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Sabina Bragg

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PARENTAL SHARED READING INTERVENTION: EXAMINING THE EFFECTS OF
STRUCTURED PARENTAL READING TRAINING ON VOCABULARY ACQUISITION
IN CHILDREN UNDERGOING TREATMENT FOR LEUKEMIA

by
SABINA BRAGG

A dissertation submitted to the Graduate Faculty in Educational Psychology in partial fulfillment
of the requirements for the degree of Doctor of Philosophy, The City University of New York

2020

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Training on Vocabulary Acquisition in Children Undergoing Treatment for Leukemia

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This manuscript has been read and accepted for the Graduate Faculty in Educational
Psychology in satisfaction of the dissertation requirement for the degree of Doctor of
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ABSTRACT

Parental Shared Reading Intervention: Examining the Effects of Structured Parental Reading Training on Vocabulary Acquisition in Children Undergoing Treatment for Leukemia

by

Sabina Bragg

Advisor: Helen L. Johnson

Children diagnosed with leukemia often fail to progress academically, even falling behind due to hospitalizations and prolonged treatment protocols. Naturally, their medical challenges take priority over all other issues, though eventually absences from school place them at risk for academic deficits after the completion of treatment (Tsimicalis et al., 2018). As well, the neurotoxicity associated with chemotherapy damages their central nervous systems, exacerbating school related problems (Lewis et al., 2010). Since the survival rate for children with leukemia has improved dramatically in recent years, intervention aimed at ameliorating these problems has potent benefits. The current study compared structured and unstructured parental reading programs in a sample of children diagnosed with leukemia focused on improving their vocabulary growth, an important factor facilitating academic success. The parents of these children participated in the intervention with their children during hospitalization. Nineteen parent-child dyads were recruited to participate in this investigation. The implementation of two different forms of reading programs, dialogic reading (structured) and read-alouds (unstructured), took place after the parent participants had received training on these topics. The Peabody Picture Vocabulary Test-Revised (PPVT-R) served as the pre/post assessment of vocabulary, measuring any gains obtained by the children in both groups. Parents in both groups read aloud to their children on a daily basis during the five-

week intervention period. To assess treatment fidelity, the principal investigator texted the parent participants weekly. This study analyzed PPVT-R data using pre and post growth scale values (GSV). GSV differences determined the significance of the vocabulary gains (Dunn & Dunn, 2007, p. 21). Results indicated that the main effect for the within-subjects factor, changes in value of the GSV, in the period between pre and post assessment, did reveal a significant difference. The data suggests areas for future research and the instructional implications of the findings.

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Chapter 1: Introduction

Inside the walls of a pediatric cancer hospital, children fight for their lives. In a world with so much at stake, where pain fills their days and fear grips their hearts, children long for their former lives. In my ten years as a hospital teacher, I had many conversations with these special children about the small things they miss: the feel of the rubber seats on the school bus, lunch with friends in the school cafeteria, the way they look in their school uniforms, recess, and simply writing their names on top of a piece of paper for a classroom assignment. These children are able to articulate their feelings about the loss of their daily routines, regular events for which they now yearn. While hospitalized, they actually experience the ramifications of other more consequential events – e.g., prolonged and recurrent school absence, lack of opportunities for learning that occur naturally in the school environment, and treatment-induced cognitive impairments - that impact their academic progress and learning in significant ways.

The purpose of this study was to examine how structured and unstructured parental reading training and subsequent intervention may contribute to the vocabulary learning of children with leukemia during the time when they participate in lifesaving medical treatments. The study also focused on eliciting information from the parents of these children regarding their impressions of the shared reading experiences. This chapter provides information on the theoretical context and background information for the research. In addition, in an effort to demonstrate the potential significance of the research, the chapter introduces the target population and delineates the study's rationale.

Academic Constructs Influencing the Rationale of the Study

The study integrated three main academic constructs: the value of structured parental reading training, the provision of an educational intervention (dialogic reading) to children

receiving treatment for cancer, and vocabulary learning. The well-established educational challenges experienced by childhood cancer patients support the use of dialogic reading techniques to increase vocabulary learning.

Structured parental reading training. Structured parental shared reading training plays a supportive role in building literacy in children. Research studies have confirmed the efficacy of parent training in building vocabulary and increasing reading comprehension, critical factors in literacy development (Colmar, 2014; Roberts, 2010; Taverne & Sheridan, 1995). The seminal work of Whitehurst et al., (1988) illustrates that parents trained in structured dialogic reading techniques can produce significant increments in their children's language development resulting from shared reading. The current study aimed to discover whether or not an enriched language experience, provided after structured parental reading training, mitigated the effects of loss of exposure to the classroom's language rich environments for children with cancer.

Dialogic reading. (DR), an evidenced-based, interactive, structured reading strategy in which the adult reader encourages a child's verbalizations by means of prompts, expansions, repetition, and scaffolding, uses repeated readings to achieve its goal of having the child retell the story to the adult audience. In an effort to help parents prompt their children to discuss their shared stories, Whitehurst (1988) exhorts parents to ask explicit questions during read-alouds, thereby encouraging them to serve as strategic reading partners with their children. Research has proven this technique effective in expanding children's responses to the reading passages because it challenges them to take active roles in recounting the shared stories in their own words while their parents take more passive roles as listeners (Whitehurst & Lonigan, 1998).

The DR process, implemented during the extended 1-on-1 time available for instruction while children undergo cancer treatments, has the potential to accomplish two positive goals simultaneously in that it promotes vocabulary learning while filling up down time with constructive activity. During hospitalizations, parents find themselves in a position to take

advantage of the sudden and unexpected increase in time together with their children. By offering each child an opportunity to take the role of the storyteller while the parent assumes the role of active listener, the dialogic reading process encourages participation by both children and parents. As active listeners, parents ask questions and probe for explanations while considering the child's interests and abilities. Since parents appreciate the day-to-day fluctuations in their children's capacities based on the impact of the frequently harsh medical treatments, they may adjust their expectations accordingly. Essentially, parents form partnerships with their children, thereby establishing equality in their reading relationships. For a brief period of time, the childhood cancer patients step out of their roles as sick children into educational experiences in which their roles as storytellers have status commensurate with the active listening roles taken by their parents. Because of the implicit expectation that the children engaging in the DR process will verbalize their conclusions regarding the shared stories, these children have the opportunity to improve their verbal fluency skills as they provide sequential narratives. In accordance with the goals of the study described herein, Whitehurst et al., (1988) identify the need for determining the relative effectiveness of DR programs in which parents have the sole responsibility for serving as reading partners for their children. To this end, this study endeavored to determine if parents can positively impact vocabulary growth at a crucial time in the lives of this special population of children. A review of the DR literature confirms the efficacy of this form of reading intervention because it provides opportunities for focused language exchanges that enable parental responses to children's commentaries, stimulation of children's thinking processes, and increased exposure to adult formal language (Mol, Bus, De Jong, & Smeets, 2008).

Germane to the proposed study, methodological considerations outlined by Whitehurst et al. (1988) include the premise that applied research using dialogic shared reading techniques should focus on the external validity of the intervention. In other words, a successful DR

intervention must prove that it effectively enhances children's language skills (Whitehurst et al., 1994; Valdex-Menchaca & Whitehurst, 1992; Whitehurst et al., 1988). Using as a foundation the well-documented findings regarding cognitive processes that underlie vocabulary learning, this study explored the specific impact of a dialogic reading technique on the vocabulary development of children with cancer.

Vocabulary learning. Abundant evidence exists in support of the premise that children's exposure to language rich environments promotes vocabulary learning; children learn new words in unstructured contexts (Akhtar, Jipson, & Callanan, 2001; Nagy, Herman, & Anderson, 1985; Rice, Buhr, & Oetting, 1992). This effortless, incidental acquisition of word knowledge happens through oral communications and casual reading experiences without the need for direct instruction (Nagy et al., 1985; Oetting, Rice, & Swank, 1995; Robins & Ehri, 1994). For typically developing children, classroom environments provide the type of language exposure that facilitates incidental word learning. Lane and Allen (2010) report that language rich environments in the classroom provide multiple opportunities for word learning by allowing students to recognize words they have learned and used in different contexts, to make word-to-word connections, and ultimately to deepen their understanding of word meaning. With respect to this point, daily classroom routines frequently provide environmental support for vocabulary expansion in the form of "Word Walls" or "Word of the Day" activities that promote both targeted and incidental learning (McKee & Ogle 2005).

Pervasive Effects of Childhood Leukemia

According to the American Childhood Cancer Organization (ACCO), in the United States an estimated 15,780 children between birth and 19 years of age annually receive a cancer diagnosis. Nevertheless, despite the large number of cases diagnosed each year, deaths from childhood cancer have decreased by 66% over the past 40 years, from 6.5 per 100,000 in 1969 to 2.2 per 100,000 in 2008. While advancements in medical treatments have increased survivorship,

survival rates vary greatly depending on cancer type. Leukemia, the most common pediatric cancer, comprises about one-third of all childhood cancers. Among the three different types of leukemia, the most common type, acute lymphoblastic leukemia (ALL), accounts for approximately 75% of all pediatric leukemia cases (Butler & Haser, 2006). Currently, St. Jude Children's Research Hospital reports a 90 percent national survival rate for children diagnosed with ALL. Because most children with ALL survive, the disruption in the continuity of academic instruction stemming from treatment may cause deleterious, long-term effects. Therefore, the importance of implementing academic interventions that potentially lighten the burden of cancer treatments must be emphasized to ensure that children diagnosed with leukemia receive appropriate academic stimulation while under care.

Medical treatment protocol. According to the Leukemia and Lymphoma Society (2014-2015), childhood ALL, a type of blood and bone marrow cancer, impacts white blood cells by causing the malignant transformation of a single lymphoid progenitor cell and ultimately its proliferation. The lymphoblasts, unable to fight infection, grow at an exaggerated rate, all the while disrupting the production of bone marrow cells. Ultimately, this disruption leads to a decline in the production of red blood cells that circulate oxygen throughout the body. Symptoms such as unexplained bruising, fatigue, pale complexion, stomach swelling, mucous membrane bleeding and joint pain often lead to a diagnosis of ALL (Leukemia and Lymphoma Society, 2014-2015). Landier (2001) explains how physicians diagnose ALL after ordering a complete blood count, chemistry panel, and chest x-ray, lumbar puncture, and bone marrow sample from the patient. When the results of these procedures reveal a low white blood count and the presence of lymphoblasts, the physician has the information necessary for making a conclusive diagnosis (Landier, 2001). Treatment of ALL primarily involves the administration of chemotherapy with the intended goal of eradicating any leukemia cells present. Researchers (Landier, 2001; Eiser & Tillmann, 2001) explain that after 4 weeks of initial treatment, almost all children with ALL

achieve remission. During the next phase of treatment, all patients receive additional medications targeted at obliterating undetectable leukemic cells. The final maintenance phase, lasting up to two years, consists of daily intake of chemotherapy medications ingested as pills or received intravenously (Eiser & Tillmann 2001, Cooper & Brown 2015, Haymarket, 2016). These harsh treatments take a toll on the emotional and physical health of young patients who suffer from the neuro-cognitive anomalies that distort information processing and memory as well as from the disruptions in school attendance that restrict exposure to normative learning experiences. The life-saving treatments for leukemia impinge negatively on the educational progress of young patients. Though educational concerns obviously occupy a lower position on the patients' hierarchy of needs in comparison with their treatments for leukemia, during this trying time complete disregard for educational goals remains fraught with unfortunate consequences.

School attendance and homebound instruction. Childhood cancer, with its complex medical treatment protocols, typically has a tremendous impact on children's school involvement from the moment of initial diagnosis to the treatment and follow-up phases. Chemotherapy, the main form of medical intervention for ALL, takes place in three phases: induction, consolidation and maintenance, lasting, on average, over 2.5 years (Landier, 2001). The toxicity inherent in chemotherapy renders children with cancer immuno-compromised throughout each phase, thereby increasing their risk of infection. Therefore, local school districts excuse these patients from traditional school attendance and initiate homebound instruction (Keene, 2003). As such, the children's physical inability to attend class and their compromised health immediately impact their progress in school. Tsimicalis, Genest, Stevens, Ungar, and Barr (2018) conducted a qualitative descriptive study interviewing parents of children newly diagnosed with cancer to summarize their perspectives on the impact of treatments for ALL comprehensively. Data reveal that school absenteeism constituted the most commonly mentioned academic concern for these parents, mainly because of its prevalence. Within the total study population of 65 parents, 53

described how their children experienced periods of school absenteeism ranging from a few days to several months. One father interviewed about his son's absenteeism as part of the study responded, "The treatment has now disrupted his schooling to the point now, because of a bone marrow transplant as part of his treatment, he will not be in attendance at school for the remainder of this school year and probably for the first semester of his next school year." As a result of their research, Tsimicalis et al., (2018) stress the need to provide parents with additional resources and strategies to reduce the impact of disrupted attendance on children's learning and ultimately educational achievement. This research clearly illustrates the need to reduce the negative impact of medical treatments on school attendance.

Throughout the course of treatment, childhood cancer presents significant educational challenges deriving from the student's physical inability to attend class, a problem documented by numerous research studies. According to the results of a study analyzing retrospective data from 72 subjects (Charlton et al., 1991), children with cancer typically miss 35 percent of the school year during the first year after diagnosis, a significant detriment to their academic progress. Additionally, research documenting chemotherapy's neurotoxicity to the central nervous systems of children with cancer points to the difficulties these children experience attending school and keeping up with their work (Lewis, Murdoch, Barwood, Docking, & Gellatly, 2010). The results of these studies suggest that children with cancer experience educational deficits resulting from absences from school precipitated by medical treatment protocols. This study focuses on how to reduce the impact of absenteeism by promoting vocabulary growth through the implementation of a parental shared reading intervention after the provision of structured parent reading training. As treatment protocols require prolonged absences from school, children undergoing cancer treatment typically receive homebound instruction, a practice that can present challenges to the consistency of instruction and the rigor of the content (Searle, Askins, & Bleyer, 2003; Irwin & Elam, 2011; personal communication

with various parents of pediatric cancer patients at NYU medical center, 2008-2015). According to Agrawal (2014), homebound instruction, regulated on the state level, may be initiated when a child has the potential to miss more than 10-20 consecutive days of school due to a medical diagnosis rendered by a physician. If the condition of the child requires confinement in his or her home or in a medical facility, a teacher licensed by the state in which the student resides will visit the student during school hours or even in the early evening hours to provide instruction using the materials and assignments provided by the classroom teacher. Viewed as a temporary solution, homebound instruction ends when students have regained their health sufficiently to return to public school. Homebound instruction differs from homeschooling, an educational process in which parents take complete responsibility for educating their children by directing and funding the entire experience according to their own needs and values. Understanding the distinction between these two types of schooling pertains to the particulars of this study which asked parents to take an active role in one specific aspect of their child's homebound instruction during treatment, building vocabulary through a dialogic reading intervention. No expectation for parents to assume responsibility for all aspects of their child's education existed in this study. The inherent goal for this type of involvement was to help both the children and their parents share in a constructive educational experience that remediates a problem deriving from the child's illness and concomitant treatment without placing undue stress on either member of the dyad. Such an experience could ameliorate the academic losses associated with absenteeism from school because the parents would be readily available to participate in dialogic reading.

Cancer treatment and cognition. Along with the problems school absenteeism presents for the education of children with cancer, the side effects of the toxic medications administered to ameliorate their conditions also compromise their ability to learn. Unfortunately, the majority of children actively receiving treatment for cancer face increased risks for a multitude of cognitive problems on a broad scale (Campbell et al., 2007, Copeland et al., 2008, Paakko et al.,

2000 & Kadan-Lottick et al., 2015). Pediatric psychologists specializing in the interface between psychiatry and neurology understand typical treatment sequelae, so they often order neuropsychological testing to monitor cognition during and after medical treatments. Data from a wide battery of cognitive assessments provide insights into the strengths and weaknesses of each child, thereby assisting educators tasked with developing individualized education plans and necessary academic interventions (Keene, 2003).

Packer et al., (1989) report data confirming that leukemia survivors experience significant declines in intelligence quotient (IQ) scores, especially when treated at ages below five. These data reveal that the comorbid diminution in cognitive functioning does not typically occur on a global scale but rather impacts specific areas of cognition, manifesting with diversity on an individualized basis. Despite a growing body of recent research (Campbell et al., 2007, Copeland et al., 2008, Paakko et al., 2000 & Kadan-Lottick et al., 2015) documenting the impact of medical treatments on the cognitive functioning and academic progress of children with leukemia, few published empirical studies designed to address prevention of neurocognitive late effects exist (Askins & Moore, 2008). This dearth points to the potential value inherent in training parents to implement a structured reading intervention in a population of children diagnosed with leukemia.

The cognitive effects of treatment of acute lymphocytic leukemia can include difficulty with academics, attention, memory, fine motor skills, and speed of information processing (Semrud-Clikerman, 2009). With regard to the premise of this reading intervention study endeavoring to facilitate vocabulary growth in children diagnosed with leukemia, researchers have documented specific impairments in expressive language skills in children associated with cancer diagnoses and treatment, results that support the goals expressed herein (MacLean et al., 1995; Precourt et al., 2002). Furthermore, beyond the immediate impact cancer treatments may have on cognition, such treatments can cause lasting cognitive deficits in children even after they

have recovered from their cancer, a probable outcome for those diagnosed with leukemia as well. By proactively addressing the negative impact these treatments may have on cognition through structured parental training and subsequent intervention, perhaps the concomitant negative academic sequelae may be diminished in both the short and long terms.

Cancer treatment and late effects. To meet the criteria for cancer survivorship, an individual must have lived cancer-free for five years, having completed treatment at least two years earlier. Though these fortunate children have survived because of their cancer therapies, they often continue to suffer from their deleterious side effects also known as late effects. Stemming from intensive cancer treatment protocols such as chemotherapy, surgery, and/or radiation, these side effects may persist for months or even years after completion of treatment. Side effects may include neuropsychological impairments, neurocognitive impairments, behavioral and/or psychological problems, increase in activity levels, mood swings, increase in irritability, decreased reflexes, and decreased fine motor coordination and speed (Armstrong & Mulhern, 2000). All of these types of side effects do not bode well for maximizing academic success.

Anderson, Godber, Smibert, Weiskop, and Ekert (2000) conducted a longitudinal study over a five-year period after treatment that documented the cognitive development of children treated with cranial radiation therapy (CRT) and chemotherapy. The treatment group subjects, including 89 survivors of leukemia, participated in assessments taking place not less than two years (T2) and three years (T3) post treatment. The researchers compared the neurocognitive functioning of children in this treatment group with that of children treated with chemotherapy alone and with that of healthy children. At T2, subjects receiving CRT and chemotherapy treatments demonstrated weaker language skills and verbal knowledge than age expectations predict. However, subjects in this group exhibited greater than expected improvements at the three year mark (T3) demonstrated by average gains of five points in reading and spelling on the

Wide Range Achievement Test – Revised (WRAT-R: Jastak et al, 1984). Although these gains indicated improvement in learning rates, the gains were not substantial enough to cause differences among the groups to disappear. The results of this research indicate that children treated with CRT and chemotherapy continue to learn during treatment, but initially do so at a slower rate that improves after completion of treatment though not to the expected levels. In other words, despite improvements overtime, treatment subjects fail to catch up with their peers completely after recovering from their challenging treatment protocols. Nevertheless, the improvements in verbal knowledge and language skills demonstrated by this participants in this study suggest that proactive academic interventions may ameliorate some of the long-term, negative effects of CRT and chemotherapy (Anderson et al., 2000). These results support the implementation of this study.

Realizing the need for research into the efficacy of targeted academic interventions for children diagnosed with leukemia, Moore et al., (2000) conducted a mathematical intervention with eight children, ages four and five, with this diagnosis. These children met study eligibility by demonstrating a documented decline in arithmetic ability as measured by the Wechsler Intelligence Scale for Children- Revised (WISC-R). The intervention provided 50 hours of a skill-based curriculum designed to teach math concepts individually. Their findings demonstrate that all children who received the intervention experienced an improvement in mathematical achievement, thereby underscoring the potential value of targeted interventions for children diagnosed with cancer.

In summary, while receiving intensive treatments, children diagnosed with cancer fall victim to the exigencies of their medical conditions, which negatively impact their educational progress (Katz & Madan-Swain, 2006). Furthermore, medical treatments may impair neurocognitive functioning, potentially creating adverse, long and short-term side effects. Currently, the combination of increased survival rates in childhood leukemia cancer patients, the

short-term, deleterious effects of treatment on educational exposure and cognitive functioning, and the promising findings regarding the possibility of catching up or at least improving in the longer term support the value of structured parental training and intervention designed to improve vocabulary learning.

Purpose

This study investigated the efficacy of providing structured parental training in DR, implemented to support the language and literacy learning of children under treatment for leukemia. The study incorporated three main purposes into the research design. The primary purpose was to determine whether the provision of structured and unstructured parental reading training can foster vocabulary growth in children with leukemia. Vocabulary, a fundamental component of learning across subject areas, has been broadly investigated in intervention studies. This study extended this work, applying it to the special educational needs and circumstances of children undergoing treatment for cancer. The second purpose was to determine whether or not parental participation in a dialogic reading intervention proved to be a positive experience for parents and children as they face medical treatment for cancer. The third purpose was to explore the self-reported parental reading behaviors of parents in the DR condition. This study strove to contribute to the existing literature documenting the benefits of using DR during parental shared reading to increase vocabulary learning in a population of children uniquely at risk. This project endeavored to expand on the findings of the pilot study (Bragg, 2018) that suggest that parental shared book reading during cancer treatment supports vocabulary learning.

Rationale

The focus on implementing structured parental training prior to a shared reading intervention as delineated in this study originated from the need to find a language intervention effective in increasing vocabulary learning for children with cancer. While no single intervention

will ameliorate the overwhelming stress faced by parents of children diagnosed with cancer, this research offered these children opportunities to minimize the extent to which they fall behind academically during a tumultuous time in their lives, thereby providing both parents and children with a sense of hope for the future. In support of this model, salient research documents that family assistance programs delivering services to parents in their homes have positive effects on children's academic accomplishments (Yoshikawa, 1994). Bessel (2001), in his work with a small sample of children with cancer, finds that both the children and their parents find a focus on education valuable because it enables them to look forward to the future and to emphasize the children's strengths. Therefore, the execution of a DR intervention stood to benefit both the parents and children recruited for this study.

This study was grounded in the Socio Cultural (SC) conceptualization of vocabulary learning as a social learning process. More specifically, this study applied the SC theoretical framework to an examination of the impact of a parental shared reading intervention, which utilized dialogic reading strategies. According to Vygotsky's (1978) social learning theory, parents intuitively engage children in activities within their Zone of Proximal Development (ZPD), meaning that parental input appropriately elevates the developmental levels of their children's performances. In terms of parental shared book reading, parents provide a scaffold to help raise their children's vocabulary skills by focusing on challenging material beyond the child's independent capability (Vygotsky, 1978). Vygotsky's model highlights the parent's ability to adjust to the child's level. In the case of pediatric oncology patients, this flexibility holds particular importance because it means that parents modify their shared reading behaviors according to daily vagaries of their children's conditions.

DR protocols themselves allow parents to draw from the tenets of the SC model, heightening their ability to adjust their behavior to the particular state of the child at each point in the DR process. Aside from these ways in which the flexibility inherent in dialogic reading

makes it particularly well-suited for a shared reading intervention with children diagnosed with leukemia, the decision to implement a DR intervention in this study was also based on empirical research on parental shared reading interventions conducted by investigators who have identified best practices proven to increase vocabulary learning. Crain-Thoreson and Dale (1999) conducted a reading intervention study in which parents successfully engaged in dialogic reading with their children in an effort to increase the production of novel vocabulary. Research conducted by Senechal and LeFevre (2002) suggests that the acquisition of new vocabulary develops from exposure to books during home literacy experiences. Additionally, much acquisition of word knowledge occurs through shared reading experiences without direct instruction (Flack, Field, & Horst 2018; Meyer et. al., 2010; Nagy et al., 1985; Oetting, Rice, & Swank, 1995; Robins & Ehri, 1994). Results of these studies consistently indicate that parental shared reading, a construct operationalized in the current study using the dialogical reading technique, encourages vocabulary learning. According to Arnold, Lonigan, Whitehurst and Epstein (1994) dialogic reading promotes language learning during shared book reading, a time when the child assumes the role of storyteller while the parent actively listens, asks questions, and prompts the child to describe the story. Vygotsky's sociocultural theory provides a theoretical context for this study, in which the dialogic exchange between parent and child offers exposure to novel vocabulary.

A salient impetus for this research derived from the need to determine if an intervention conducted with a population of children unable to attend school had a significant impact on their vocabulary learning. With the provision of structured parental reading training, the probability of obtaining a positive outcome increased. The assumption that parents have consistent and frequent access to their children undergoing medical treatments for cancer supported parental involvement as an integral component of the research design of this study. As well, since most parents relish the unique opportunity to influence their children's learning (Charlton et al., 1991;

Senechal & LeFevre,2002), a high likelihood existed that they would view participation in this study favorably. Therefore, positive parental attitudes regarding involvement in this intervention potentially reduced the negative impact that leukemia and its concomitant lifesaving treatments have on academic progress. Pragmatically speaking, the implementation of structured parental reading training prior to the dialogic reading intervention with this population of children during their treatments made sense.

Through the integration of the aforementioned academic constructs, this study investigates the possibility of helping childhood cancer patients lessen the negative educational ramifications of their disease by examining how structured parental reading training prior to a dialogic shared reading intervention contributed to the vocabulary learning. Pursuit of this worthy goal with young patients with leukemia simultaneously receiving medical treatments and structured reading intervention offers opportunities for progress. The following chapter (2) presents the literature that served as the basis for this study and the pilot study from which this research was derived. Chapter 3 includes the methodology employed for conducting this research.

Chapter 2: Literature Review

Chapter 2 provides background information on the sociocultural model, socioculturalism as it relates to language-development, and shared reading. This chapter also provides an overview of the ways in which shared book reading enhances vocabulary learning. Additionally, it discusses structured parent training for shared reading. Next, an overview of dialogic reading follows as well as a discussion about the ways in which this technique aligns with the tenets of the sociocultural model of reading instruction, enhances language development, and pertains to children facing learning challenges. Also, a description of the pilot study (Bragg, 2018) that influenced the design of the proposed is presented. Chapter 2 concludes with the research questions and hypotheses investigated herein.

Sociocultural Model

The framework of this study derived from the sociocultural theory of learning posited in the foundational work of 20th-century Soviet psychologist, Lev Vygotsky (1978), who proposed that culture shapes the mind just as the child's interactions with more knowledgeable others (MKO) express and transmit culture. Smith, Teemant and Pinnegar (2004) define sociocultural theory as a foundational view of knowing, learning, teaching and performing (Vygotsky, 1978; Bakhtin, 1981; Rogoff & Wertsch, 1984; Wertsch, 1985, 1991; Rogoff, 1990). According to Vygotsky's theory, learning represents a social process strongly influenced by cultural input and interactive teachings. Wertsch (1990), a professor of social anthropology and a disciple of Vygotsky, further expands Vygotsky's tenets of sociocultural theory by defining cognition in terms of contextually situated processes in which the interactions of individuals with their social environments systematically promote learning. Though Vygotsky discusses internalization in his debates with Piaget over the relationship between language and thought, Wertsch (1990) augments Vygotsky's model by introducing a new definition of internalization in which he

discusses how non-verbal or sensory thinking and language, initially discrete processes, coalesce to help children learn from their unique environments, Vygotsky maintains that cognitive development occurs because of the internalization of language, specifically inner speech, a self-directed dialogue that, in his mind, defines the developmental phase during which thought and language merge (Vygotsky, 1962). Vygotsky (1978) further theorizes that when children talk to themselves while engaged in cognitive tasks, they facilitate the learning process. In his view, cognitive development proceeds on two planes or levels of thought: the social (interpsychological plane) and the individual (intrapsychological plane). He defines the transition of knowledge from the social to the individual plane as internalization, the endpoint of a logical thought process. Wertsch (1990) emphasizes that internalization does not mean that an individual's cognition grows simply from participation in social experiences; rather, cognition develops on both the social and individual planes simultaneously, thereby reshaping the structure and function of an individual's thought processes. With respect to learning, the theoretical concepts proposed by Vygotsky and Wertsch pertain to language development, a concept operationalized in this study as vocabulary acquisition.

Socioculturalism and Language Development

According to Vygotskian theory, children acquire language from exposure to words in their natural environments. Through communications with others in their unique social, cultural and historical contexts, children improve their verbal abilities in a developmental process stimulated by the interdependence of cognition and language. According to his theory, a child's intellectual development promotes language growth, which, in turn, promotes intellectual development. Language serves a vital purpose in the development of cognition by playing at least three salient roles. Firstly, through social interactions, language provides learners with access to knowledge others have already acquired. Secondly, language provides learners with cognitive tools that allow them to think about the world and, consequently, to solve problems.

Thirdly, language provides a special benefit to each individual; it gives people a means for regulating and reflecting on their own thinking (metacognition), a uniquely human ability. With these roles in mind, Vygotsky (1978) asserts that language learning not only occurs from the knowledge gained from communications with others in children's particular social environments, but also from the active contribution children make to their own language learning, both with and without assistance from others. Research in support of these two constructs substantiates their rightness.

There is a long and rich literature on child-directed speech illustrating the influence of input on children's language learning (Cazden, 1988; Huttenlocher et al, 1991; Snow, 1972). Parents who provide more input overall have children whose early vocabulary grows at an accelerated rate in comparison with parents who provide less input (Hart & Risley, 1995; Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Weizman & Snow, 2001). More recently, a longitudinal study conducted by Hurtado, Marchman and Fernald (2008) provides evidence in support of Vygotsky's premise that children improve their language skills from the verbal inputs they receive from their environments. To assess their hypothesis that early experiences in language rich environments predict efficiency in vocabulary learning, these researchers studied 27 children in the process of learning Spanish. Eighteen month old children whose mothers provided exposure to more words when compared with children whose mothers provided exposure to fewer words knew more words and demonstrated greater speed in word recognition at 24 months than their same age peers. The results of this study indicate that language input accelerates children's vocabulary growth, a finding that suggests that enriched language input will positively impact the cognition of young learners because of the inextricable connection between language and cognition. This finding regarding the association between language input and language growth supports the goals of this study that implemented a shared reading

intervention in a population of children diagnosed with cancer in an attempt to support their vocabulary growth by promoting enriched and extended language interactions.

In an effort to understand the specific ways in which enriched language input from caregivers stimulates vocabulary growth, Rowe (2012) videotaped parent-child interactions to measure the quality of caregiver input in 50 families with children ages 18, 30, and 42 months. The study employed a longitudinal design to study the parent-child dyads, with the goal of determining whether parents' use of complex vocabulary and decontextualized language (for example, explanations, narratives, or verbal fantasy) influences children's vocabulary growth during early development. In this study, Rowe (2012) used the Peabody Picture Vocabulary Test (PPVT-III; Dunn & Dunn, 1997) to assess vocabulary acquisition. The results obtained suggest that parents can improve vocabulary acquisition in children at different points in development through scaffolding or differentiating the quality of their verbal input. In other words, as children develop, exposure to increasingly sophisticated contextual language fosters vocabulary growth. Though intuitive, the results of this empirical research study support the goal of this study: to foster vocabulary growth in children diagnosed with cancer using shared reading, such as dialogic reading, a technique structured to engage the dyad in more substantive language interactions. Rowe's (2012) data support the sociocultural theory of Vygotsky (1978) who described the ways in which parents stimulate cognitive growth when they communicate with their children using verbal input that simultaneously challenges them and provides them with support and multiple opportunities to learn.

McGrail and Davis (2011) illustrate Vygotsky's premise that children actively contribute to their own learning, both with and without assistance from others, in a qualitative research study that explores how blogging influences writing development in elementary school students. The researchers analyzed the writing samples of 16 fifth graders written before and after the

students received feedback from their blog audiences to determine if this feedback had an impact on their ability to improve their written expression skills. Pre and post analyses of the students' writing indicated that the students had made significant improvements based on the combination of the feedback they had received and their own initiative in creatively adapting their blogs to the responses of their audience. These results offer empirical evidence supporting Vygotsky's proposition that children actively contribute to their own learning. These findings also pertain to the relevance of the active roles children take in the DR process in terms of improving their own vocabulary skills.

Shared Reading

For many adults, the memory of a parent reading aloud to them remains a nostalgic part of childhood. Shared reading, a common form of child-parent interaction, promotes children's language and literacy development (Crain-Thoreson and Dale, 1999). This positive process may prove useful in supporting vocabulary learning for children with cancer. Shared reading provides an authentic, meaningful, and stimulating experience for both parent and child (Watkins & Bunce, 1996). This type of interaction has proven benefits. When children listen to texts read aloud, they comprehend at a higher level than when they read independently. At the same time, they learn from exposure to new vocabulary (Sticht & James, 1984). In *The Read-Aloud Handbook*, Trelease (2006) describes the positive intentions of parents who share read-alouds with their children. Trelease maintains that adults read to children for all the same reasons they talk to children: to reassure, to entertain, to bond, to inform or explain, to arouse curiosity, and to inspire. He further explains that while reading aloud, parents also build vocabulary, condition their children's brains to associate reading with pleasure, create background knowledge, and provide a reading role model. Shared reading may prove especially beneficial for childhood cancer patients, who need reassurance during a time of uncertainty and may relish the entertainment that read-alouds can provide.

Shared book reading provides a natural and easily accessible context that may impact children's language and literacy growth positively (Meyer et. Al., 2010, Senechal, Mol, & Bus, 2011; Senechal, 2010). Mol and Bus (2011) discovered that when families established a routine of book reading, they created a "causal spiral" that supported children's language and reading skills. In other words: the routine of shared reading increased exposure to language, which increased participation in reading outside of school, and ultimately supported overall growth in language and literacy skills. Senechal (2010) also found a similar causal relationship in which shared reading contributed to children's vocabulary growth, which in turn contributed to successful literacy development in later grades. Highlighting the value of shared reading, two meta-analyses demonstrated that shared book reading in the home has a moderate effect on the development of receptive vocabulary in young children (Bus, Van Ijzendoorn, & Pellegrini, 1995; Arnold et al., 2008). Sénéchal and LeFevre (2002) conducted a five-year longitudinal study that examined home literacy experiences and children's reading achievement. Their results are consistent with all of the aforementioned findings, indicating that the development of vocabulary in children has a strong relationship with exposure to read-aloud experiences. According to Senechal & LeFevre (2002), books provide novel vocabulary, specifically stimulating children with exposure to words not often experienced in daily conversation. Studies show that children who participate in parental shared reading experience an increase in novel language exposure and vocabulary growth (De Jong & Leseman, 2001, Isbell, Lindauer & Sobol, 2004, Niklas & Schneider, 2015). Meta-analysis has documented the moderately positive effects of shared book reading on young children's developing language skills, including receptive language, expressive language, and vocabulary, as well as on emergent literacy skills and reading comprehension (Bus, van Ijzendoorn, & Pellegrini, 1995; National Early Literacy Panel, 2008). McKeown and Beck (2006) emphasize the need to involve children in discussions of the material to which they have listened in order to increase literacy growth in general. The authors

specify how interactions during reading support successful vocabulary acquisition. By reading story books aloud, parents improve their children's language skills, particularly vocabulary and emergent literacy skills, as well as overall school achievement.

Reach Out and Read (ROR) is an evidence-based national pediatric literacy program, through which medical providers offer parents guidance about the importance of reading aloud as part of routine primary care for young children. ROR data indicate that participation in parental shared reading fosters significant improvements in the language scores of children (Needlman, Klass, & Zuckerman, 2002). According to Klass, Dreyer and Mendelsohn (2009), the ROR program has three main components: 1) literacy-rich waiting rooms with volunteers who read aloud to children and modeling techniques for reading aloud for parents who may perhaps lack familiarity with the practice, 2) anticipatory guidance about reading aloud given by clinicians to parents during the visit, and 3) the gift of an age-appropriate picture book to each child between the ages of 6 months and 5 years during the course of every well-visit. Data show that, for at risk populations, participation in the ROR intervention is associated with an increase in positive attitudes toward reading aloud, frequency of reading, improvements in the home literacy environment, and significant increases in expressive and receptive language among children in the critical preschool age range (Needlman, Toker, Dreyer, Klass, & Mendelsohn, 2005). Of note, the body of independent, peer reviewed and published research supporting the efficacy of the Reach Out and Read model proves more prolific than that of any other psychosocial intervention in the pediatric medical literature (e.g. Byington et al., 2001; Golova, Alario, Vivier, Rodriguez, & High, 1999; High, Hopmann, LaGasse, & Linn, 1998; High, LaGasse, Becker, Ahlgren, & Gardner, 2000; Jones et al., 2000; Mendelsohn et al., 2001; Needlman, Fried, Morley, Taylor, & Zuckerman, B, 1991; Needlman, Toker, Dreyer, Klass, & Mendelsohn 2005; Sanders, Gershon, Huffman, & Mendoza 2000; Sharif, Rieber, Ozuah, &

Reiber, 2002; Silverstein, Iverson, & Lozano 2002; Theriot et al., 2003; Weitzman, Roy, Walls, & Tomlin 2004).

Colmar (2014) conducted a parental shared reading intervention with 36, five-year old children with atypical, delayed language skills, living in a socio-economic area defined as disadvantaged. Parents in the experimental group were trained in easily learned strategies, such as pausing and encouraging their child to talk more on their chosen topic over a four-month period. Children in the experimental group whose parents were trained in adult-child language interactions obtained positive, significant language gains, with large to very large effect sizes as compared to two separate control groups (one matched with similar language delays and one with non-disabled peers), both of whom received no training. Given the results in Colmar (2014), shared reading may prove especially useful to childhood cancer patients, an atypical population deserving of individualized intervention.

Shared Book Reading and Vocabulary Learning

Walt Disney said, “There is more treasure in books than in all the pirate’s loot on Treasure Island”. Because of the sizeable body of research demonstrating the improved vocabulary learning of children exposed to books, shared book reading has acquired the status of a societal norm (Flack, Field, & Horst 2018; Lonigan et al., 1994; Scarborough & Dobrich, 1994). Further supporting the significance of shared reading, Robbins and Ehri (1994) found positive effects of shared book reading on children’s incidental word learning. The authors conducted a study that included individualized read aloud sessions during which 45 kindergarten-aged children, nonreaders, listened to an adult read the same storybook twice, two to four days apart. They then completed a post-test measuring their knowledge of the meanings of 22 unfamiliar words, half of which had appeared in the story. On average, children learned approximately one new vocabulary word for every two storybooks to which they had exposure. Children recognized the meanings of significantly more words from the read aloud story than

words not in the story, an indication that storybook reading effectively builds vocabulary.

Findings confirm that, during storybook reading in the classroom, incidental vocabulary learning occurs. Pediatric oncology patients miss these school-based incidental learning experiences, so the potential for incidental learning in shared reading with caregivers is especially important for them.

In a major synthesis of 38 studies on this subject that span a 27 year period, Flack, Field, and Horst (2018) reviewed research findings documenting the influence of shared reading on word learning. In general, the findings indicate that dialogic reading styles, number of word exposures, and the number of words influenced word learning results. This comprehensive meta-analysis emphasizes the paramount importance of reading style in determining outcomes because the dialogic reading styles that encourage additional interactions with the text significantly improve word learning. As well, the overall conclusions reached indicate that both the number of new words introduced and the frequency with which the children hear them also prove integral to word learning.

Elley (1989) read stories aloud to elementary school children in New Zealand administering pre-tests and post-tests to measure the extent of the new vocabulary the children acquired from the reading. Results indicated that incidental learning associated with reading stories aloud constitutes a significant source of vocabulary acquisition regardless of whether teacher explanations of word meanings accompany the passages. In Elley's first study, seven classes of seven year olds demonstrated vocabulary gains of 15% in target words after the students had listened to one story read aloud without any teacher explanations. In her second study, after listening to one story, three classes of eight year olds who received no explanations of word meanings from their teachers showed gains of 15% in target words. Follow-up tests indicated that this incidental vocabulary learning remained relatively permanent and that low-scoring children gained as much as high-scoring children.

Reading words can impact vocabulary development, even if children do not consciously or intentionally focus on retaining new vocabulary words, an important benefit of this process. The aforementioned studies by Elley (1989) as well as Robbins and Ehri (1994) support the efficacy of children's incidental word learning from shared book-reading interactions. Nagy, Herman, and Anderson (1985) maintain that learning word meanings from oral contexts, most significantly from the speech of parents and peers, represents the major mode of vocabulary acquisition for children. Beck and McKeown (2001) report that reading aloud to children helps them grow their vocabularies more efficiently than when they read to themselves because their oral comprehension abilities typically outshine their abilities to decode words. In addition to the ease of learning vocabulary incidentally, listening to read-alouds stimulates children's oral comprehension abilities and higher order conceptual skills by introducing them to new ideas with minimal effort on their part. Though the entire process stimulates intellectual curiosity and other receptive language processes, vocabulary improvement stands out as the most easily measured feature of read-alouds.

Senechal and Cornell (1993) explored whether four and five year old children, assigned to either a listening only or listening and questioning treatment condition, learned new vocabulary words after listening to a researcher read a single story in a 1:1 setting. Investigators conducted immediate post-tests along with delayed post-tests, administered one week after intervention. Results indicate that children of both ages learned new words from the story context; however, five-year-old children acquired more words than the 4-year olds did. Senechal and Cornell (1993) did not determine if students in the group receiving the questioning treatment after the book reading session acquired more vocabulary than those who were not questioned. Results reveal that, simply by listening to a book read aloud, children increase their vocabulary knowledge.

As a means of documenting their significance, researchers have explored the salient features of shared reading experiences that contribute to vocabulary learning. To this end, Trivette, Dunst, & Gorman (2010) conducted an extensive review of the literature including information on 21 shared reading investigations after which they concluded that shared reading experiences with teachers and parents have moderate effects on children's expressive and receptive language scores. In their analyses, Trivette, Dunst and Gorman (2010) describe the ways in which adults enhance language development in children by providing reading opportunities with an adult who follows the child's lead, relates the reading material to the child's own experiences, expands on the child's verbal contributions, asks open-ended questions, and supports the child's interests. More recently, Sundman-Wheat (2012) examined the effects of a parent-implemented reading intervention on 26 parent-child dyads in a Head Start program in which the children were at least 56 months old. Parents reported difficulty finding time to read because of the time constraints imposed on them by the demands of their jobs and the need to care for other children in their households. By documenting the salience of the issue of time constraints on busy parents who may want to engage in reading activities with their children but simply lack the time, these researchers have actually lent support to the idea of encouraging parents of children receiving treatment for cancer to read aloud with their children. When parents find themselves in the unfortunate situation of having to spend time in a hospital with their children receiving treatment for cancer, they must take time off from work to meet medical treatment demands. During this time, they will have the unique opportunity to implement reading interventions that may contribute to vocabulary growth.

Parent Training for Shared Reading

Researchers have established the value of parent training for read-alouds that supports the joint goals of vocabulary growth and the development of language and literacy expertise. In a study that provided read-aloud training to parents, Taverne and Sheridan (1995) sought to

increase maternal interactive shared reading experiences in at-risk homes by providing weekly individual and group training sessions on the topic of interactive book reading skills for a period of seven weeks. The skills training sessions consisted of general discussion, modeling, role-playing, and performance feedback. Results demonstrate significant vocabulary gains for the children of the trained parents. Although the investigators reported no follow-up data, results of this study suggest that parents who received training display changes in reading behavior that benefit their children. The children of the parents in the control group did not experience vocabulary gains commensurate with those of the children of the parents in the experimental group, who received encouragement and specific training. These conclusions point to the supportive role that targeted parent training plays in building vocabulary.

Recent research supports the implementation of parent training for read-aloud programs that facilitate children's literacy learning. Roberts (2010) conducted an intervention study to examine the feasibility of infusing parent-child read-alouds with comprehension strategy instruction by providing parents with weekly reading workshops designed to improve their skills. The study, carried out with 20 kindergarten students and their parents, reinforces the typical educational recommendation that parents read aloud with their children. Germane to the research design of the current study, this intervention highlights one particular way of building minimal levels of expertise in caregivers in order to make the time they spend reading with their children as effective as possible. Parents assigned to the experimental group attended workshops presented in two-week intervals during which time they received instruction about specific reading comprehension strategies. In the time period between the training sessions, they completed practice materials in a book designed to reinforce their skills and also read regular reminders about the comprehension strategies they learned. Parents assigned to the control group attended one workshop at the beginning of the study during which they listened to information touting the benefits of reading aloud to their children. The researchers then compared the pre-

and post-intervention scores of both groups using measures assessing the qualitative effects of parental implementation of read-alouds and changes in the reading comprehension levels of the children. Results indicate that, when compared to the subjects in the control group, parents in the intervention group reported more productive interactions with their children during read-aloud sessions. Researchers define productive interactions as a significantly higher number of discussions about the texts including a wider range of topics initiated by both parents and children, more retelling of the stories, and more analyses of story structure. Children in the experimental group achieved significantly greater gains in composite reading comprehension scores than children in the control group, an indication of the potency of the training intervention. The results from this study clearly demonstrate how structured parent training positively impacts the implementation of strategies designed to improve reading comprehension skills.

Dialogic Reading

(DR), an evidenced-based interactive reading strategy in which the adult reader encourages a child's verbalizations by means of prompts, expansions, repetition, and scaffolding. Repeated readings are employed to achieve the goal of having the child retell the story to the adult audience. Whitehurst (1988) exhorts parents to prompt children to discuss stories by asking explicit questions during read-alouds. This technique expands children's responses by challenging them to recount the shared stories in their own words (Whitehurst & Lonigan, 1998).

DR includes opportunities for sharing ideas and opinions in order to transform a student's behavior from passively listening to the story to actively engaging in the process, an especially important feature of the technique. Alexander (2006) outlined the essential features of the dialogic technique in terms of five separate processes: a collective process, during which children and adults address learning tasks together as opposed to children learning in isolation; a reciprocal process, during which children and adults listen to each other share ideas and

viewpoints; a supportive process, during which children articulate their ideas freely, without fear of embarrassment; a cumulative process, during which adults and children scaffold ideas together to improve comprehension; and a purposeful process, during which adults plan for the accomplishment of particular educational goals. These processes illustrate how DR techniques adhere to the theoretical principles of the sociocultural model that encourages discussion and social interaction during shared reading. Two acronyms, PEER and CROWD, describe the actual strategies implemented in DR. PEER stands for Prompts, Evaluates, Expands, and Repeats. In the PEER sequence, parents are trained to prompt their children to say something about the content of the books they read and are encouraged to expand on the children's responses by adding new information, if applicable. Parents repeat their prompts to ensure that their children grasp the novel concepts. The additional acronym, CROWD, refers to the five additional prompts taught to the parents: Completion, Recall, Open-ended, Wh-, and Distancing. Completion prompts consist of a fill in the blank form of questioning that provides children with information about the structure of language. The second set of prompts, recall prompts, ask questions that require children to summarize events that happened earlier in the story. These prompts help children remember the plots of the stories they read. Open-ended prompts encourage children to respond to different aspects of the stories using their own words to share opinions and express evidence of comprehension. Wh- prompts (what, where, why, when, etc.) help children expand their knowledge of the material. Lastly, distancing prompts require children to connect the information in the book to their own experiences. This type of schematic connection can help cement a new word/concept in long-term memory and foster the development of global perspectives.

Researchers interested in understanding the efficacy of DR for improving literacy outcomes in children have turned their focus towards the use of this technique with populations of children with special needs, largely due to the myriad of research studies proving its success

with students who do not face specific challenges (Crain-Thorenson & Dale, 1999; Fleury & Schwartz, 2016; Fung, Chow, & Mc-Bride-Chang, 2005). Research documenting the effects of DR on children undergoing treatment for cancer does not exist, but the findings of DR's effectiveness with other populations with special needs suggests its potential value for children with cancer. Nevertheless, research using DR techniques with children diagnosed with special learning needs, while limited, shows promise for improving their literacy outcomes. Fung, Chow and Mc-Bride-Chang (2005) explored the impact of a DR program on deaf and hard-of-hearing kindergarten students in Hong Kong. They assigned parent-child dyads to 1 of 3 groups, each of which received a different intervention for 8 weeks: DR, typical read-alouds, and no reading (control). Data indicate that the members of the DR group demonstrated significantly greater improvements in vocabulary scores than did the members of the two other groups, thereby highlighting the usefulness of the intervention for diverse learners with limited language exposure. Fleury and Schwartz (2016) conducted a DR intervention with children diagnosed with Autism Spectrum Disorder (ASD) in which the use of DR had a direct association with greater gains in book-specific vocabulary when compared with the use of a baseline book reading condition. Though currently limited, to date the findings on the use of DR with at risk children prove promising. Given the aforementioned empirical evidence, the elements of the Dialogic Reading (DR) method, their relevance to the sociocultural model, their implications for language growth and diverse learners, and finally their intrinsic compatibility with parent training point to their potential efficacy as a means of fostering productive parent-child interactions during shared reading experiences.

Dialogic Reading and the Sociocultural Model

Vygotsky promotes the idea that the language learning process occurs as a result of give and take between children and more knowledgeable members of society. Specifically, as parents and teachers facilitate guided discovery and assess learning potential at different developmental

levels, over time children internalize language skills. To this end, DR provides a context in which adults engage with children in their natural environments in order to help them recognize novel concepts in real time by scaffolding conversations around shared texts. Vygotsky's concepts have particular relevance to the implementation of DR in a population of children diagnosed with cancer because they represent a potentially successful means of stimulating language development at a time when these children face extraordinary challenges that may negatively impact their cognition. Based on Vygotsky's sociocultural theory of language development that emphasizes the child's active role in the learning process, DR provides a natural framework for facilitating language growth. Essentially, Vygotsky posits that children need their parents to assist them in the development of language skills. This premise encompasses the conceptual framework of the current study: since parents spend more time with their children undergoing cancer treatments, parents can transform the natural shared reading process to the more structured, interactive DR process as a means of exposing their children to a broader range of vocabulary and language enrichment.

Therefore, children benefit from participation in DR in that it takes place in an organic context under the guidance of a "more knowledgeable other" (MKO) (Vygotsky, 1978). As part of a DR intervention, the MKO actively listens to the child in order to provide assistance as needed by facilitating, expanding, and responding to the child's utterances during shared reading. Because parents are naturally inclined to care about their children's vocabulary knowledge, they have the motivation to ameliorate it. However, do they know how to build vocabulary knowledge appropriately? Obviously, considerable variation in parents' abilities to guide their children during shared reading exists. Dialogic Reading serves as a useful tool for standardizing the reading intervention through the initiation of parent training. To that end, DR provides a structured platform for parents to effectively evaluate their children's current language prowess in order to increase vocabulary growth in the Zone of Proximal Development (ZPD), a sweet

spot for potential learning (Vygotsky, 1978). Finally, DR, simply put, enables parents and children to have fun together as they engage in a constructive activity, because, conversation rather than didactic exercises frame the DR exchanges, infusing the learning experiences with positive affect. When parents teach from a place of positivity by focusing on naturally occurring vocabulary, they offer momentum for vocabulary growth. In sum, Vygotsky's principles integrate well with concepts that form the basis of DR strategies.

Dialogic Reading and Language Growth

Given both the practical and theoretical advantages of DR, numerous researchers have documented the value of utilizing this technique for supporting children's language development (Blomm-Hoffman, O'Neil-Pirozzi, & Cutting, 2006; Flack, Field, & Horst 2018; Huebner & Meltzoff, 2005; Mol, Bus, de Jong, & Smeets 2008; Valdez-Menchaca & Whitehurst, 1992; Whitehurst et al., 1988). Mol et al., (2009) conducted a meta-analysis examining sixteen experimental studies to determine the overall effect of DR on parent-child reading. The research designs of all of the studies in the meta-analysis included experimental groups that received training in DR techniques and control groups that did not. Results indicated that use of the DR technique accounted for 4% of the variance in vocabulary growth. Mol et al., (2009) conclude that the quality of book reading is as important for language development as is reading frequency. Further, Mol et al., (2009) explain that not only does the exposure to a story promote language development, but it is also helps parents stimulate active involvement by eliciting verbal responses to the story with the help of open-ended questions. In other words, enhancing dialogue during shared reading has important benefits. Furthermore, Mol et al.'s meta-analysis provides data supporting parent training in the DR technique as a means of strengthening the interactions between parents and children during reading and fostering positive language and literacy outcomes.

More recently, Flack, Field and Horst (2018) conducted an additional meta-analysis which included 38 studies with 2,455 children, reflecting 110 effect sizes, investigating how reading styles, story repetitions, tokens and related factors moderate children's word comprehension. Data from this extensive analysis illustrates that dialogic reading significantly increases the number of new words children learn from shared storybook reading, an important construct for consideration when planning an academic intervention for children missing school due to cancer treatment.

Dialogic Reading and Diverse Learners

Researchers have also examined the efficacy of DR for improving literacy outcomes in children with special needs, largely due to the myriad of research studies proving its success with students who do not face specific challenges (Crain-Thorenson & Dale, 1999; Fleury & Schwartz, 2016; Fung, Chow & Mc-Bride-Chang, 2005). Research documenting the effects of DR on children undergoing treatment for cancer does not exist, but the findings of DR's effectiveness with other populations with special needs suggests its potential value for children with cancer. Research using DR techniques with children diagnosed with special learning needs, while limited, shows promise for improving their literacy outcomes. Fung, Chow and Mc-Bride-Chang (2005) explored the impact of a DR program on deaf and hard-of-hearing kindergarten students in Hong Kong. They assigned parent-child dyads to 1 of 3 groups each of which received a different intervention for 8 weeks: DR, typical read-alouds, and no reading (control). Data indicate that the members of the DR group demonstrated significantly greater improvements in vocabulary scores than did the members of the two other groups, thereby highlighting the usefulness of the intervention for diverse learners with limited language exposure. Fleury and Schwartz (2016) conducted a DR intervention with children diagnosed with Autism Spectrum Disorder (ASD) in which the implementation of DR techniques had a direct

association with greater gains in book-specific vocabulary when compared with the use of a baseline book reading condition.

Additional research on the benefits of DR for children with academic challenges suggests that this form of intervention would improve the vocabulary skills of children under treatment for cancer. Hargrave and Senechal (2000) conducted a DR intervention study in which they administered a standardized assessment of expressive vocabulary skills to their subjects who had demonstrated relative weaknesses in vocabulary development. This research concluded that children in the DR intervention group made significant gains in transfer vocabulary but not in receptive vocabulary assessed by standardized assessments. Crain-Thorenson and Dale (1999) provided further evidence for the efficacy of DR with diverse learners when they documented the positive effects of DR on the communication skills of children with language delays. Because the DR method includes explicit instruction about how adults should repeatedly model literacy skills during shared reading, this technique has effectively promoted literacy in diverse populations, a finding that has positive implications for the use of this intervention with children under treatment for cancer.

In summary: empirical research has established strong support for the use of DR with children in order to increase positive literacy outcomes. Whitehurst et al., (1988) implemented a DR program with parents and children in home-based settings, the results of which delineated the positive effects of DR on vocabulary growth. After this study, the use of DR spread rapidly as investigators implemented similar programs in classrooms, in homes and in a mix of home and school conditions (Lonigan & Whitehurst, 1998; Mol et al., 2009; Whitehurst et al., 1994; Whitehurst et al., 1994; Zandbergen & Whitehurst, 2003). Expanding on the initial success of DR in building vocabulary skills, Kotoman (2008) found that DR positively impacts not only language skills but also children's attitudes toward reading. Further adding to the empirical support for DR, the results of several longitudinal research studies conducted by a variety of

researchers (Mol et al., 2009, Whitehurst et al., 1999, Zevenburgen & Whitehurst, 2002) support the potency of this technique. For example, preschool children exposed to DR interventions in Head Start programs still demonstrated significant effects at the end of kindergarten. Follow up data obtained two years post intervention reveal that parents continued to use DR strategies with their children well after the conclusion of the intervention (Huebner & Payne, 2010). The well-documented, positive effects of DR on vocabulary acquisition prove relevant to this study because they point to its potential value for children undergoing treatment for cancer who may not have opportunities for traditional, direct instruction but who do have ample opportunities for shared reading with parents.

Parent Training for Dialogic Reading

The widely accepted DR technique offers great potential for fostering vocabulary growth in the at-risk population of children diagnosed with cancer because not only can learning occur when convenient for each individual parent-child dyad but most importantly because the promise of DR offers parents a structured format for engaging their child with more advanced words and language.

In an effort to understand the psychological challenges parents may face when tasked with teaching their own children, Kabuto (2012) conducted case study research into “the dynamic, interpersonal nature of parents working with their children.” The investigator observes that, while interacting with struggling readers, parents often experience emotional strain deriving from their feelings of inadequacy regarding how to help their children with reading. Based on her observations, Kabuto cautions educators not to assume that parents know how to react productively during structured reading sessions (Kabuto, 2012). In this current study, parents of children receiving treatment for leukemia had to deal with both the typical stressors inherent in parent-child structured reading sessions and the additional stressors their children’s illnesses

imposed on the shared reading process. Based on the ideas Kabuto presented for consideration, the current study endeavored to imbue the parents involved with knowledge about the basic tenets of serving as strategic reading partners before implementing training on dialogic reading. This plan derived from the premise that clarification of the nature of productive parental roles pertinent to this intervention would boost parental self-confidence and prepare those involved for the specific training in DR techniques.

According to Kabuto (2012), strategic reading requires that parents have some knowledge about the reading process, a high priority for the parents in this study. Since the goal of strategic reading is for children to learn to create meaning from their stories, parents must first appreciate that their role is to facilitate understanding in their readers. The primary expectation for parents in this particular study was that, by encouraging vocabulary growth, they would eventually foster improved comprehension skills in their children because enhanced vocabulary skills lead to greater understanding. To serve effectively as strategic reading partners, parents must be prepared to understand that all readers, regardless of age or experience, make miscues. By accepting miscues as a normal part of the DR process, parents can maintain realistic expectations about the errors made by their children, an essential feature of a well-functioning reading dyad. As well, parents must be encouraged to listen carefully to the types of miscues made by their children because the nature of the miscues can reveal whether or not a student comprehends successfully. Kabuto (2012) maintains that high quality miscues suggest that the reader understands the material. Low quality miscues (such as decoding errors) suggest that readers may struggle with comprehension due to their singular focus on simply saying what the words say not what they mean. When readers fail to employ strategies to deal with unknown words, their inept approach to decoding words may negatively affect comprehension and vocabulary growth. However, when parents recognize their children's low quality miscues, their knowledge may have positive ramifications because they may hopefully be favorably inclined

towards seeking appropriate, individualized, interventions for their children's reading problems. Once parents have tuned into these aforementioned types of concerns about their children's reading skills, they will be better primed for the DR training.

To effectively incorporate DR into their children's overall treatment regimens, parents must have knowledge of the essential features of the DR technique. Training programs helping parents learn DR strategies vary, a potential problem in assessing their efficacy. Therefore, in an effort to reduce the variability in training programs, twenty-five years ago, Arnold et al., (1994) created a video teaching the PEER and CROWD strategies as a means of standardizing training. PEER (Prompt, Evaluate, Expand, and Repeat) targets improvement in children's vocabulary and comprehension skills by helping adults remember the exact sequence for implementing the technique. CROWD (Completion, Recall, Open-ended questions, Wh-questions, and Distancing) has the same goal, also implemented by teaching parents to employ these five different prompts. Arnold et al. (1994) reported that the use of these videos constituted a more effective training strategy than addressing adults in a traditional lecture format because it standardized the process. Additional research has substantiated the effectiveness of such video training (Blom-Hoffman et al., 2006; Blom-Hoffman et al., 2007). Additionally, findings from a DR intervention conducted by Pillinger and Wood (2014) supported the use of standardized video training in a DR intervention, showing significant effects for children's enjoyment of reading and their ability to derive meaning from printed material, for positive parent-child reading behaviors, and for favorable parental attitudes towards joint storybook reading. The overall success of these programs lends support to the use of parent training in the proposed study.

Pilot Study

Bragg (2018) implemented a small-scale, exploratory pilot study that examined vocabulary acquisition in ten pediatric oncology patients who participated in a parental read-

aloud intervention for five weeks while receiving chemotherapy for cancer. Nine of the participants received treatment for leukemia and one participant for hepatoblastoma. Data collection about the ways in which the reading intervention contributed to the improvement of children's vocabulary constituted the primary goal of this study. The Peabody Picture Vocabulary Test-Revised (PPVT-R) 4th Edition, administered pre- and post-intervention, served as the measure of children's vocabulary knowledge. Prior to the actual intervention, Bragg assessed the subjects' reading levels and reading interests utilizing the San Diego Quick Reading Assessment and Interest Inventory. The information gleaned from the administrations of these measures informed the preparation of a set of reading materials for each subject, above each child's independent reading level and aligned with the child's interests. Parents received information regarding the implementation of effective read-aloud strategies (Trelease, 2006) prior to the five-week intervention. To monitor adherence to the intervention protocol, parents responded to weekly text messages from the principal investigator inquiring about their progress. Analysis of the pre- and post-intervention PPVT-R 4th Edition scores revealed that the participants' receptive vocabulary Growth Scale Values (GSV's) increased by 6.4-points on average over the course of the study. The changes from the pre to post-intervention scores ranged from minus 12 to plus 18 points. One subject obtained a decrement in vocabulary at the end of the five-week protocol, indicated by the loss of 12 points. Responses to the weekly text messages indicated strong adherence to the study protocol, with approximately 70% of the dyads reporting high adherence over the five weeks. The exploratory pilot study successfully promoted vocabulary acquisition.

The findings of Bragg (2018) suggested the potential value of a structured, interactive parent-child shared literacy experience for children with moderate cancer diagnoses while they undergo chemotherapy. The parents of the participants proved willing and able to adhere to the study protocol while their children advanced their vocabulary knowledge despite the difficulties

of coping with cancer. The overall success of the reading experience for the mother-child dyads in Bragg (2018) suggests that, despite their vulnerable circumstances, parents will invest in learning the DR techniques and will use them effectively with their children, an encouraging outcome that influenced the planning of the current study.

Because the parent-child dyads in Bragg (2018) study met the same criteria determined for those eventually selected to participate in the current study as members of the treatment group, the PI decided to establish the participants of Bragg (2018) as members of the comparison group. In terms of research design, both groups had identical backgrounds. Also, both groups adhered to the same research format because they had identical experiences in the project with the exception of the specific nature of the intervention employed. The parents from Bragg (2018) received unstructured training (information on the implementation of “effective read aloud strategies”) and had participated in a five-week intervention during which they read aloud with their children. The parents in the current study received structured parental training in the specificities of the DR techniques and also participated in a five-week intervention using these techniques. The implementation of the unstructured “effective read aloud strategies” with the comparison group enabled a contrast with the implementation of the specific DR techniques with the treatment group in the current study. This design facilitated the assessment of the efficacy of the DR technique in terms of promoting vocabulary growth in a population of children challenged by coping with cancer. The comparison of structured training (DR techniques) and unstructured training (benefits of shared reading) addressed the issue of whether or not children’s vocabulary growth could be attributed to specific parental behaviors designated during the training experiences and focused on the goal improving the efficacy of the intervention.

Study Proposal

The current research expanded upon Bragg's (2018) study in terms of defining a more discrete population and implementation of the structured reading intervention. The population in this study constituted a larger sample size that included only children diagnosed with pediatric leukemia. As well, the research design in this study, empirical in nature, included the use of a comparison group. Finally, parents in the treatment group of this study participated in structured parental reading training about DR techniques.

Members of the treatment and comparison groups, both consisting of parent-child dyads comprised of children receiving treatment for pediatric leukemia, received training though the nature of the training differed. Parents in the treatment group received structured training in DR techniques (Whitehurst, 1992). Parents in the comparison group, whose task involved reading books to their children, viewed an informational video discussing the importance of storybook reading for children's academic development (Idaho Literacy Project, 1991). Members of both treatment and comparison groups received books equally rich in vocabulary as part of the intervention. As a gesture of thanks for their participation in the study and also to help their children build vocabulary skills, parents in the comparison group had access to the DR training after the completion of the study. Chapter 3 delineates the methodology employed in the current study. The research questions and hypotheses for this current study follow.

Research Questions and Hypotheses

This study addressed four research questions. The first research question explored whether, for parents of children undergoing treatment for leukemia, the provision of structured parental reading training is associated with gains in vocabulary when compared to the provision of unstructured parental reading training. The second and third research questions investigated the overall enjoyment and suitability of the DR intervention as rated by parent and child participants.

The fourth research question compared parent behavior during the reading intervention to the actual tenets of DR.

A. Research Questions

- 1) For parents of children undergoing treatment for leukemia, is the provision of structured parental reading training associated with gains in vocabulary growth when compared with the provision of unstructured parental reading training as measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R) 4th Edition?
- 2) For parents of children undergoing treatment for leukemia, how does participation in a structured parental reading training and subsequent participation in a shared book reading program impact their satisfaction with both the training and the shared book reading program as measured by a post intervention questionnaire?
- 3) An exploratory research question: For children of parents who participated in structured parental reading training, what is their level of enjoyment in a shared book reading experience with their children who are undergoing treatment for leukemia as assessed by post intervention interviews?
- 4) To what extent did self-reported parental behaviors exhibited during shared reading experiences adhere to the principles and strategies delineated during the DR training they received as assessed by analyses of coded responses on the weekly text message check-ins?

B. Hypotheses

- 1) Children in the treatment group whose parents participate in structured reading training will demonstrate significantly greater improvement in receptive vocabulary growth than children in the comparison group whose parents participate in unstructured reading training.

- 2) Parents of children in the treatment group who participate in structured reading training will report satisfaction with the shared reading program.
- 3) Children in the treatment group whose parents participate in structured reading training will report enjoyment from the shared reading experiences that take place during the time when they are undergoing treatment for leukemia.
- 4) Parental behaviors exhibited during shared reading experiences will adhere to the principles and strategies delineated in the structured reading training they received as reported in the weekly text-message check-ins.

Chapter 3: Methodology

To implement this study, the PI invited parents of children actively participating in treatment for leukemia to take part in shared reading experiences. By accepting the invitation, the parents indicated their motivation to foster their children's progress in reading despite the stressors of the medical treatments administered to cure the cancer. This study utilized data collected over a two-year period. The initial data collection occurred in 2018 after the recruitment of nine parent child dyads. The second wave of data collection occurred in 2019 after the recruitment of 10 dyads. Both sets of data documented the impact of shared reading interventions on vocabulary learning in the children. The 2018 protocol differed from the 2019 protocol in terms of the nature of the training in which the parents participated and the selection of books curated for the study. The first cohort of dyads, designated as the comparison group, participated in unstructured training while the second cohort of dyads, comprising the treatment group in the current study, participated in structured training. As well, the books curated for the two groups differed in terms of how they were selected. The interventions differed in no other ways.

During the initial period of data collection, the nine parents in the comparison group were instructed to engage in daily shared book reading with their children simultaneously undergoing treatment for childhood leukemia. To this end, the parents received a collection of books curated for the children in terms of interests and reading levels. These parents did not receive any structured training in strategies for conducting the shared reading session; they simply watched a video touting the benefits of parental read-alouds. Though preliminary analyses of the findings from the first set of data collected proved promising, any improvement in vocabulary could not be attributed to the implementation of the shared reading program due to the lack of information about actual parental shared reading behaviors and the lack of a comparison group. These issues rendered these initial findings inconclusive because the data obtained were only anecdotal.

In the following year, 2019, a second wave of data collection was implemented with the assignment of ten additional dyads to the treatment group. In this case, the training was more specific. The treatment group parents participated in structured training in dialogic reading techniques with the goal of providing them with well-defined strategies to improve the vocabularies of their children. Also, the selection of books curated for this group differed from the aforementioned selection process because the books were picked on the basis of their interest to the children, not their reading levels. Just as in the case of the parents in the comparison group, no data about the shared reading behaviors of parents in the treatment group were collected. Therefore, neither of the two reading interventions could demonstrate that vocabulary growth in the children occurred as a direct result of the shared reading experiences.

This chapter describes the population and procedures for this study and specifies the nature of the statistical analysis used for evaluating the significance of the results of the measure administered to assess vocabulary growth. Though the original research design had called for the recruitment of 20 parent-child dyads in total with random assignment of 10 to each group, an unexpected, confounding variable occurred, prompting the PI to modify the research design with respect to the formation of the treatment and comparison groups. Failure to modify this aspect of the design would have diminished the reliability and validity of the results, rendering possible generalizations to additional populations fallacious. An explanation for the change of plans substantiates this decision. The initial research design for the current study recruited 20 dyads, randomly assigning 10 to the comparison group and 10 to the treatment group. This design called for the participants in the comparison group to follow the protocol of the 2018 preliminary study, engaging in shared reading experiences using a curated book collection. The participants in the treatment group would follow the protocol for the current study described herein by engaging in dialogic reading experiences also using a curated book collection. However, since the parents recruited for the current study all knew each other because their children received treatments in

the same settings, they had inadvertently formed an informal community, supporting each other during difficult times. As a result, the casual communications among the parents (regarding who would receive treatment and who would not) would have impacted the reliability and validity of the results of the intervention. For example, in 2019, when the parent recruits learned about the proposed intervention, those initially designated as members of the comparison group began directing questions about the dialogic reading intervention to members of the treatment group. They expressed curiosity about the nature of the program to be implemented with the children in the treatment group. They knew that their children would not have access to the same program, a situation that might possibly evoke feelings of envy or resentment that could interfere with their straightforward participation in the study. Therefore, the PI made the decision to offer the same structured reading training to all of the parents recruited in 2019 for the current study. Thus, the treatment group was comprised of this group of parents while the comparison group was comprised of parents from the 2018 study. The current research design allows for the attribution of any results obtained to the intervention because it eliminates the impact of a potentially confounding variable.

Participants

Although recruitment for participants was open to all parents, only female parents volunteered. The treatment and comparison groups consisted of 19 parent-child dyads, totaling 38 participants. Recruitment for the comparison group (Bragg, 2018) was identical to recruitment for the treatment group in 2019. The dyads from (Bragg, 2018) serve as the comparison group in the present study. The 2019 recruitment of the participants in the treatment group occurred in two ways. First, the principle investigator (PI) advertised the study to all members of an online support group for parents of children on active treatment for cancer. This pediatric cancer support group generally has about 200 members. The support group included parents, all North Carolina residents, representing a range of socioeconomic and cultural

backgrounds. Secondly, the PI used the snowball method by asking each enrolled participant to recommend others eligible for participation. Interested parents received both the recruitment message and contact information for the PI of the study to enable them to find answers to pertinent questions about the risks and benefits involved in participation. To facilitate recruitment, the PI implemented both approaches simultaneously. The eligibility criteria for parents participating in this research included the following: (1) parents have a child with ALL, younger than 13 and older than 4 years old (enrolled in grades K-6); (2) parents have high school diplomas or higher education; (3) parents have the ability to communicate fluently in English; (4) children have no prior history of participation in an Individualized Education Program (IEP); (5) once the PI verified that interested participants met the stated criteria for participation in the study, these participants signed an agreement indicating that they accepted the terms of the study (informed consent, child assent form). (6) parents also completed a questionnaire providing demographic data, as summarized in Table 1.

Table 1

Sample Demographic Characteristics

Variable	Treatment	Comparison
	<i>n</i> (%)	<i>n</i> (%)
Child's Gender		
Male	8 (80%)	4 (44%)
Female	2 (20%)	5 (56%)
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Child's Age (years)	5.70 (1.77)	8.11 (1.83)
Race		
White	8 (80%)	7 (78%)
African American	1 (10%)	1 (11%)
Hispanic or Latino	1 (10%)	1 (11%)
Parent's Gender		
Male	0 (0%)	0 (0%)
Female	10 (100%)	9 (90%)
Parent's Schooling		
College	9 (90%)	5 (56%)
Associates	0 (0%)	2 (22%)
High school	1 (10%)	2 (22%)
Parent's Employment		
At Home	8 (80%)	5 (56%)
Employed	2 (20%)	4 (44%)
Parental Reading to Child		
Every Day	7 (70%)	7 (78%)
Multiple Times Per Week	3 (30%)	1 (11%)
No Reading	0 (0%)	1 (11%)

Section 504 Accommodation Plans served all of the children recruited for the study to address the specific educational challenges they faced due to their illnesses. Based on the provisions afforded citizens in the Americans with Disabilities Act (ADA), the U.S. Department of Education defines a 504 Plan as an individualized plan developed to ensure that each elementary or secondary student with appropriate documentation, in this case a diagnosis with a severe medical condition, will receive accommodations designed to promote academic success and to provide access to appropriate learning environments. All the children recruited for this

study qualified for 504 accommodations due to their active participation in treatment protocols for pediatric leukemia, a disease so severe that it prohibited them from attending school at various points in their treatment.

Research Design

This research study occurred in two phases. In 2018, the PI implemented the first phase of the intervention (Bragg, 2018). The parents of the children, ultimately designated as members of the comparison group, participated in unstructured training in which they watched a video touting the benefits that accrue to children whose parents read aloud to them, information based on research completed by Literacy Project (1991) that indicates storybook reading improves academic development. After the training, they participated in daily read aloud sessions with their children for a period of five weeks. The rationale for establishing the duration of the shared reading program derived from information provided by the American Cancer Society indicating that chemotherapy treatment cycles average four to six weeks in length. Therefore, the five - week intervention period allowed adequate time for the completion of the reading intervention. Pre and Posttest assessments were administered to the children to determine the impact of the structured reading training on receptive vocabulary growth.

In 2019, the PI implemented the second phase of the study. The parents of the children in the treatment group attended a structured parental reading training session explaining the DR methodology. Following the completion of the training, also over the course of a five-week intervention period, the parents implemented the dialogic reading methods proposed by Whitehurst et al. (1988) with their children, the dyads assigned to the treatment group. The children participated in the pre and posttest assessments of their receptive vocabulary and in an interview about their experiences. The parents filled out assessments about their experiences that marked the end of the intervention for the dyads in the treatment group.

To obtain data about their receptive vocabulary skills, the children in both the treatment and the comparison group were administered the PPVT-Revised (PPVT-R) 4th Edition, using alternate forms in the pre/post intervention design. Analysis of the results of the pre/post administrations of this measure determined if any gains obtained by children in the treatment group differed significantly from those obtained by children in the comparison group. A pre/post 2x2 2(groups) X 2(time) factorial design comprised the statistical analysis used to evaluate significance. Additionally, at the end of the intervention period, parents of treatment group children rated their subjective experiences by responding to questions employing a Likert Scale. The results include a tabulation of the descriptive statistics of these anecdotal reports.

Procedure

The actual intervention for both the treatment and comparison consisted of daily read aloud sessions in which the parent-child dyads read one to two books (depending on length) per week over a period of five-weeks. In 2018, parents in the comparison group attended an unstructured training session emphasizing the importance of reading aloud to their children. After this session, these parents implemented daily read aloud sessions with their children during a five-week period. In 2019, parents in the treatment group participated in structured training on dialogic reading techniques to enable them to use this methodology in daily sessions with their children, also lasting for a five-week period. One important goal of this study was to determine if the implementation of the dialogic reading methodology would impact the growth of receptive vocabulary skills in the children to a significantly greater degree than did the read-alouds employed in Bragg (2018).

Prior to the start of the intervention, eligible parents in both the comparison and treatment groups received information about the intervention and access to consent forms, which they completed with their children. Parents in both groups also completed a demographic

questionnaire. Parents in the comparison group watched a training video on shared reading while parents in the treatment group watched a training on video on DR. Administered as a pretest, the Peabody Picture Vocabulary Test-Revised(PPVT-R) 4th Edition (Dunn & Dunn, 2007) established a baseline for the receptive vocabulary levels for children in both the comparison and treatment groups. Book selection for both groups was based on the children's interests. However, for children in the comparison group, in addition to interest, books were also selected three levels above the child's reading level, leading to a curation of high interest books that contained challenging vocabulary. To select books of interest to the children in the comparison group a reading interest inventory was conducted. Each dyad in the comparison group received seven books. To select books of high interest to the children in the treatment group by ascertaining the personal interests, of each child, the PI conducted an informal conversation with each dyad prior to the start of the intervention. The PI asked each child to identify favorite school subject, general interests, dream vacation, favorite songs, future plans and topics about which they like to read. Each dyad received 10 to 12 books.

The intervention period consisted of daily reading sessions in which parents in both the comparison and treatment groups read aloud to their children. Parents in the comparison group were encouraged to simply read aloud to their children. Parents in the treatment group were encouraged to utilize the DR methodology learned about during the structured training. Parents responded to weekly text inquiries about their shared reading experiences and behaviors to monitor adherence to the protocol in both groups. As well, the weekly check-ins via text messages obtained anecdotal information about each parent-child dyad's shared reading experiences. The intervention portion of the study concluded after each dyad completed five-weeks of work.

After the intervention, the treatment group participants participated in interviews to assess their enjoyment of the DR intervention. Parents in the comparison group participated in a

post intervention text message communication assessing their general reaction to the program. Anecdotal data revealed general enjoyment of the shared book reading program. Parents in the treatment group completed rating forms assessing their satisfaction with the DR intervention and opinions about its efficacy. Children in the treatment group participated in a post intervention interview exploring their overall enjoyment of the reading intervention. Administered as a posttest, the Peabody Picture Vocabulary Test-Revised (PPVT-R) 4th Edition (Dunn & Dunn, 2007) assessed vocabulary growth at the end of the five-week intervention. Quantitative and qualitative analysis of the results obtained determined the results of the study.

Training

Parents in both groups participated in a training session prior to the beginning of the intervention. However, the training for the comparison group was an unstructured general informational session about shared reading, whereas the training for the treatment group provided structured training in DR techniques.

Unstructured reading training. Prior to the initiation of the read aloud intervention implemented in the comparison group (Bragg, 2018), the parents, participated in a training experience before they began to read with their children. Training for parents in the comparison group consisted of watching an informational video on the importance of storybook reading for the promotion of children's academic development (Idaho Literacy Project, 1991). The PI remained available throughout the intervention to answer any questions about shared reading. Table 2 details the timeline for the intervention and the comparison groups.

Structured reading training. Prior to the start of the intervention, parents in the treatment group received training in DR, scheduled at the convenience of each parent. The PI first introduced the concept of dialogic reading. Then the PI played the RTTT video, Read Together, Talk Together (Whitehurst, 2002), for the parents, responding to any questions asked during and after the presentation. This 15-minute instructional video teaches parents about DR

strategies and offers them a rationale for using the DR reading technique. It also shows parent-child dyads modeling the DR strategies in the context of shared reading. At the conclusion of each training session in the DR program, the PI conducted a program overview conversation with each parent. This covered what the participants thought they had learned from the session and how they planned to practice what they learned at home. As well, the PI wanted to provide an opportunity for parents to ask further questions about the content of the session. The goal of the program overview conversation was to understand if the participants understood the DR concepts and also to insure adequate time for the provision of answers to all of the participants' questions.

Table 2

Timelines for Dialogic Reading Intervention (2019) and Shared Reading Group Intervention (2018)

	Dialogic Reading (DR) Treatment Group (2019) N = 20	Shared Reading (SR) Comparison Group (2018) N = 18
Week 1	Consent (Parents and Children) Demographic Questionnaire (Parents) DR Training Video (Parents) PPVT-Form A (Children) Interest Conversation	Consent (Parents and Children) Demographic Questionnaire (Parents) SR Training Video (Parents) PPVT- Form A (Children) Interest Conversation
Week 2-6	Dialogic Reading of Books SMS Weekly Check In (Parents)	Shared Reading of Books SMS Weekly Check In (Parents)
Week 7	PPVT-Form B (Children) Post Intervention Questionnaire (Parents) Child Enjoyment Interview	PPVT- Form B (Children) Post Intervention Parent Text Message

Measures

The PI employed five measures to address the research questions, four of which the PI designed. The parents filled out one measure independently. These include: 1) Demographic Survey (for parents), 2) Peabody Picture Vocabulary Test-Revised (PPVT-R) 4th Edition (Dunn & Dunn, 2007) (for children), 3) Treatment Fidelity Measure (for parents), 4) Post Intervention Survey (for parents in the treatment group), 5) Post Intervention Interview (for children).

Demographic Survey. Each parent completed a researcher-designed demographic survey administered at the beginning of the intervention period. The 8-item demographic survey collected background information about the parent participants, including participants' ages, number of years of formal schooling, ethnic backgrounds, language backgrounds, gender, and socioeconomic status. Additionally, the surveys solicited information about the types of leukemia diagnosed in their children and their stages of treatment. See Appendix A for the Parent Demographic Survey.

Peabody Picture Vocabulary Test-revised (PPVT-R). The Peabody Picture Vocabulary Test - Revised (PPVT-R) 4th Edition (Dunn & Dunn, 2007) assessed the children's vocabulary knowledge because the instrument provides a widely respected measure of receptive vocabulary. As recommended by Dunn & Dunn, 2007, the research design called for the administration of alternate forms of the test (Forms A and B) in the pre/post design. In this individually administered, norm-referenced test, the PI asked the children to point to one out of four pictures that identifies a word spoken aloud. The PPVT-R manual recommends using growth scale value (GSV) scores for measuring change in a student's vocabulary over time, stating that the GSV measures "an examinee's vocabulary with respect to an absolute scale of knowledge. As an examinee's vocabulary grows, the GSV will increase" (Dunn & Dunn, 2007, p. 21). The raw scores obtained by the children convert to standard scores according to age-based

norms. The age-based normative sample used to establish the reliability and validity of the instrument consisted of 3,540 (50 % females and 50 % males). Those tested in the norm samples came from diverse backgrounds with respect to race/ethnicity, SES, geographic region, and education background. This study analyzed PPVT-R data using pre and post growth scale values (GSV). GSV differences determined the significance of the gains (Dunn & Dunn, 2007, p. 21).

SMS Weekly Check In (treatment fidelity). To monitor the extent to which participants conducted their weekly read-aloud sessions, the PI conducted weekly check-ins with parents in both groups via text messages. Weekly text messages to the parents in the comparison group read as follows: How has the week been going?; Have you had a chance to look at the books with your children? Weekly text messages to parents in the treatment group read as follows: How has the week been going?; Have you had a chance to look at the books with your children?; What questions have you asked your child about the books?; What questions has your child asked you about reading them?; Are you and your child enjoying reading together? An independent reviewer grouped the responses from the weekly text message checks into categories demonstrating trends in responses that emerged over the course of the study.

Post intervention survey. After the completion of the reading intervention and the completion of all post-testing, the PI administered a post intervention survey developed specifically for this study (Appendix B) to parents in the treatment group. This questionnaire evaluated the parents' satisfaction with the intervention, their perceptions about the efficacy of implementation of the DR technique, their assessments of their children's enjoyment of the reading intervention, and their reactions to the overall purposefulness of the intervention since it occurred during the time frame in which their children received medical treatments for cancer. The Post Intervention Survey consisted of eight questions, answered on a Likert Scale (comprised of the options strongly agree, agree, neutral, disagree, and strongly disagree).

Participants completed the survey anonymously through the use of surveymonkey.com after the completion of post-testing.

Post intervention child interview. After the completion of the reading intervention and all post-testing, the PI conducted a simple exploratory interview with each of the children in the treatment group, asking if they had enjoyed the reading intervention. The PI followed up the children's yes or no responses with questions about why they had responded positively or negatively. The purpose of the questioning was to explore the children's enjoyment of the intervention and to document their reactions to the meaningfulness of the intervention since it occurred during a difficult time in their lives.

Materials

Experimental Group Books. Twelve fictional books, selected prior to the start of the study, corresponded with the Ten Characteristics of Text for Interactive Read-Aloud authored by Pinell and Fountas (2011). Characteristics of the books included: accessible and compelling subject matter, themes and motifs appropriate for students of different ages chosen to augment the current schema, richness in novel vocabulary, and inclusion of attention-grabbing illustrations to stimulate the children.

Comparison Group Books. The PI selected seven fictional books prior to the start of the study, based on individual responses from a student interest inventory administered to the participants. The PI chose the books from a publication of notable books published by The Bank Street College of Education. To ensure exposure to novel vocabulary, the PI selected challenging books, three levels above the students' reading levels.

Dialogic Reading Bookmark. (Experimental Group) The PI created a bookmark that included the acronyms PEER and CROWD and subsequent definition of the acronyms.

Statistical Analyses

Descriptive statistical analyses focused on the demographics of parents in the treatment and comparison groups. Descriptive statistical analyses determined whether significant differences between the groups existed in terms of age, gender, number of years of formal parental education and socioeconomic status. Following this comparison, the PI directed the statistical analyses towards the four core research questions, as detailed below.

Research question 1. *For parents of children undergoing treatment for leukemia, is the provision of structured parental reading training associated with gains in vocabulary when compared with the provision of unstructured parental reading training as measured by the Peabody Picture Vocabulary Test- Revised (PPVT-R) 4th Edition?*

To evaluate this question, a mixed model Analysis of Variance (ANOVA) with one within-subjects factor and one between-subjects factor was employed, using the pretest scores as the covariate and post-test scores as the dependent variable. This information was used to compare the treatment group to the comparison group and demonstrate if one condition supported significant improvement compared to the other condition. Beyond the ANOVA, a *t*-test was performed comparing the gain scores (post-test pre-test) for both the comparison and treatment conditions.

Research question 2. *For parents of children undergoing treatment for leukemia, how does participation in a structured parental reading training and subsequent participation in a shared book reading program impact their satisfaction with both the training and the shared book reading program, as measured by a post intervention questionnaire?*

Descriptive statistics were employed to delineate the types of responses given by parents in the treatment group. Types and frequencies of enjoyment comments were coded and calculated.

Research question 3. *An exploratory question: For children of parents who participated in structured parental reading training what is their level of enjoyment in a shared book reading experience while undergoing treatment for leukemia as assessed by post intervention interviews?*

Descriptive statistics were employed to delineate the types of responses provided by children in the treatment group. Types and frequencies of enjoyment comments were coded and calculated.

Research question 4. *To what extent did self-reported parental behaviors exhibited during shared reading experiences adhere to the principles and strategies delineated during the DR training they received as assessed by analyses of coded responses on the weekly text message check-ins?*

Descriptive statistics were employed to delineate the types of responses given by parents in the treatment group. Types and frequencies of responses were coded and calculated.

Chapter 4: Results

This chapter describes the results of the analyses used to explore the aforementioned research questions about the DR intervention. This chapter begins with a presentation of the preliminary analyses of the demographic data describing the participants. Following these initial analyses, the PI conducted an analysis of each research question based on the statistical procedures described in Chapter 3. Finally, the chapter includes a discussion of the issues pertaining to reliability and validity.

Preliminary Analyses

Preliminary analyses examined the demographic characteristics of the dyads in the study in terms of age, race/ethnicity, gender, cancer diagnosis, and parental educational levels. Data obtained about the children also included information about the amount of time spent reading at home. The treatment and comparison groups consisted of 19 parent-child dyads, totaling 38 participants. The first nine dyads (Bragg 2018) comprised the comparison group while the second 10 participants received assignment to the treatment group whose members participated in the DR intervention. The child participants in the comparison group consisted of five females and four males. Out of these nine participants, four of their parents had graduated from college, three had obtained associate degrees, and two had completed high school. The child participants in the treatment group consisted of eight males and two females. Nine of the parents of the participants in this group had completed college while only one parent had completed high school. The differences in gender and age of the child participants, parental education levels, and parental employment status that emerged after enrollment were unintentional.

Impact of a Structured Parental Reading Training on Vocabulary Growth

To evaluate the research question: For parents of children undergoing treatment for leukemia, is the provision of structured parental reading training associated with gains in

vocabulary when compared with the provision of unstructured parental reading training, the PI administered the Peabody Picture Vocabulary Test-Revised (PPVT-R) 4th Edition in a pre-test and post-test format to the children in both groups.

Then, for all the participants, the PI calculated the growth scale values (GSV's) pertaining to the time period between the pre and posttest administrations of the PPVT-R. A mixed model ANOVA with one within-subjects factor (time) and one between-subjects factor (condition) was used to determine if a significant difference in vocabulary growth existed between the children in treatment and comparison groups (condition). Table 3 presents the ANOVA results examined using an alpha of 0.05. The main effect for the between-subjects factor (condition) did not reach significance with $F(1, 17) = 0.55, p = .468$, indicating no significant difference between the scores of the two groups. The main effect for the within-subjects factor did reach significance with $F(1, 17) = 29.48, p < .001$, revealing a significant difference between the values of GSV at pretest and GSV at posttest. The interaction effect between the within-subjects factor and condition was not significant $F(1, 17) = 0.09, p = .764$, indicating that the change from pretest to posttest did not depend on condition.

Table 3
Mixed Model ANOVA Results

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	η_p^2
Between-Subjects						
Condition	1	178.81	178.81	0.55	.468	0.03
Residuals	17	5512.24	324.25			
Within-Subjects						
Within Factor	1	179.72	179.72	29.48	< .001	0.63
Condition: Within. Factor	1	0.57	0.57	0.09	.764	0.01
Residuals	17	103.64	6.10			

The mean contrasts utilized Tukey comparisons based on an alpha of 0.05. Tukey comparisons were used to test the differences in the estimated marginal means for each

combination of between-subject and within-subject effects. For the Comparison category of Condition, pretest GSV was significantly less than posttest GSV, $t(17) = -3.53, p = .003$. For the Experimental category of Condition, pretest GSV was significantly less than posttest GSV, $t(17) = -4.17, p < .001$. Table 4 presents the marginal means contrasts for the mixed model ANOVA.

Table 4

The Marginal Means Contrasts for each Combination of Within-Subject Variables for the Mixed Model ANOVA

Contrast	Difference	SE	df	t	p
Condition Comparison					
pretest GSV – posttest GSV	-4.11	1.16	17	-3.53	.003
Condition Experiment					
pretest GSV – posttest GSV	-4.60	1.10	17	-4.17	< .001

Note. Tukey Comparisons were used to test the differences in estimated marginal means.

Summary statistics were calculated for GSV Difference split by Condition (see Table 5). GSV Difference was calculated by subtracting the pretest GSV from the posttest GSV. The statistics indicate that, for Experimental, the observations of GSV Difference had an average of 4.60 ($SD = 3.31$, Min = 1, Max = 10, Skewness = 0.43, Kurtosis = -1.45). For Comparison the observations of GSV Difference had an average of 4.11 ($SD = 3.69$, Min = -1, Max = 9, Skewness = 0.00, Kurtosis = -1.41). When the skewness is greater than 2 in absolute value, the variable is considered to be asymmetrical about its mean. When the kurtosis is greater than or equal to 3, the variable's distribution is markedly different than a normal distribution in its tendency to produce outliers (Westfall & Henning, 2013). These descriptive statistics, together with the results of the ANOVA, indicate that the dialogic reading intervention did not have a statistically significant impact on the change in GSV over time.

Table 5

Summary Statistics Table for Interval and Ratio Variables by Condition

Variable	M	SD	n	Min	Max	Skewness	Kurtosis
GSV_Difference							
Experiment	4.60	3.31	10	1.00	10.00	0.43	-1.45
Comparison	4.11	3.69	9	-1.00	9.00	0.00	-1.41

Note. '-' denotes the sample size is too small to calculate statistic.

Impact of Structured Parental Reading Program on Parental Satisfaction

To evaluate the research question: For parents of children undergoing treatment for leukemia, how does participation in a structured parental reading training and subsequent participation in a shared book reading program impact their satisfaction with both the training and the shared book reading program, the PI employed a post intervention survey developed specifically for the treatment group (Appendix B). The post intervention survey assessed parents in the treatment group in terms of their satisfaction with the intervention, their perceptions about the efficacy of implementing the DR technique, their assessments of their children's enjoyment of their participation in the study, and their reactions to the overall purposefulness of the intervention since it occurred during their children's medical treatments for cancer. The treatment group parents answered eight questions on a measure using a Likert scale comprised of the following categories: strongly agree, agree, neutral, disagree, and strongly disagree. Descriptive statistics analyzed the responses given by parents in the treatment group on the post intervention survey. The types of responses (positive or negative) and frequencies of responses were coded and calculated. Table 6 presents these results, which indicate that the majority of treatment group parents had positive reactions to the DR intervention because they selected either agree or strongly agree in response to the positive statements about their experience. The statements about the usefulness of the training (Training/Useful), the appropriateness of the use of time (Appropriate/Use Of Time), the helpfulness of the program (Program/Helpful), and parental enjoyment of the program (Enjoyed/Program) indicated the parents' highest levels of agreement, with 90% of the parents either agreeing or strongly agreeing with these statements. Overall, these results demonstrate that most of the parents in the treatment group considered the program useful, helpful, and enjoyable. It is important to note, results cannot be attributed to DR given the differences in the data collection about parent satisfaction.

Table 6
Frequency Table for Parental Satisfaction Likert Responses

Variable	D (%)	N (%)	A (%)	SA (%)
Had Enough Time	1 (10)	3 (30)	5 (50)	1 (10)
Training/Useful	0 (0)	1 (10)	5 (50)	4 (40)
Confident/DR Ability	0 (0)	2 (20)	8 (80)	0 (0)
Appropriate/Use Of Time	1 (10)	0 (0)	8 (80)	1 (10)
Program/Helpful	1 (10)	0 (0)	6 (80)	3 (30)
Child/Enjoyed Program	2 (20)	1 (10)	6 (60)	1 (10)
Enjoyed/Program	1 (10)	0 (0)	6 (60)	3 (30)

Notes. D = disagree. N = neutral. A = agree. SA = strongly agree.

Impact of a Dialogic Reading Intervention on Child Satisfaction

To evaluate the exploratory research question: For children of parents who participated in structured parental reading training, what is their level of enjoyment in a shared book reading experience while undergoing treatment for leukemia as assessed by post intervention interviews, responses from participants were coded according to their content. After reading the participants' open-ended responses to a series of questions, an independent reviewer created a list of commonly occurring categories (i.e., themes) in the responses. These categories included Enjoy/Reading, Reading/With Parents, Enjoyed/Books, Dislike/Reading, Miss/Friends, Favorite/Book, and Felt Sleepy/Sick. Then, an independent reviewer coded all the responses with a yes or no to indicate whether or not the subject had mentioned any of the designated categories. Table 7 presents the frequencies of these responses and their percentages out of the total number of possible responses. Five children (50%) mentioned Enjoy Reading, Enjoyed Books, and Favorite Book. Six children (60%) mentioned Reading with Parents. Two children (20%) mentioned Dislike Reading and Miss Friends at School. Three children (30%) mentioned Felt Sleepy/Sick. See Table 8 for the content of children's comments. Overall, these results demonstrate that the majority of children enjoyed reading with their parents.

Table 7
Frequency Table for Child Interview Responses

Variable	Yes (%)	No (%)
Enjoyed Reading with Parents	6 (50)	4 (40)
Enjoyed Books	5 (50)	5 (50)
Dislike Reading	2 (20)	8 (80)
Miss School Friends	2 (20)	8 (80)
Favorite Book	5 (50)	5 (50)
Felt Sleepy/Sick	3 (30)	7 (70)

Table 8

Child Responses from the Post Intervention Child Interview

Child	Responses
1	I love to read. I like bringing books in my new book-bag to the hospital. We do my HW and mom gives me stickers. Sometimes I didn't feel well and fell asleep, mommy would start the book over.
2	I like the books. One book had pretty pictures and mommy, and I drew a picture like that at the hospital. When I am better, I am going to go to school with the big library.
3	I like playing video games, and mom said I couldn't play until we read. Books boring. I love video games, and that's what I like to do at the hospital. They have the best games, all the new games.
4	I don't like reading, but there was one book I really liked you gave my mom. It was so funny and made me think of my friend from school. At school, we get to go the library as much as we want to take out new books.
5	Reading makes me sleepy sometimes. I like to read with mom. The babies are sometimes loud. Those are my books, not the babies. Taking my favorite book to the hospital makes me feel happy.
6	I like reading with mommy. I like watching shows too. Mom says books before shows. Dad reads sometimes.
7	Sometimes I didn't feel well when mommy was reading. I like having the new books. I am going to take my favorites to school when I go back to school. My friend will like the book about baseball. I miss my friends and school and don't like to go to the hospital. I like my own bed. It's cozy. We keep the books under my bed.
8	I think this was a good thing to do with my mom while I can't go to school. I always liked reading, but my mom thinks some of my books that are like comic books aren't good enough. The books you gave me were pretty good, especially the book with the boy running away and all the stuff he did to survive in the woods. I am strong like him. I could do that.
9	Reading with my mom was fun. I never thought I would admit that! I even get sick of video games, and it made me feel like I had HW again. I really liked the book with the bad weather and the scary one with the shipwreck, it made me think of other kids who had to deal with something tough other than me.

Evidence of Parental Use of Dialogic Reading Strategies

To evaluate the research question: To what extent did self-reported parental shared reading behaviors adhere to DR principles and strategies as evidenced through analysis of coded responses on the weekly text message log, an independent reviewer analyzed and coded 48 text message responses received during the course of the five-week intervention. An independent reviewer read the open-ended responses and created a list of commonly occurring categories (i.e., themes). These categories included Forgot/Could Not Read, Read Book Multiple Times, Enjoying Reading, Talking About Books, Sleepy/Sick, Discussion of Pictures, and Use of DR Bookmarks. Then, each parent was assigned a code to indicate whether they mentioned each category or not (yes or no) in their texts. Table 9 presents the frequencies of their responses and the percentages out of the total number of possible responses for parents who had implemented DR strategies. Four participants (40%) mentioned Forgot/Could Not Read, Read Book Multiple Times, and Pictures. Six participants (60%) mentioned Enjoying Reading and Bookmarks. Nine participants (90%) mentioned Talking About Books. Eight participants (80%) mentioned Sleepy/Sick.

Table 9
Frequency Table for Text Message Responses

Variable	Yes (%)	No (%)
Forgot/Could Not Read	4 (40)	6 (60)
Read Book Multiple Times	4 (40)	6 (60)
Enjoying Reading	6 (60)	4 (40)
Talking About Books	9 (90)	1 (10)
Sleepy/Sick	8 (80)	2 (20)
Talking About Pictures	4 (40)	6 (60)
Use of DR Bookmarks	6 (60)	4 (40)

In their text messages, eight participants (80%) indicated DR use, indicating that the majority of parents demonstrated evidence of DR use. See Table 10 for examples of content from parents' text messages.

Table 10
Examples of Responses from the Parental Text Message Response

Category	Exemplar
Use of Bookmarks	Still reading- love the bookmarks! One book reminded her of a trip we took and a restaurant we visited- loved sharing that memory!
Talking About Books	Better this week- loving the book about the horse-talked about what he would name that horse and had a whole separate discussion about that- made me feel great too-
Talking About Pictures	Going ok, bookmarks are good to have. Helps to talk about pictures and ask what he thinks is going on.
Enjoy Reading	Great week, rereading favorite books- loving our snuggle time together reading.

Though parents in both the comparison and the treatment groups indicated adherence to their respective protocols on the weekly text message check in, themes that naturally emerged were different. However, two themes overlapped: enjoyment of the reading program and difficulty reading on a daily basis.

Chapter 5: Discussion

The current study investigated vocabulary growth in children undergoing treatment for leukemia by comparing the impact of structured versus unstructured parental reading training. Specifically, working with two cohorts of children undergoing medical treatment for leukemia, the study compared vocabulary growth in children whose parents received training in dialogic reading techniques (DR) to vocabulary growth in children whose parents were simply encouraged to read aloud with their children. The study also analyzed the extent to which the parents in the (DR) treatment group reported adherence to the actual tenets of DR instruction during the shared reading experiences with their children. Finally, the study explored parent and child enjoyment of the shared DR reading intervention and the extent to which the parents felt empowered by the experience. The dedicated parents who implemented this project deserve great homage; they committed themselves to serving as literacy partners with their sick children while navigating the complex issues that arose from their children's diagnoses.

After reviewing the findings of the current study, this section considers the limitations of the study and the implications of the findings for clinical interventions and future research. To summarize the most salient aspects of this study, Table 11 presents an overview of the research questions, hypotheses and findings.

Table 11
Research Questions, Hypotheses, and Findings

Research Question	Hypothesis	Hypothesis Finding
1. For parents of children undergoing treatment for leukemia, is the provision of structured parental reading training associated with gains in vocabulary growth when compared with the provision of unstructured parental reading training as measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R) 4 th Edition?	Children in the treatment group who participate in a structured shared reading experience with their parents trained in the DR technique will demonstrate significantly greater improvement in receptive vocabulary than children in the comparison group whose parents participated in unstructured shared reading training.	Not Supported
2. For parents of children undergoing treatment for leukemia, how does participation in a structured parental reading training and subsequent participation in a shared book reading program impact their satisfaction with both the training and the shared book reading program as measured by a post intervention questionnaire?	Parents of children in the treatment group who participate in a DR intervention with their children undergoing treatment for leukemia will report satisfaction with the shared reading experiences.	Supported
3. For children of parents who participated in structured parental reading training what is their level of enjoyment in a shared book reading experience while undergoing treatment for leukemia as assessed by post intervention interviews?	Children in the treatment group who participate in a DR intervention with their parents will report satisfaction with the shared reading experiences that take place during the time when they are undergoing treatment for leukemia.	Supported
4. To what extent did self-reported parental behaviors exhibited during shared reading experiences adhere to the principles and strategies delineated during the DR training they received as assessed by analyses of coded responses on the weekly text message check-ins?	Parental behaviors exhibited during shared reading experiences will adhere to the principles and strategies delineated in the DR training they received as reported in the weekly text-message check-ins.	Supported

The original research design for the current study called for the recruitment of 20 parent-child dyads in total with random assignment of 10 dyads to a treatment group and 10 dyads to a comparison group. However, due to potential problems with fidelity to the original empirical design expressed by some of the parents, it was not possible to establish a comparison group for the current study without compromising the study's reliability and validity. Therefore, results from the preliminary read aloud intervention (Bragg, 2018) served as baseline data from the comparison group. The current study compares this baseline data with the data from the treatment group to determine to explore the efficacy of the interventions.

The current study enrolled parent-child dyads in order to implement a shared reading intervention with a diverse population of children receiving treatment for leukemia. The parent participants in this study participated in one of two types of training, structured and unstructured. Parents in the treatment group were trained provided structured reading training in dialogic reading with their children while parents in the comparison group simply were explained the benefits of reading aloud to their children. The primary impetus for this investigation derived from questions about the influence of shared reading experiences on children's vocabulary growth with participants undergoing treatment for leukemia, a disease that resulted in their inability to attend school.

Designing this intervention with parents as reading partners allowed parent participants to engage in learning experiences with their children during the time of their absence from school devoted to lifesaving medical treatments. Through participation in this shared reading experience, parents helped the children improve their receptive vocabularies, thereby underscoring the benefits of read-alouds focused on enhancing literacy experiences. Because the shared reading took place during a period when the parents and children spent much more time together than they would have under normal circumstances, the shared reading provided a structured activity in which both members of the dyads could feasibly engage without interfering

with the treatments. Parents and children took advantage of their opportunities for meaningful participation in the intervention despite the pressure of omnipresent medical treatments and the frightening circumstances surrounding their cancer diagnoses. Moreover, because the shared reading experiences could occur when convenient for each individual dyad, whether in between treatments or while travelling to appointments, the intervention did not disrupt any important treatment protocols or the children's need to rest.

In terms of book selection, all the parent-child dyads read well-written, beautifully illustrated literature. Overall, the reading sessions offered parents and children a chance to focus on positive subjects, contrasting with the usual discussions of illness and medical treatments. For example, in a post intervention interview, one parent participant reported that the program provided a great distraction. This parent loved having books to read together during downtime while waiting to be seen for medical appointments or having labs drawn. Since the results of this study indicated that children in both groups improved their receptive vocabulary achievement though they read different sets of curated books, perhaps the specific book choice and also the ways of implementing shared book reading are less important than the process of enjoying literature together. Parents and children may appreciate the guidance they received regarding the selection of good books because they do not have to worry about this detail at a time when they want to focus on more pressing matters. Future research projects could explore interventions using different genres of the books (fiction or nonfiction) to delineate accurately whether or not the genre makes a difference.

Not only do the parents of children undergoing treatment for leukemia need to remain focused on the daily challenges presented by the illness, they also need to consider the issues their children will face in the future, mainly because so many children now survive the disease. For this reason, a significant body of research exists on school re-entry after treatment for children with cancer has ended. Recently, Helms et.al., (2016) conducted a meta-analysis of

school re-entry programs for children with cancer. The meta-analyses revealed significant, positive effects of school re-entry programs in terms of enhancing academic achievement and lowering levels of depression in children, still vulnerable to the ramifications of their illness even after their treatments have ended. The current study attempted to explore the feasibility of implementing a structured reading program to address the academic deficits that accrue to children hospitalized with leukemia. Given that few empirical research studies have dealt with this specific problem, this exploration has the potential to make a meaningful contribution to future research by asking the salient question, “Can children with cancer learn while they actively participate in treatment, prior to their re-entry into school?” Accordingly, the current study structured the intervention during the treatment process rather than after the treatments had ended with the goal of reversing any potential educational losses by addressing academics along the way. The current study met the children in situ, a research paradigm that took into account the educational problems associated with the pause in learning experienced by this population. To this end, the current study endeavored to take advantage of the important roles the parents of these children could play not only as constant caretakers but also as literacy partners. The empowerment of parents during a time of crisis for them and their children offered both parties hope for the future.

Shared Reading and Vocabulary Growth

The results of the present study did not support the hypothesis that children in the treatment group who participated in a structured shared reading experience with their parents trained in the DR technique will demonstrate significantly greater improvement in receptive vocabulary than children in the comparison group whose parents participated in unstructured shared reading training. The benefits of the shared reading experiences were evident for children in the unstructured read aloud condition as well as for children in the structured reading condition. These findings are consistent with other previous research that suggests that shared

book reading provides a natural context in which adults can influence children's language and literacy development positively (Denny et al., 2010; Mol and Bus, 2011; Senechal, 2001).

Overall, the results from the two groups were quite similar, showing vocabulary growth in both. The treatment group did not show an advantage over the comparison group in terms of vocabulary growth. Both parents and children reported positive reactions to the reading interventions. However, since no data regarding enjoyment of the intervention were obtained from participants in the comparison group, no conclusions about their enjoyment as compared with that of the participants in the DR group can be reached.

The data regarding the pre and post administrations of the standardized PPVT-R indicated no findings of significant differences in receptive vocabulary development between the treatment and comparison groups; both groups improved their receptive vocabulary skills during the five-week intervention. Since vocabulary growth often falters while children undergo treatment (MacLean et al., 1995; Precourt et al., 2002), the fact that that these reading interventions may have reversed this trend underscores their value and the potential benefit of other academic interventions during treatment. Because any growth in vocabulary represents a major accomplishment for the participants in the study, the results obtained have positive implications in terms of academic success not only for this particular group of children but also for children diagnosed with other illnesses as well.

The accessibility and flexibility of the reading intervention, initiated during an unpredictable time, made it both viable and sustainable. While their children received lifesaving treatments for leukemia, parents could, with relative ease, make important contributions to their children's learning that could ultimately benefit their children academically and ease their re-entry into school. One parent mentioned during a weekly check-in that she felt good when the doctor came into the room while she actively discussed a chapter book with her sick child. The mother cited positive feelings about her parenting as well as pride in front of the doctor, based on

his positive reaction to the discussion he observed. Possibly, she felt empowered by her own behavior and by the doctor's praise. Another parent mentioned her enjoyment of the program deriving from the gratifying conversations she had with her child regarding the storylines and the characters in the stories, another type of experience that enhanced positive feelings about parenting a sick child. After participating in read alouds, parents and children in this study reported feelings of satisfaction, hopefully resulting in improved self-esteem for both parties at a time when they remain vulnerable to feelings of helplessness and hopelessness stemming from their circumstances. Both members of the parent-child dyads expressed appreciation for the opportunities presented by the read-alouds. The exploration of the benefits of shared reading for children receiving treatment for leukemia has proven useful because, overall, the intervention had a positive impact on the parent-child dyads in this study. Hopefully, future implementation utilizing the same model of intervention will reinforce its effectiveness.

Dialogic Reading and Parental Satisfaction

The findings of this study support the hypothesis that parents in the treatment group who participate in a DR intervention with their children receiving treatment for leukemia will report satisfaction with the shared reading experiences. Results indicate that the majority of parents either "agreed" or "strongly agreed" with the statements maintaining that the dialogic reading training was useful, enjoyable and helpful. As well, they either "agreed" or "strongly agreed" with the statement maintaining that the training was an appropriate use of treatment time. Because most of the parents endorsed statements supporting their overall satisfaction with the intervention, the results of this study suggest that a structured reading program may have a supportive effect on vulnerable parents. Of note to the current research is that while treatment group parents expressed positive reactions to their structured training and shared book reading experience, comparable data was not collected from the comparison group, so there is no basis for attributing the positive responses specifically to DR, rather than to shared book reading

generally. The exploration of parental satisfaction herein points to the need for further studies on this topic to further delineate the reasons why parents find shared reading enjoyable. With such knowledge, effective interventions can be targeted to specific groups of parents.

Dialogic Reading and Child Enjoyment

The findings of this study support the hypothesis that children enjoy the parent-child dialogic reading sessions that occur while they are receiving treatment for leukemia. During a post intervention interview, half of the participants in the treatment group who participated in the DR sessions made reference to a favorite book they particularly enjoyed during the program. Additionally, the children made positive comments that included the expression of protective ownership of their books, their preference for reading high interest books in lieu of video games, and their strong connections to the characters in the books selected for the intervention. This finding suggests that children struggling with leukemia may find enjoyment in intellectual stimulation by connecting to literature during their treatments. Of importance to note, findings were from children whose parents received DR training. It is not possible without comparison data to know whether effects are related to DR or to shared book reading more generally. However, this exploratory data provides valuable information about a possible way to support these children while they endure the horrific side effects of their lifesaving treatments. Therefore, based on the exploratory nature of the interviews with the participants, the study offers important insights regarding how to intervene academically during this trying time, and, most importantly, demonstrates that the children themselves welcomed the interventions. Furthermore, the study provides direction for future research into the benefits of educational interventions during hospitalization.

Dialogic Reading and Parental Adherence

The findings of this study support the hypothesis that parents adhered to the principles of dialogic reading they learned in the training sessions as indicated by their responses to the text message check-ins. Eighty percent of parent participants in the treatment group mentioned DR use in their text message responses, indicating that the majority of parents invested in using the DR techniques. For example, during text message correspondences, the majority of parents mentioned that they were enjoying the mutual engagement in lively conversation while reading with their children. The bookmarks also proved to be helpful as 60% of the parents mentioned that having them available while reading fostered dialogue. Because parental adherence to DR principles provided a positive experience for most parties involved, the study elucidates valuable information pertaining to future interventions, i.e. parents respond well to specific training about educational strategies, and dialogic reading techniques may prove useful in helping parents and children cope during the time of stressful leukemia treatments. Previous research findings from Gardner et al., (2017) similarly indicate that teaching strategies that promote optimism to caregivers can help them learn to cope more effectively with their children's diagnoses. The focus on vocabulary growth implicit in the current study likely benefitted the families of children diagnosed with leukemia. Though exploratory in nature, the study emphasizes the relevance of educational intervention by parents while their children remain in the hospital.

Positive Effects of Shared Book Reading

The results of this study align with the existing body of research that indicates that shared book reading provides authentic, meaningful, and stimulating experiences for both parents and children (Watkins & Bunce, 1996). Specifically, the positive effects of shared book reading apply both to children, in terms of both enjoyment and vocabulary learning and to parents, in terms of enjoyment and empowerment. With respect to enjoyment, Pillinger and Wood (2014) conducted a reading intervention which illustrated significant effects for children's and parents'

enjoyment of reading together. In that both members of the reading dyads benefit from their shared experiences, they are bound together in their mutual love of reading. Bus's research (2001) supports this premise that shared book reading fosters a love of reading for children. Additionally, studies show that children who participate in shared book reading experience an increase in novel language exposure and vocabulary growth (De Jong & Leseman, 2001, Isbell, Lindauer & Sobol, 2004, Niklas & Schneider, 2015). This increase reflects an important goal of the shared reading process. In terms of empowerment, research on the benefits of shared book reading for parents, conducted by Preece and Levy (2018), concluded that parents feel empowered to engage in shared reading when there is clear evidence of their child's enjoyment of the process. For families facing challenging times, shared book reading offers respite from the discomfort of their circumstances with the added value of offering educational benefits.

Limitations and Future Directions

The current study contributes to the literature on the benefits of shared reading interventions, specifically with children diagnosed with leukemia. However, a number of limitations exist deriving from the methodology of the study.

The first limitation derives from the differences in the demographics in the parent-child dyads in the comparison and treatments groups. Though the subjects had to meet the criteria established for participation in the study, imbalances between the demographic compositions of each group occurred by chance. These differences in demographics could potentially represent confounding factors, impacting the reliability and validity of the results. Because these demographic differences could have a significant association with the conclusions reached, in this case the efficacy of the structured reading intervention, they could diminish the power of the results and negatively impact the generalizability of these results to other populations.

The second limitation involves the failure to obtain precise information about the nature of the verbal interactions that took place while the parents actually read to their children and the specific methods they implemented. For example, no taping or coding documented the actual content of the read-aloud sessions in terms of reading strategies, verbal reinforcement, or the nature of the conversations about the novel vocabulary that occurred organically between the mothers and children. Therefore, the quantity and quality of the parent-child verbal interactions remains unknown, except to the extent of the subjective reporting by parents via text. Because no data exists regarding the specific methods the mothers actually implemented during the intervention, the findings cannot be directly attributed to the shared reading process. This failure to obtain precise information about the parent-child interactions establishes a confounding variable that diminishes the reliability and validity of the study.

The third limitation derives from the small sample size recruited for this study. The small N prohibited the use of sophisticated statistical techniques and diminished the precision of the findings. Results obtained regarding the impact of the intervention will not generalize to all children with leukemia due to the small sample size. Nevertheless, this limitation suggests the need for additional research incorporating more participants.

The fourth limitation derives from the difficulty of controlling for the exigencies of the severity of the subjects' diagnoses and their individual prognoses for recovery. These factors may have influenced the degree to which each child responded positively to the intervention. These impossible-to-control variables threatened the reliability and validity of the results because they may have impinged on the ability of the participants to put forth consistent effort each day. For example, one child may have experienced more side effects than the others enrolled in the study, making this child's health a confounding variable. Though all the participants received the same diagnosis (leukemia), variances in the response to medical treatment could skew the

precision of the statistical analyses in terms of teasing out the impact of the DR treatment on vocabulary growth.

The fifth limitation derives from the questionable reliability of the participants' self-reports regarding their shared reading experiences that documented their qualitative responses. In this study, the weekly parental text messages provided anecdotal information used to assess a number of aspects regarding their experiences during the intervention. These data lack the precision of quantitative data, so they remain vulnerable to biased interpretations. Despite the best efforts of the PI to diminish the lack of rigor in the parental self-reports by documenting the parental responses in a straightforward manner and analyzing them with an unbiased coding system, these qualitative data yield less powerful results than quantitative data obtained through observation. Perhaps a future study could include videotapes of parents working directly with their children. Such tapes of parents engaged in structured reading sessions could be analyzed to determine the efficacy of particular parental strategies without relying on the self-reports of parents. As well, analyses of the data obtained from the tapes could determine the degree to which the participants adhered to the strategies for which they had received training. With proof of adherence to the paradigm established for the structured reading sessions, statistical analyses of the results could establish possible significant effects of one type of reading intervention in comparison with another.

The sixth limitation derives from the difficulties of establishing legitimate treatment and comparison groups from the cohort of parent/child dyads recruited for this intervention. The confounding variable of familiarity among parents potentially assigned to the treatment and comparison groups made the formation of unbiased groups impossible in the current study. To cope with this problem, the PI made a decision to relegate all the participants in the current study to the treatment group in order to diminish the envy exemplified by the parents who received assignment to the comparison group. Since, in the current study, the participants initially

assigned to the comparison group asked the participants in the treatment group many questions regarding the intervention they perceived their children would not receive. The communications between the parents would have confounded the validity of the results, rendering them essentially useless. Given that this type of problem could occur in future research in which the recruitment of participants to comparison and treatment groups takes place in one location, recruitment of participants for the two groups should occur in at least two separate sites. With participants for the comparison and treatment groups in completely different sites, no opportunities for communications among them would exist, thereby eliminating this confounding variable. The formation of unbiased treatment groups would enhance the power of the results.

The seventh limitation derives from the presentation of different sets of curated books to the dyads in the comparison and treatment groups. Though the PI selected both sets of books with careful consideration given to the quality and reading levels of the books, participants in the comparison group had the opportunity to share information about their interests and individual reading levels, whereas those in the treatment group did not. Given the differences in the book selection process, this variable may have confounded the results of the study. Keeping the book selection consistent across groups in future research in this area may improve the validity of the results and the generalizability of the findings.

The eighth limitation of the study derives from its failure to compare the rate of vocabulary growth in children hospitalized with leukemia with the rate of vocabulary growth in a population of healthy children who received the same intervention. By making such a comparison, a determination about the significance of each of the shared reading interventions could be made. The inclusion of an additional comparison group of healthy peers may provide insight into the extent to which vocabulary growth can be attributed to the intervention.

Educational Implications and Future Research

A consideration of the educational implications of this study points to the need for future studies focusing on the efficacy of specialized literacy interventions for children undergoing treatment for leukemia and possibly other life-threatening diseases. Because the children in this study demonstrated the ability to enjoy academic stimulation during the treatment process and to benefit from it in terms of vocabulary growth, the initiation of programs similar to this one could provide benefits for children all over the country who find themselves in the unfortunate situation of having to endure extended, debilitating treatment protocols. Also, since research has demonstrated that children with cancer are unprepared academically to re-enter into the school environment post treatment (Meeske, Katz, Palmer, Burwinkle, & Varni, 2005), a definite need to address this problem exists. The results of this current study indicate that one meaningful way to help children undergoing treatment for leukemia may be to provide them with access to quality books of high interest and to empower their parents to serve as strategic literacy partners as outlined by Kabuto (2011). To that end, educational interventions may help both during diagnosis and treatment stages of cancer therapies. Actively participating in academic pursuits during treatment protocols provides opportunities for children living with cancer to engage in constructive activities at a time when normalization of the disruptive life experiences they must endure proves difficult (Katz, 2006).

Given the advancements in treatment and increased survivorship of childhood cancer victims, maintaining and enhancing maximal quality of life for children living with cancer qualifies as an accepted psychosocial goal of comprehensive care (Armstrong & Breiry, 2004; Institute of Medicine 2003; Madan-Swain, Katz, & LaGory, 2004). Embracing the importance of interventions that sustain the quality of life for children living with cancer, researchers must continue to investigate the efficacy of all academic interventions feasible during treatment. Hopefully, the shared reading intervention implemented in this study will encourage parents to

take on teaching roles that expand literacy to all relevant intellectual disciplines, so their children may return to school demonstrating academic gains.

Conclusions

The purpose of this dissertation derived from the PI's desire to examine the impact of a dialogic reading intervention on vocabulary growth in children with leukemia and to explore the appropriateness of academic intervention during a tenuous time for them and their parents. Significant evidence exists that the current special education system providing specialized instruction does not facilitate academic growth for children receiving treatment for cancer. In fact, children re-entering their regular schools after treatment often have not progressed academically. In effort to combat educational loss with academic gain, the current study endeavored to establish a starting point for future research, using an academic intervention embedded in the children's treatment protocols during the stage of active medical interventions when children are not able to attend school.

In summary, the current study found that when parents read enjoyable books aloud to their children actively participating in treatment for leukemia, the children demonstrated growth in receptive vocabulary, possibly reversing a trend towards diminution of academic skills during their sickness. The study also determined that both dialogic reading techniques and straightforward read-alouds proved equally effective at building vocabulary. Additionally, when given the opportunity to learn a specific reading technique, parents reported enjoyment with the program. Because parents of children undergoing treatment for leukemia unquestionably must endure a substantial amount of stress, their motivation to participate in structured reading training speaks to their belief in the importance of this intervention and their willingness to devote their valuable time to carrying it out. The success of program implemented in this study underscores the paramount importance of future research in this area.

Appendix A**Demographic Profile Questionnaire**

1. What is your age? _____
2. What is your child's age and current grade level? _____
3. What is your child's diagnosis? _____
4. What was your child's age at diagnosis? _____
5. Did your child have an IEP prior to diagnosis? _____
6. What is your gender? M F
7. What is your child's gender? M F
8. What is your race or ethnicity? Check as many that apply.
___ White ___ African-American/Black ___ Hispanic/Latino ___ Asian ___ Native
American ___ Other
9. What languages are spoken in the home? What languages is the child exposed to on a regular basis? _____
10. What is your current marital status?
 - a. Currently married
 - b. Divorced/Separated
 - c. Widowed
 - d. Single, never married
11. How many years of schooling have you received? _____
12. What is your occupational status?
 - a. Full-time outside the home
 - b. Full time in the home
 - c. Part-time outside the home

d. Part-time in the home

e. Student

13. How often do you read to your child at home?

a. rarely b. once a week c. 3-5 times per week d every day

14. How much time does your child spend looking at books?

a. never b. 5 minutes c. 10 minutes d 15 minutes or more

15. Do you and your child partake in any of the following routines? Circle all that apply

Book-reading

Storytelling

Song- Singing

Drawing

Appendix B

Directions: Below, you will see a series of statements concerning the Dialogic Reading (DR) program in which you just participated with your child. Read each statement carefully and place an X on the number to the right of the statement that comes closest to indicating your opinion about different aspects of the course or program. You may use a pencil or pen. There are no correct or incorrect responses. If you neither agree nor disagree with a statement, place an X on the neutral (N) number 3. *Please respond to all items.*

Strongly agree (SA) Agree (A) Neutral (N) Disagree (D) Strongly disagree (SD)

1. I think that the DR program was helpful for my child.

2. I enjoyed the DR program.

3. The DR program was an appropriate use of my time.

4. Training for the DR program was useful.

5. My child enjoyed the DR program.

6. I had enough time to read with my child.

7. I feel confident in my ability to use DR techniques with my child.

8. I think the DR program served a useful purpose.

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