CULTURALLY RELEVANT DIALOGIC READING TO INCREASE VOCABULARY IN NAVAJO PRESCHOOLERS WITH DISABILITIES

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ABSTRACT

CULTURALLY RELEVANT DIALOGIC READING TO INCREASE VOCABULARY IN NAVAJO PRESCHOOLERS WITH DISABILITIES

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This study investigated the evidence-based practice of Dialogic Reading to increase the vocabulary knowledge of Navajo preschoolers with disabilities while using culturally relevant picture books. Native American children should be represented as participants in more studies for evidence-based practices. In addition, parents of the preschool participants were interviewed for social validity to explore Navajo families' views of the culturally relevant Dialogic Reading intervention, how they build vocabulary, and whether they value culturally relevant books. The results indicate that the use of culturally relevant picture books in a Dialogic Reading intervention did indeed increase the participants' receptive and expressive vocabulary knowledge. Parents were pleased with these results.

Keywords: Native American, Navajo, Dinè, American Indian, preschoolers, disabilities, Dialogic Reading, vocabulary, culturally relevant books

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Dedication

This dissertation is dedicated to the people I love most. My daughter Aubrie, who was a child when I started this journey and is now a young lady. I hope she has learned from my example that with hard work and determination anything can be accomplished. Though she told her teachers “my mom left me again” every time I was away for conferences, meetings, or classes, I know she was rooting for me. My dad and mom who have assisted in raising Aubrie by watching her when I was attending to my doctoral responsibilities. I am grateful that they taught me the importance and strength of faith and prayer. It is through my faith and prayer that I pulled through some of the most difficult moments in this journey. My siblings Quinn, Skyler, April, and Shelby who always had words of comfort and encouragement and would give me a much-needed break for laughs as needed. My friends Marshelda, Monika, and Revina who have been some of my biggest cheerleaders throughout my life, encouraging me to dream big and believing in me to accomplish those dreams. My boyfriend Sy whom I met during the middle of this journey, but who has been there every day since then, inspiring me to improve and focus.

Chapter 1: Introduction

The formal education of Native Americans has been transformed throughout the past century (e.g., boarding schools, community schools, public schools). Young Native American (NA) children attend preschool (U.S. Department of Education, 2020) and Head Start (Marks et al., 2004) in their own communities, which may be on or off of tribal lands (Norris et al., 2012). According to the National Center for Educational Statistics (2021), in 2019 about 45% of Native American children 3–4 years of age and 83% of 5-year-old children were enrolled in schools in the United States. Some tribal communities have developed culturally relevant curricula to support the learning of their young community members (Aguilera et al., 2007; Gilliard & Moore, 2007; Inglebret et al., 2008; Thompson et al., 2008). Culturally relevant learning techniques for young NA children are needed (Aguilera et al., 2007). Research has demonstrated that culturally relevant practices have positive academic outcomes for children of minority descent (Byrd, 2016). NA children have been reported to have low test scores (DeVoe et al., 2008), NA youth have high suicide rates (Heron, 2016), and NA children are disproportionately represented in special education (Zhang et al., 2014). Recent data from the 43rd Annual Report to Congress on the Implementation of Individuals with Disabilities Education Act (IDEA), 2021 reported that preschool aged children, 3 to 5 years, were more likely to be served under Part B of IDEA than were children ages 3 to 5 in other ethnic groups besides those associated with two or more racial/ethnic groups (U.S. Department of Education, 2022). Furthermore, in 2019 disability rates were higher for American Indian/Alaska Natives (5.9%) than any other racial group (U.S. Census Bureau, 2021). Thus, there is a need for establishing interventions that can positively influence academic outcomes for NA children.

In a review of studies demonstrating the practicality of evidence-based practices (EBPs) for students with Autism Spectrum Disorder (ASD), only one study included an NA child as a participant, and only 17.9% of these studies noted the race of their participants (West et al., 2016). Sinclair et al. (2018) researched participant diversity in intervention research of 12 special educational journals and found that the race of study participants was not reported in 45.3% of the studies. Recognizing the race of participants will assist in assuring an EBP is successful, not only with the majority population but also within minority populations.

Dialogic Reading (DR) is an EBP that has been shown to improve language and communication in children with disabilities (What Works Clearinghouse, 2010). A summary of the participant race representation in the studies that met the What Works Clearinghouse standards for DR was 67% white, 18% Black, and 15% not specified (What Works Clearinghouse, 2015). According to the U.S. Census Bureau (2021), approximately 2.9% of people living in the United States identify as Native American; therefore at least 2–3% of NA participants should be represented in research for each of the EBPs.

The National Association for the Education of Young Children (2020) recognizes five developmental domains (development in physical, cognitive, social/emotional, and linguistic skills and approaches to learning) that support each other and are interrelated. For example "language development influences a child's ability to participate in social interaction with adults and other children; such interactions, in turn, support further language development as well as further social, emotional, and cognitive development" (National Association for the Education of Young Children, 2020, p. 9). Immordino-Yang et al. (2018) indicated that "the quality of a person's relationships and social interactions shapes their development and health, both of the body and of the brain" (p. 3). Their study recognized the importance of each developmental

domain and focused on the cognitive development of participants in vocabulary knowledge gained though the social interactions that occur during DR interventions.

Theoretical Framework

This study incorporated the following two theories: Interconnected Funds of Knowledge (Gonzalez et al., 2005; Moll, 2019; Velezibanez & Greenberg, 1992), and Tribal Critical Race Theory (TribalCrit; Brayboy, 2005). The Funds of Knowledge theory acknowledges that cultural communities have cultural resources (known as Funds of Knowledge; Velezibanez & Greenberg, 1992). When Funds of Knowledge are recognized, understanding of cultural systems can occur (Velezibanez & Greenberg, 1992). The Funds of Knowledge theory is applicable to this study because students tapped into their Funds of Knowledge as they learned vocabulary. The qualitative section of this study incorporates the Funds of Knowledge of NA families and children regarding the literacy development in young children. Funds of Knowledge can be employed by researchers, teachers, and administrators to understand the cultural systems of the students, families, and communities, which can inform student learning.

TribalCrit is a branch of Critical Race Theory that has nine tenets, emphasizing that "colonization is endemic to society. By colonization, I mean that European American thought, knowledge, and power structures dominate present-day society in the United States" (Brayboy, 2005, p. 430). This study focuses on the seventh tenet of TribalCrit which takes into account that Indigenous beliefs, traditions, and values are viewed as important to tribal members' learning (Brayboy, 2005). This study shows that NA family views of culturally relevant learning can inform those involved with the education of NA children about the strengths with which NA children begin school.

Problem Statement

Families that come from historically marginalized populations and have a child with disabilities are considered multiply marginalized (Love & Beneke, 2021). There is a need for multiply marginalized populations to be represented in research. Culturally relevant teaching is a strategy that is beneficial for students who come from cultures that differ from the majority population (Byrd, 2016). This study shares the views of five Navajo families who have a child with a disability and reveals how culturally relevant DR from culturally relevant picture books can increase vocabulary knowledge in Native American preschoolers with disabilities. The social validity portion of this study highlights the views of the participants parents regarding the study.

Purpose and Questions

The purpose of this study is to discover whether Navajo preschoolers with disabilities can better build their vocabulary using a culturally relevant DR intervention. The following questions were addressed:

1. Does a culturally relevant DR intervention increase vocabulary for Navajo preschool students with disabilities?
2. Will Navajo families see value in using culturally relevant books at school and/or at home?

Significance of the Study

The significance of this study to the field of early childhood special education is demonstrated through the results of the single-case study, which demonstrated the effectiveness of culturally relevant DR with Navajo preschoolers with disabilities. A lack of research exists regarding the use of culturally relevant EBPs with Navajo preschoolers with disabilities (Faircloth, 2006). This study demonstrates the necessity of the development and implementation

of culturally relevant services that cater to the needs of Navajo preschoolers with disabilities. Future researchers may replicate this study to expand to the needs of specific NA nations while providing supporting evidence for this specific study. The study may be generalized depending on the findings of the EBPs and DR to the Navajo participants of this study.

Assumptions

The assumptions for the participants in this study are that the student participants would do their best to learn during the intervention and that they would participate to the best of their ability at that time. In addition, the parent participants would answer all the interview questions honestly.

Procedural fidelity and interobserver agreement were measured with the use of a second observer to decrease the chance of bias and increase internal validity (Barton, Meadan-Kaplansky, & Ledford, 2018). It is also assumed that the study followed all procedures necessary in order to conduct research on Navajo tribal lands with Navajo preschool and parent participants; this includes seeking approval from the Internal Review Board at Northern Arizona University (as well as gaining approval from the university's tribal liaison) and seeking approval from the Navajo Nation Human Research Review Board (as well as from any Navajo Nation agencies and school districts where the participants reside and attend school). Consent was obtained from the parent participants and all participant identifiable data were kept confidential. Students and parents were coded with numbers to protect their identity.

Definition of Terms

Navajo. Native American people from the Southwest region of the United States. Navajo people typically refer to themselves as Diné, "the people."

Navajo Nation or Navajo Tribal Lands. A Native American territory appointed to the Diné by the U.S. federal government, which covers parts of Arizona, Utah, and New Mexico.

Evidence-based Practice. What Works Clearinghouse (2020) has defined an intervention as an evidence-based practice. These interventions have been proven to be effective in high-quality research. At least five single-case studies must have replicated the same outcomes and have met the What Works Clearinghouse standards, the studies must be conducted by three different investigators, and there must be at least 20 or more participants in the studies. These evidence-based practices are proven to be generalizable through high-quality replicated research and are then presented as effective interventions.

Developmental Delay. This term is used to describe children between the ages of 3 and 10 who score between 1.5 and 3 standard deviations lower than the mean of same-aged children in two or more areas (cognitive, physical, communication, social/emotional, or adaptive development) on a norm-referenced test (assessments used are at the discretion of the district and vary).

Single-case Design. Single-case design is a popular quantitative research approach in special education (Gast & Ledford, 2018b). Participants serve as their own control during a baseline (control condition) and are then introduced to the intervention (Gast & Ledford, 2018b).

Chapter 2: Literature Review

Recent and significant studies regarding Dialogic Reading (DR), vocabulary, comprehension development, and culturally relevant learning are discussed in this review of literature. Studies were selected based on how closely they related to the themes of this study (Dialogic Reading, vocabulary and comprehension, and culturally relevant learning).

Evidence-based Practices

EBPs began as a way to make informed decisions in medicine and business in the early 1900s (Eraut, 2004). In the late 1990s there was a debate about EBPs in education (Thomas, 2004). Hammersley (2004) argued that some issues of EBPs are that quantitative research results are valued over qualitative research results; also, research evidence is valued over professional evidence (e.g., classroom teacher experience). However, research is used to inform the policy that influences educational practice (Hodkinson & Smith, 2004). National educational policies (No Child Left Behind, Every Student Succeeds Act, Individuals with Disabilities Education Act) mandate the use of EBP in classrooms (Odom et al., 2005).

There is a gap between research and practices, according to Hess (2021); not enough EBPs are being utilized in schools. Hess gave three reasons to why this gap may exist: (1) research evidence is imperfect, (2) what is researched is driven by policy makers rather than educators, and (3) there is a lack of clarity about how to carry out the steps of EBPs. Suggestions to solve these issues are to consult and collaborate with PK–12 educators to conduct educational research, require researchers to focus on what works and how to implement what works in classrooms so educators can understand what they can do, and require that vendors and policy makers explain the specifics of studies that claim that EBPs provide positive outcomes (Hess, 2021).

Despite arguments drawing attention to the faults of EBPs, they are promoted as effective and therefore are pushed to be practiced in the classroom (Hammersley, 2004; Hess, 2021). Single-case research has been used to establish EBPs in special education (Horner et al., 2005). Experimental control is achieved through baseline logic, meaning that "behavior is measured repeatedly across two adjacent conditions: baseline (A) and intervention (B)" (Gast, Ledford, & Severini, p. 215). Single-case studies are appropriate to use in special education research because special educational service focuses on the needs of the individual student, provides explanations and analysis for the outcomes of the differing participants, and provides specifics about participants and settings so as to encourage and allow replication (Horner et al., 2005). What Works Clearinghouse (2020) has presented guidelines about what qualifies single-case studies as high quality and what may collectively confirm interventions as evidence-based.

Dialogic Reading

DR was formed in the 1980s and became an evidence-based practice for preschoolers with disabilities in 2010 (What Works Clearinghouse, 2010). DR is conducted in a one-on-one or small group setting with an adult who provides the preschooler with five types of prompts during the reading to encourage verbal interaction, which is when the learning occurs (Urbani, 2020). The acronym CROWD can be used to remember the types of prompts used in DR: Completion (preschooler fills in the blank); Recall (ask a question about a part of the book that was already read); Open-ended (ask what is happening in a picture); Wh-questions (ask who, what, where, when, why questions); and Distancing (relate pictures and words to preschoolers' personal experiences; What Works Clearinghouse, 2010). The adult follows the reading technique called PEER: Prompts the child to make a comment or question about the book; Evaluates the response

of the child; Expands the child's responds; and Repeats the prompt (What Works Clearinghouse, 2010).

What Works Clearinghouse (2010) found that DR is an effective strategy for building communication and language skills in children with disabilities. The two studies that met What Work Clearinghouse standards focused on participants who had mild to moderate language delays; it was not shared whether any of the participants were students who had an IEP in any other developmental areas or had significant support needs. However, more recent studies have conducted DR interventions with children with disabilities (Coogle et al., 2018; Coogle et al., 2020; Fleury et al., 2014; Fleury & Schwartz, 2017; Urbani, 2020).

Fleury et al. (2014) conducted a study to determine whether DR strategies increased student with Autism Spectrum Disorder (ASD) engagement and verbal participation. Using a multiple baseline across the three male participants, the data indicated that DR did not significantly affect their on-task behavior because at baseline they already demonstrated high levels of engagement. However, all participants increased in their engagement during the DR intervention regardless of the severity of ASD. The data for the rate of verbal engagement indicated that DR was moderately effective for one participant and highly effective for two participants.

Fleury et al. (2014) results indicated that the DR intervention may benefit some students with ASD to increase verbal participation and time engaged with books. The DR strategies may work well for some students, but some students may benefit from modifications such as asking yes or no questions, providing students with choices of possible answers, or requesting for the child to find a picture in the book that relates to a target word. Fleury et al. (2014) recommended

future studies examine DR's effectiveness in early literacy outcomes such as vocabulary and print knowledge.

Whalon et al. (2015) also conducted a study that used DR and strategies that have been proven to assist students with ASD. These strategies support joint attention by talking about and pointing to a picture in the book, support inference-making by asking what will happen next or asking how a character feels, and support interactions by intentionally pausing and looking at the child for 3–5 seconds to encourage the child to initiate a comment or question. This intervention is called Reading to Engage Children With Autism (RECALL). Whalon et al. (2015) sought to discover if RECALL impacted the responses and verbal initiations (i.e., comments or questions about the book) in four preschool males with ASD. In a multiple baseline across participants study, Whalon et al. (2015) discovered that all students made gains in their responses and verbal initiations, although one participant's results varied. Their study builds upon Fleury et al.'s (2014) future research suggestion of adding adaptations to the DR intervention.

Fleury and Schwartz (2017) also conducted a study that included the modifications described previously in Fleury et al. (2014). The adaptations in that study included additional least-to-most-intrusive prompts. These prompts would begin as a verbal prompt (e.g., is it hot or cold?), with the most intrusive being a physical prompt to point to a picture in the story. Fleury and Schwartz (2017) utilized these adaptations during DR interventions to discover if the adaptations were beneficial to improving participation during book reading and increasing vocabulary in preschoolers with ASD. A multiple-baseline design across groups of children (mild ASD, moderate ASD, severe ASD) with nine participants total and three children in each group was utilized. Results indicated that children with ASD learned more vocabulary, participated more, and increased verbal participation and verbal response during the intervention;

however, the participant initiation of comments or questions was not significantly influenced no matter the ASD severity of the participants (Fleury & Schwartz, 2017).

Fleury and Schwartz (2017) found that the preschool participants in this study did not need to be explicitly taught how to respond to the questions presented during the DR intervention. When given the chance, they sometimes required more prompting to respond to the questions asked. An implication from this study is that students with ASD may require additional instruction on initiating comments and questions during DR (Fleury & Schwartz, 2017). A longitudinal study was suggested by Fleury and Schwartz (2017) to verify if the preemergent skills lead to later reading skills in the upper grades.

The studies of Fleury et al. (2014), Whalon et al. (2015), and Fleury and Schwartz (2017) demonstrate the benefits of increased language and participation during DR interventions. Fleury et al. (2014) suggested that adaptations may be needed for some students when using a DR intervention. Whalon et al. (2015) and Fleury and Schwartz (2017) made adaptations as part of their study, revealing that children with ASD benefited from these modifications. In addition, Fleury and Schwartz (2017) discovered the benefits of using DR with modification for children with ASD no matter the severity. DR is a cost-free intervention (What Works Clearinghouse, 2010) that can be easily applied in a classroom that services children with special needs (Fleury & Schwartz, 2017)

DR would be an effective intervention to use at preschools on tribal lands. Information about how to utilize this strategy is available for free at What Works Clearinghouse (2010) making DR very cost-effective. Preschool directors would easily be able to provide DR training for their teachers and paraprofessionals. Current research also indicates that DR is effective for

young children with disabilities. Another benefit for utilizing DR in schools on tribal lands is that culturally relevant books could be used.

Vocabulary

The studies discussed in the section above gave a good foundation of research on using DR to increase participation during shared reading experiences with children who have ASD. Similar to the Fleury and Schwartz (2017) study, other research using the DR intervention has been conducted to increase vocabulary in students with disabilities (Coogle et al., 2018; Coogle et al., 2020). The National Early Literacy Panel (2008) found that, in children 0–5 years of age, vocabulary under the label of print knowledge and oral language correlated moderately with future reading achievement. In addition, Ramsook et al. (2020) found that preschool vocabulary development predicted kindergarten math achievement. The following studies have examined whether vocabulary can be increased for preschoolers with disabilities.

An alternate treatment design conducted by Rahn et al. (2016) examined whether DR or an Activity-Based Intervention (learning through play) increased vocabulary knowledge more. Three students with disabilities participated in that study and all increased vocabulary knowledge with the DR and Activity-Based Intervention with, however, variability between participants. Vocabulary knowledge during maintenance decreased for all students, but was highest with the DR intervention. Rahn et al. (2016) recommended a future study to compare DR, Activity-Based Intervention, and DR + Activity-Based Intervention in teaching vocabulary knowledge.

Coogle et al. (2020) conducted the previously mentioned recommended study with a focus on vocabulary development in an alternating treatment design that compared DR, modeling, and DR + modeling. Two students with ASD participated in this teacher-led intervention. The DR intervention utilized the CROWD prompts, whereas the modeling

intervention was done in a dramatic play setting and the adult modeled the use of the target vocabulary word three times. The DR + modeling intervention combined the previously described DR and modeling interventions. The data revealed that although all interventions (DR, modeling, DR + modeling) increased student labeling of target vocabulary words, the DR intervention had the strongest effect. Some limitations noted by Coogle et al. (2020) were that only 12 total target vocabulary words, 4 in each intervention, were focused on and the participants learned them quickly; in addition, the time frame of the study was short, therefore the students had multiple exposures to the interventions daily.

In another study Coogle et al. (2018) explored if vocabulary could be developed using DR and DR + technology in four preschool males with ASD. In an adapted alternating treatment design, Coogle et al. (2018) learned that both the DR and DR + technology interventions were effective in increasing vocabulary for children with ASD. Similar to the Coogle et al. (2020) study, DR was found to be an effective strategy to use for teaching vocabulary to preschoolers with ASD (Fleury et al., 2021; Rahn et al., 2016; Shamir, 2018).

It is evident from the studies of Coogle et al. (2018), Coogle et al. (2020), and Rahn et al. (2016) that increased vocabulary knowledge can be gained in student with disabilities when exposed to a DR intervention. Vocabulary knowledge is connected to future reading achievement (National Early Literacy Panel, 2008) and leads to increased comprehension (Fleury et al., 2021). Children's engagement in verbal social interactions could benefit from increased vocabulary knowledge.

Culturally Relevant Literacy Learning for Young Students with Disabilities

Culturally relevant stories can support the cultural identity of NA students, while educating non-NA students about contemporary and historical aspects of NA lives (Inglebret et

al., 2008). When cultural relevance matches the experiences of the students, they can draw upon their prior knowledge to create meaning when learning (Freeman & Freeman, 2004).

Spooner et al. (2009) added to the research by using culturally relevant books with primary language support to teach vocabulary and comprehension to Yari, a 6-year-old child from Mexico learning English as a second language with a moderate intellectual disability. This multiple probe design across skills used task analysis to teach three sets of skills to Yari. Ultimately, Yari increased her vocabulary knowledge and listening comprehension, and applied what she learned when the lessons were conducted in English. An educational curriculum that promotes learning and respects a student's culture is ideal for culturally and linguistically diverse students with moderate or severe disabilities (Spooner et al., 2009).

In a more recent study, Yuan and Jiang (2019) shared the experience of Emma, a young child from a low-income immigrant family who was nearly misdiagnosed as having special needs. Four months after starting school for the first time in the United States, Emma was referred for special educational services. A special education itinerant teacher named Hui worked with Emma in both English and Mandarin and discovered a subject Emma was interested in—a giraffe. Hui created lessons that focused on this giraffe while also incorporating pictures of familiar people and places she knew in China. Emma communicated more and then demonstrated in her primary language that she did not qualify for special educational services. A culturally relevant lesson about community workers from the Chinese community was created for Emma and other children and was shared with the whole class. Pictures of Emma's grandfather, who was a mailman, were included. After this lesson Emma started to participate more in class (Yuan & Jiang, 2019).

Emma's experience demonstrates how culturally relevant learning can positively impact a culturally and linguistically diverse child. However, Yuan and Jiang (2019) have explained that culturally relevant learning is about helping students to feel a sense of belonging and to relate who they are to their lives at school.

Little research was found that combined culturally relevant texts with children with special needs. Yuan and Jiang (2019) and Kibler and Chapman (2019) emphasized that culturally relevant learning is not just about sharing a text that has cultural information about the student; educators must self-reflect to find out what cultural or racial bias they have and then they need to research the backgrounds of their students as well as their communities. Students and families should be viewed as resources for connecting their home experiences with school (Yuan & Jiang, 2019). Furthermore, researchers who utilize culturally relevant lessons should evaluate their own bias and research the neighborhoods or communities of their participants to create a well-matched, culturally relevant program for their participants.

Culturally Relevant Literacy Learning for Native American Children

According to Wang and Valentine (2016), educators should ensure that books in the classroom represent the cultural makeup of their students; furthermore, students should identify with the lessons. Some themes that emerge from the literature are the importance of collaborating with tribal communities to create a culturally relevant curricula for NA children (Putnam et al., 2011), the need for a culturally relevant literacy curricula to improve phonological awareness (Mackay & McIntosh, 2012), and the fact that home literacy can improve preschool reading and math scores (Riser, 2020).

In a collaborative project that began with university professors and Mi'gmaq community members (Putnam et al., 2011), a culturally relevant curricula was created for Mi'gmaq children

from the state of Maine in the United States and eastern Canada (Putnam et al., 2011). The early childhood curriculum educational goals were based on Mi'gmaq values (respect initiative, culture, relationships, language, laughter, joy) and included teaching the children the Mi'gmaq language through songs, rhymes, and culturally relevant stories (Putnam et al., 2011). Family and elder participation was also an important part of the early childhood curriculum; however, the teachers noted that it was difficult to find parents and elders who were able to participate (Putnam et al., 2011).

Mackay and McIntosh (2012) conducted a study to investigate the effects of two culturally responsive intervention programs (Moe the Mouse and enhanced Moe the Mouse) on the phonological awareness of NA kindergarteners. The intervention programs included themes on NA culture, language, and values. Teachers who utilized these interventions rated both programs as socially valid. The enhanced Moe the Mouse intervention, which included explicit instruction on phonics, was found to be more effective. The Mackay and McIntosh (2012) study demonstrated how a culturally relevant literacy curricula could be utilized in an early childhood classroom. However, including tribal community members to rate the social validity of these programs would have strengthened the social validity findings.

Using national data from the Early Childhood Longitudinal Study – Birth Cohort, Riser (2020) investigated how home literacy affected NA children's preschool reading and math scores. Ultimately Riser (2020) found that home literacy was significantly associated with the participants' preschool reading and math scores. Furthermore, shared reading was a significant predictor of reading skills. These findings indicated that regardless of the family's socio-economic status and their mother's education level, home literacy activities were positively correlated with the NA preschoolers' math and reading scores (Riser, 2020).

Educational programs should include Native American Language and cultural programs in schools to improve NA student outcomes. In a review of the literature, Demmert (2001) shared that NA language and cultural programs in schools are connected to student motivation, self-identity, and positive attitudes, all of which are related to improved academic performance. If improved academic performance in NA students is desired, educators should use this research-based information which shows that including language and cultural into our educational programs will improve academic outcomes. When young children start school and do not encounter anything there that relates to their family life or what they are familiar with, they begin to cultivate a negative self-concept. The Children's Center of Prairie Island therefore designed a program (Krohn et al., 1993) specifically to encourage regard for cultural diversity. The center hoped to provide a CRT that would increase self-identity and respect for other cultures in the NA children they served (Krohn et al., 1993).

Educators should use CRT when working with NA students because NA children bring their language and values from home to school. Language and culture programs at school influence NA children's early development and self-identity, using CRT can bring students a sense of belonging, and it can improve culturally and linguistically diverse students' academic success. CRT is connected to positive academic outcomes, self-identity, and social and cultural growth for Native American students (Demmert & Towner, 2003). The use of CRT by educators impacts not only a student's academic success but also social, cultural, and self-identity, all of which can affect the child's and community's future (Demmert & Towner, 2003).

Educational success will come when the puzzle pieces of culture, values, and educational principles for the community fit together for the benefit of the community and child. When

educators use CRT, they are considering the unique qualities that CLD children bring to the class and utilizing their strengths.

Native American Preschool and Early Childhood Student Learning

Early childhood learning opportunities for NA children can influence their social, emotional, and cognitive development (Faircloth, 2015), which can impact their future academic success (Demmert, 2001). Hibel et al. (2008) found that students' individual pre-reading and math scores when starting kindergarten strongly indicated special education placement for NA third graders. This shows that many students are being placed in special educational services in their early years and it is related to a lack of academic readiness in reading and math, which is measured by standardized tests (Hibel et al., 2008). If NA children are coming to school less academically equipped than other students, then creating and implementing culturally and linguistically relevant approaches that meet the distinct needs of NA communities to prepare NA students for school should be a priority (Hibel et al., 2008). Culturally relevant education programs for NA children can help to meet children where they are when they begin attending school.

Alexander et al. (2017) have provided several recommendations to the Kuruk community, whose Head Start program uses CRT. To use CRT, educators should ensure that the families' vital needs are met first, and then provide them with the information and necessities they need (e.g., such as helping them sign up for Woman, Infants, and Children [WIC]). Teachers in that community started the school year off by doing home visits to build a relationship with families. The program also worked with the tribe in providing their program with culturally relevant supplies, materials, and curriculum for the two Head Start classrooms. Alexander et al. (2017) reported that child and family relationships at the childcare center led to

inspiring the student and family's academic, language, and social-emotional development. By meeting the family's vital needs, the Karuk program built the necessary rapport and trust with the families to bring them a sense of belonging. Alexander et al. also shared that the foundation to an effective pedagogy for NA children is to build meaningful relationships, relate curriculum to the students' lives, appreciate and value students, and include a kinesthetic approach for learning.

It has been established that early childhood education is important for preparing children to enter kindergarten. Likewise, Romero-Little (2010) articulated that the NA population's linguistic and cultural objectives, and aims for their young ones must be in line with what is taught in the school setting. The Cochiti Pueblo is an example of an NA community being proactive in educating their children. The community worked together to create a language renewal program of their tribal language, Keres, beginning with 1-hour language lessons for children aged 0–3. Language classes are given at the elementary, middle, and high schools as well as language lessons for tribal employees. The fruits of the language renewal program have been in the youth's increased appreciation and understanding of traditional practices. The students are succeeding not only in their community but in academics as well (Romero-Little, 2010).

According to Romero-Little (2010), the Jemez Pueblo recognizes the importance of their children learning English but also know how vital it is for them to learn Towa. The Pueblo therefore did a self-study, researching their traditional beliefs about educating children, and created an educational mission that transformed their educational system, including Head Start and teacher training. The educational program and projects in the classroom are grounded in Jemez educational beliefs for children. This program puts an emphasis on training caretakers and Head Start teachers, who were members of the community and knew the Towa language. The

Jemez Pueblo found that a culturally relevant program for NA children included the culture and language of the community. After NA educators from various New Mexico pueblo communities completed a self-study, they discovered that the Montessori approach to teaching best aligned with their cultural views of education (Romero-Little, 2010). NA tribes may choose other existing teaching methods that align with their beliefs or may decide to create and establish their own educational program.

Gilliard and Moore (2007) did a study on the Flathead Indian Reservation to explore the connection of home and community in the early childhood program. They found that the educators used three different ways to recognize and express the community's culture. The first was to respect the students, family, and tribe. This was demonstrated by the educators through recognizing and accepting the traditional view of death and how the student may be absent for a week. Another point was creating a feel of belongingness through participation and involvement in community activities such as a powwow. The third topic was the significance of home ideals and viewpoints. This was accomplished through family involvement in the classroom including welcoming families to share their home language at the childcare center. This study demonstrated how these three early childhood centers served their students, families, and community (Gilliard & Moore, 2007).

Research has indicated the importance of including family and community members in the planning of CRT to address the learning needs of NA early childhood students (Alexander et al., 2017; Gilliard & Moore, 2007; Romero-Little, 2010). NA families and community members can provide the information needed to help educators understand what knowledge and strengths the children may be coming to school with, therefore allowing educators to build upon these strengths.

Summary

DR is an evidence-based practice that has been proven to increase language and communication in young children with disabilities (What Works Clearinghouse, 2010). Further studies using DR with accommodations have demonstrated that children with disabilities have increased vocabulary and/or verbal initiations (Coogle et al., 2018; Coogle et al., 2020; D'Agostino et al., 2020; Fleury & Schwartz, 2017; Rahn et al., 2016; Whalon et al., 2015). However, studies on interventions used for children with disabilities do not always share the participants' race (Sinclair et al., 2018; West et al., 2016). Studies should share participants' racial backgrounds so as to generalize the results to additional racial groups (West et al., 2016). It is especially important to share the racial identities of participants in studies that address culturally relevant learning, to match the program to the individual student. The studies of Urbani (2020) and Spooner et al. (2009) share the cultural background of their studies' participants; they used culturally relevant text while conducting a shared reading intervention.

Culturally relevant learning can be a means for making a child feel a sense of belonging and a way to connect home life to life in the classroom (Yuan & Jiang, 2019). The National Association for the Education of Young Children (2020) recognizes that each developmental area (physical, social/emotional, cognitive, communication, approaches to learning) is important and that they all affect one another. Ramsook et al. (2020) discovered that social communication skills and vocabulary development in preschool predict improved academic achievement in kindergarten.

This literature review found no studies that addressed the use of culturally relevant use of DR for NA students with disabilities; furthermore, no studies shared the views of NA families on culturally relevant learning for preschoolers with disabilities. This finding reveals the need for

such a study to inform those involved in the education of NA preschoolers with disabilities (i.e., educators, families, administrators, policy makers).

Chapter 3: Methods

This study demonstrates the effectiveness of culturally relevant Dialogic Reading (DR) with Navajo preschoolers with disabilities. Little to no research exists concerning the use of culturally relevant evidence-based practices (EBP)s with Indigenous (i.e., Navajo) preschoolers who have disabilities (Faircloth, 2006). This study demonstrates the necessity of developing and implementing culturally relevant services that cater to the needs of Navajo preschoolers with disabilities. The purpose of this study was to discover whether Navajo preschoolers with disabilities build vocabulary using culturally relevant DR. The study sought to answer these two questions: Does a culturally relevant DR intervention increase vocabulary for Navajo preschool students with disabilities? Will Navajo families see value in using culturally relevant books at school and/or at home?

Research Design

Within single-case study research there are various designs used for specific purposes. The following is an overview of some single-case designs. Withdrawal and reversal designs are used to introduce and withdraw the intervention, which may use different AB intervention patterns (Gast, Ledford, & Severini, 2018). Multiple baseline and multiple probe designs are time-lagged; these "designs involve assessing multiple A-B comparisons by implementing A to B condition changes at three or more different points in time for three or more targets rather than introducing and withdrawing the interventions with a single target" (Gast, Lloyd, & Ledford, 2018, p. 240).

The changing criterion design is used for interventions that require gradual step changes in behavior that either increase or decrease (Ledford & Gast, 2018). Comparative designs are used to compare two or more interventions to determine which is most effective for changing the

desired behavior (Wolery et al., 2018). A time-lagged design was the best fit for my dissertation topic because the multiple-probe design is good "for evaluating and demonstrating accountability … in educational settings" (Gast, Lloyd, & Ledford, 2018, p. 240).

This study is therefore a single-case, multiple-probe design across word sets applied with three students and including interviews with parents to measure social validity. The multiple-probe design exhibits external validity that may not be demonstrated in other single-case studies which only have one participant (Gast, Lloyd, & Ledford, 2018, p. 240). Baseline, intervention, probes, and maintenance data were measured. The study meets the What Works Clearinghouse (2020) guidelines of collecting interobserver agreement, having a minimum of five data points during intervention, and providing data in graph form.

Participants

Navajo Preschoolers

Three Navajo preschool students with disabilities participated in this study. The criteria for their participation were: (1) they must be 3–5 years of age and enrolled in a preschool/Head Start program, (2) the preschoolers must have an Individual Education Program (IEP) that indicates a developmental delay including a language delay, and (3) the preschooler must also identify as Navajo. The students who participated in this study lived off tribal lands in a border town (town near tribal lands). Student demographics can be seen in Table 1.

The student participants were measured with three tests. Elijah and Taya were measured using PLS- 5. Elijah's PLS-5 test for Auditory Comprehension and Expressive Communication resulted in a standard score of 50 (percentile rank = 1st percentile). Taya received a standard score of 50 for Auditory Comprehension, significantly below the average range (Standard Score 85-115), but no results in Expressive Communication. However, Taya was also tested by ABAS-

3 and received a Conceptual Composite Score of 85 which was below average. The conceptual domain of the ABAS-3 includes skills in communication, functional academics, self-direction, and health and safety (WPSpublish, 2022). Allie was tested by GFTA-3 and presented with 95 errors, which registered as a standard score of 63 (confidence interval 60–68). An average score on this measure was 100.

Table 10

Student Demographic Information

Student	Age	Sex	Parent Highest Level of Education	Exceptionality	Test	Score
Allie	3.11	F	Some College	Speech or Language Impaired	[1]GFTA-3	SS - 63
Elijah	4.5	M	High School Diploma	Developmental Delay	[2]PLS-5	Auditory Comprehension SS - 50 Expressive Communication SS - 50
Taya	4.8	F	Some College	Developmental Delay	[3]ABAS-3 [2]PLS-5	Conceptual Composite Score - 85 (below average) Auditory Comprehension SS - 50

SS = Standard Score (SS)

[1]*Goldman Fristoe Test of Articulation*, 3rd edition (GFTA-3, Goldman & Fristoe, 2015).

[2]*Preschool Language Scale*, 5th edition, (PLS-5, Zimmerman et al., 2011).

[3]*Adaptive Behavior Assessment System*, 3rd edition (ABAS-3, Harrison & Oakland, 2018).

Navajo Preschool Parents

The three parents interviewed were all mothers and lived off tribal lands in a border town. The parents of the Navajo preschoolers were asked to be interviewed to measure social validity. The only criterion for the parent participants was that they identified as Navajo. Allie's and Taya's mother had some college education. Elijah's mother had a high school diploma; she and Taya's mother shared that they had struggled with reading when they were young, but they did not have an IEP in grade school.

Setting

The study took place at the school in a one-on-one setting (i.e., only the researcher and preschooler were present in the designated room) at the preschooler's educational site. Allie and Elijah were from the same school site and Taya was from another school site within the same border town community. A computer lab was the setting at Allie's and Elijah's school site; the place where a counter connected to the wall was used and the researcher sat to the right of the student. The teacher's lounge was the setting at Taya's school site and a large circular table was used, where the researcher sat to the right of the preschoolers. Both educational sites provided free lunch to most of the students at their schools.

Materials

Materials included the following: a list of possible vocabulary words made by the researcher for the teacher to mark, three culturally relevant books (for each student), pictures of each of the vocabulary words along with two distractor pictures per vocabulary word printed and laminated (total 27), tangible objects of the target vocabulary words (to assess generalization), a token board (i.e., laminated chart with 10 squares to which laminated happy faces could be

Velcroed), and reinforcer activities or toys for students to work towards playing with after earning the 10 happy faces (during probe and intervention sessions).

The vocabulary words for each child were picked from the three books and differed depending on the vocabulary knowledge of the child before the intervention began. The books were selected based on the following criteria (Hargrave & Sénéchal, 2000):

- Colored pictures appear on each page
- New vocabulary is represented by text and pictures
- Text has no more than 20 pages
- Book topics are age appropriate for preschoolers
- Books do not focus on specific holidays
- Books have not been read previously by their teachers to the students
- Rhyming and word books are not used

In addition, culturally relevant books were selected based on the author and/or illustrator being Navajo. Illustrations depicted the Navajo culture and the books included Navajo words.

Measurement

Nine vocabulary words were selected from the text. The target vocabulary words were assessed. The dependent variable was the receptive vocabulary knowledge gained by the participants. The independent variable was the DR intervention using culturally relevant books that were facilitated by the researcher. The culturally relevant books used in this study can be seen in Table 2.

Table 11

List of Books and Vocabulary Words

Title of Book	Author/Illustrator	Student	Vocabulary
[1]*Baby Learns About Weather*	Salina Bookshelf/Beverly Blacksheep	Taya	Rainbow Kite Butterflies
[2]*Baby Learns to Count*	Salina Bookshelf/Beverly Blacksheep	Taya	Shoes Rabbit Fingers
[3]*Beauty Beside Me, Stories of My Grandmother's Skirts*	Seraphine G. Yazzie/Baje Whitethorne Sr.	Allie	Navajo Flute Navajo Tea Scarf
[4]*Bidii*	Marjorie W. Thomas/Patrick S. Begay	Allie	Corral Bridle Trough
		Elijah	Bridle Stump Wool carders
[5]*First Laugh Welcome Baby!*	Rose Ann Tahe and Nancy Bo Flood/Jonathan Nelson	Allie	Raven Cradleboard Blue corn Mush
		Elijah	Skyscraper Cradleboard Windmill
[6]*Navajo Life*	Hildegard Thompson/Andrew Van Tsihnajinnie	Taya	Boy Girl Dog
		Elijah	Hogan Goats Wagon

[1]*Baby Learns About Weather* (Salina Bookshelf, 2005)
[2]*Baby Learns to Count* (Salina Bookshelf, 2003)
[3]*Beauty Beside Me, Stories of My Grandmother's Skirts* (Yazzie, 2011)
[4]*Bidii* (Thomas, 2006)
[5]*First Laugh Welcome, Baby!* (Tahe & Flood, 2018)
[6]*Navajo Life* (Thompson, 2014)

Procedures

After IRB approval from the institution, the researcher contacted participating schools to begin recruiting participants. Parent consent was sought for three Navajo preschoolers with disabilities. The researcher did not have knowledge of who the student and parent participants would be before beginning the study. In addition, specific testing information was not provided to the researcher at the beginning of the study. As the researcher learned more about the students over time (i.e., need for reward system, short breaks) the study was modified to their individual needs. Data were collected during the participants' school day between 8:00 a.m. and 1:00 p.m., Monday through Thursday. A list a vocabulary words was given to the teachers. The teachers were asked to mark the words they believed their student did not know.

A vocabulary assessment was given to the preschool participants that included the words the teacher selected to determine the vocabulary words they would be learning. The probe was set for at least five data points. The first intervention began when a participant had stable data. Probe 2 began when a participant had stable intervention data at 75% or above for at least three of five consecutive data points (determined through a visual analysis showing a clear change in level with no overlapping data with probe for at least three consecutive data points; Gast, Lloyd, & Ledford, 2018). The intervention sessions were video recorded.

Baseline and Probe

When baseline and probe data were measured, the researcher placed three picture cards of a word set on the table—this was later increased to nine due to the higher chance of guessing correctly and gaining high scores even though the word had not been taught. Three of the pictures were of the vocabulary words and the others were distractor pictures. A list of example distractor pictures (in text) associated with a word set can be seen in Table 3. The researcher

asked the student to select the correct card as the word was said (receptive vocabulary). After each question, if the participant did not answer, the researcher waited at least 3 seconds before repeating the question (unless the student answered soon than 3 seconds). Baseline or probe data were collected before starting the first intervention and probe data were collected five times after each intervention set. Each receptive vocabulary question was repeated three times, for a total of 27 questions asked at each probe session. Before the probe the students picked three toys from a bin, to be used as motivators. Students were permitted to play with the toys they picked out after they earned all the happy faces for their token board, which was after the probe session.

Table 12

Example of vocabulary word set and distractor pictures

Vocabulary Word Set	Distractor Picture	Distractor Picture
raven	road runner	parrot
cradleboard	bassinet	crib
blue corn mush	oatmeal	porridge

Intervention

The researcher used the EBP of DR. She used pictures of the target vocabulary words as visual supports (for answering vocabulary questions), modeling, corrective feedback, and positive reinforcement through verbal praise and a token board. The study included four probes, three intervention sets, one generalization set (once at baseline and once during maintenance), and one maintenance set. The intervention consisted of two phases. Before intervention the students picked three toys from a bin to be used as motivators. Students were permitted to play

with the toys they picked out after they earned all the happy faces for their token board, which was after the intervention session.

Phase 1 Dialogic Reading: During the reading the researcher used the following DR strategies to teach the vocabulary word: Completion (preschooler fills in the blank), Recall (ask a question about a part of the book that was already read), Open-ended (ask what is happening in a picture), Wh-questions (ask who, what, where, when, why questions), and Distancing (relate pictures and words to preschoolers' personal experiences; What Works Clearinghouse, 2010). When on a page with a target vocabulary word, the researcher asked Wh- questions, "What is this?" and pointed to the picture of the target word. If the student gave the correct answer the researcher said, "This is a (vocabulary word)" and recited an age-appropriate definition of the target vocabulary word. If the student did not respond or responded incorrectly, the researcher said, "This is a (vocabulary word), say (vocabulary word)."

Phase 2 Assessment: After reading the story, each student was assessed individually. The researcher put three pictures in front of the student and asked, "Which one shows (vocabulary word)?" (receptive vocabulary). Then the students were shown a picture of the vocabulary word and were asked "What is this?" (expressive vocabulary). If the student gave the correct answer the researcher said "Yes, that is a (vocabulary word)." If the answer was incorrect the researcher said "No, this is the (vocabulary word)" and pointed to the correct answer. Each of the questions were asked three times (students were asked three receptive knowledge questions and three expressive knowledge questions for each of the 3 vocabulary words, for a total of 18 questions asked during Phase 2).

Maintenance and Generalization

Maintenance was collected 2 weeks after the last intervention session and were collected five times. During the maintenance assessment the researcher asked the same questions that were asked during the intervention assessment (receptive and expressive vocabulary). Each question asked for assessment was asked three times, to assess if the participant truly knew the correct answer.

Generalization data was gathered twice (once at baseline and once at maintenance). During generalization three pictures were shown to the student per word set and the question was asked once. Physical objects of the vocabulary words were utilized to garner whether the students could generalize the picture vocabulary to the actual objects. Generalization was assessed through asking "What is this?" while holding up an object of the vocabulary word (e.g., if the vocabulary word was apron, the researcher held up an actual apron and asked, what is this?). In addition, generalization data were collected based on being probed by a different person and in another setting. After being shown pictures (of all sets of vocabulary words), another person in another setting asked, "Which picture shows a (vocabulary word)?"

Data Analysis

A graphic representation of the data was generated in a line graph; it displayed the independent and dependent variables, the relationship between the variables, the time dedicated to each condition, and the sequence of the baseline and interventions (Spriggs et al., 2018). Visual analysis of the data helped to determine growth, regression, and/or overlapping scores. Formative visual analysis occurred during the study to identify behavior change (i.e., changing data patterns in conditions), including within and between condition analysis; the between

condition analysis determined a functional relationship between the independent and dependent variables (Barton, Lloyd et al., 2018).

Within condition analysis takes place "to discern patterns within a single condition during a study." This includes analyzing level, trend, variability, and stability, as well as making decisions as to whether adaptations are necessary, and when to change conditions (Barton, Lloyd et al., 2018, pg. 181). Baseline stability was established across five sessions, with scores at or near zero (Barton, Lloyd et al., 2018), to measure the participants' vocabulary knowledge that was the focus during the interventions. The interventions began after baseline criteria were met. The trend was observed by analyzing the slope and direction of the data over time (positive, negative, zero, or undefined; Barton, Lloyd et al., 2018). Variability was observed through the fluctuation of data points and may determine whether the study should be extended to demonstrate more stability (Barton, Lloyd et al., 2018). Stability was demonstrated with consistent and predictable data in level and/or trend, which may indicate the lack of environmental interferences (Barton, Lloyd et al., 2018),

Between conditions visual analysis was used to recognize whether behavior change transpired (Barton, Lloyd et al., 2018). Functional relationships between the independent and dependent variables determine whether the independent variable (DR intervention with cultural relevance) yields a consistent change in the dependent variable (increase in participant's vocabulary; Barton, Lloyd et al., 2018). Researchers should look for changes in the data patterns (i.e., level and trend in different conditions and before, during, after condition changes). Immediacy of change can include abrupt changes which should be identified if a change in behavior occurs immediately after the intervention and can indicate an effective intervention.

Delayed changes may also occur and can be explained when a delay is predicted a priori and the delay is consistent across conditions (Barton, Lloyd et al., 2018).

Overlap is observed when data from one condition are in the same range as data in another condition (Barton, Lloyd et al., 2018). If baseline data and intervention data overlap, the confidence in the intervention effectiveness may be questioned. Consistency is established when data patterns are similar across conditions and are necessary when deciding a functional relationship between the independent and dependent variables (Barton, Lloyd et al., 2018). The between conditions analysis is necessary to find the functional relationships between the conditions (i.e., baseline, DR with culturally relevant book), which provide the information needed to draw conclusions, inferences, and future research ideas in the study report.

The social validity interviews were analyzed using In Vivo coding. The researcher utilized the words or short phrases of the parents to code the data (Miles et al., 2020). For example, a parent shared that she "struggled," and another parent said she had "difficulty" reading; therefore, one of the codes created was "struggled/difficulty with reading." Paper copies of the three interview transcripts were made and the researcher highlighted any similar codes found throughout the transcripts.

Procedural Fidelity

A second observer watched 30% of the video recordings of interventions to ensure procedural fidelity and watched 30% of the video recordings (i.e., baseline, intervention, probe, maintenance), and scored the vocabulary learned to measure interobserver agreement.

Procedural fidelity and interobserver agreement were measured with the use of an observer to decrease the chance of bias and increase internal validity (Barton, Meadan-Kaplansky, & Ledford, 2018; Ledford et al., 2018. The observer (Marie Max) scored about 30%

of procedural fidelity and interobserver agreement. The procedural fidelity data sheet has a list of procedures the researcher followed (see Tables 4 and 5 for the probes and interventions). The observer check-marked the procedures that were followed. For interobserver agreement, data were collected on the vocabulary knowledge gained throughout the study; the data collected by the observer were compared to the data collected by the researcher to minimize bias and mistakes. The interobserver agreement form can be seen in Tables 4 and 5. The observer was paid $30 per hour for observing the data.

The researcher and observer were the only people who saw all the faces of the young participants. The researcher sent the observer 30% of the video recordings to observe through secure file transfer and they were stored on a password-protected external drive. The parent watched a video of their own child participant. After data collection was completed, these videos were erased.

Table 13

Procedural Fidelity Checklist, Reliability Data Sheet, Intervention Phase 1

Intervention Phase 1: Dialogic Reading	Step Observed
When on a page with a target vocabulary word the PI will ask Wh- questions, "what is this?" and will point to the picture of the target word.	
If the student gives the correct answer the PI will say "This is a ____" and will recite an age-appropriate definition of the target vocabulary word.	
If the student does not respond or responds incorrectly, the PI will say "This is a ___. Say____."	

Interobserver Agreement

One observer analyzed about 30% of the recorded sessions. The observer was recruited based on her experience with conducting research, familiarity with data analysis protocols, and experience teaching Navajo students with delays/disabilities.

The interobserver agreement was assessed between 30% of baseline, intervention, probe, and maintenance. Interobserver agreement was calculated by dividing the number of agreements regarding the student participant responses by the number of agreements plus disagreements between raters and multiplying by 100. The sessions were recorded using a digital recorder attached to a tripod and placed on the table. Interobserver agreement data were collected on receptive and expressive vocabulary knowledge gained throughout the study. The data collected by the observer were compared to the data collected by the researcher to minimize bias and mistakes. The interobserver agreement sheet can be seen in Table 5.

Social Validity

The social validity portion of this study was conducted after the student participant completed the interventions. The parent participants were interviewed online by the researcher. The parent's interview was audio recorded and transcribed. The interview took about 1 hour. The parents were interviewed to determine how they feel about the culturally relevant EBP DR intervention, culturally relevant books, and how they build vocabulary skills at home. The social validity questions were asked after they were shown a video of their child being read to using the DR intervention. These questions can be seen in Table 6.

Participants received a $15 Starbucks gift card for participating in the interview. They received the gift card in the mail after they had been given 3 days to respond to an email sent to them with the interview transcript (i.e., member checking).

Table 14

Procedural Fidelity Checklist and Interobserver Agreement Sheet, Intervention Phase 2

Intervention Assessment: Receptive and Expressive Vocabulary (3 words)	Trial 1	Trial 2	Trial 3
1 receptive: Teacher placed picture cards on table Vocabulary Word			
Teacher asked student to select correct card as the word is said			
Teacher waited 3 seconds for response			
Was response correct?			
1 expressive: Teacher shows picture card of the Vocabulary Word			
Teacher asked student, what is this?			
Teacher waited 3 seconds for a verbal response			
Did the student give a response?			
2 receptive: Teacher placed picture cards on table Vocabulary Word			
Teacher asked student to select correct card as the word is said			
Teacher waited 3 seconds for response			
Was response correct?			
2 expressive: Teacher shows picture card of the Vocabulary Word			
Teacher asked student, what is this?			
Teacher waited 3 seconds for a verbal response			
Did the student give a response?			
3 receptive: Teacher placed picture cards on table Vocabulary Word			
Teacher asked student to select correct card as the word is said			
Teacher waited 3 seconds for response			

Was response correct?			
3 expressive: Teacher shows picture card of the Vocabulary Word			
Teacher asked student, what is this?			
Teacher waited 3 seconds for a verbal response			
Did the student give a response?			

Summary

This study assessed whether culturally relevant DR increased the receptive vocabulary of three preschoolers with disabilities. The EBP of DR was used along with modeling, visual supports, positive reinforcement, and feedback. Generalization was also measured using tangible objects of the vocabulary words and different people asking the probe questions in another setting.

Table 15

Social Validity Questions

1	Do you feel the DR intervention was effective in teaching your child vocabulary? Why or why not?
2	Does the DR intervention seem easy to do? Do you think you would be able to do this intervention at home? Explain your answer.
3	Was it beneficial for your child to receive the DR intervention? Why or why not?
4	Did your child learn anything from the DR intervention? If so, what did he or she learn? If not, what could have helped him or her to learn?
5	Do you have picture books at home? If so, what are they about?
6	Have you seen any Navajo children's books before? If so, what do you think about them?
7	Do you have any Navajo picture books at home? If so, tell a little bit about them.
8	How often do you read to your child?
9	How did you learn to read? Did you use picture books? Did you ever use Navajo picture books?
10	On a scale from 1 to 10, 1 being not important and 10 being very important, How important is it for culturally relevant books to be used in schools?
11	We used culturally relevant books to teach new words to [child's name]. How do you teach [child's name] new words at home?
12	In what ways have you helped to grow [child's name] language skills?
13	How do you feel you learned new words when you were young?
14	What type of school did you attend? Were picture books used? Were Navajo picture books used?
15	Do you think your educational experience would have been different if Navajo Picture books were used? Tell me about this.

Chapter 4: Results

Chapter 4 presents the quantitative and qualitative results of the SCD multiple-probe design of this study. The SCD multiple-probe design across students' results has been organized by participants. The sequence completed by each participant is presented in graphs to facilitate the analysis of the data obtained during the probe, intervention, and maintenance phases. The outcomes for each participant are then reported using quantitative data.

This chapter also includes the results of the social validity portion of this study with the objective to determine how parents felt about the culturally relevant EBP DR intervention and culturally relevant books, and how they build vocabulary skills at home. Some questions involved yes/no answer. However, all the questions were open ended (yes or no questions were followed-up with why? or why not? Explain your answer, tell me about this). For this reason, the obtained data were analyzed qualitatively.

This study presents the results of the multiple-probe design across participants to address the following research questions:

1. Does a culturally relevant DR intervention increase vocabulary for Navajo preschool students with disabilities?
2. Will Navajo families see value in using culturally relevant books at school and/or at home?

Allie's Data

Probe and Intervention 1 Sessions

During probe 1 (i.e., baseline) Allie's scores averaged 29% (range = 11–44%). The average score of word sets 1 and 2 was 29% (word set 1 range = 22–33%; word set 2 range = 11–44%) and for word set 3 the average was 31% (range = 22–33%). For probe 1 and

intervention 1 Allie was choosing between three picture choices and would sometimes guess correctly. The use of three pictures during probe 1 provided a higher probability of guessing correctly.

The average correct responses on intervention set 1 was 76% (range = 55–88%) across eight sessions, showing an upward trend. No overlap occurred between probe 1 and intervention 1. Growth occurred from session 1 of intervention 1 at 55% to 88% at session 8. Stability was shown in the last four sessions of the intervention in which Allie scored above the criteria of 75%. Allie's data for baseline/probes, interventions, and maintenance are displayed in Figure 1.

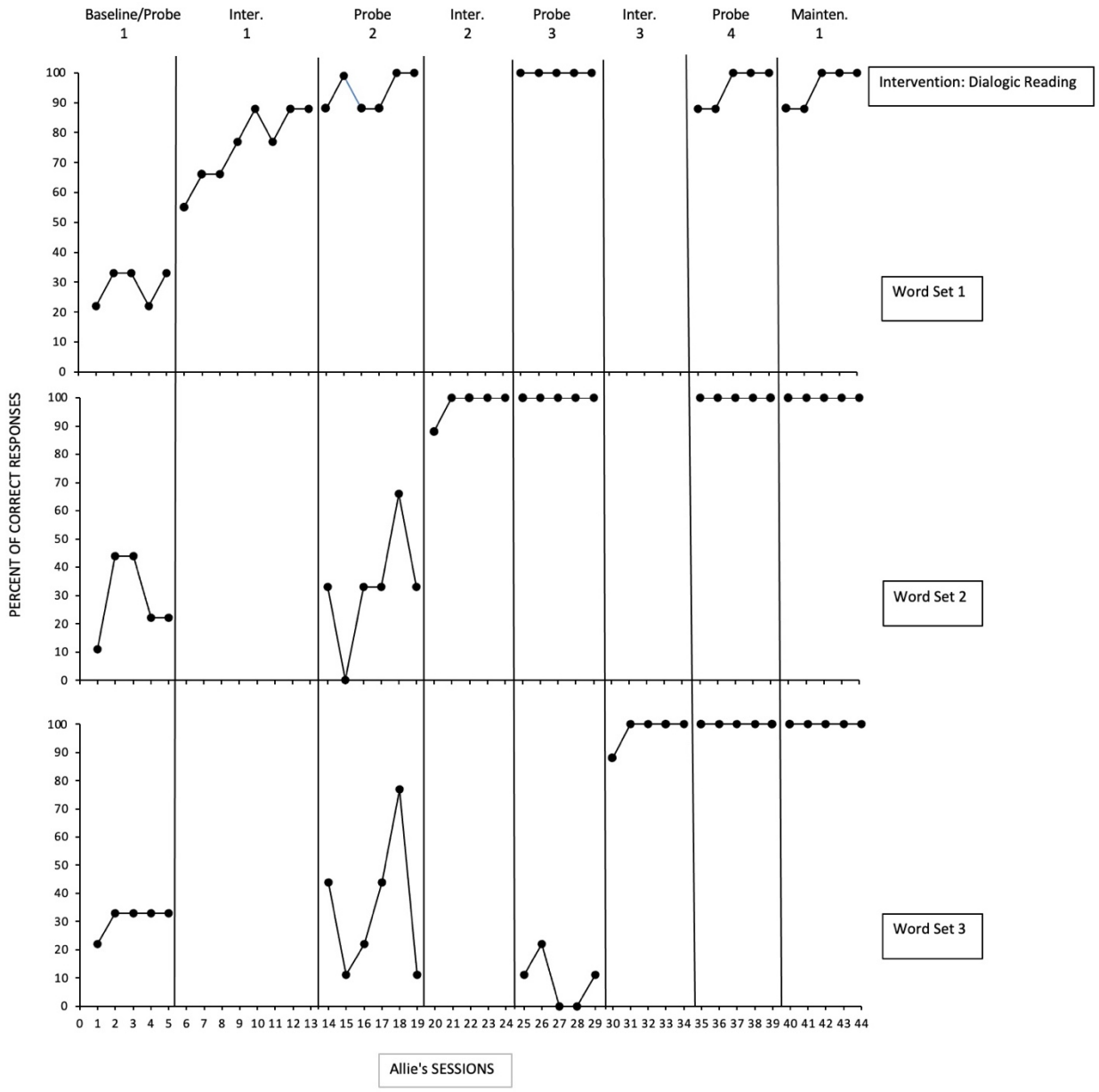
Probe and Intervention 2 Sessions

During probe 2 Allie's scores varied highly for word sets 2 (range = 0–66%) and 3 (range = 11–77%). A within-condition analysis allowed the researcher to determine that this may have been because Allie was beginning to learn the vocabulary words during the probe. Therefore, the vocabulary word sets 2 and 3 were changed to new words and nine pictures were shown to her instead of three during probe 2 session 6 for word sets 2 and 3. Three pictures continued to be shown to Allie during probe word set 1 because she had already learned these words. When nine pictures were shown to her instead of three, Allie's probe scores for word sets 2 and 3 lowered (i.e., the word set 2 probe score lowered from 66% to 33% and word set 3 probe score lowered from 77% to 11%). Afterward, her scores went back down for word sets 2 and 3. Growth continued to be seen from intervention 1 session 1 to probe 2 session 5 (range = 55–100%).

In intervention 2 Allie scored an average of 98% (range = 88–100%) across 5 sessions. No overlap occurred between probes 1 and 2 and intervention 2. Growth occurred from session 1 of intervention 1 at 88% to 100% at session 5. Stability was demonstrated in the last four sessions of the intervention, in which Allie scored above the criteria of 75%.

Figure 13

Results for Allie – Dependent Variable



Probe and Intervention 3 Sessions

During probe 3 Allie's scores were all 100% for word sets 1 and 2. The average score for word set 3 was 9% (range = 0–22%). The additional distractor pictures added to the word set 3 probe resulted in her not learning the words. The low range of the probe 3 scores shows stability. A within-conditions analysis shows that Allie responded well to the adaption of the additional distractor pictures and no additional adaptations were needed.

The average score for intervention 3 was 98% (range = 88–100%). During Allie's first intervention 3 session she scored 88% and for the following sessions she scored at 100%. These scores demonstrated both growth and stability, showing low variability.

In four of the five DR intervention sessions, Allie scored 100%. There was no overlap between probes1–3 and intervention 3. Allie's scores for intervention 3 demonstrated low variability, high stability, and growth.

Probe 4 and Maintenance

Allie's average score for probe 4 was 93% (range = 88–100%). For word set 1 she scored an average of 95% (range = 88–100%). For word sets 2 and 3 Allie scored 100% in all the sessions. Allie's scores demonstrated that she had learned the three-word sets, and growth was demonstrated in the high scores earned during probe 4, showing low variability and no overlap with probe scores before the intervention of each word set (i.e., comparing probe 1 word set 1 range = 22–33% to probe 4, word set 1 range = 88–100%).

Allie's average score for maintenance was 98% (range = 88–100%). Allie scored 100% on all maintenance sessions for word sets 2 and 3. For word set 1 Allie scored an average of 82% (range = 66–100%).

Generalization

Generalization data were collected during probe 1 and maintenance. During probe 1 generalization when shown an object of the vocabulary words Allie scored 0% for saying the correct vocabulary word for the object. However, when shown the actual object and given picture choices to match the picture to the actual object Allie scored 100%. For generalization of the probe questions being asked by the school secretary and in another location (school cafeteria), Allie scored with 55% accuracy.

During maintenance generalization when shown an object of the vocabulary words Allie scored 78% for saying the correct vocabulary word for the object. Figure 2 displays the pre and post generalization scores of the expressive vocabulary word sets. However, when shown the actual object and given picture choices to match the picture to the actual object, Allie scored 100%. For generalization of the vocabulary questions being asked by the classroom teacher and in another location (the classroom), Allie scored 78% accuracy. Figure 3 displays the pre and post generalization scores of being asked the vocabulary questions by another person in another setting. In addition, when shown all the actual objects of the vocabulary words spread out on the table and Allie was asked to "show me the [vocabulary word]," Allie correctly singled out the object being asked for 100% of the time.

Figure 14

Allie Generalization Expressive Vocabulary

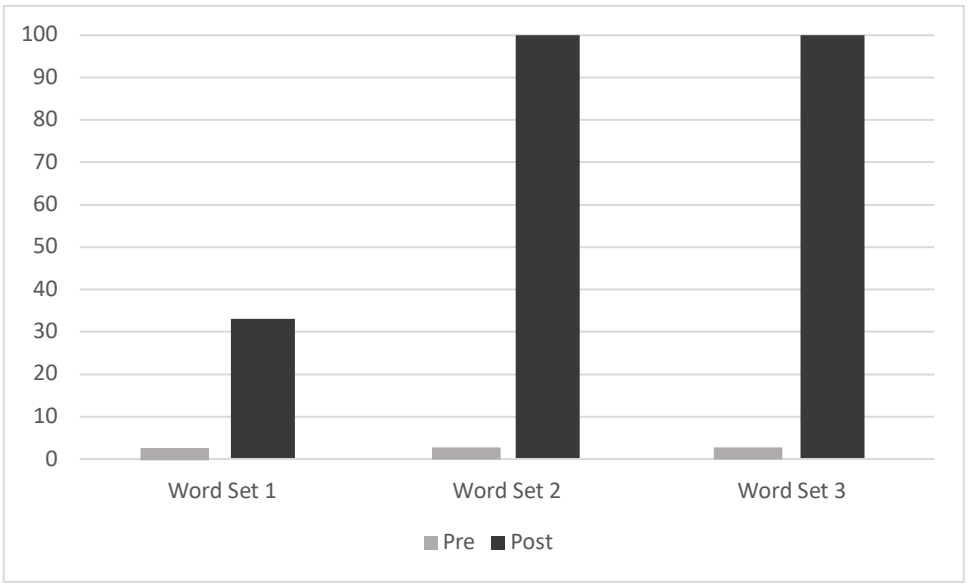
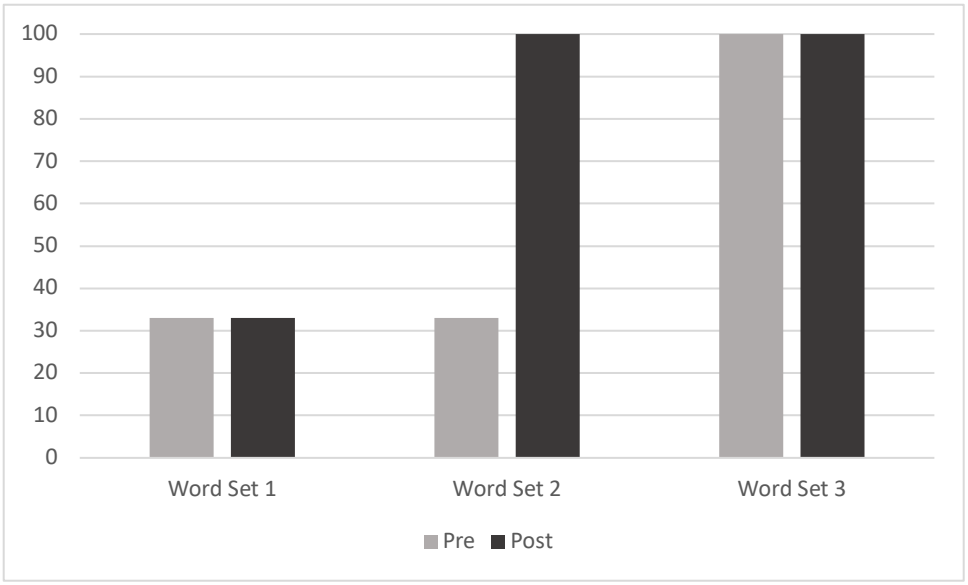


Figure 15

Allie Generalization Person and Setting



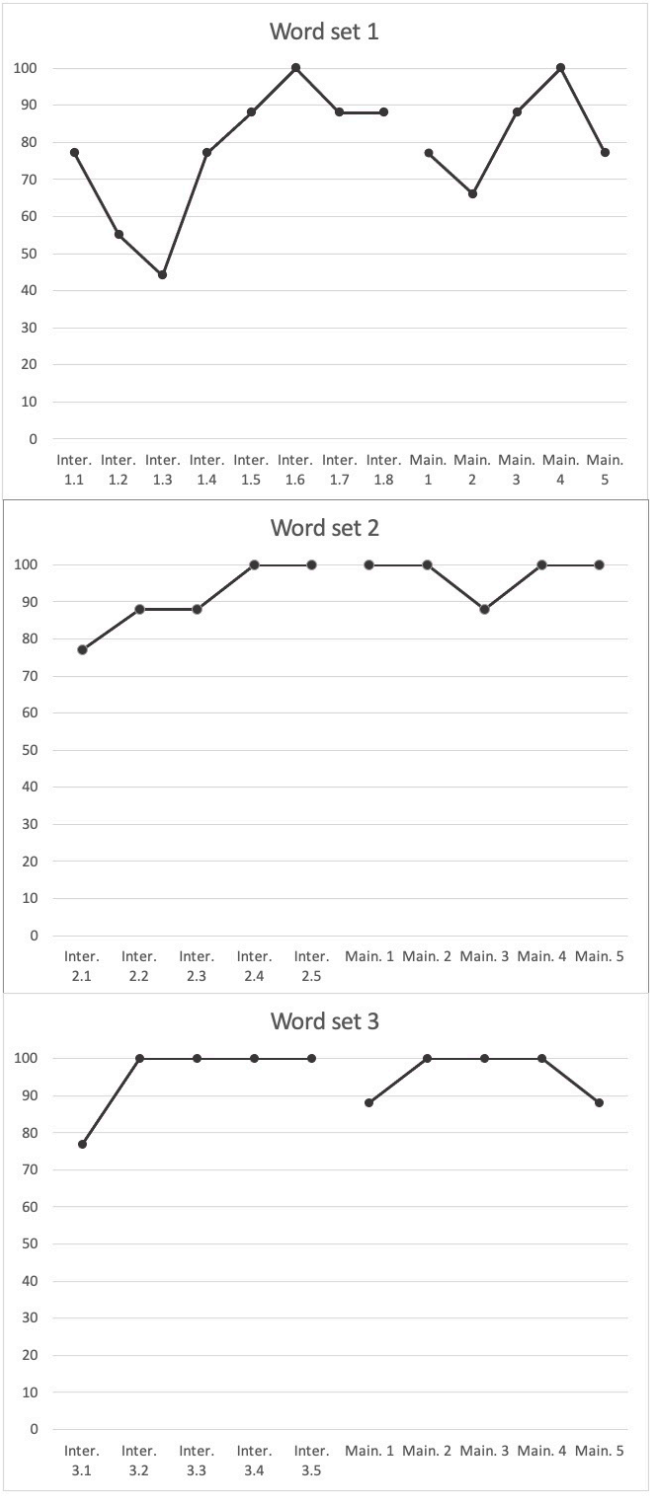
Expressive Vocabulary

Expressive vocabulary growth was not the dependent variable of this study; however, expressive vocabulary data were gathered during intervention and maintenance. Figure 4 displays the expressive vocabulary data for Allie. Her average score for expressive vocabulary for word set 1 (intervention 1) was 77% (range = 44–100%). For word set 2 (intervention 2) her average score was 91% (range = 77–100%), and for word set 3 (intervention 3) her average score was 95% (range = 77–100%).

During maintenance her overall average score was 94% (range = 66–100%). The averages for each word set during maintenance were 82% for word set 1 (range = 66–100%), and 98% for word sets 2 and 3 (range = 88–100%). During maintenance Allie had the most difficulty with two vocabulary words (corral, bridle). She was above criteria (75%) for word sets 2 and 3 during maintenance. We can conclude that Allie learned expressive vocabulary for seven of the nine words (trough, turquoise jewelry, Navajo tea, scarf, raven, cradleboard, and blue corn mush).

Figure 16

Allie Expressive Vocabulary



Elijah's Data

Probe and Intervention 1 Sessions

During probe 1 Elijah's scores averaged 26% (range = 11–44%). The average score for word set 1 was 20% (range = 11–33%). The average score for word set 2 was 26% (range = 0–44%), and for word set 3 the average was 31% (range = 11–33%). Elijah was choosing between three picture choices and would sometimes guess correctly, which caused high variability in his scores. Low stability was shown due to Elijah correctly guessing the answers at times. In addition, Elijah was not attending or following directions very well during probe 1 and intervention 1 (getting out of his seat and running around the room with one of the picture cards and/or hiding the picture cards). It was during intervention 1 session 2 that the token board was used, and that positively impacted Elijah's behavior during the following probe and intervention sessions.

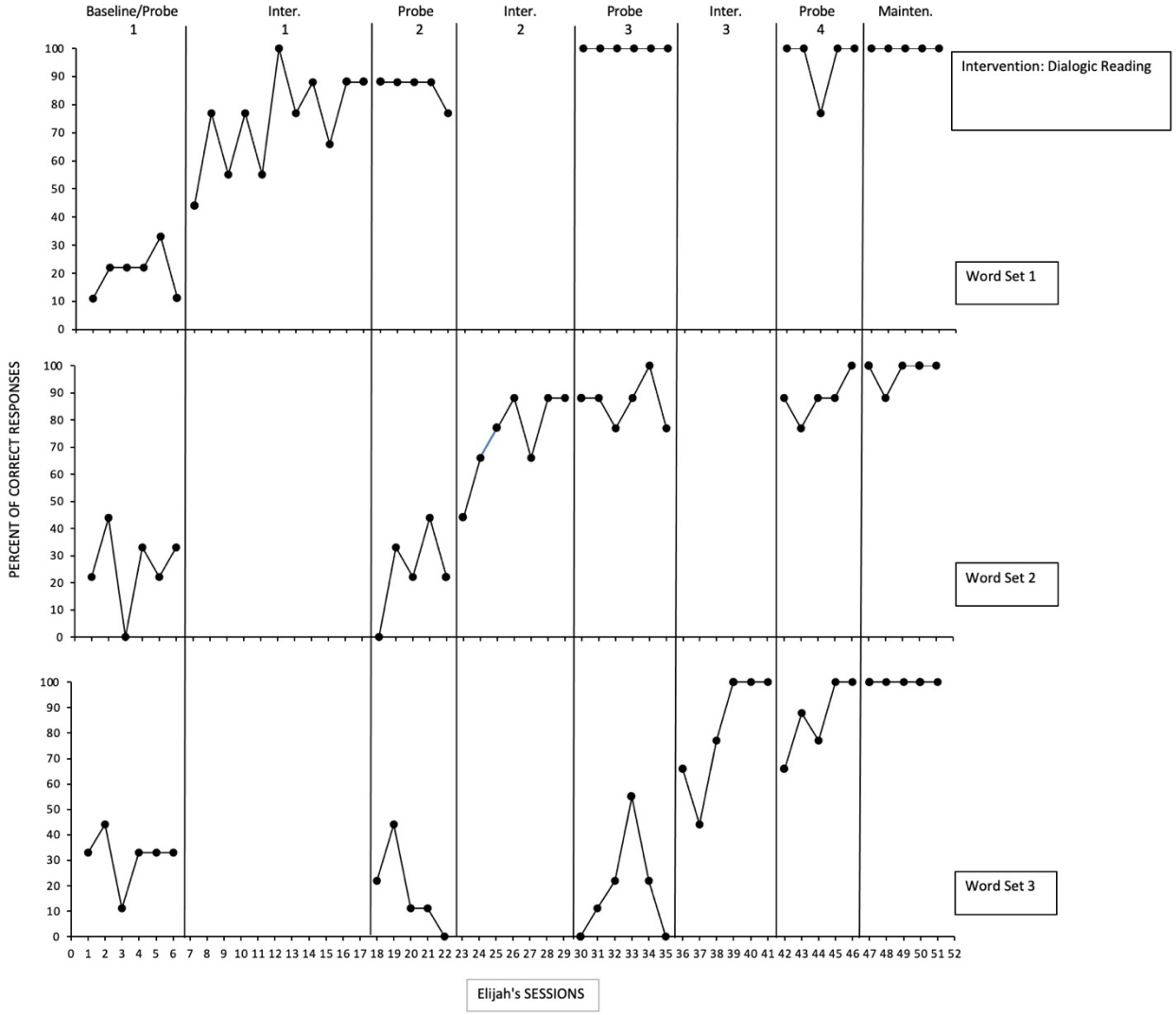
The average correct response on intervention set 1 was 74% (range = 54–100%) across 11 sessions, showing an upward trend and growth. Although there was high variability in the intervention 1 scores, no overlap occurred between probe 1 and intervention 1. Elijah's data for baseline/probes, interventions, and maintenance are displayed in Figure 5.

Probe and Intervention 2 Sessions

Elijah's average probe 2 score was 43% (range = 0–88%). His scores varied for word sets 2 and 3 (range = 0–44%). His score for word set 1 averaged 86% (range = 77–88%). At times Elijah would choose the correct answer due to having three pictures to choose from. The scores for probe 2 were moderately variable for word sets 2 and 3.

Figure 17

Results for Elijah – Dependent Variable



In intervention 2 Elijah scored an average of 74% (range = 44–88%) across seven sessions. The first day of intervention 2 was also an off day for Elijah. He kept asking for the book from intervention 1 and he kept telling the researcher to “shut up” after she asked the assessment questions. Overlap occurred between probes 1 and 2 and intervention 2. Elijah’s scores were stable for the last two consecutive sessions of intervention 2.

Probe and Intervention 3 Sessions

During probe 3 Elijah's scores were an average of 68% (range = 0–100%). For word set 1 the average was 100% and for word set 2 average was 86% (range = 77–100%). The average score for word set 3 was 18% (range = 0–55%). Elijah's probe 3 scores varied. The researcher suspected that Elijah was beginning to learn the words during the probe because his probe scores were increasing from 0% to 55%; therefore, the researcher added distractor pictures during probe and his scores decreased from 55% to 22% and then to 0%.

The average score for intervention 3 was 81% (range = 44–100%). His scores varied and overlap occurred between probes 1–3 and intervention 3, but overall showed growth. The overlap happened due to a low score in the second session of intervention 3. It is unknown why Elijah scored low that day; however, in the following session he increased his score to 77%. Stability was demonstrated in the final three of five DR sessions when Elijah scored 100%.

Probe 4 and Maintenance

During probe 4 Elijah scored an average of 90% (range = 66–100%). Elijah scored 66% on the first session of probe 4, word set 3, which was his first day back from being absent for a week because he was sick. Elijah's scores varied, however, and most of his scores in probe 4 were above the criteria score of 75%. His final two probe scores for word set 1 and 3 were 100%, showing some stability. The final session for word set 2 was 100%. During probe 4 after session 1, short breaks that consisted of tossing a ball to each other five times, were incorporated between nine word set questions. This change appeared to cut down on Elijah scoring below criteria (i.e., 75%). The researcher suspected that Elijah was answering incorrectly on purpose, and the short activity between sets of questions assisted in keeping Elijah focused on giving the correct answer.

Elijah's average score for maintenance was 99% (range = 88–100%). Elijah scored 100% on all maintenance sessions for word sets 1 and 3. For word set 2 Elijah scored an average of 98% (range = 88–100%).

Generalization

Generalization data were collected during probe 1 and maintenance. During probe 1 generalization when shown an object of the vocabulary words Elijah scored 0% for saying the correct vocabulary word for the object. However, when shown the actual object and given picture choices to match the picture to the actual object, Elijah scored 66%. For generalization of the probe questions being asked by the classroom paraprofessional and in another location (the classroom), Elijah scored at 22% accuracy.

When shown an object of the vocabulary words during maintenance generalization, Elijah scored 66% for saying the correct vocabulary word for the object (expressive vocabulary, Figure 6). However, when shown the actual object, and given picture choices to match the picture to the actual object, Elijah scored 100%. For generalization of the vocabulary questions being asked by the classroom teacher and in another location (the classroom), Elijah scored 88% accuracy. Figure 7 displays the pre and post generalization scores of being asked the vocabulary questions by another person in another setting. In addition, when shown all the actual objects of the vocabulary words spread out on the table and being asked to "show me the [vocabulary word]," Elijah correctly singled out the object being asked for 100% of the time.

Figure 18

Elijah Generalization Expressive Vocabulary

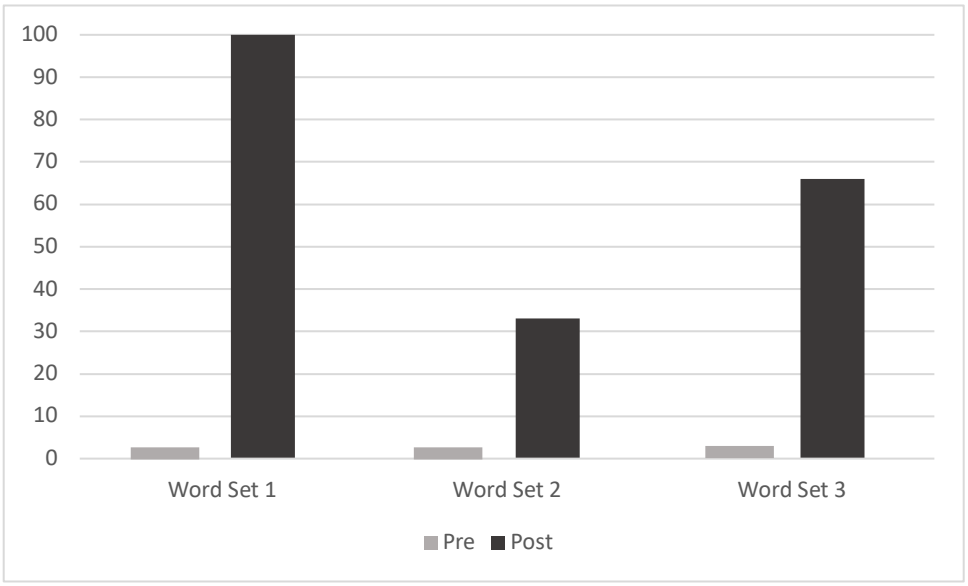
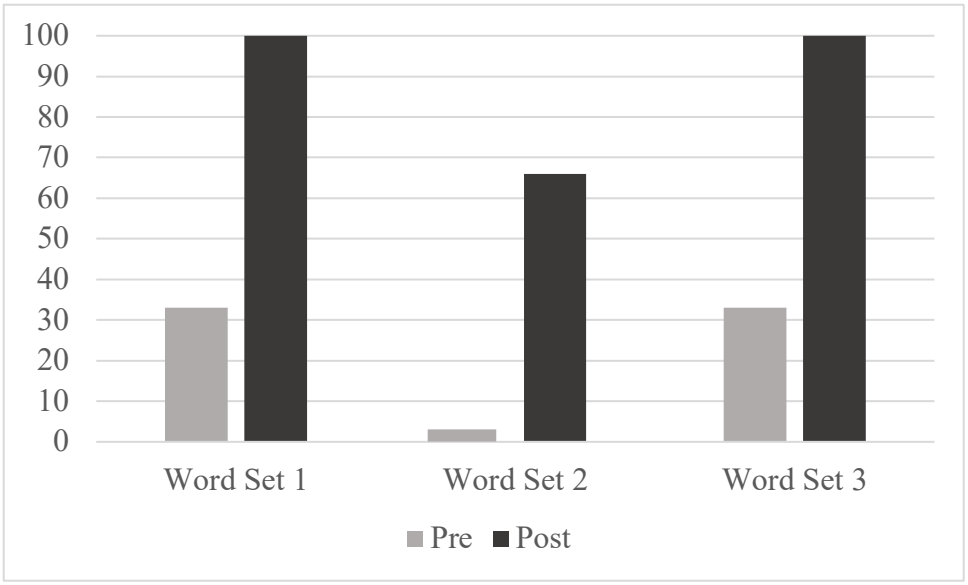


Figure 19

Elijah Generalization Person and Setting



Expressive Vocabulary

Figure 8 displays the expressive vocabulary data for Elijah. His average score for expressive vocabulary for word set 1 (intervention 1) was 75% (range = 0–100%). For word set 2 (intervention 2) his average score was 57% (range = 0–100%), and for word set 3 (intervention 3) his average score was 81% (range = 33–100%). During maintenance his overall average score was 90% (range = 66–100%). The averages for each word set during maintenance were 100% for word set 1, 81% for word set 2 (range = 66–88%), and 88% for word set 3 (range = 77–100%). During maintenance Elijah had the most difficulty with three vocabulary words (wood carders, bridle, cradleboard). He was above criteria (75%) for word sets 1 and 3 during maintenance. We can conclude that Elijah learned expressive vocabulary for six of the nine words (hogan, goats, wagon, stump, skyscraper, and windmill).

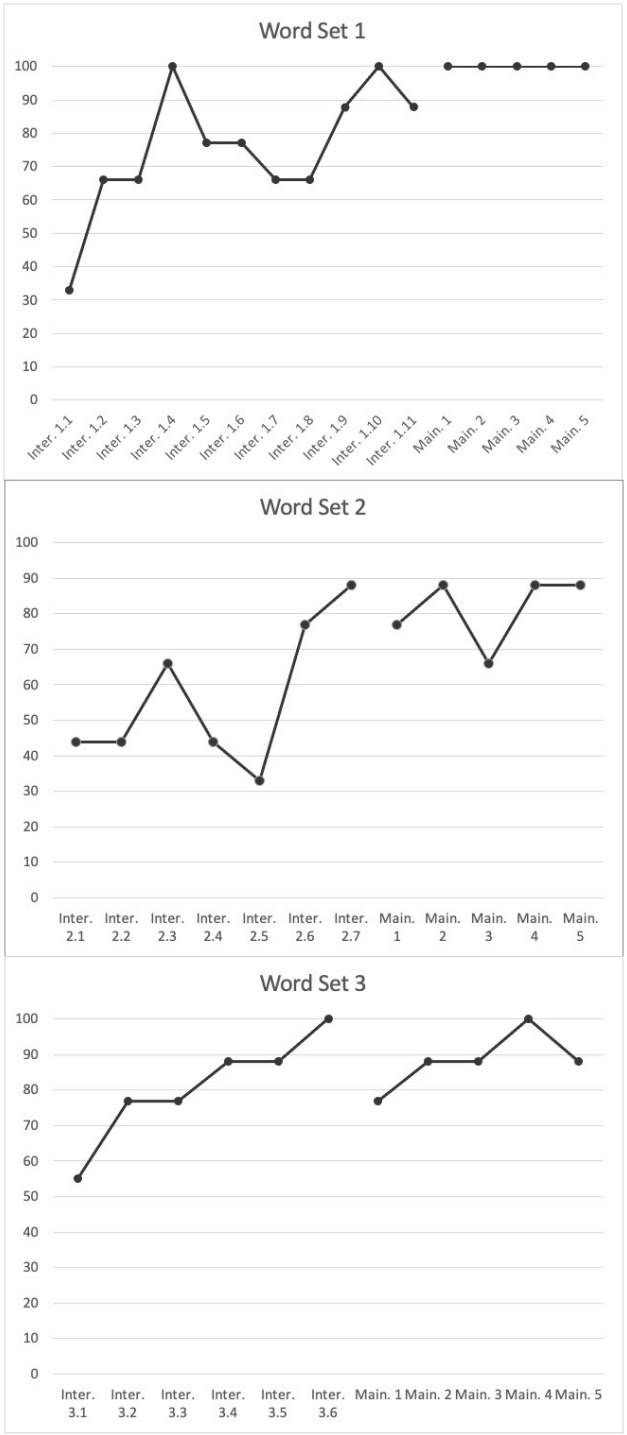
Taya's Data

Probe and Intervention 1 Sessions

During probe 1 Taya's scores averaged 25% (range = 11–33%). The average score for word set 1 was 29% (range = 22–33%). The average score for word set 2 was 22% (range = 11–33%) and for word set 3 the average was 24% (range = 11–33%). Taya was choosing between three picture choices and would sometimes guess correctly, which caused high variability in her scores. Low stability was shown due to Taya correctly guessing the answers at times. In addition, Taya would put her head down and refuse to answer the questions during probe 1 and intervention 1. It was during intervention 1 session 2 that the token board was used, which positively impacted Taya's behavior.

Figure 20

Elijah Expressive Vocabulary



The average of correct responses on intervention set 1 was 61% (range = 11–88%) across 20 sessions, showing an upward trend and growth. Overlap occurred between probe 1 and intervention 1, during probe sessions 1, 2, and 5, and in intervention 1 sessions 1 and 8. Taya met criteria (i.e., 75%) seven times during intervention 1, including the last two sessions, demonstrating some stability. Taya's data for baseline/probes, interventions, and maintenance are displayed in Figure 9.

Probe and Intervention 2 Sessions

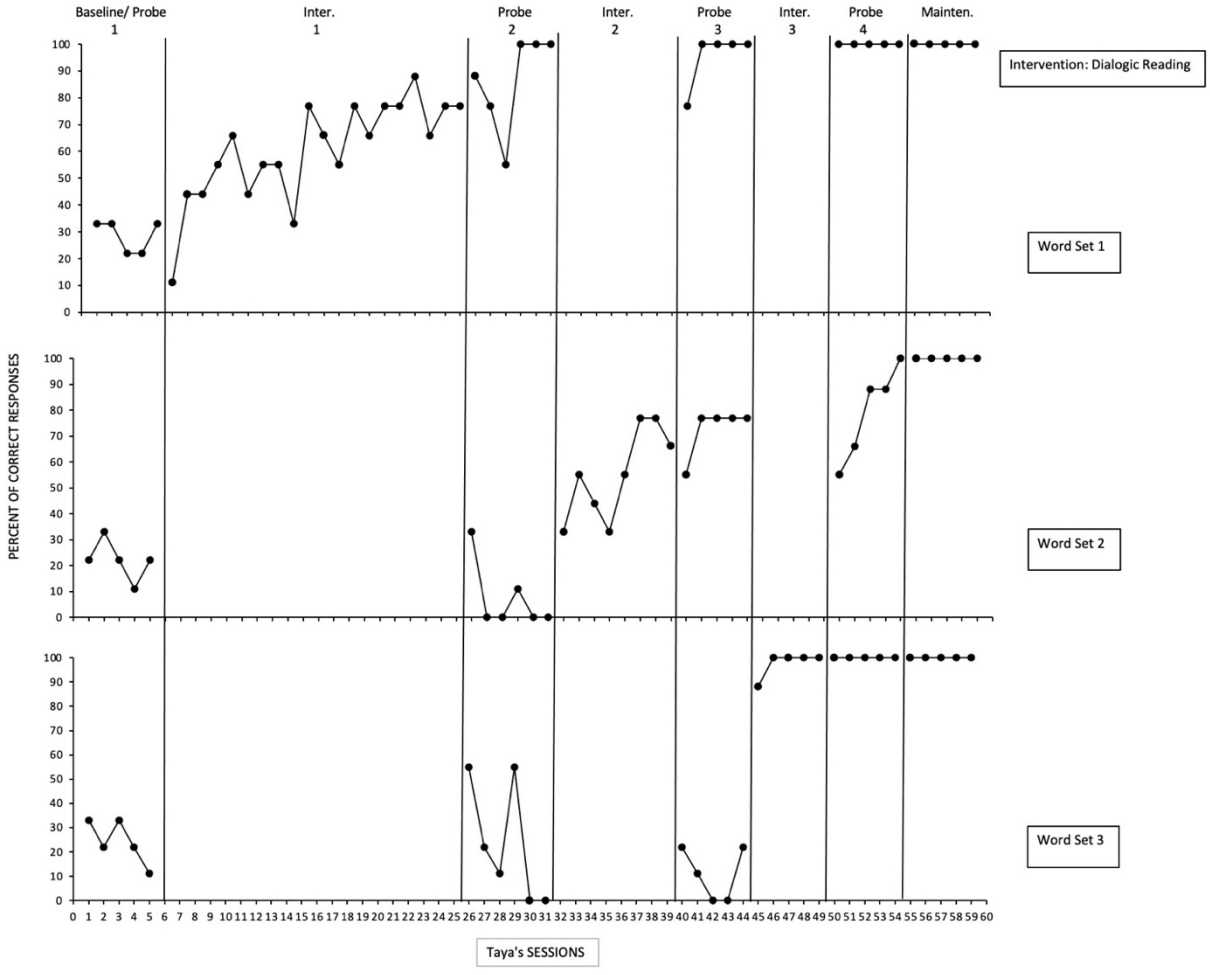
During probe 2 Taya's average probe 2 score was 40% (range = 0–100%). Her scores varied for all three-word sets (word set 1 range = 55–100%; word set 2 range = 0–33%; word set 3 range = 0–55%). Her score for word set 1 averaged 84%, which demonstrated stability in Taya's vocabulary knowledge gained for word set 1. Taya's word set 2 average score was 9%, for word set 3 it was 29%, which varied highly. At times Taya would choose the correct answer due to having three pictures to choose from, and the researcher suspected that Taya was learning some of the words during probe; therefore, additional distractor pictures were added to the remaining probe sessions (probe 2 sessions 5 and 6). When the additional pictures were added during session 5 of probe 2, Taya's probe scores started to decline (word set 2 from 11% to 0% and word set 3 from 55% to 0%) and show some stability with the final two sessions of word sets 2 and 3 at 0%.

In intervention 2 Taya scored an average of 55% (range = 33–77%) across eight sessions, which varied. For word set 2, overlap occurred between probes 1 and 2 and intervention 2. Due to having three choices of pictures at times, Taya scored 55% during probe and due to some days Taya not responding to the assessment questions, she scored 55% during sessions 1 and 4 of intervention 2. The researcher noticed that Taya would put her head down when the token board

with happy faces was brought out, though she still responded positively to the motivator toys she picked out to play with after the probe or intervention.

Figure 21

Results for Taya – Dependent Variable



Probe and Intervention 3 Sessions

During probe 3 Taya's scores were an average of 60% (range = 0–100%). For word set 1 the average was 95% (range = 77–100%) and for word set 2 the average was 73% (range = 55–77%). The last four consecutive scores above criteria (75%) demonstrated stability. Growth from the first probe to probe 3 was seen for word sets 1 and 2. The average probe 3 score for word set 3 was 11% (range = 0–22%). Although the scores for word set 3 varied somewhat, the scores were low. It was during probe 3 that the researcher began to have Taya play with one of the motivator toys for 30 seconds between the three repeated questions for each word. An improvement in her behavior was immediately noted—she no longer put her head down, nor refused to answer for the rest of the sessions (i.e., probe, intervention, maintenance).

In intervention 3 Taya scored an average of 98% (range = 88–100%) across five sessions. Overlap did not occur between probes 1–3 and intervention 3 and stability was demonstrated (four of the last intervention scores were 100%). Growth was seen from the low probe scores when comparted to the high intervention scores for word set 3.

Probe 4 and Maintenance

During probe 4 Taya scored an average of 93% (range = 55–100%). Taya scored 55% on the first sessions of probe 4, word set 2. Her scores for word set 2 were highly varied and exhibited that she had some difficulty remembering words. In this word set her scores were 55%, 66%, 88%, 88%, and 100%. However, most of her scores in probe 4 were above the criteria score of 75%. Her probe scores for word sets 1 and 3 were 100%, which exhibited mastery of those vocabulary words. The final session for word set 2 was 100%. The short breaks of 30 second to play with a sensory toy between asking the three questions per each word continued

during probe 4. This change continued to provide support, with Taya no longer putting her head down and refusing to answer questions.

Taya's average score for maintenance was 100%. She scored 100% on all maintenance sessions for all word sets.

Generalization

Generalization data were collected during probe 1 and maintenance. During probe 1 generalization when shown an object of the vocabulary words Taya scored 0% for saying the correct vocabulary word for the object. However, when shown the actual object and given picture choices to match the picture to the actual object, Taya scored 44%. For generalization of the probe questions being asked by the classroom paraprofessional and in another location (the classroom), Taya scored 44% accuracy.

During maintenance generalization when shown an object of the vocabulary words Taya scored 77% for saying the correct vocabulary word (expressive vocabulary; Figure 10). However, when shown the actual object and given picture choices to match the picture to the actual object, Taya scored 100%. For generalization of the vocabulary questions being asked by the classroom teacher and in another location (the classroom), Taya scored 100% accuracy.

Figure 11 displays the pre and post generalization scores of being asked the vocabulary questions by another person in another setting. In addition, when shown all the actual objects of the vocabulary words spread out on the table and Taya was asked to "show me the [vocabulary word]," Taya correctly singled out the object being asked for 77% of the time.

Figure 22

Taya Generalization Expressive Vocabulary

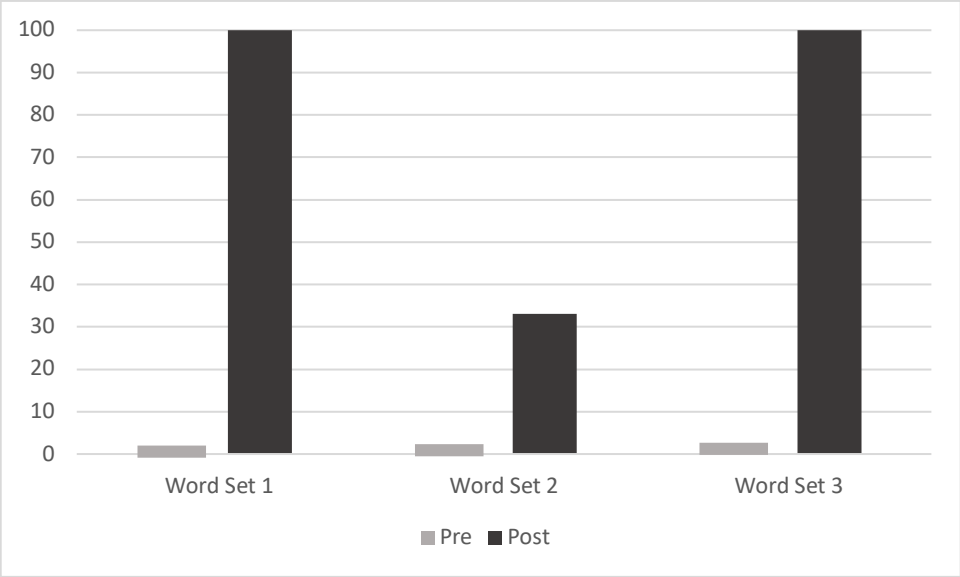
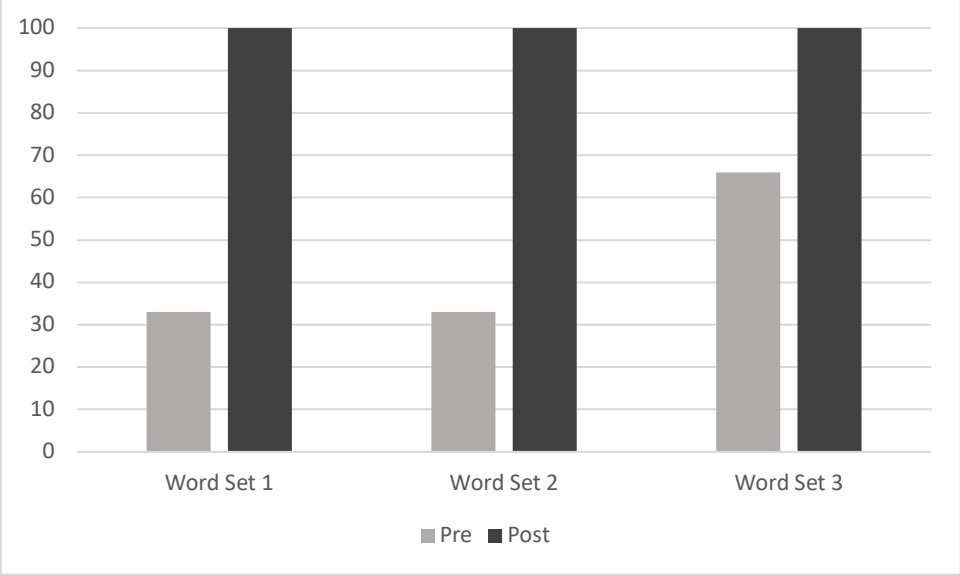


Figure 23

Taya Generalization Person and Setting



Expressive Vocabulary

Figure 12 displays the expressive vocabulary data for Taya. Her average score for expressive vocabulary for word set 1 (intervention 1) was 70% (range = 0–100%). For word set 2 (intervention 2) her average score was 55% (range = 0–100%) and for word set 3 (intervention 3) her average score was 91% (range = 33–100%). During maintenance Taya's overall average score was 99% (range = 88–100%). The averages for each word set during maintenance were 100% for word set 1, 98% for word set 2 (range = 88–100%), and 100% for word set 3. During maintenance Taya did not demonstrate having difficulty with the vocabulary words. She was above criteria (75%) for all word sets during maintenance, scoring almost 100% in all sessions. We can conclude that Taya learned expressive vocabulary for all the nine words (rainbow, kite, butterflies, boy, girl, dog, shoes, rabbit, fingers).

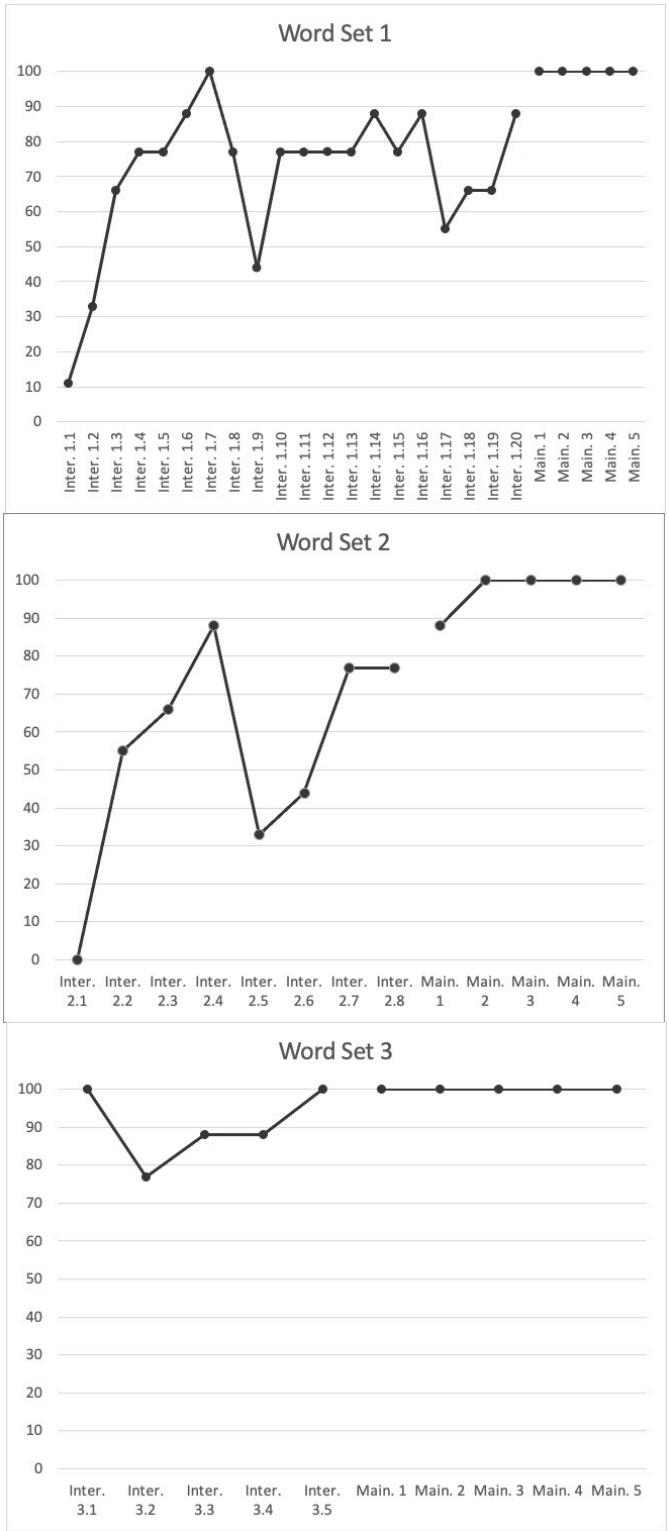
Interobserver Agreement Results

Interobserver agreement (IOA) data were collected on at least 30% of the probe, intervention, and maintenance sessions. IOA was calculated by dividing the total number of agreements by the total number of agreements plus disagreement and multiplying by 100%. The averages for IOA results can be seen by participant in Table 7. The average IOA for each participant was above the recommended average of 80% (Ledford, Lane, & Gast, 2018).

Allie's IOA on probe 1 was 100%, for probe 2 it was 98% (range = 96–100%), for probe 3 it was 100%, and for probe 4 it was 98% (range = 96–100%). For intervention 1, Allie's IOA was 97% (range = 94–100%), and for interventions 2 and 3 it was 100%. Allie's maintenance IOA was 100%.

Figure 24

Taya Expressive Vocabulary



Elijah's IOA on probe 1 was 96%, for probe 2 it was 100%, for probe 3 it was 100%, and for probe 4 it was 96%. For interventions 1, 2, and 3 Elijah's IOA was 97% (range = 94–100%). Elijah's maintenance IOA was 98% (range = 96–100%).

Taya's IOA on probe 1 was 87% (range = 85–89%), for probe 2 it was 100%, for probe 3 it was 95% (range = 89–100%), and for probe 4 it was 100%. For intervention 1, Taya's IOA was 99% (range = 94–100%), for intervention 2 it was 98% (range = 94–100%), and for intervention 3 it was 98% (range = 94–100%). Taya's maintenance IOA was 98% (range = 96–100%).

Procedural Fidelity Results

The observer recorded data for 7 of Allie's 18 interventions and 8 of her 21 probe sessions. The researcher calculated 97% fidelity for probes and interventions. Maintenance was 100% fidelity. The average fidelity for the probes, interventions, and maintenance was 100%.

The observer recorded data for 8 of Elijah's 24 interventions and 8 of his 22 probe sessions. For Elijah, the researcher calculated 100% fidelity for probes and maintenance. Interventions were 99% fidelity. The average fidelity for the probes, interventions, and maintenance was 99%.

The observer recorded data on 11 of Taya's 33 interventions and 8 of her 21 probe sessions. For Taya, the researcher calculated 97% fidelity for probes and 99% for interventions. Maintenance was 100% fidelity. The average fidelity for the probes, interventions, and maintenance was 98%. Overall, reliability was 98–99%, as shown in Table 8.

Table 16

IOA Results

Students	Probes 1-4	Interventions 1-3	Maintenance	Average IOA
Allie	99%	99%	100%	99%
Elijah	98%	97%	98%	98%
Taya	95%	98%	98%	97%

Table 17

Fidelity Results

Students	Probes 1-4	Interventions 1-3	Maintenance	Average Fidelity
Allie	95%	99%	100%	98%
Elijah	100%	99%	100%	99%
Taya	97%	99%	100%	98%

Social Validity Results

The three parent interviews provided insight into parental views of the culturally relevant dialogic reading intervention. The results of the social validity interview questions are displayed in Table 9. On three separate occasions in one-on-one interviews, after watching a video of their child participating in a DR intervention, all three parents agreed that the DR intervention was effective in teaching their child vocabulary and that the intervention seemed easy to do.

Table 18

Social Validity Results

Social Validity Questionnaire	Allie's Parent	Elijah's Parent	Taya's Parent
Do you feel the DR intervention was effective in teaching your child vocabulary? Why or why not?	Yes	Yes	Yes
Does the DR intervention seem easy to do?	Yes	Yes	Yes
Do you think you would be able to do this intervention at home?	Yes	Yes	Yes
Was it beneficial for your child to receive the DR intervention?	Yes	Yes	Yes
Did your child learn anything from the DR intervention?	Yes	Yes	Yes
Do you have picture books at home?	Yes	Yes	Yes
Have you seen any Navajo children's books before?	Yes	Yes	No
Do you have Navajo picture books at home?	Yes	No	No
How often do you read to your child?	Every other night	1 time per week	1–2 times per week

On a scale from 1 to 10, 1 being not important and 10 being very important, how important is it for culturally relevant books to be used in schools?	10	10	10
How do you teach [child's name] new words at home?	Repeating words, read books	Explain words to him	Repeating words
In what ways have you helped to grow [child's name] language skills?	Talk to her at her level	Talking and playing with sibling	Practice saying words (break the words up into separate sounds)
How did you learn to read?	Preschool and picture books	Reading intervention class	Reading while using a computer and headphones
Did you use picture books?	Yes	Yes	I think so
Did you ever use Navajo picture books?	No	No	No
What type of school did you attend?	Public	Private	Public
Do you think your educational experience would have been different if Navajo picture books were used?	Yes	Yes	Yes

In addition, the parents felt they would be able to do this intervention at home and that the DR intervention was beneficial for their child. Examples of what parents shared about what their child had learned from the DR intervention showed that the children were more verbal, more familiar with things in the environment, and had improved vocabulary. When asked if she thought the DR intervention was beneficial for Allie, Allie's mother replied, "Yes, because it helps her, I think, grow her vocabulary, and I've noticed that she's been speaking a lot more than when she started school in August. Yeah, like a lot a lot more, you know. I'm actually really happy."

When asked whether her child had learned anything from the DR intervention, Elijah's mother said, "I mean, I was surprised he actually knew those words, and he said them pretty perfect …Yeah, especially skyscraper and windmill … Those are pretty long words and it's like more than one, you know syllable to it. So, I was pretty surprised he actually said them pretty good."

The three parents had picture books at home and read to their child between one and four times per week. Allie's mother reads to her every other night, Elijah's mother mentioned that her work schedule makes it difficult to read and spend time together with Elijah, and Taya's mother mentioned that due to work and home responsibilities she is not able to read more than one or two times per week. When asked what types of picture books they had at home, Allie's mother shared that they had content learning picture books that focused on colors and shapes, Elijah's mother had a variety of picture books focused on her son's interests (bugs, animals, sharks, wildlife), and Taya's mother shared that they had several types of picture books (story books, content learning, rhyming).

When the mothers were asked if they had seen Navajo picture books before, one parent said no and two said yes. One of the latter mothers added that although she had seen Navajo picture books before, she had not seen a lot of these types of books. Furthermore, two mothers shared that they did not have Navajo picture books at home and one mother responded that they had one Navajo picture book about a grandma and her sheep. When asked, on a scale from 1 to 10 (1 being not important and 10 being very important), how important it is for culturally relevant books to be used in school, all three parents answered 10. When asked why, Allie's mother said, "because I think that would help our youth like know about our culture and start speaking Navajo more and just learning a lot about the language and culture." Elijah's mother said "I think it's important for kids to know where their background is, and like where their local community is coming from, you know different cultures, especially even if it's not your own culture. I think it's important to learn, you know, where other people come from and where your friends come from." Taya's mother said, "because I know lately, there are some youngsters. They don't know anything about their culture, so it'll be best that they have knowledge of it when they get older."

When the mothers were asked what type of K–12 schools they had attended, Allie's and Taya's mothers said they had attended public schools and Elijah's mother had attended a private school. The mothers were also asked about their own experience of learning to read and vocabulary development. When asked how they had learned to read, Elijah's and Taya's parents mentioned that they had struggled with learning to read. Allie's mother learned to read from preschool and using picture books. Elijah's mother learned to read from a reading intervention class. Taya's mother replied, "I did struggle when I was younger, and some of the classes that I

had was like, we would have to read. There was these headsets that we would have to put on our head, and then we read the book. But then it goes along with something on the computer."

Afterwards the parents were questioned whether picture books had been used when they were learning to read or even if they'd had Navajo picture books. Two of the three parents responded yes, they used picture books; Taya's mother added that she thinks picture books were used. All three mothers said Navajo picture books were not used when they were learning to read. The final question of the interview was, "Do you think your educational experience would have been different if Navajo picture books were used? Tell me about this." The three mothers answered yes. Allie's mother said "because we would learn like actual Navajo words. And I guess, learn how to speak Navajo using those words and putting them in our vocabulary."

Chapter 5: Discussion

The purpose of this study was to explore whether the EBP of DR using culturally relevant books would increase the vocabulary of three Navajo preschoolers with speech and language delays. Data demonstrated that all three students increased vocabulary knowledge in all three-word sets.

Effect of Intervention on Dependent Variables

The three participants showed growth in their receptive vocabulary knowledge (dependent variable). Allie's receptive vocabulary data indicated that she learned all nine words; all maintenance data averaged 98%. However, her expressive scores (88% average for word set 1 and 98% average for word sets 2 and 3) and generalization scores (100% in word sets 2 and 3) during maintenance indicated that she was inconsistent in her knowledge of two words from word set 1 (bridle and corral). These words may not be words she was exposed to on a regular basis in class or at home. Allie may need more intervention sessions to master these words. Allie consistently demonstrated that she had learned seven of the nine vocabulary words during intervention.

Elijah's receptive vocabulary data also indicated that he learned all nine words; all maintenance data averaged 99%. However, his expressive scores (75% average for word set 1, 57% average for word set 2, and 81% for word set 3) and generalization scores (66% in word set 2 and 88% for word set 3) during maintenance indicated that he was inconsistent in his knowledge of two words from word set 2 (bridle and wool carders) and one word from word set 3 (cradleboard). These words may not be words he was exposed to on a regular basis in class or at home. Elijah may need more intervention sessions to master these words. He had more exposure to some of the words; he pointed out a picture at his school (which we saw as we

walked to the room where we were working) of a hogan, goats, wagon, and windmill (Elijah's vocabulary words from word sets 1 and 3). He would comment on these, further reinforcing his learning of the vocabulary words. Elijah consistently demonstrated that he learned six of the nine vocabulary words during intervention.

Taya's receptive vocabulary data also indicated that she learned all nine words; all maintenance data were 100% for all word sets. Her expressive vocabulary knowledge was almost all 100%; she missed one word (girl) in word set 2 during maintenance session 1, and for generalization during maintenance, person, and setting, she scored 100% for all word sets. Her generalization, expressive language was low for word set 2 (33%). Scores during maintenance indicated that she is inconsistent in her knowledge of three words from word set 2 (girl, boy, dog). During probe 3 many times Taya would confuse those three words, most often saying dog for boy and boy for dog. However, it was during probe 4 that Taya received a score of 100% for word set 2 and the same score was earned all throughout the maintenance sessions. Taya may need more intervention sessions to completely master her expressive vocabulary knowledge when generalizing these words to objects. Taya consistently demonstrated that she had learned all the nine vocabulary words during intervention.

The three students were given the three books they used for their intervention. All parents shared that they read to their child at home. It may be possible that additional readings of these culturally relevant books by family members to the student participants at home will further solidify the vocabulary knowledge they gained.

Discussion

The researcher did not know of or have knowledge of the specific students who would participate in this study. The school district's early childhood coordinator provided the

researcher with a list of student names who had a speech and language delay/impairment along with contact information for the school they attended. The school then gave the researcher parent contact information which was used to obtain parent consent. Therefore, the level of the students cognitive, social, emotional, physical, and adaptive skills was unknown to the researcher. Prior knowledge of this could have influenced the modifications (the change from using three cards to six cards during probe sessions) and adaptations (use of a token board and short breaks) to be planned for at the beginning of the study. Toward the onset of the study the researcher noticed differences in the students' behavior and length of time it took students to begin to learn the words. At various points throughout the study Allie, Elijah, and Taya had somewhat variable data which at times showed instability. However, all students demonstrated growth in all vocabulary sets. The line graph showed an upward trend across all word sets.

All students required more time in intervention one (Allie – 8 sessions, Elijah – 11 sessions, Taya – 20 sessions), less time in intervention 2 (Allie – 6 sessions, Elijah – 7 sessions, Taya – 6 sessions), and the least amount of time in intervention 3 (Allie – 5 sessions, Elijah – 6 sessions, Taya – 5 sessions). This could be because it was not only the words that took time to learn, but also the process of figuring out what was being expected of them (learning the vocabulary words discussed during the DR intervention). Learning from a person they have only recently met may also have contributed to them learning the vocabulary words, which is supported by research and theory that stresses the importance of building rapport with students for learning to take place (Driscoll & Pianta, 2010; Sandilos et al., 2019; Williford et al., 2016).

During baseline/probe 1 the researcher did not observe that the students were learning the words. The researcher began to suspect that all students were learning the vocabulary words at various times during probes 2 and 3 when they were shown three pictures. Students were

exposed to each word at least 15 times during a probe condition and with only three pictures to choose from, the students began to match the word to the picture. An implication of this is that young children may learn vocabulary words with repeated auditory exposure to the word and a visual without the explicit teaching of the word. Research on vocabulary acquisition corroborates this implication (Dickinson, 1984; Dickinson et al., 2019).

When distractor pictures were added to the probes for word sets not yet taught, the probe scores demonstrated more stability; the distractor pictures were closely related to the meaning of the actual vocabulary word. For example, in the case of Elijah the distractor pictures for cradleboard were a crib and a bassinet. Elijah may have associated the word "cradle" with "baby," and when he saw the picture of a baby in a cradleboard, he was correctly guessing cradle despite not actually being taught what a cradleboard was. However, when the distractor pictures were added he would more often choose the crib or bassinet for cradleboard, which indicated that Elijah did not truly know what a cradleboard was until he was explicitly taught the vocabulary word during the intervention.

Elijah and Taya benefited from the use of the token board and/or small breaks during the probe. Elijah's behavior of getting up during probe or phase 2 of the intervention stopped after the implementation of the token board. The researcher also suspected that Elijah was purposefully answering incorrectly. When short breaks were incorporated, he began to continuously score above criteria (75%). From the beginning of the study Taya would at times put her head down and refuse to answer probe and phase 2 intervention questions. After the token board was used her behavior improved, but then started to regress toward the end of intervention 1 through probe 2 and intervention 2. At the beginning of probe 3 short breaks were built into her sessions and Taya no longer put her head down or refused to answer.

The researcher began the study in October and ended in March for Elijah and Taya and in April for Allie. Because the preschool program was in session only 4 out of 5 days per week, and due to school breaks (e.g., Thanksgiving, winter break), student illnesses, and 9 snow days, the study took 6 to 7 months.

Overall, the students all made gains on the dependent variable, receptive vocabulary, although it took various lengths of time to reach criteria with each of the word sets. Comparable to other studies of students with disabilities who participated in a DR intervention, increased language was demonstrated (Fleury et al., 2014; Whalon et al., 2015; Fleury & Schwartz, 2017). Students also made gains in expressive vocabulary and in generalization skills. The maintenance data demonstrated that they retained the knowledge they gained. Furthermore, the mothers who were interviewed responded positively to watching a recording of their child participate in the intervention. They also shared that they had noticed improvements in their child since beginning the intervention. The data of the students and the positive reaction from the parents provide evidence that using culturally relevant DR with the preschool Navajo students provided positive outcomes in receptive vocabulary.

Social Validity

The social validity interview data indicated that the three parents viewed the culturally relevant DR intervention as socially valid and that it could easily be implemented at home. Each parent also shared that they had seen notable gains in their child (more verbal, more familiar with things in the environment, and improved vocabulary). The importance of reading books at home was demonstrated through all parents sharing that they read to their child at home. Two parents (Elijah's and Taya's mothers) shared that they read to their child only once or twice per week

due to work and daily responsibilities, and Allie's mother read to her every other night. All parents also had picture books in their homes.

The parents' views that using culturally relevant books in schools is very important aligns with the theoretical framework of TribalCrit's seventh tenet, which states that Indigenous beliefs, traditions, and values are viewed as important to tribal members' learning (Brayboy, 2005). The mother's answers about why using culturally relevant books are important and how their educational experiences would have been different if they had used culturally relevant books had to do with learning Navajo words and more about the Navajo culture. Taya's mother also mentioned the importance of learning about the cultures of peers. However, only one parent shared that she had one culturally relevant book and that she had not seen a lot of Navajo picture books. Questions regarding how accessible Navajo picture books are to Navajo families that live in border towns—are they in the city libraries, classrooms, bookstores? and how much do they cost?—should be asked to discover why the Navajo parents in this study did not have more, or even any, Navajo picture books in their homes.

Limitations

Some limitations of this study include the variability in probe scores, few participants, threats to internal validity, and the use of motivator activities. Probe data when participants were shown only three pictures were somewhat variable. Stable data points are desired versus variable data (Barton, Lloyd et al., 2018). Although these data were somewhat variable, overall, the intervention data had an upward trend, and the variability was minimal when distractor pictures were added to the probe sessions of words sets that did not yet have an intervention.

In addition, few students and parents participated; therefore, the results are not generalizable. However, replication single-case studies that have the same results while

modifying investigators, population, and/or settings can generalize the findings (Gast & Ledford, 2018a).

Internal validity was another limitation. It is high, when possible, threats are controlled for, demonstrating experimental control (Gast, Lloyd, & Ledford, 2018). Maturation is an internal threat to validity for the multiple-baseline design. Maturation and testing effect threats may occur due to the long amount of time spent in the baseline condition (Gast, Lloyd, & Ledford, 2018). The maturation effect was a factor in this study due to the participants learning words during probe. However, with the addition of new word sets and distractor pictures this effect was controlled for Allie. For Elijah and Taya, the addition of the distractor pictures during probe assisted in curbing the maturation effect.

The final limitation is the use of motivator toys/activities, which were not used at the start of the study. When working with young children, researchers should consider including motivators for the child to work toward because young children are at different levels for attending to and focusing on activities (Mahone & Schneider, 2012) as they are developing this skill in preschool.

Future Research

Research intended to benefit the educational needs of Indigenous young children with special needs has been minimal (Faircloth, 2006). Therefore, more research is needed to focus on interventions in all developmental areas (cognitive, social, emotional, adaptive, communication, and physical) for indigenous young children with special needs. Furthermore, not all studies report the race of their participants (Sinclair et al., 2018). Studies should report the racial background of the participants in their studies. This information should be reported because

minority groups have been historically marginalized, and this information may be helpful to educators of historically marginalized students, who may ultimately benefit.

Teaching Navajo words during a DR intervention is another way that this study could be extended. The readings could be conducted in both Navajo and English and the focus could be on increasing Navajo vocabulary words. Language revitalization is of great importance for many Indigenous nations, many of whom are going through a language shift (i.e., the process of a language losing speakers until it is extinct; Werito, 2020).

Replication of this study can increase the external validity. External validity is measured by how generalizable the study outcomes are to the population (Gast, Lloyd, & Ledford, 2018). Multiple-probe designs have some measure of external validity due to having three or more participants; when "consistent effects occur across participants, the researcher has demonstrated that intervention effects are not due to some idiosyncratic characteristic of a single participant" (Gast, Lloyd, & Ledford, 2018, p. 270).

Replication of single-case studies that have the same outcomes, modifying investigators, participants, and settings can be conducted to generalize the findings (Gast & Ledford, 2018a). The participants in this study were Navajo preschoolers who live off tribal lands; a replication study could be conducted with Navajo preschoolers who live in urban areas, or preschoolers of a different race to make this study generalizable, thus increasing the external validity.

What Works Clearinghouse (2020) deems an intervention to be an evidence-based practice (i.e., interventions that have been proven to be effective in high-quality research) if at least five single-case studies have replicated similar outcomes and meet the What Works Clearinghouse standards. The studies must be conducted by three different researchers, and the total number of participants in the studies must be 20 or more. These evidence-based practices

are proven to be generalizable through replication research and then shared with the general public as effective interventions.

The researcher conducted the intervention with the students, which keeps the knowledge of the intervention with the researcher. Future research may include the teacher, paraprofessional, and/or caregiver facilitating the interventions, which would train those who are with the developing child more often in the evidence-based practice of DR.

Conducting this study with Navajo preschool students who live on tribal lands would add to the limited amount of research available on this population. The researcher would take additional steps to obtain approval from the Navajo Nation Human Research Review Board (Navajo Nation IRB; NNHRRB) in addition to their institution's IRB. This may be the reason for the limited amount of research available. Although the process of gaining authorization may take more time, the NNHRRB exercises the sovereign right of the Navajo Nation to ensure research conducted on tribal lands is culturally respectful and beneficial to the Nation (Navajo Nation and Center for Native American Health, 2005).

Implications for Practice

There are three implications for practice, based on this study's findings. First, future replications of this study should take into consideration diagnostic information of the student participants to plan for the use of strategies or adaptations that should be put into place to meet the individual needs of the students, such as positive behavior supports and/or use of adaptive technology. The student scores during baseline and probe may have been more stable if this information was considered prior to beginning the study.

Using culturally relevant books and DR with Navajo preschoolers resulted in increased vocabulary knowledge (receptive and expressive vocabulary). Even though expressive

vocabulary was not the objective, the students learned to say the majority, if not all the target words. Most of the books used in this study were at the preschool level. However, additional preschool age books are needed that are culturally relevant to Navajo preschoolers. One parent interviewed shared that she had not seen a Navajo children's book before and another mentioned that they had seen these books but had not seen a lot of them. More importantly all parents indicated that it was very important to use culturally relevant books in schools. More research is needed to explore culturally relevant evidence-based practices for Indigenous preschoolers with disabilities. There are currently 574 federally recognized tribes in the United States (U.S. Department of Interior, 2022) and each tribe is unique in their customs and beliefs. Therefore, to replicate this study, culturally relevant books specific to the participant's tribe would be most beneficial.

Finally, using Navajo picture books to teach vocabulary to Navajo preschoolers utilizes the children's Funds of Knowledge. Allie learned the word cradleboard in this study and Allie's mother shared that they have a cradleboard hanging on one of their walls at home, which she had heard Allie refer to. Allie was able to make the connection between the picture of the vocabulary word learned at school and the cradleboard at home. Allie may have been more receptive to learning the word cradleboard because it was connected to prior knowledge of the cradleboard at home.

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