) implemented interventions during academic tasks. Three studies (21.43%) implemented choice-making to improve a self-help skill. One study (7.14%) implemented the intervention during vocational tasks. It should be noted that some studies conducted research in multiple domains due to their participants needs.

Treatment setting. Across the 14 included studies, intervention was implemented across six settings. Most frequently, studies were conducted in a school setting (n=11; 78.57%). For example, Umbreit & Blair (1996) examined choice-making interventions within the school involving activities such as reading and writing. Two studies (14.29%)

were conducted within the participant's home. Two studies (14.29%) were conducted within a hospital setting. Two studies (14.29%) were conducted within a residential treatment facility. One study (7.14%) was conducted at a clinic. Finally, one study (7.14%) was conducted at an unidentified autism center. It is important to note that several studies (21.43%) implemented interventions across multiple settings.

Treatment implementer. A variety of individuals implemented the choice-making intervention across included studies. The most common implementers included a teacher (n=6; 42.86%) and a researcher/experimenter (n=5; 35.71%). In one study (7.14%), the implementer was a parent. In one study (7.14%), the implementer was a therapist. In one study (7.14%), the implementer was a paraprofessional. Finally, in one study (7.14%), the implementer was a graduate student tutor.

Choice intervention. Choice-making interventions were classified into two categories: within-activity and across-activity choices. Six studies (42.86%) implemented across-activity choices. Three studies (21.43%) implemented within-activity choices. Four (28.57%) studies combined both within- and across-activity choices during intervention. One study (7.14%) compared the effectiveness of within- and across-activity choices during intervention.

Across the studies, within-activities choices included choice of materials (n=6; 42.86%), choice of setting (n=3; 21.43%), order within an activity (n=2; 14.29%; e.g. which animal to color first on a coloring page), working with or without assistance on an activity (n=2; 14.29%), and how to respond to an activity (n=1; 7.14%; e.g., using a silly

voice or normal voice to answer the question). The across-activity choices included choice of an activity from two or more activities (n=8; 57.14%), order of activities (n=3; 21.43%), and one study (7.14%) offered a choice to complete all activities.

Discussion

A total of 14 studies met the six inclusion criteria. Several noteworthy results were identified among these 14 studies. First, most studies evaluated the effects of choice making with participants 12 years or younger. In other words, very little research exists to support the use of choice-making with teen and adult participants. This is particularly surprising considering autonomy (i.e. choice-making) is typically associated with older children, teens and adults, relative to children.

Another area that was lacking was the inclusion of FBAs. Of the 14 studies included in this study, only six conducted an FBA. Function based interventions have been found to be more effective than interventions that opt not to conduct an FBA (Heyvaert et al., 2014). This is noteworthy as choice-making interventions may be more effective for individuals whose challenging behavior is maintained by escape from demands as the intervention may alter the motivation to escape from the demand or actually allow the individual to escape undesired demands in lieu for a choice that is more desirable. As a result, an FBA may be helpful in determining if a choice-making intervention would likely be effective for the individual.

Finally, it was found that most choice-making interventions were conducted with academic tasks. Generally, choices are offered in a variety of manners throughout an individual's daily life, therefore, it seems reasonable to conduct choice-interventions in

various settings and during various activities. With the limited information provided in the literature, it is unknown the extent to which choice-making treatments can be effective outside of the classroom.

Overall, the existing literature represents a variety of choice-making interventions including choices within activities (e.g., choice of materials) and across activities (e.g., selection of activity). The literature further indicates that both choice-making within and across activities are successful interventions to reduce challenging behavior. Areas for future research were identified including a need for more studies to compare effectiveness of within and across activities.

Limitations

There are several limitations associated with this literature review that should be considered when analyzing the results. The first limitation was only single-case research designs were examined which may have resulted in the exclusion of additional studies that may have evaluated choice-making interventions utilizing other experimental designs. The decision to include only single-case research designs was based on the interest in evaluating individual responding to choice-making interventions. The second limitation was the published articles might have resulted in a publishing bias. Research that indicated no positive effects of choice-making interventions may not have been published. Therefore, current data may reflect a bias towards successful choice-making interventions.

Future Research

Four gaps within the literature were identified for future research. First, future research should explore the effectiveness of choice-making interventions across activity domains other than academic activities (e.g., vocational self-help, and other activity domains). Second, future research should specifically evaluate the effectiveness of choice-making interventions among participants ages 13 years or older. Additionally, future research should incorporate a FBA of targeted challenging behavior. This will allow for evaluation of the effectiveness of choice-making across functions of targeted challenging behavior.

Finally, few studies have compared the effectiveness of within- and across-activity choices. While the current literature supports the effectiveness of choice-making interventions, it is important to understand the relative effectiveness of various choice-making intervention approaches. Future research should evaluate the relative effectiveness of the various within- and across-activity choices represented in this literature review. Rispoli et al. (2013) was the only study of the 14 evaluated that compared the effects of both a within- and across-activity choice-making intervention. Results supported the other five studies that examined the effects of both within- and across-activity intervention on reducing challenging behavior.

This current study will replicate and extend the procedures outlined by Rispoli, et al (2013) to evaluate the relative effectiveness of within- and across-activity choice-making interventions. In addition to extending the evaluation of relative effectiveness of within- and across-activity choice making interventions on reducing challenging behavior, evaluation of task completion will be conducted as well.

Table 2.1 *Studies that met inclusion criteria.*

Study	Participant Characteristics	Intervention Characteristics	Activity Domain
Cole, & Davenport (1997)	Male (3) 6-18 years old	Across-Activities	Academic
Cole, & Levinson, (2002).	Male (2) 6-12 years old	Within-Activity	Academic Self-help
Dunlap, et al. (1994)	Male (3) 3-12 years old	Within-Activity Across-Activities	Academic
Dyer, et al. (1990)	Male (1) Female (2) 3-12 years old	Across-Activities	Academic
Foster-Johnson, & And, (1994)	Male (2) Female (1) 6-18 years old	Within-Activity Across-Activities	Academic
Harding, et al. (2002)	Male (2) 3-12 years old	Within-Activity	Academic
Kern, et al. (2001)	Male (1) Female (2) 6-18 years old	Across-Activities	Academic
Moes, (1998)	Male (4) 3-12 years old	Within-Activity Across-Activities	Academic
Peterson, et al. (2001)	Male (1) 6-12 years old	Within-Activity	Academic
Rispoli, et al. (2013)	Male (3) Female (1) 3-12 years old	Within-Activity Across-Activities	Academic
Romaniuk, et al. (2002)	Male (3) Female (4) 3-12 years old	Across-Activities	Academic
Seybert, et al. (1996)	Male (2) Female (1) 13-22 years old	Across-Activities	Vocational
Smeltzer, et al. (2009)	Male (3) 6-12 year olds	Across-Activities	Academic
Umbreit, & Blair, (1996)	Male (1) 6-12 year olds	Within-Activity Across-Activities	Academic Self-help

CHAPTER THREE

Methods

Purpose

The purpose of the present study was to replicate and extend the procedures outlined by Rispoli, et al (2013). Specific research questions included:

- a) What was the relative effectiveness of within- and across-activity choice-making interventions on reducing challenging behavior?
- b) What was the relative effectiveness of within- and across-activity choice-making interventions on task completion?

Participants

Inclusion Criteria

Participants were solicited from the Baylor Clinic for Assessment, Research and Education (CARE), housed within the Baylor Center for Developmental Disabilities. Specifically, participants were solicited from clients currently receiving services and currently on the wait list to receive services. Parent consent was obtained prior to their child's participation in the study. Similar to Rispoli and colleagues (2013), all tasks and materials were based on consultations with the participants' parents.

Chris (pseudonym) is an eight-year old Caucasian male, diagnosed with mild ASD and communicates verbally using complete sentences. The target challenging behavior Chris engaged in was verbal protesting. Verbal protesting was defined as any occurrence of Chris saying "Why?", "No", "I don't want to", or an equivalent statement.

Parents identified fine motor tasks, specifically coloring and academic tasks (i.e., math and reading) to be associated with challenging behavior. Additionally, parents identified materials that required a pincer like grip (e.g., pencils, pens, crayons, markers, etc) to be associated with challenging behavior.

Larry (pseudonym) is a six-year old Caucasian male, diagnosed with ASD and attention deficit hyperactivity disorder (ADHD) and communicates verbally using complete sentences. The target challenging behavior Larry engaged in was verbal protesting. Verbal protesting was defined as any occurrence of Larry saying “No”, “I don’t want to”, “I won’t do it”, “Not now”, or an equivalent phrase; sighing; or grunting. Parents identified fine motor tasks (i.e., coloring and tracing) be associated with challenging behavior. Moreover, parents identified crayons, markers, and pencils as materials associated with challenging behavior.

Setting

All sessions took place at Baylor CARE in a therapy room. The therapy room was carpeted and contained a child-sized square worktable, child-sized chairs, a window, closed cabinet, and empty bookshelf. Each session was five minutes. No more than 10 sessions were conducted per day, with no clinic visit lasting longer than 1.5 hours. All clinic visits were scheduled at the parent and participants’ convenience.

Materials

Participant materials included worksheets (i.e., coloring, letter tracing, and math), writing utensils (i.e., crayons and markers), toys, Skittles®, iPhone®. Additionally, the

researcher used pen, paper, clipboard, timer, and JVC® camcorder for data collection purposes. Any items not necessary to conduct the session, such as additional furniture removed prior to conducting sessions.

Data Collection

Dependent Variables

Data were collected on target challenging behavior and task completion. The individually identified target challenging behavior for each participant was based on the parent interview. Researchers collected data live and via video. Data for challenging behavior were collected using response per minute for each session throughout the baseline and treatment phases. Rate for challenging behavior was calculated for each session by taking the total number of occurrences of the target challenging behavior and dividing it by five, the number of minutes of the session. Data for task completion were taken using frequency. A data collector tallied the number of tasks completed each session. Frequency for task completion was calculated for each session by adding up the total number of tally marks in the task completion section on the data sheet.

The target challenging behavior for Chris was verbal protesting. Verbal protesting was defined as any occurrence of Chris saying “Why?”, “No”, “I don’t want to”, or an equivalent statement or any occurrence of crying with 2 -s between vocalizations. For Chris task completion was defined as prompted or unprompted completion of a coloring worksheet (i.e., when all letters and pictures were colored) and prompted or unprompted completion of a math worksheet (i.e., all math problems were correctly answered).

The target challenging behavior for Larry was also verbal protesting. Verbal protesting was defined as any occurrence of Larry saying “No”, “I don’t want to”, “I won’t do it”, “Not now”, an equivalent phrase, any occurrence of crying with 2-s between vocalizations, or any occurrence of sighing, grunting, or equivalent sound. For Larry task completion was defined as prompted or unprompted completion of a coloring worksheet (i.e., when all letters and pictures were colored) and prompted or unprompted completion of a tracing worksheet (i.e., when all letters were traced legibly).

Interobserver Agreement (IOA)

To verify data collection was consistent throughout sessions, a secondary independent observer collected data live or via video recording for a percentage of all sessions for both participants. IOA for challenging behavior was calculated by dividing the smaller number of occurrences by the larger number of occurrences and multiplying the results by 100. Task completion IOA was calculated by dividing the smaller number of recorded tasks by the larger number of recorded tasks and multiplying the results by 100.

Chris. IOA was obtained for 40% of FA sessions for Chris with a mean agreement of 93% (range, 71-100%). Additionally, IOA for Chris’ target challenging behavior of verbal protesting was measured for 38% of baseline sessions with a mean agreement of 76% (range, 68-89%), 40% of within-activity intervention sessions with a mean agreement of 100% and 40% of across-activity intervention sessions with a mean agreement of 93% (range, 73-100%). Finally, IOA for Chris was collected for task

completion and was measured for 38% of baseline session with a mean agreement of 100%. During the within-activity choice-making intervention, a second independent researcher collected data on 40% of sessions; mean agreement was 100%. During the across-activity choice-making intervention sessions, a second observer collected data on 40% of sessions and mean agreement was 100%.

Larry. IOA was obtained for 100% of the TBFA for Larry with a mean agreement of 99% (range, 90-100%). Additionally, IOA for Larry was measured for 30% of baseline sessions with a mean agreement of 90% (range, 67-100%). IOA was measured for 30% of within-activity intervention sessions with a mean agreement of 88% (range, 67-100%) and 30% of across-activity intervention sessions with a mean agreement of 94% (range, 75-100%). Moreover, IOA was measured for 30% of baseline session with a mean agreement of 92% (range, 50-100%). During the within-activity and across-activity choice-making intervention sessions, IOA was measured during 33.4% of sessions each with a mean agreement of 100%.

Experimental Design

This study was comprised of a functional behavior analysis, preference assessment, and treatment assessment. A multielement design was used to determine the function of Chris' challenging behavior during the functional analysis (FA). A bar graph was used to determine the function of Larry's challenging behavior during the time-based functional analysis (TBFA). A multielement embedded within an ABAB design was utilized for both participants in order to analyze the effects of two choice-making

interventions on challenging behavior and task completion (Kennedy, 2005). The "A" phase consisted of baseline sessions and the "B" phase included a mutielement analysis of the two choice conditions.

Pre-experimental Phase

Three assessments were conducted prior to the experimental phase of this study. Specifically, a parent interview, preference assessment, and functional analysis were conducted prior to the experimental phase of the study.

Parent Interview

The purpose of the interview was to identify potential preferred stimuli (i.e., toys and edibles) that were included in the preference assessment that could have served as reinforcement and specific tasks associated with challenging behavior. Additionally, the parent interview aided in detecting relative preferred and nonpreferred materials that were utilized in the within-activity choice intervention conditions (e.g., crayons, pencils, pens, markers, etc.). Furthermore, the parent interview assisted in recognizing specific relative preferred and nonpreferred tasks that were utilized in the across-activity choice interventions. Lastly, the parent interview was utilized in defining the target challenging behavior.

The lead researcher conducted a researcher-developed interview with Chris's mother. Larry had received services at the Baylor clinic within the last four months prior to the study. As a result, an existing parent interview was used to inform Larry's preference

assessment and target challenging behavior. Researchers had used Modified Functional Assessment Interview form (O’Neil et al., 1997) to conduct the parent interview.

Preference Assessment

A multiple stimulus without replacement (MSWO) was conducted three times with Chris and four times with Larry to identify a rank order of preferred stimuli (DeLeon, & Iwata, 1996) for both participants. Stimuli identified in the parent interview were presented in front of the participants evenly apart from one another on the worktable. The participants were instructed to select one item. The participants were given access to the stimulus for 15 s or until the item was consumed. The array of stimuli were again presented to the participants, but without the previously-selected stimulus. This continued until all stimuli had been selected. If no item was selected when presented to participant within 30 s, the lead researcher concluded the assessment and all remaining items were marked as unselected (DeLeon, & Iwata, 1996). Items were averaged in order of selection. The first item selected, most often, was marked as the highest preferred item. The item that was selected last, most often, was marked as the least preferred item. Items not marked as the highest or least preferred item were considered moderately preferred.

Based on Chris’ preference assessment results, the lead researcher concluded that Skittles® were considered the highest preferred edible and puzzles were the highest preferred item. Moderately preferred toys (i.e., hand puppets, toy animals, and toy cars) were utilized in the attention condition during Chris’ FBA. Additionally, moderately and highly preferred toys were utilized in the play condition Chris’ FBA. Based on Larry’s preference assessment results, the lead researcher concluded that the two highest

preferred items were an iPhone® and trains. The highest preferred toy or edible was delivered contingent upon a completion of activities during the baseline and intervention conditions for both Chris and Larry.

Functional Analysis

The purpose of the functional analysis was to (a) determine the function of the challenging behavior and (b) identify participants whose behavior was maintained by escape from demands. Only participants whose targeted challenging behavior was maintained by access to escape continued to the next phase of the study. Both participants' results indicated the target challenging behavior was maintained by access to escape.

Chris. A functional analysis based on the procedures outlined by Iwata, Dorsey, Slifer, Bauman, & Richman (1994) was conducted for Chris. Three conditions were assessed to accurately identify the function of verbal protesting: escape, attention, and a control condition. Sessions were 5 min in length, with two researchers in the room. The lead researcher administered the assessment, while the secondary collected data (see appendix A).

Escape. During the escape condition, demands such as “Touch your nose” or “What letter is this?” were placed. A three-prompt hierarchy consisting of (a) a verbal prompt, (b) a verbal and gestural prompt (e.g., pointing at puzzle), and (c) a verbal and full physical

prompt was utilized. Contingent upon the target challenging behavior, the researcher removed the task for 30 s. All non-target challenging behavior was ignored.

Attention. During the attention condition, the researcher provided Chris with access to moderately preferred items and explained to Chris that he can play while the researcher worked. The researcher pretended to be occupied by work. Contingent upon the target challenging behavior, the researcher stopped and provided attention in the form of a disapproving comment concerning the target challenging behavior, “I really have a lot of work I need to do, you shouldn’t do that” (Iwata, Dorsey, Slifer, Bauman, & Richman, 1994).

Control. During the control condition the researcher provided Chris with attention in the form of a vocal statements (e.g. “I see that you are playing with cars”) and/or physical contact (e.g. pat on the back) at least once every 30 s (Iwata, Dorsey, Slifer, Bauman, & Richman, 1994). No task demands were presented.

Larry. Larry had participated in a functional analysis prior to participation within this study. Researchers utilized a trial-based functional analysis (TBFA) based on procedures outline by Sigafoos and Sagers (1995) with modifications based on Rispoli, Ninci, Neely, and Zaini (2014). The TBFA consisted of four conditions-attention, escape, tangible, and escape to tangible. Each trial was no more than 60 s and consisted of a test and control trial.

Attention. During the attention control trial the researcher provided non-contingent attention for 60 s. If the target challenging behavior occurred during the control trial, a plus mark was written on the data sheet and the control trial ended. During the test trial the lead researcher indicated that they had work to do and turned away from Larry, allowing him to play with moderately preferred toys. Contingent upon target challenging behavior, the lead researcher provided attention in the form of a verbal statement and the trial ended. If the target challenging behavior occurred, a plus mark was indicated in the specific trial on the data sheet. If no target challenging behavior occurred, a negative mark was indicated in the specific trial on the data sheet. Researchers allowed 60 s without challenging behavior between trials before beginning. All nontargeted challenging behavior was ignored.

Escape. During the escape control trial the lead researcher sat across from Larry for 60 s without placing demands or providing attention. If the target challenging behavior occurred during the control trial, a plus mark was written on the data sheet and the control trial ended. During the test trial the lead researcher presented a demand or task using a least-to-most prompting hierarchy for 60 s or until the target challenging behavior occurred. Contingent upon target challenging behavior, the lead researcher removed the demand or task and ended the trial. If the target challenging behavior occurred, a plus mark was indicated in the specific trial on the data sheet. If no target challenging behavior occurred, a negative mark was indicated in the specific trial on the data sheet. Researchers allowed 60 s without challenging behavior between trials before beginning. All nontargeted challenging behavior was ignored.

Tangible. During the tangible control trial the lead researcher provided 60 s of access to the highest preferred item. If the target challenging behavior occurred during the control trial, a plus mark was written on the data sheet and the control trial ended. During the test trial the lead researcher removed the highest preferred item for 60 s or until the target challenging behavior occurred. Contingent upon target challenging behavior, the lead researcher gave the highest preferred item back and the trial ended. If the target challenging behavior occurred, a plus mark was indicated in the specific trial on the data sheet. If no target challenging behavior occurred, a negative mark was indicated in the specific trial on the data sheet. Researchers allowed 60 s without challenging behavior between trials before beginning. All nontargeted challenging behavior was ignored.

Escape to tangible. During the escape to tangible control trial the lead researcher provided 60 s of access to the highest preferred item. If the target challenging behavior occurred during the control trial, a plus mark was written on the data sheet and the control trial ended. During the test trial the lead researcher removed the highest preferred item for 60 s and presented a demand or task using a least-to-most prompting hierarchy for 60 s or until the target challenging behavior occurred. Contingent upon target challenging behavior, the lead researcher removed the task or demand, gave the highest preferred item back and the trial ended. If the target challenging behavior occurred, a plus mark was indicated in the specific trial on the data sheet. If no target challenging behavior occurred, a negative mark was indicated in the specific trial on the data sheet. Researchers allowed 60 s without challenging behavior between trials before beginning. All nontargeted challenging behavior was ignored.

Experimental Procedures

Across all conditions, task-related materials were present on the worktable and the researcher instructed the participant to complete a task. Following the instructions, a least-to-most prompting hierarchy was implemented contingent upon incorrect responses or no responding. The prompting hierarchy order consisted of a (a) verbal prompt, (b) verbal and gestural prompt, and finally (c) a verbal and physical prompt (Rispoli et al., 2013). Contingent upon correct responses, participants were given verbal praise. Contingent upon correct task completion, researchers provided 15 s of access to the participants' highest preferred item(s). For Larry this was an iPhone® or toy train and for Chris this was a single Skittle®. Sessions began once instructions were provided and were five minutes in length.

Baseline

During baseline sessions, no choices were provided to the participant. Participants were systematically exposed to the tasks and materials that would be used throughout the choice-making conditions. Both participants were presented with each of the four activity and material combinations at least twice across both baseline phases: Activity A with Material A (e.g., coloring worksheet with a crayon), Activity A with Material B (e.g., coloring worksheet with a marker), Activity B with Material A (e.g., math worksheet with a crayon), and Activity B with Material B (e.g., math worksheet with a marker). All target and non-target challenging behavior was ignored during the baseline phases for both participants.

Choice Conditions

Choice-making conditions, within-activity choice condition and across-activity choice condition, were presented in counterbalanced blocks. The presentation of the conditions were counterbalanced and the first condition presented in each intervention phase was randomly selected. During the intervention phases all target and non-target challenging behavior was ignored for Larry. During the intervention phases all non-target challenging behavior was ignored for Chris, but when target challenging behavior occurred, the choice options were represented. This was due to an accidental treatment fidelity failure.

Within-Activity Choice Condition

During the within-activity choice-making condition, once instruction had been provided, the lead researcher held out a crayon and marker in each hand in front of the participant. The lead researcher told the participant that he could complete the task with either a crayon or a marker and instructed him to choose one. If no choice had been made within 10 s, the researcher presented the choices again. If no choice had been made within the following 10 s, the researcher presented the choice a third time. After the third presentation if no choice had been made, the session was terminated. No sessions were terminated across participants. Contingent upon material selection, the researcher stated “great job making a choice” and the session began.

Chris. Prior to the first implementation of the choice conditions, the lead researcher randomly selected one task between the two *across-activity* tasks to be presented

throughout all within-activity choice-making intervention sessions. As a result, a single probe session was conducted in which the *within-activity choice condition* procedures were implemented with the other *across-activity* task. The purpose of this probe was to determine if changes in challenging behavior and task completion observed in the *within-activity choice condition* were maintained across both tasks.

Larry. For the within-activity choice-making condition the lead researcher yoked the presented task based off Larry's choice of activities in the *across-activity choice condition*. Specifically, the activity selected a *within-activity choice* session was the activity not selected during the immediately prior *across-activity choice* session. In other words, if during an *across-activity choice* session, Larry chose to complete the coloring task, the tracing task was selected for the immediately subsequent *within-activity choice* session.

Across-Activity Choice Condition

During the across-activity choice-making condition the lead researcher presented the participant with two tasks on the worktable and told the participant to select one to complete. Once a task had been selected, the lead researcher stated "Great job making a choice!", instructed the participant on how to complete the task, and the session began. If no choice had been made within 10 s, the researcher presented the choices again. If no choice was made within the following 10 s, the researcher presented the choice a third time. After the third presentation if no choice had been made, the session was terminated. No sessions were terminated across participants.

Chris. Task options were comprised of a coloring worksheet and a math worksheet. For the across-activity choice-making condition the lead researcher randomly selected the material prior to the intervention phases. The material that was randomly selected was presented throughout all across-activity choice-making intervention sessions.

Larry. The task options were comprised of a coloring worksheet and a letter tracing worksheet. For the across-activity choice-making condition the lead researcher yoked the presented material. During the prior within-activity choice-making condition, whatever material Larry did not select was presented during the following across-activity choice-making condition.

Treatment Integrity

In order to evaluate the integrity of treatment implementation, a second independent researcher completed the treatment fidelity checklist. Treatment fidelity was calculated by dividing the number of steps implemented correctly by the total number of steps for each session multiplying by 100.

Chris. During Chris' baseline sessions, treatment fidelity was conducted for 31.3% of sessions and mean treatment fidelity was 100%. During the within-activity choice-making sessions, treatment fidelity was measured for 30% of sessions with a mean fidelity of 100%. During the across-activity choice-making sessions, treatment fidelity was conducted for 30% of sessions with a mean treatment fidelity of 100%. The

deviation from protocol to ignore all challenging behavior during treatment did not affect the treatment fidelity scores due to the manner in which the fidelity for the intervention phases was written. During the intervention phase, only non-target challenging behavior was scored on the treatment fidelity form, see appendix A.

Larry. During the attention condition treatment fidelity was conducted for 100% of trials with a mean treatment fidelity of 100%. During the escape condition treatment fidelity was conducted for 100% of trials with a mean treatment fidelity of 94%. During the tangible condition treatment fidelity was conducted for 100% of trials with a mean treatment fidelity of 88%. During the escape to tangible condition, treatment fidelity was taken for 40% of trials and fidelity was 100%. During Larry's baseline sessions, treatment fidelity was measured during 30% of sessions with a mean treatment fidelity of 100%. During the within-activity choice-making sessions, treatment fidelity was conducted for 33.4% of sessions, also with a mean fidelity of 100%. During the across-activity choice-making sessions, treatment fidelity was measured for 33.4% of sessions with a mean fidelity of 100%.

CHAPTER FOUR

Results

Preference Assessment Results

Chris

During the first preference assessment Chris had the opportunity to select a puzzle, hand puppets, toy animals, and toy cars. During the second preference assessment, Chris had the opportunity to select Skittles® , pretzels, goldfish, and Cheez-It®. The ranking of selected reinforcement was graphed, resulting in puzzles as the highest tangible reinforcement as seen in figure 4.1 and Skittles® as the highest edible reinforcement as seen in figure 4.2.

Larry

During the preference assessment Larry had the opportunity to select a toy truck, toy trains, Legos®, and iPhone®. The ranking of selected reinforcement was graphed, resulting in toy trains and the iPhone® as the highest reinforcement as seen in figure 4.3.

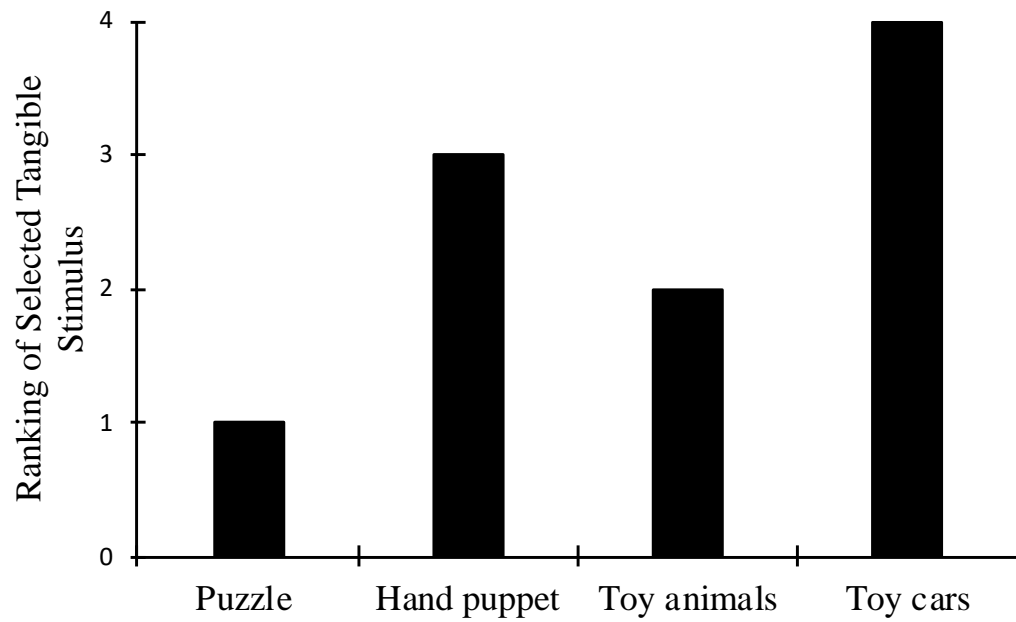


Figure 4.1. Ranking of Chris' selected tangible stimulus.

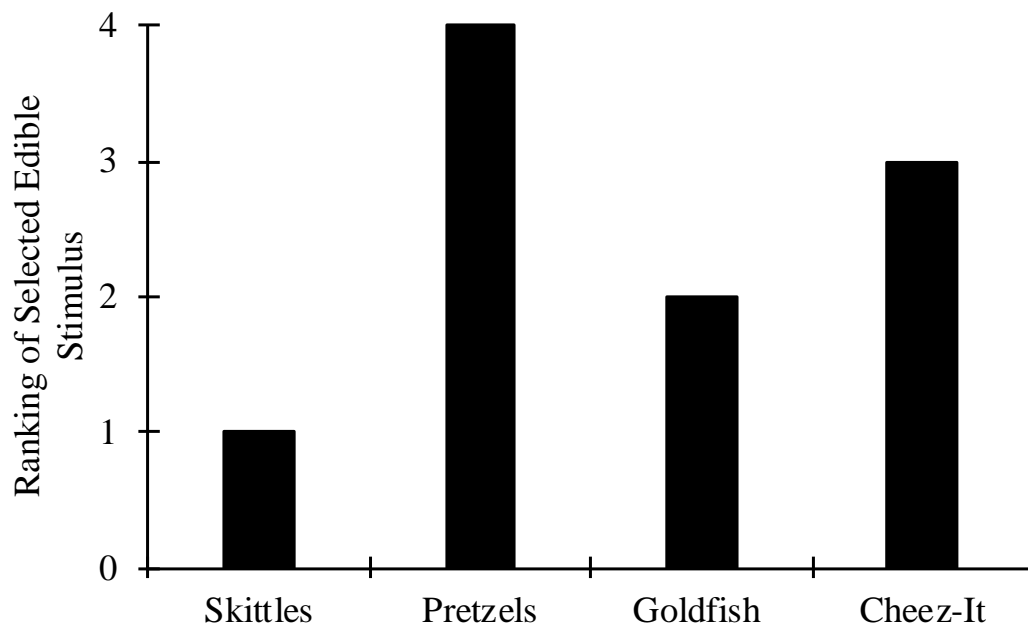


Figure 4.2. Ranking of Chris' selected edible stimulus.

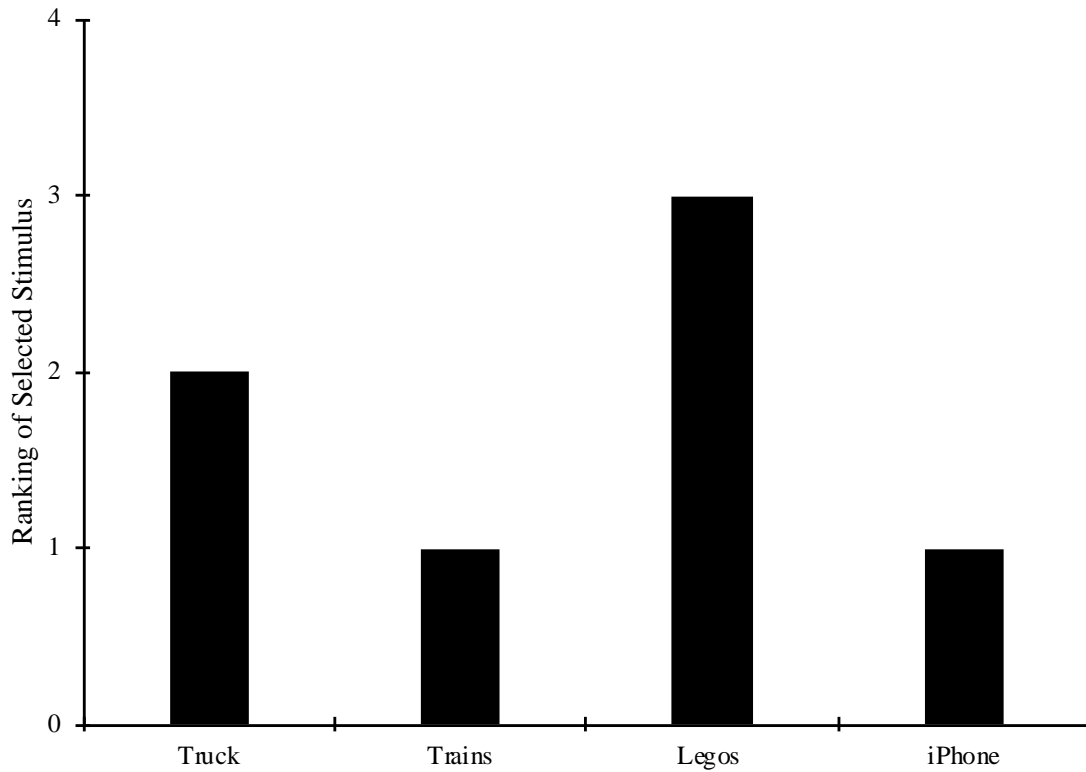


Figure 4.3. Ranking of Larry's selected stimulus.

Functional Analysis Results

The functional analysis for both participants indicated that challenging behavior was maintained by escape from demands. Elevated levels of challenging behavior occurred when a demand or task was removed contingent upon challenging behavior, relative to the control condition.

Chris

The results of Chris' FA are depicted in Figure 4.4. The mean rate of verbal protesting during the escape condition was 14.2 (range, 1.8-6.2). The mean rate of

challenging behavior during the attention condition was 4.8 (range, 0-4.4). The mean rate of challenging behavior during the control condition was 1.6 (range, 0-1.4). The results of the FA indicated that verbal protesting was maintained by escape.

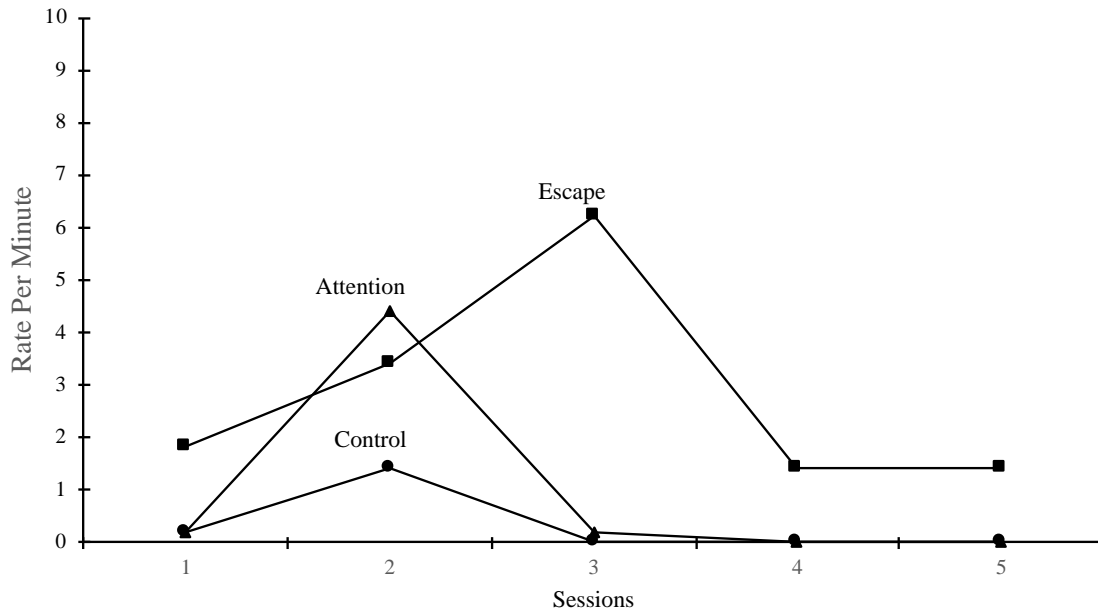


Figure 4.4. Rate of Chris' challenging behavior per minute during 5-minute FA session

Larry

The results of Larry's TBFA are presented in Figure 4.5. Verbal protesting occurring during 10% of the attention test trials and 10% during attention control trials. On the other hand, verbal protesting occurring during 100% of the escape test trials, but never occurred during the escape control trials. Verbal protesting occurring during 60% of the tangible test trials, but never occurred during the tangible control trials. Finally, verbal protesting occurring during 100% of the escape-to-tangible test trials, but never occurred

during the escape-to-tangible control trials. These results indicate that verbal protesting was maintained, at least in part, by escape from demands.

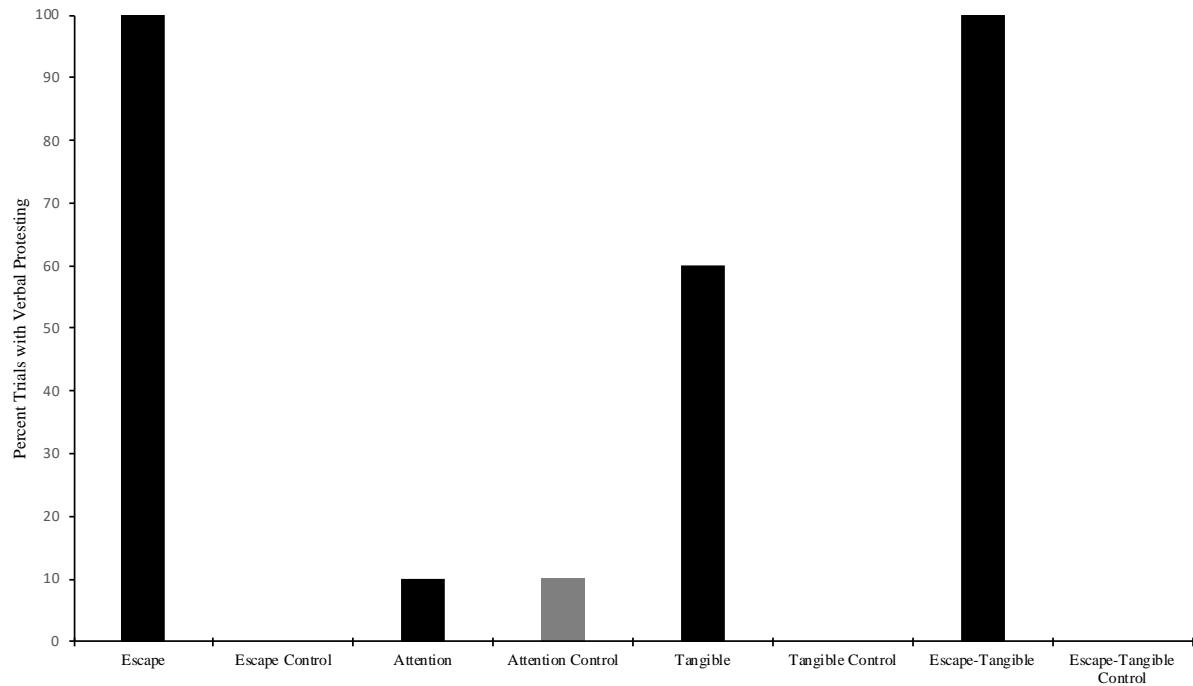


Figure 4.5. Larry's TBFA results percent of trials with verbal protesting.

Experimental Phase

Chris

Chris' data are presented in Figure 4.6. The top panel displays rate of challenging behavior across sessions. The bottom panel displays frequency of task completion.

Challenging behavior. During baseline, verbal protesting occurred at a mean rate of 4.0 (range, 1.2-14.2). During the within-activity choice-making condition, this rate

dropped to a mean of 0.1 (range, 0-0.4). Similarly, during the across-activity choice-making condition, the mean rate was 0.5 (range, 0-1.6).

Task completion. During baseline, Chris completed a mean of 0.8 tasks (range, 0-3). Task completion increased to a mean frequency of 1.2 tasks per session (range, 1-2) during the within-activity condition and a mean frequency of 1.0 tasks per session (range, 1-1) during the across-activity condition.

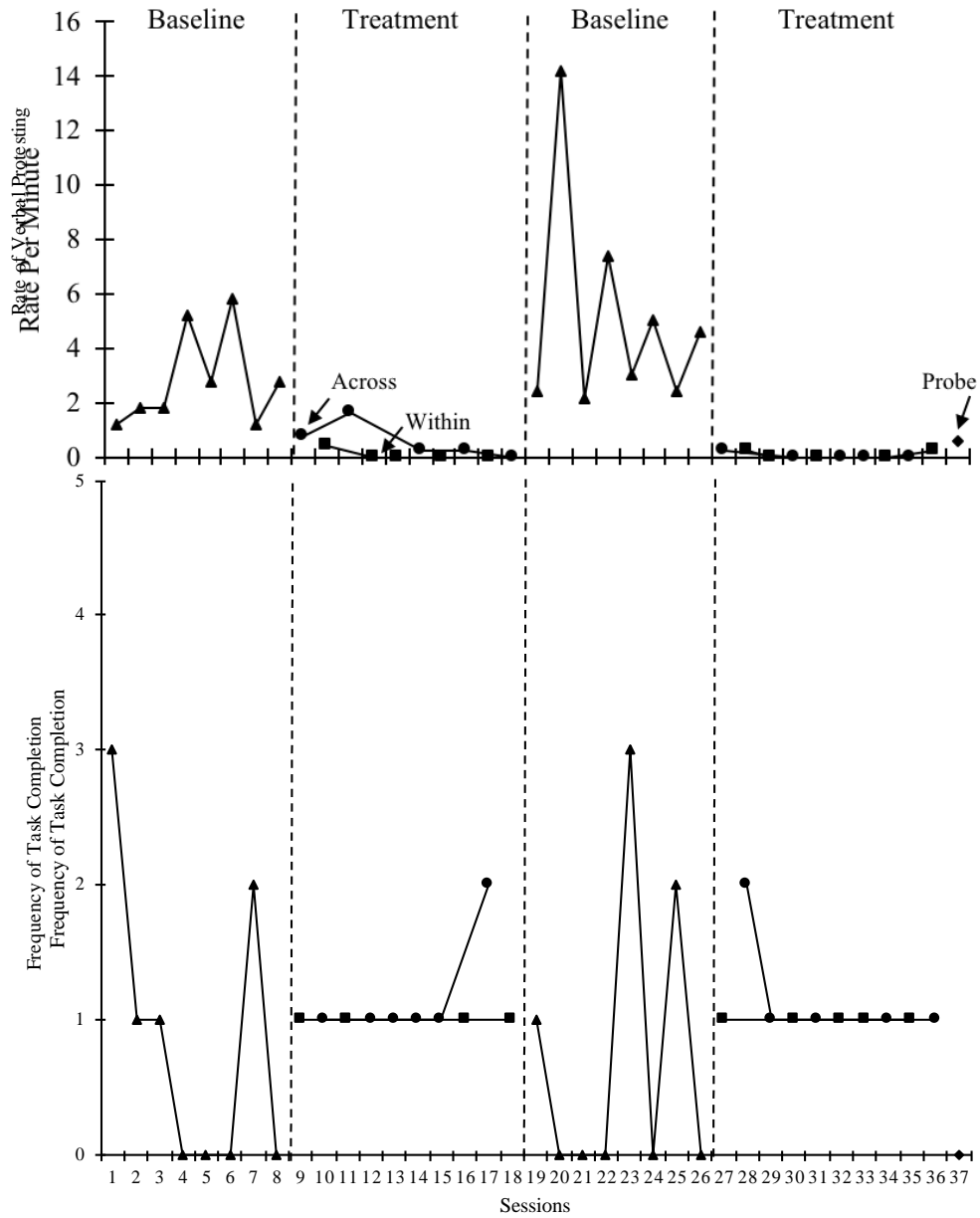


Figure 4.6. Chris' rate of verbal protesting and frequency of task completion during 5-minute session.

Larry

Larry's data are presented in Figure 4.7. The top panel displays rate of challenging behavior across sessions. The bottom panel displays frequency of task completion.

Challenging behavior. During baseline, verbal protesting occurred at a mean rate of 4.3 (range, 0-12.8). During the within-activity choice-making condition, this rate dropped to a mean of 2.2 (range, 0-5.2). Similarly, during the across-activity choice-making condition, the mean rate was 0.3 (range, 0-1.2).

Task completion. During baseline, Larry completed a mean of 3.8 tasks (range, 0-9). Task completion decreased to a mean frequency of 2.2 tasks per session (range, 0-6) during the within-activity condition. However, task completion increased to a mean frequency of 8.5 tasks per session (range, 8-9) during the across-activity condition.

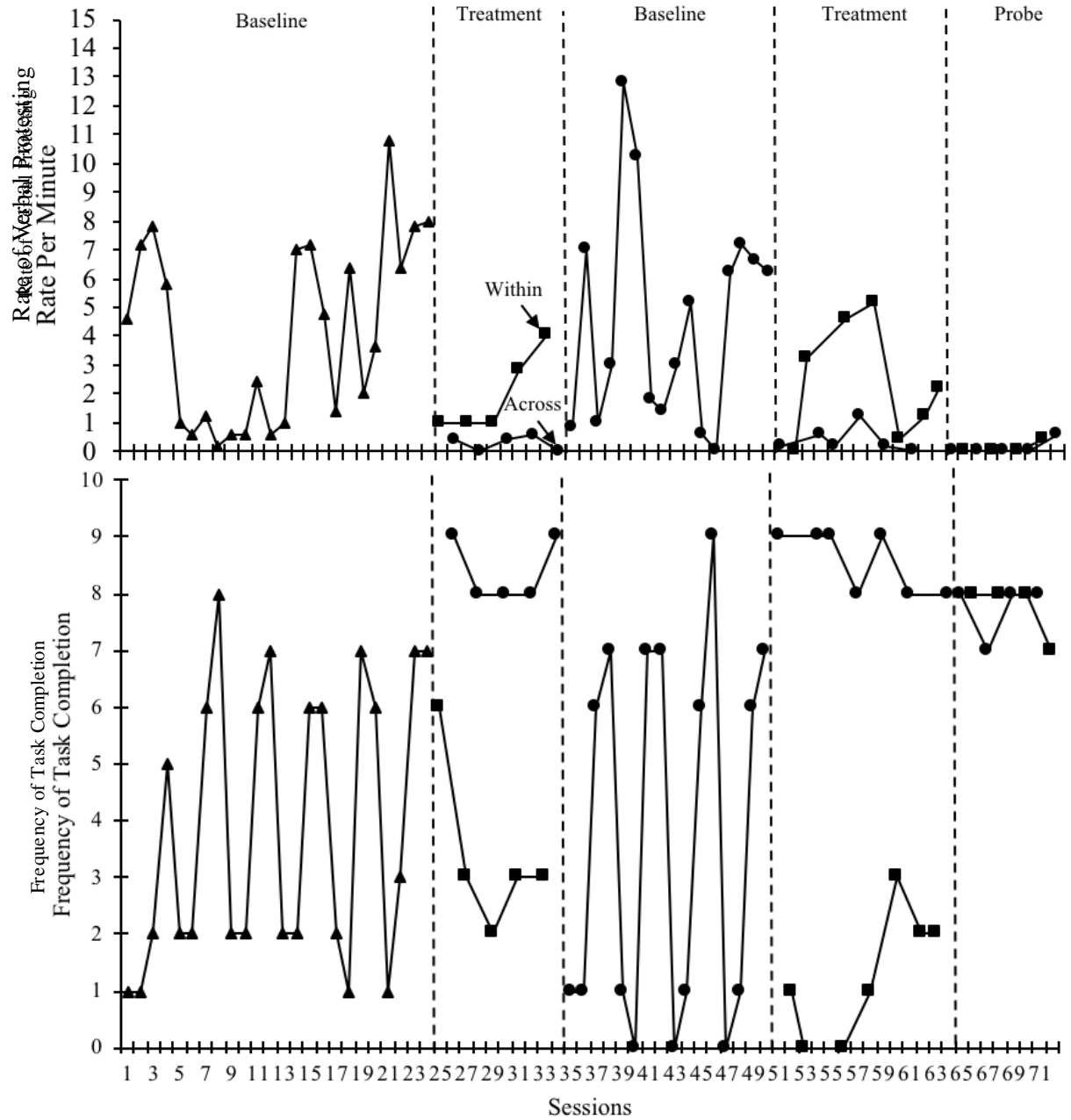


Figure 4.7. Larry's rate of verbal protesting and frequency of task completion during 5-minute session.

CHAPTER FIVE

Discussion

Conclusions

Previous research indicates that providing choices is an effective antecedent intervention to decrease challenging behavior. The results of this study support the literature on choice-making interventions as it replicated and extended the procedures outlined by Rispoli and colleagues (2013). Similar to the results of Rispoli, one participant demonstrated a meaningful decrease in challenging behavior during the across-activity choice-making condition as compared to the within-activity choice-making condition. Both participants demonstrated a decrease in challenging behavior during the intervention phases as compared to baseline, supporting the suggestion by Rispoli that the use of either choice-making condition is an effective intervention to decreasing challenging behavior.

Chris' data showed a substantial decrease in challenging behavior during both choice-making intervention sessions. While there was little to no variation in levels of challenging behavior between the two choice-making conditions, Chris' challenging behavior results are consistent with results identified by Rispoli and colleagues (2013). One of the participants' data revealed little to no variation between the two choice-making conditions during the second phase of treatment, as well as a decrease in challenging behavior as compared to the second baseline phase.

Larry's data also show a decrease in challenging behavior throughout the choice-making intervention sessions. These data support the results of Rispoli and colleagues (2013). They identified two participants whose data exhibited a considerable decrease in challenging behavior during the across-activity choice-making condition as compared to the within-activity choice-making condition and baseline phases.

This study extends the research conducted by Rispoli and colleagues (2013) by addressing their limitation of task completion data by including data on task completion. Results of this study show that in addition to decreases in challenging behavior, choice-making interventions may also increase task completion. Chris' results demonstrate consistent responding to task completion across both intervention phases as compared to both baseline phases. Similarly, Larry's results indicate an increase in task completion during the across-activity choice-making intervention.

Both participants resulted in a decrease in challenging behavior. While Larry demonstrated significantly less challenging behavior during the across-activity choice-making condition, results of both participants lends credence to the existing literature on choice-making interventions in general. While it is still unclear as to which choice-making intervention is most effective researchers should consider evaluating the extent to which providing choices can alter motivating operations. In cases in which providing choices does alter motivating operations and decreases challenging behavior, researchers may find that utilizing choice-making interventions can be less intrusive to the individual compared to other interventions and the methods more natural.

Implications for Practice

This study provides information that practitioners can use to decrease escape-maintained challenging behavior and increase task completion. Based on the results of this study and those of Rispoli and colleagues (2013), practitioners should consider offering the choice of activity prior to presenting a task that has been recognized as an antecedent to challenging behavior. In addition to offering activity choices, practitioners can offer an individual the choice of materials to complete a task or activity. Both interventions have shown to be effective in decreasing escape-maintained challenging behavior, as well as, increase task completion. Due to the effectiveness of these interventions, it can be argued that offering choices can be utilized by various treatment implementers, such as teachers and parents.

Limitations

There were some limitations associated with this study that need to be addressed. The first limitation was the deviation from procedures with Chris. During the intervention phases for Chris, when challenging behavior occurred the lead researcher presented the tasks or materials again. Due to this deviation, it is not clear whether the treatment itself affected challenging behavior or the presentation of tasks or materials again. By presenting the tasks and materials again, the lead researcher could have unintentionally reinforced the challenging behavior. As a result, challenging behavior could have increased and the treatment would have been ineffective. Fortunately, the results do not reflect this, however, it was a potential outcome as a result of the deviation. The second limitation was in regard to the tasks for Larry. Due to the yoking process that was

utilized, when Larry selected the letter tracing worksheet during the across-activity condition, the coloring worksheet was utilized during the within-activity condition. When the coloring worksheet was presented during the within-activity condition, challenging behavior increased as seen in figure 4.7. Larry always selected the letter tracing worksheet during the across-activity condition. As a result, it is not clear if the treatment was effective in reducing challenging behavior or the task itself. Another area of limitation is related to the non-target challenging behavior. Throughout the study, there was an emergence of non-target challenging behavior. During baseline, both participants had an increase in non-target challenging behavior in addition to the target challenging behavior. Additionally, Larry displayed non-target challenging behavior during the within-activity condition. It is recommended that future researcher include a section in the parent interview specifically asking parents or caregivers about alternative challenging behavior. Moreover, future researchers need to consider collecting data on non-target challenging behavior to identify any potential trends that may emerge. The fourth limitation is related to the preference assessment for Chris. During the preference assessment, the lead researcher included stimulus that could not be used during the intervention. In the future, researchers should ensure all stimuli included can be used throughout the intervention. Lastly, the randomization of tasks and materials needs to be modified. There needs to be a more consistent manner in which tasks are selected during the within-activity choice-making conditions and materials are selected during the across-activity choice-making conditions to avoid unintentional exposure to more or less preferred tasks and materials throughout the treatment phases.

Future Research

Future research needs to be conducted to continue to compare the effectiveness of within-activity choice-making and across-activity choice-making interventions on decreasing challenging behavior. Due to the limited literature on choice-making interventions, it is important to understand how offering choices can benefit individuals as a potential antecedent intervention in various environments such as the classroom or clinic. Additionally, future research needs to be conducted on comparing the effectiveness of choice-making interventions on increasing task completion. Escape-maintained challenging behavior can negatively impact an individual academically. Understanding how to increase task completion can aid in positively impacting an individual academically, increasing their chances for success.

APPENDICES

APPENDIX A

Functional Assessment

Target Behavior:

Date: _____

Escape Condition

Time	0-1:00	1:01-2:00	2:01-3:00	3:01-4:00	4:01-5:00
Occurrence of Behavior					
Total					

Attention Condition

Time	0-1:00	1:01-2:00	2:01-3:00	3:01-4:00	4:01-5:00
Occurrence of Behavior					
Total					

Control Condition

Time	0-1:00	1:01-2:00	2:01-3:00	3:01-4:00	4:01-5:00
Occurrence of Behavior					
Total					

APPENDIX B

Baseline and Treatment Data Sheets

<u>Target Behavior:</u>					
<u>Date:</u>			<u>Condition:</u>		
Time	0-1:00	1:01-2:00	2:01-3:00	3:01-4:00	4:01-5:00
Occurrence of Behavior					
Total:					
Number of completed tasks					
Total:					
<u>Date:</u>			<u>Condition:</u>		
Time	0-1:00	1:01-2:00	2:01-3:00	3:01-4:00	4:01-5:00
Occurrence of Behavior					
Total:					
Number of completed tasks					
Total:					
<u>Date:</u>			<u>Condition:</u>		
Time	0-1:00	1:01-2:00	2:01-3:00	3:01-4:00	4:01-5:00
Occurrence of Behavior					
Total:					
Number of completed tasks					
Total:					
<u>Date:</u>			<u>Condition:</u>		
Time	0-1:00	1:01-2:00	2:01-3:00	3:01-4:00	4:01-5:00
Occurrence of Behavior					
Total:					
Number of completed tasks					
Total:					

APPENDIX C

Treatment Fidelity Checklist: Baseline Condition

Procedure	Correct	Incorrect	Total
1. Lead researcher presents activity and explains task.			
2. Research sets timer for 5-minutes.			
3. Contingent upon incorrect responses lead researcher follows least-to-most prompting hierarchy.			
4. Lead researcher provides participant with verbal praise for correct responses.			
5. Contingent upon task completion, lead researcher provides 15-s of access to a preferred toy or bite-sized access to preferred edible.			
6. Lead researcher repeats process with different activities until end of timer.			
7. All target and non-target challenging behavior is ignored.			
Overall Total			

Treatment Fidelity Checklist: Within-Activities Condition

Procedure	Correct	Incorrect	Total
1. Lead researcher presents activity, material options, and explains task.			
2. Once a selection has been made the researcher sets timer for 5-minutes.			
3. Lead researcher re-presents material options to participant after 10-s without a response.			
4. Contingent upon 3 consecutive no responses from participant, lead researcher terminates session.			
5. Contingent upon incorrect responses lead researcher follows least-to-most prompting hierarchy.			
6. Lead researcher provides participant with verbal praise for correct responses.			
8. Contingent upon task completion, lead researcher provides 15-s of access to a preferred toy or bite-sized access to preferred edible.			
9. Lead researcher repeats process with different activities and materials until end of timer.			
10. All non-target challenging behavior is ignored.			
Overall Total			

Treatment Fidelity Checklist: Across-Activities Condition

Procedure	Correct	Incorrect	Total
1. Lead researcher presents two activity options, and explains task.			
2. Once a selection has been made the researcher sets timer for 5-minutes.			
3. Lead researcher re-presents activity options to participant after 10-s without a response.			
4. Contingent upon 3 consecutive no responses from participant, lead researcher terminates session.			
5. Contingent upon incorrect responses lead researcher follows least-to-most prompting hierarchy.			
6. Lead researcher provides participant with verbal praise for correct responses.			
8. Contingent upon task completion, lead researcher provides 15-s of access to a preferred toy or bite-sized access to preferred edible.			
9. Lead researcher repeats process with different activity options until end of timer.			
10. All non-target challenging behavior is ignored.			
Overall Total			

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