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Thomas J. Donaghy
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150 Pillsbury Drive, SE
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Editor's Message

Greetings to all members and friends of the **International Association of Special Education (IASE)**. I am very pleased to introduce you to the 2018 journal with topics covering a broad range of issues concerning students and individuals with special needs around the world.

The mission of the *Journal of the International Association of Special Education (JIASE)* is to serve as a professional, peer-reviewed journal for the worldwide dissemination of articles focused on research and models of practice to help the fields of special and inclusive education gain a better understanding of diverse approaches to teaching and learning. The key to our mission is our commitment to working with international authors, reviewers and readers to become skilled and creative writers, critics and consumers of international special and inclusive education research and innovative practices.

In this 2018 issue of JIASE, articles represent investigations and practical applications conducted in several different countries, including Finland, India, New Zealand, Nigeria, and the United States. Topics covered in the articles include the impact of school culture on special education; bullying education for special educators; effects of vitamin-mineral deficiency in children; children with ADHD; reciprocal teaching, use of augmentative and alternative communication (AAC) in the classroom, and more.

It is very exciting and encouraging to see the interest of researchers and practitioners from so many different countries to publish their research and practical experiences in JIASE. We encourage others to the same!

This publication would not be possible without the dedication, inspiration and encouragement from IASE leadership, JIASE managing editor Thomas J. Donaghy, and our wonderful team of consulting editors, who volunteer many hours to provide professional peer review services for the journal. We thank them all for all they do.

We are always seeking members who would like to serve as consulting editors for JIASE. If interested, please contact Dr. Tichá directly for more information. Also, please consider submitting your work for publication in future JIASE issues. Publication submission guidelines are located on the IASE website at <http://www.iase.org/> as well as at the end of this journal issue. We hope that you will find this issue to be a valuable resource in your own work with students, parents and teachers all over the world. We hope to see you all in Magamba, Tanzania, east Africa, in July 14–17, 2019, for our 16th Biennial IASE Conference.

Sincerely,
Renáta Tichá, PhD, Editor of JIASE

From Risk to Resilience: Advancing the Well-being of At-risk Māori Children: Education and Services in New Zealand

Kaili C. Zhang

Unitec Institute of Technology, New Zealand

Abstract

Historically, Māori children in New Zealand have been consistently over-represented in negative social statistics. To describe the current status of New Zealand's education and services for at-risk Māori children and their families, this article highlights the country's overall structure of special education and services, as well as unique features of the service delivery system. This article concludes that strategies toward more fully supporting young people to engage in schools and communities ought to be cognizant of the inter-connectedness of the various aspects of well-being within a person, and the ways in which these aspects are affected through different contexts.

Keywords: *at-risk, resilience, well-being, Māori, special education*

Background

New Zealand (Māori: *Aotearoa*), an island nation in the southwestern Pacific Ocean, has a reputation for being a world leader in education: a reputation built on the development of innovative policies, high participation rates, and bicultural foundations. For example, the New Zealand national curriculum, which is composed of *The New Zealand Curriculum* and *Te Marautanga o Aotearoa* (the national curriculum for Māori-medium), makes it clear that education in New Zealand puts all children at the center of teaching and learning, asserting that students should experience a curriculum that is forward-looking and inclusive, and affirms New Zealand's unique cultural identities.

The majority of New Zealand's population is of European descent (74%), with the indigenous Māori (14.9%), followed by Asians (11.8%) and non-Māori Pacific Islanders (7.4%; Statistics New Zealand, 2017). As the largest minority and a unique population in New Zealand, Māori has undergone enormous demographic and social changes. However, historically, Māori children have been consistently over-represented in negative social statistics: Māori children are New Zealand's most vulnerable children who the government has identified as priority learners (e.g., Penetito, 2001). Māori young people are more likely to leave school without qualifications, and are less likely to receive tertiary training; and compared to their European counterparts in the country, hospitalizations for medical conditions were consistently higher for Māori children (Boven, Harland, & Grace, 2011; Craig, Anderson, & Jackson, 2008). To describe the current status of New Zealand's education and services for at-risk Māori children and

their families, this article highlights the country's overall structure of special education and services, as well as unique features of the service delivery system.

At-risk Māori Children and the Juvenile Justice System

Over the last decade in New Zealand, a large number of juveniles are being served in the formal justice system as well as diversion programs (i.e., programs attempt to address offenses outside the formal correctional system, such as girls' and boys' homes). According to the Ministry of Justice (2002), Māori youth offenders make up almost 50% of all youth offenders, and in some Youth Courts the figure is as high as 80%, despite Māori encompassing only about 25% of the New Zealand population under 17 years of age. This situation has become a great concern to the public. However, though research on the well-being of at-risk children in western countries, such as the United States of America and the United Kingdom, has been done extensively, this issue has received relatively little attention from investigators in New Zealand (Committee on the Rights of the Child, 2011).

Although the domains of childhood well-being are complex and not completely understood, poor family support, poverty, school failure such as drop out, retention, illiteracy, as well as other learning problems seem to predict poor child outcomes (Zhang, Choo, & Lim, 2009; Zhang & Wu, 2009). Similarly, in the context of New Zealand, as a result of disadvantaged economic status, academic difficulties, high incidences of victimization (physical, sexual and/or emotional), and significant health issues, at-risk Māori children have presented

challenges to the juvenile justice system and society (Blumenkrantz & Goldstein, 2010; Ministry of Youth Development, 2010).

In recent years, research has also shown that high quality early interventions can make a lasting difference for at-risk children, advance their well-being, and act as a protective factor for vulnerable children (Chesney-Lind & Shelden, 2004; Zhang, 2008a; 2008b; Ministry of Youth Development, 2017). In addition, more and more people have noticed the therapeutic effect of strength-based, positive youth development practices (Blumenkrantz & Goldstein, 2010; Zhang et al., 2009; Zhang & Wu, 2009).

The Mental Well-being of At-risk Māori Children

Mental well-being is clearly an integral part of at-risk children's overall well-being.

More than a decade ago, to demonstrate the importance of addressing mental well-being, the World Health Organization (2004) presented a now-globally accepted principle—"there is no health without mental health" (p. 10)—in their summary report. At its core, the principle conveys the message that mental health is more than the absence of mental illness; it is vital to individuals, families, and societies. Indeed, enhancing mental well-being is fundamental to ensuring at-risk children have the resilience, knowledge, skills, and abilities to enjoy life by meeting the challenges of everyday life. The importance of mental well-being is also included in the New Zealand Curriculum key competencies (Ministry of Education, 2007). For example, a positive and responsible attitude, skills to meet challenges and relate to other people are recognized as essential components in child development.

For the purpose of this article, the term *well-being* is operationally defined as the quality of people's lives. It is a dynamic state that is enhanced when people can fulfill their potentials and achieve personal life goals. It is understood both in relation to (a) subjective indicators such as happiness, perceptions of quality of life, and life satisfaction; and (b) objective measures, such as household income, educational resources and health status (Bruce et al., 2014; Craig et al., 2008). The term *at-risk children* is generally understood as children under 18 who have been adversely affected or made vulnerable by difficult life conditions or one or a combination of social, economic, political, and cultural factors (Penetito, 2001; Zhang et al., 2009). Some of the common risk factors include education, trauma, substance abuse, running away, mental health or "hidden" disabilities, such as emotional/behavioral disorders and learning

disabilities, social issues, and poverty (Bruce et al., 2014; Penetito, 2001; Zhang et al., 2009). The following section briefly delineates each of these factors.

Education. At-risk children often exhibit low levels of academic achievement and school failure. The three common at-risk statuses in education include: (a) retention, which refers to the repeating of a grade level because of low academic performance; (b) dropout, which refers to leaving high school before graduation, and (c) substandard basic skills. Substandard basic skills exist when individuals cannot read, write, or compute at level necessary to perform in the general workplace (Zhang et al., 2009). Not surprisingly, youth offenders often have a history of special education classification, suspension, and expulsion (Penetito, 2001).

Delinquent behavior. This term is used in this article to refer to improper or criminal behavior. An example of delinquent behavior is robbing a store (Blumenkrantz & Goldstein, 2010; Zhang, 2008a).

Trauma. Traumatic experiences or a history of physical and sexual abuse may put children at-risk for delinquent behavior. Since many of the children may not have adequate resources to cope with abuse or trauma in their lives, they are jeopardized to unhealthy behaviors as coping mechanisms (Penetito, 2001; Zhang et al., 2009).

Substance abuse. Many children abuse alcohol and other drugs to escape the pain of trauma. Too often, substance abuse is associated with other delinquent behavior such as truancy, gang membership, and risky sexual behavior (Ministry of Education, 2012a).

Running away. While drugs provide a psychological escape, children may simply physically escape abuse or other family problems by running away. This behavior places them at a high risk for crime, as they sometimes engage in illegal activities, such as prostitution or selling drugs to support themselves (Ministry of Education, 2012b).

Mental health or "hidden" disabilities, such as emotional/behavioral disorders and learning disabilities. Many children involved in the juvenile justice system face mental health issues and learning difficulties. Depression, suicide attempts, and eating disorders are common problems experienced by these children (Zhang et al., 2009).

Social issues. Arrest rates and confinement statistics provide evidence of racial and cultural bias among children. These issues can also put certain children at risk for involvement with juvenile corrections. Another common issue is teenage pregnancy among girls (Bruce et al., 2014; Zhang et al., 2009).

Poverty. Some of the poor results for young people from Māori families in New Zealand were found to be related to family income, living standards, and occupation. Maternal age and education, which could be linked to income levels, may also play a significant role (Blumenkrantz & Goldstein, 2010; Zhang, 2008a).

The Overall Structure of Special Education and Services for At-risk Children and Youth

Education in New Zealand is compulsory from age 6 to 16, and the education system is a three-tier model that includes primary and intermediate schools, followed by secondary schools (high schools), and tertiary education at polytechnics and universities. However, formal education in New Zealand did not begin until the arrival of Europeans in 1816 (Lee & Lee, 2007). As formal education was introduced under the patronage of the Anglican Church Missionary Thomas Kendall, it followed a British model (Lee & Lee, 2007), and all New Zealand children were to learn English as well as the values and virtues of Christianity.

By the early twentieth century, compulsory education had become broader in scope, and special schools were introduced. As a result, children with special needs were increasingly encouraged to stay in formal education. Currently, education and services for at-risk children are guided by the *Education Act 1989* (New Zealand Parliament, 1989) that guarantees equal rights for people with special needs (whether because of disability or otherwise) to participate in mainstream primary and secondary education. This legislation and other related policies (e.g., Special Education Business Plan; Success for All) aim to establish a fully inclusive education system in New Zealand, by providing a range of funding and support to students with special needs, including those who are at-risk or marginalized. Ministry of Education, 2010b; 2011).

At present, special education and services provide support both within mainstream schools as well as through special schools (Ministry of Education, 2010a). These special schools are run by the government to cater to students with special needs. Special education costs are covered entirely by government funding,

while non-government and community agencies may bear some costs in relation to alternative education for at-risk children and youth.

Just like the United States and many other countries, Individual Education Plans (IEPs) are used to set out individualized goals for students with special needs and outline how they will be supported to achieve them, including teaching strategies, resources, and strategies for parents to support them at home.

There are also government-funded resources that help with well-being and health issues, such as bullying, immunizations, physical activity, and healthy lifestyles. For instance, the National Mentoring Service for Māori and Pasifika Students is aimed at supporting young Māori and Pasifika students to achieve the National Certificate of Educational Achievement (NCEA), New Zealand's main secondary school qualification. Most students with special education services are enrolled in a mainstream secondary school, and have access to services (e.g., Severe Behavior Service) or support from Special Education Needs Coordinators (SENCOs), who work with a student's teacher and parents to develop an IEP that fits the student's needs.

Unique Features of Service Delivery System

In New Zealand, non-mainstream education and services for children with special needs are delivered by a range of organizations. These services are either funded by the Ministry of Education or private organizations. One such example is the Positive Behavior for Learning Action Plan (PB4L; Ministry of Education, 2013) that applies to all students across all schools. With a focus on providing early, proactive support for parents, teachers, and schools, the PB4L includes a series of programs and activities that are delivered across New Zealand to address behavior problems in schools. The PB4L has four major program components: (a) the Early Years program, which is also known as *Incredible Years*, targets children aged two to eight at risk for or presenting with behavior problems; (b) wrap around service; (c) crisis response service, and (d) schoolwide PB4L.

Other programs and activities included in the PB4L are: programs for all schools (e.g., bullying surveys), identification and development of programs for Māori, developed by Māori, with a focus on *Kura Kaupapa* (i.e., Māori: a primary school in which Māori values are taught and Māori is the language of instruction), and schools and early childhood centers with high proportions of Māori students. There are also education

assessments provided to child and youth offenders (aged 10-16 years) with high education needs and who are at risk of re-offending.

In 2012, the New Zealand government funded a new initiative, the *Youth Mental Health Project*, to provide help for young people with mild to moderate mental health needs. This project was designed to address youth mental health in four main areas: schools, on-line, the health sector, and in families and communities. Furthermore, to support young people who have disengaged, or are at risk of disengaging from education, the Youth Mental Health Project introduces many new initiatives to mainstream schools. For example, the *Youth Mental Health Project* introduces nurses and youth workers into schools, helps at-risk children and families identify mental health needs and access appropriate services, and provides training and resources for professionals working with children with mental health issues.

There are also *Children, Youth, and Family Residential Schools* which are also funded by the Ministry of Education (Education Review Office, 2013). Currently there are four youth justice residences in the country. These residential schools cater for some of the country's most vulnerable children, with adolescents placed in these residences because of serious criminal or welfare issues. Education for these children are provided through the Youth Justice and Care and Protection services. Some residences have on-site schools, others may utilise private education providers. Skills taught in these schools include: (a) life skills, such as finance management; (b) practical skills such as woodwork, art, music, and computer skills; (c) job-search skills; and (d) social skills such as anger-management, or ways to deal with drugs and alcohol related issues.

Advancing the Well-being of At-risk Māori Children and Their Families in New Zealand: A Look to the Future

While clearly not all at-risk Māori children will end up being involved with the juvenile justice system, the examination of the well-being of Māori children and families sets a standard for investigation of prevention and intervention programs for at-risk children and juvenile delinquents.

Further, strengthening Māori families to support individual at-risk children is consistent with positive youth and child development practices. Research (Blumenkrantz & Goldstein, 2010; Penitito, 2001) has shown that for Māori *tamariki* (Māori: children), mental well-

being, growth and development are integrally linked to *whakapapa* (Māori: genealogy), family backgrounds, and connections with *whānau* (Māori: an extended family or community of related families who live together in the same area). This places a responsibility on society and government to support Māori families to care for and educate their children.

There is a growing body of research on the well-being of children and families with Māori background. Examples include Te Kahui Mana Ririki's work on child well-being that promotes traditional Māori parenting practices (Jenkins & Harte, 2011), the 2010 Whānau Ora Taskforce report, and the Families Commission's whānau research program. Other research on the measures of well-being for Māori include Whatarangi Winiata's work *He Ōranga Hapori* (2011) [Māori: community growth] for the Māori Economic Taskforce, Manuka Henare et al.'s *He Ara Hou* (2011) [Māori: a new way] framework, and the Public Health Advisory Committee's (2010) report.

Indeed, children live, learn, and grow not in isolation but in the context of their varied worlds, including school, home, and both geographic and cultural communities. And within each of these contexts a young person's well-being will be impacted in different ways, including *taha hinengaro* (Māori: psychological), *taha wairua* (Māori: spiritual), *taha tinana* (Māori: physical), and *taha whānau* (Māori: relational).

Therefore, strategies toward more fully supporting young people to engage (or re-engage) in schools and communities ought to be cognizant of the interconnectedness of the various aspects of well-being within a person, and how these aspects are affected through different contexts. With the increase of offenses committed by young people, the need to provide appropriate education and social support for these at-risk Māori children has never been greater. It is now time to investigate thoroughly positive youth development practices that help enhance the well-being of at-risk Māori children and their families, and to develop more rigorous and engaging programs for at-risk Māori children in New Zealand.

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The Effects of Reciprocal Teaching on Hispanic Students' Awareness of Comprehension Strategies for Expository Text

J. Elizabeth Casey

University of Texas of the Permian Basin, USA

Abstract

Educators need to utilize evidence-based instructional strategies that effectively support the needs of English Language Learners (ELLs). Reciprocal Teaching (RT) (Palincsar & Brown, 1984) has a wide body of research that demonstrates its effectiveness when introduced to students in general education and special education settings (DaSilva Iddings, Risko, & Rampulla, 2009; Williams, 2010). However, research on the effects of RT with students identified as ELLs is more limited. The four components of RT include question generation, summarizing, clarifying, and making predictions about texts.

This single subject study, utilizing an A-B-C changing criterion design, addressed two research questions to determine the effects of an RT intervention on ELLs' comprehension of social studies text. Hispanic student-participants were all identified as ELLs, and research questions included: (1) Can RT increase ELLs' comprehension of expository material?; and, (2) Is there a difference between whole group, teacher-guided RT approach versus small group, student-led RT approach? Although the level of English proficiency for student-participants in this study varied, results demonstrated that both ELLs showed academic gains on researcher-designed assessments.

Reciprocal teaching strategies, results of this study, and limitations will be discussed further, with implications for future research.

Keywords: Reciprocal Teaching, English Language Learners, single subject research design

INTRODUCTION

In 1980, the Hispanic population in the United States (U.S.) totaled 14.6 million and represented 6.4% of the overall U.S. population (Hobbs & Stoops, 2002). In the 1999 census data, the U.S. Hispanic population totaled 22,354,059; in the 2000 census data, the Hispanic population in the U.S. rose to 35,305,818, or 12.5%, nearly doubling that of twenty years earlier (U.S. Census Bureau, 2018); and according to the Pew Research Center (Passel & Cohn, 2011): "The 2010 Census counted 50.5 million Hispanics in the United States, making up 16.3% of the total population" (np). Current 2016 census data has the Hispanic population in the U.S. at 17.8% (U.S. Census Bureau, 2018). During the 2014–2015 school year, 9.4% of students in U.S. schools were ELLs, up from the 9.3% of ELLs during the 2013–2014 school year (National Center for Education Statistics, 2018), Likewise, in the 2014–2015 school year, "Hispanic students made up over three-quarters (77.8 percent) of ELL student enrollment" (National Center for Education Statistics, 2018). Educators must be prepared to address the needs of ELLs in their classrooms to ensure students experience academic success.

Statement of the Problem

The rise in the U.S. Hispanic population has impacted public education nationwide. Educators may be under-prepared to meet the culturally and linguistically diverse needs of Hispanic students (Artiles & Ortiz, 2002; Gay, 2010; Gay, 2013; Yosso, 2005). Fergus (2009) reported that half of Hispanic students in the fourth grade are not proficient in either math or reading. Recent data from the National Assessment of Educational Progress (NAEP) (2016) indicate that there is a significant difference in fourth and eighth-grade reading levels between white students and their black and Hispanic same-grade peers. Furthermore, there was a "24-point score gap between the average reading scores of White and Hispanic fourth-grade students in 2015" (NAEP, 2015).

Of importance is the discrepancy between the percentage of minority students in fourth and eighth grade scoring at or above proficient compared to White students. In fourth grade, 46% of white students, 18% of black students, and 21% of Hispanic students scored at or above proficient. In eighth grade, 44% of white students, 16% of black students, and 21% of Hispanic students scored at or above proficient (The Nation's Report Card, 2015). These results are untenable, and students

in U.S. schools need interventions that ensure academic growth, particularly students from underserved backgrounds. These results are more startling because in “comparison to 2013, average reading scores in 2015 were lower for white, black, and Hispanic eighth-grade students as well as for male and female eighth-graders” (The Nation’s Report Card, 2015). Furthermore, in the fall of 2014, over 60% of Hispanic students, 57% of Black students, and 53% of Pacific Islander students attended schools where the combined enrollment of minority students was at least 75% of total enrollment (NCES, 2017). This trend demonstrates the need for effective interventions.

To ensure gains in academic achievement for Hispanic students, teachers must be prepared to provide high-quality, research-based instruction that incorporates the cultural and linguistic needs of this growing student population (Gay, 2010; Kanagala, Rendón, & Nora, 2016; Ortiz, Wilkinson, Robertson-Courtney, & Kushner, 2006). Students who speak English as a second language are often from culturally and linguistically diverse (CLD) backgrounds. Furthermore, many ELLs across the U.S. may not be engaged in culturally relevant pedagogy (Gay, 2010; Ladson-Billings, 1995) or have access to their cultural wealth (Kanagala et al., 2016; Valdez & Lugg, 2010; Yosso, 2005), both of which can be used to support academic learning. Likewise, educators may be unaware of Yosso’s (2005) Cultural Wealth Model that can be used in supporting CLD students. Kanagala et al. (2016) used Yosso’s model to develop one specifically to address and support the needs of ELLs.

Ortiz et al. (2006) reported that teachers play a key role in identifying ELLs for testing, but they often have difficulty distinguishing between linguistic/cultural differences, as opposed to specific learning disabilities (LD). As a result, in the mid-1980s and today many ELLs continue to be misidentified as students with LD due to inappropriate assessments (Artiles, Kozleski, Trent, Osher, & Ortiz, 2010; Artiles & Ortiz, 2002; Ortiz et al., 2006; Raj, 2016). In contrast, under-identification of students with a disability is now of concern in Texas. In January 2018, the U.S. Department of Education issued multiple findings, citing the Texas Education Agency for failure to “ensure that all children with disabilities residing in the State who are in need of special education and related services were identified, located and evaluated, regardless of the severity of their disability, as required by IDEA” (U.S Department of Education, 2018).

In addition to these difficulties, Cummins (1984) noted that ELLs may be underachieving because they have not yet mastered Basic Interpersonal Communication Skills (BICS), which can take up to two years. Likewise, Sáenz, Fuchs, and Fuchs (2005) argued that the next level of language to develop, Cognitive Academic Language Proficiency (CALP) (Cummins, 1984), can take five to seven years to attain, which further impedes academic growth for ELLs. Students who have not yet mastered CALP require effective strategies to help them navigate grade level content area material most often found in expository texts. Finally, English-only policies in some areas of the United States may not effectively support the needs of ELLs to allow for academic success (Casey, 2014).

Given the current progress of Hispanic students in the U.S. (NAEP, 2016), educators need to implement effective strategies that enable struggling students to experience educational growth. Research-based strategies that incorporate opportunities for Hispanic students to talk about expository content material with their peers may support their linguistic efforts, especially if these students are still acquiring BICS and/or CALP levels of English proficiency (Cummins, 1984). Most importantly, intervention strategies must ensure academic gains for Hispanic students.

Potential Solution

It is essential to provide research-based instructional strategies to support academic success for all learners. It becomes more important for students from underserved populations, such as students with exceptionalities and/or ELLs. Early intervention is key for all students who struggle to achieve benchmarks in reading and math. Nevertheless, if students are below grade level in reading in upper elementary and middle school, they are still required to use grade level materials in content area classes. To access content knowledge with expository texts, struggling readers with poor comprehension need effective academic supports. Reciprocal teaching (RT) (Palincsar & Brown, 1984) is just such an intervention. As previously noted, many Hispanic students are not proficient in math or reading (Fergus, 2009; NAEP, 2016). Likewise, many ELLs attend schools with greater than 75% minority student population (NCES, 2017). However, through RT, a classroom teacher can implement strategies to better meet the needs of ELLs and other students who struggle while reading expository texts.

Review of the Literature

Reciprocal teaching is a potential intervention that has shown efficacy in supporting struggling learners. However, there is much less research on the use of RT with ELLs. In a search of the ERIC (EBSCO) database using the keywords *reciprocal teaching* and *elementary*, 173 articles were retrieved; but, when the keyword *English language learner* was added, three articles were retrieved. When the keywords *reciprocal teaching* and *English language learner* were used, six articles were retrieved; and of those, only two were peer reviewed. Thus, although there is a wide body of knowledge on the efficacy of RT as an effective intervention, there is limited research on the effects of RT with ELLs.

RT is a metacognitive strategy that teaches students to: (a) create teacher-like questions, (b) clarify information they do not understand, (c) summarize what they have read, and (d) make predictions about text (Palincsar & Brown, 1984). RT was designed to ensure gains in student understanding of content material through means of scaffolding and teacher-guided instruction. Ultimately, students begin to take on a larger role in the learning process by using metacognitive strategies to guide their comprehension of text (Palincsar, 1984; Palincsar, 1985). Reciprocal teaching is a multi-strategic approach that can be used with large or small groups. Likewise, RT is an academic intervention that has demonstrated evidence of being an effective intervention in the general and special education classroom to support struggling readers (Alfassi, Weiss, & Lifshitz, 2008; DaSilva Iddings, Risko, & Rampulla, 2009; Gersten, Baker, Smith-Johnson, Dimino, & Peterson, 2006; Olson & Land, 2007; Williams, 2010). Most importantly, research on RT has shown gains in achievement for a variety of student-participants (Casey, 2014; Casey, Mireles, Vilorio, & Garza, 2018; Palincsar & Brown, 1984; Englert & Mariage, 1991; Fergus, 2009; Klingner & Vaughn, 1999).

Yeh, Hung, and Chiang (2017) conducted a study in Taiwan and found that students' comprehension increased when RT annotations were added into an online reading program. Wayman, McMaster, Sáenz, & Watson (2010) conducted a study to determine the effectiveness of peer-mediation at the secondary level using peer assisted learning strategies (PALS) (Fuchs & Fuchs, 2005). This second article was retrieved in a search of the database, but it did not use RT strategies as described above. Johnson-Glenberg (2000) wanted to determine if there were differences in students' academic gains when placed in a reciprocal teaching intervention versus a visual/verbal (V/V) strategies intervention.

The findings were unexpected: the reciprocal teaching "group's superiority at answering explicit questions had not been predicted" (Johnson-Glenberg, 2000, p. 780).

Reciprocal teaching studies, which have lasted from a few months (King & Parent Johnson, 1999; Lederer, 2000) to many years (Alfassi, 2004; Carter, 2001; Hacker & Tenent, 2002), have demonstrated positive academic growth in reading comprehension for students with a wide range of ability levels. Whether the metacognitive strategies were taught within the context of reading (Palincsar & Brown, 1984) or prior to reading (Carter, 2001; Hacker & Tenent, 2002; Lederer, 2000; Palincsar & Brown, 1986), RT strategies supported student learning. The goal of RT is that students begin to internalize strategies and then use them across a variety of texts to enhance understanding of new content. Furthermore, although students are taught all four strategies, students may rely on different strategies at different times, dependent upon text and purpose. However, students should be aware of when and why to use components of RT (Palincsar & Brown, 1986).

Gajria, Jitendra, Sood, and Sacks (2007) synthesized the literature on comprehension strategies, including the effect sizes (ESs) of various approaches for elementary, middle, and high school students. In the synthesis, the effects of RT were addressed. Several studies utilized the RT methodology, altering variables by adding to or modifying slightly the four aforementioned components. The POSSE (Englert & Mariage, 1991) version of RT incorporated semantic mapping as an additional strategy. Likewise, Collaborative Strategic Reading (CSR) (Klingner & Vaughn, 1999) slightly altered the original RT methodology to test comprehension effects for ELLs. Multi-strategic approaches, to include RT, demonstrated the largest effect sizes in student gains for students with LD (Gajria et al., 2007). Struggling ELLs who have not been identified with LD could benefit from RT, but developing an intervention for maximum benefit is necessary.

Multi-strategic methods have demonstrated high levels of efficacy in providing support for at-risk Hispanic students to make academic gains in comprehension when working with expository text (Klingner & Vaughn, 1999; Olson & Land, 2007). ELLs can benefit greatly from a multi-strategic approach such as RT, as it is capable of helping ELLs break down dense, expository material into chunks of manageable information in a collaborative fashion. Likewise, this methodology can be utilized in either whole group or smaller group instruction via a scaffolded approach that includes direct instruction, modeling, feedback, and opportuni-

ties to practice using the strategies. For ELLs, feedback and scaffolding of instruction under teacher guidance is essential.

For this single subject study, RT (Palincsar & Brown, 1984) was identified as a positive academic support, in combination with three scaffolded supports (Vygotsky, 1978) specifically to aid ELLs, including: (a) making connections to help build background knowledge, (b) graphic organizers, and (c) visualizations to make abstract concepts concrete. Research has demonstrated that learning English vocabulary is best facilitated when dual code is promoted; that is, ELLs utilize both visual and auditory stimuli as they gain English vocabulary (Driscoll, 2005; Klingner, Vaughn, & Boardman, 2007). Likewise, when possible, code-switching (Lantolf, 2000) should be utilized to facilitate student learning (Jiménez, 2006). Code-switching is the act of moving between two languages; and students engaged in dialogue in English, Spanish, or both languages can improve students' conversations about text (DaSilva Iddngs et al., 2009; Jiménez, 2006), as well as increase students' English proficiency.

The purpose of this study was on a RT intervention designed to support struggling fourth grade ELLs in a social studies class. The guiding research questions were: 1) Can RT increase ELLs' comprehension of expository material?; and, 2) Is there a difference between a whole group, teacher-guided RT approach versus a small group, student-led RT approach?

METHODS

Design

A changing conditions A-B-C single subject research design was the method chosen for this study to test the effects of RT in both whole group and small group instruction. Due to the probability of carry-over effects (Barlow, Nock, & Hersen, 2009), a return to baseline seemed unlikely to occur with the same level of fidelity. Furthermore, the primary investigator (PI) believed that a withdrawal of the intervention might remove student-participants' opportunities to practice RT strategies. After baseline data collection (A-phase) was complete, and a stable trend line was evident, the PI trained student-participants and the classroom teacher in RT strategies over a two-day period. Immediately following training, the PI began collecting data on the effects of RT during whole-group instruction (B-phase), followed by data collection on the effects of RT in small-groups (C-phase). There was not a return to baseline due to carry-over effects. Although RT was not compared to another intervention, data analysis of students' perfor-

mance on the researcher-designed assessments during phase A yields results of students' academic performance under typical classroom instruction.

Selected Intervention

The four components of RT include: (a) creating teacher-like questions, (b) clarifying information, (c) summarizing text, and (d) making predictions about text (Palincsar & Brown, 1984). These RT strategies were easily incorporated into classroom instruction, along with three additional supports: building background knowledge, using a graphic organizer (GO), and assisting students with visualizations to make abstract concepts more concrete. The students were instructed to create a GO by folding a piece of paper into quadrants. Students labeled each quadrant with a header: summary, clarifications, predictions, and questions. Students wrote down the information and/or drew pictures into their graphic organizer. This GO limited extensive teacher preparation. Initially, the PI introduced the RT intervention to students during classroom instruction, utilizing explicit instruction, modeling of strategies, and a lot of guided practice to facilitate students' awareness and use of the strategies. Once students understood the components of RT, the classroom teacher used the strategies and the PI observed in the classroom, collecting data on: (a) teacher's use of RT strategies, ensuring for a second observer across 30% of observations; and, (b) the effectiveness of RT on students' comprehension based on analysis of researcher-designed post assessments.

Student Participants

Participants included five Hispanic students in an inclusive fourth grade classroom. The school's English for Speakers of Other Languages (ESOL) teacher identified all five students as ELLs based on district assessments. Likewise, the ESOL teacher stated that all five students would benefit from an academic intervention designed to support comprehension of content material. These five Hispanic students (Table 1) made up approximately one quarter of a fourth grade class of 19 students. Student scores on the English Language Proficiency Assessment (ELPA) ranged from pre-functional to intermediate for the five Hispanic students, out of five categorical outcomes: pre-functional, beginner, intermediate, advanced, and fully English proficient. ELPA is not an assessment of academic content material, but "provides scale scores as well as performance levels for a composite and scores in the four domains of listening, speaking, reading, and writing" (Council of Chief State School Officers, 2018, p. 14). In addition,

Table 1
Student-participant Information and English Proficiency Level.

Hispanic Student Participants	Age	Gender	ELDA Reading Comprehension Level	ELDA Overall English Proficiency	MAP Reading Comprehension	Lexile Level
Participant 1	10 yrs, 7 mos	Male	1 Pre-functional	Pre-functional	1st%	0
Participant 2	10 yrs, 6 mos	Male	4 Advanced	Intermediate	70th%	828
Participant 3	9 yrs, 8 mos	Male	2 Beginner	Beginner	7th%	308
Participant 4	10 yrs, 6 mos	Female	3 Intermediate	Beginner	26th%	568
Participant 5	10 yrs, 3 mos	Female	3 Intermediate	Intermediate	31st%	603

the ELPA was designed with the intent of eliminating cultural bias in assessment. The one male Hispanic student who scored at the pre-functional level had extremely limited English proficiency had been in the U. S. for less than a year, and evidence suggested he had received little or no formalized schooling prior to the current school year.

With university IRB approval and parental permission, students' scores for Lexile level, English Language Development Assessment (ELDA), and Measure of Academic Progress (MAP) reading comprehension scores were extracted from their records. Lexile levels are used by the school to identify appropriate reading ranges. For fourth grade students, a student reading level of 445L to 810L on a Lexile scale would be considered average (Lexile Framework for Reading, 2018). Lexile levels afford teachers the ability to direct students to books within their reading level. School libraries will often provide Lexile levels to assist both students and teachers in ensuring that appropriate reading materials are selected for each student. MAP is a computerized adaptive test administered three times a year to compare relative growth for students across the school year, as well as across grade levels. ELDA scores are considered to be an appropriate and non-biased measurement of a student's expressive and receptive English language development in oral and written forms (ccss.org). At the time of the study, none of the students had been diagnosed with learning disabilities (LD). However, four of the five students had been, or were being, pulled from class by the ESOL teacher for additional support in classroom instruction.

Setting

Locality. This Title I elementary school was located in a largely rural area in the southeastern United States. The school housed approximately 700 students ranging from K-3 to 5th grade. An increased migrant population resulted in a larger percentage of Hispanic students over the past decade, and Hispanic students accounted for approximately one quarter (24%) of the total school population.

Classroom. During the study, all students worked in groups of four to read passages and use RT strategies. The classroom arrangement was designated in this manner prior to the beginning of the study, and the PI did not rearrange any students during this investigation. There were five groups of four students: (a) Group 1 — two ELLs and two English-only students; (b) Group 2 — four English-only students; and, (c) Groups 3, 4, and 5 — one ELL and three English-only students. During this A-B-C design, students worked with the same group of students, whether it was A-phase (baseline), B-phase (whole group use of RT strategies), or C-phase (small group use of RT strategies). This represented diverse groups working collaboratively, and student-grouping was specifically incorporated to test the effects of the participants' awareness of the strategies while working with English-only students.

Procedures

Teacher/Student Training. During baseline (A-phase), instruction continued in the traditional manner, with the classroom teacher performing all instruction in typical class fashion through selecting her preferred instructional strategies for the whole group.

The only difference was that at the end of a lesson, all students took a short assessment, described below. Once a baseline was established, the classroom teacher and students were trained in the use of RT strategies. The PI trained all students in this general education, fourth-grade classroom, including the five Hispanic student-participants; and, each of the RT strategies were explicitly taught via direct instruction to the entire class over a two-day period.

On day one of training, the PI taught three of the four RT components and inserted one of the supplemental supports, the graphic organizer. The PI began the training by drawing a picture of four quadrants on a piece of paper on the whiteboard and asking students to do the same on an actual piece of paper. One quadrant was labeled questions, the next clarifications, and the next predictions. Of importance, the clarifying strategy was altered slightly in the following manner. After some initial difficulty with vocabulary, the first author asked student-participants to search several paragraphs at a time prior to reading to identify unknown words. These words were then defined by other students or the researcher, and the new words were added to the clarifying portion of students' graphic organizers as needed.

In Palincsar and Brown's (1984) original study, clarifications were made after reading. For this study, it was an effective strategy for the ELLs to identify unknown words before they read. Thus, clarifications of unfamiliar vocabulary terminology were made prior to reading. Students read aloud from the text, with the primary researcher stopping at appropriate points and asking questions about the text. Thus, the researcher modeled how students might ask and/or create teacher-like questions about the content material. After initially modeling this strategy, the PI began to call on students to create a question or make comments about the content being read. Students had opportunities to practice this strategy throughout the remainder of the lesson. Along with asking questions, students also made predictions about what might happen next. Again, the PI modeled making predictions three or four times before calling on students to make a prediction. Students had multiple opportunities to practice creating teacher-like questions, making predictions, and making clarifications, with the researcher modeling all of the strategies repeatedly. Along with the graphic organizer that students used for writing down the RT components, each group was also given a folder with cue cards prompting them to create questions, make predictions, and ask for clarification.

On day two of training, the primary researcher reviewed the first three RT strategies and then added the summarizing strategy — the last of the four components — along with the two additional supplemental support strategies: (a) making connections, and (b) visualizing strategies, again providing many opportunities for students to practice. Students were asked to summarize one or two paragraphs at a time in ten words or less. Students shared and compared their summaries with group members, the class, and the researcher before writing down a final summary. Visualizing words, locations, or ideas had students drawing pictures on their graphic organizers. The visualization strategy was added to aid the ELLs with vocabulary and language. One example of visualizing was the state of Montana. The Spanish word for mountains is *montaña*, and by making the connections between the languages, as well as drawing pictures of a mountain, students had a visual representation of the state of Montana, which happens to be mountainous.

The student-made graphic organizers were used on both days of training. During training days, supplementary expository material that corresponded to students' primary social studies text books was used. The PI practiced each of the strategies with the class during whole group instruction, providing modeling and thinking aloud to ensure students were familiar with their part in the RT process. Students continued to add pictures to their graphic organizers, if applicable, to help with comprehension and to build background knowledge. Students had opportunities to practice using the strategy before the B phase began. No assessments were given during the two days of student training. The professional development (PD) training for the teacher took approximately two hours, occurring during the teacher's planning period immediately following student training. Although there were only five student-participants, all students in the class were trained in RT by the PI; and the classroom teacher was present in the classroom when all students in the class were being trained in the RT method.

Materials. All student groups were given a notebook with color-coded cue cards in the interior pockets. These cards reminded and encouraged students to use RT strategies that had been explicitly taught by the PI. Plain white paper was included in group folders, allowing students to create simple GOs by folding it to form quadrants and then writing the RT headers into each quadrant. The classroom teacher, after receiving training in the RT procedures, taught and prepared all social studies lessons for the general education classroom.

Data Collection and Inter-observer Agreement. To determine the effects of RT on student-participants' comprehension of social studies content material, a researcher-designed assessment was prepared in advance. The assessment consisted of two true/false questions, four multiple choice questions, and four fill-in-the-blank items. To assist with fill-in-the-blank items, students selected a response from a word bank that included a list of vocabulary words taught during the lesson embedded in the assessment. A word bank can assist ELLs with word recall, thus eliminating the possibility that they know the answer but cannot recall the word. The PI worked with the ESOL teacher to develop questions that used simple, rather than complex, vocabulary to ensure decoding and/or word recognition was not a factor in students' responses. For example, rather than using a term like "synonym" on an assessment, the word would be changed to "has the same meaning" or "means the same thing." Test items were written using concise, simple language to ensure the English language was not presenting a barrier to assessing students' comprehension of content. The classroom teacher was blind to the tests to ensure teaching to the test would not be a possibility. The PI was aware of material that would be covered during instruction, and the teacher stated that she focused primarily on key words highlighted in the social studies text. The PI designed tests accordingly during each phase of the study, incorporating a similar number of easy, moderate, and difficult questions for each assessment. Student-participants took these research-designed assessments during baseline data collection (A-phase), whole group intervention phase (B-phase), and small group intervention phase (C-phase). All students in the class took this short measure of comprehension upon completion of a lesson; and assessments typically took students five to seven minutes to complete. The PI collected all tests to grade student-participants' responses and record data.

Using a fidelity-of-implementation checklist, the researcher collected data on student and teacher implementation during each phase of the investigation. Simultaneous observations occurred over 30% of the intervention during phases B and C. The form was not used during baseline (A-phase), as the intervention had not yet been taught. Prior to the collection of any data, the PI met with a second observer several times to review data collection procedures. The PI developed a fidelity-of-implementation checklist to determine if students and the classroom teacher were using RT strategies as intended. It was determined that this checklist would be a good tool to collect data on teacher's and

students' use of RT strategies at the same time. During B phase, the fidelity-of-implementation checklist contained information pertinent to whole class instruction. During C phase, the checklist was changed slightly to reflect small group, student-led discussions.

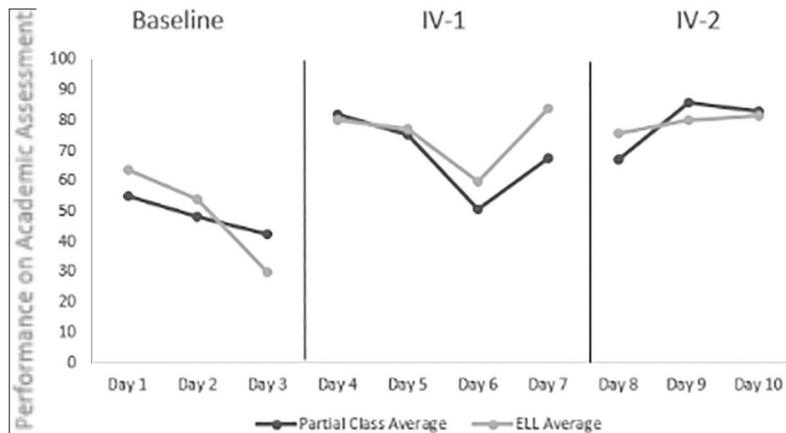
Although this study was undertaken to determine the effects of RT on ELLs' comprehension of expository text, all students participated, with IRB and appropriate parental permissions. Half of all classroom student-participants' assessments were graded by two researchers independently. Each assessment had one correct answer. There were no short-answer questions on the assessment to control for grading subjectivity. One half (50%) of all students' assessments were graded by two observers in each phase of the study. Inter-observer agreement (IOA) for assessment averages was 100% during all phases of instruction.

As in most elementary schools, students tend to be absent. In this study, during baseline data collection, one English-only student was absent on day two, and two English-only students were absent on day three. During phase B, the first intervention phase (IV-1), one English-only student was absent on days one and two, and one ELL was absent on day two. Finally, during phase C, the second intervention phase (IV-2), one English-only student was absent on day two. This study was short in duration, conducted over a period of approximately three-and-a-half weeks. Once the teacher and students were trained in RT strategies, students used the strategies for approximately one hour daily during social studies instruction. Students took a post assessment immediately after each instructional period. The frequency and intensity of the intervention did begin to take its toll on the teacher and students. Students knew they would be assessed, and test-overload became a factor. Likewise, lessons required students to read from expository texts, think about content, summarize paragraphs, and write down information. This required more active learning and participation from all students, especially during small group instruction. It requires much less work to put on a CD and have students listen to passages than to employ RT strategies; and at times, the teacher and students grew weary of using these strategies.

RESULTS

During each phase of the study, the PI collected data on student-participants' comprehension of content via a researcher-designed assessment. Each assessment was developed to assess students' comprehension of content being taught during a single social studies lesson. Each

Figure 1
Baseline Comparison Data-Partial Class Average v. ELL Average on Researcher-developed Assessments.



assessment aligned with content being taught on a given day. The assessment format was identical across each phase of the study; only the content changed depending on content material being taught during the week. The PI ensured that simple language was used on all tests across all phases; and each assessment included two true/false, four multiple choice, and four fill-in-the-blank items, for a total of ten questions. Likewise, each assessment included a word bank. The ESOL teacher previewed each test and made changes to vocabulary if a cognate was available to minimize decoding and/or translation difficulties for ELLs.

The PI wanted to ensure that the test format did not interfere with the primary purpose of the investigation: to determine if RT strategies increased students' understanding of content. Each time the PI observed, during phases A, B, and C, students took a researcher-designed assessment immediately after instruction had concluded. Tests were used to monitor students' comprehension of content. RT was the independent variable, and assessments were a measure of the success of the intervention. This was done to determine the effects of an RT intervention on Hispanic students' comprehension of expository texts: Can RT increase ELLs' comprehension of expository material? Is there a difference between a whole-group, teacher-guided RT approach versus a small-group, student-led RT approach for the ELL student-participants in this investigation?

Results (Figure 1) compared the cumulative mean scores of all ELLs and those of their English-only peers, as well as results for each ELL student individually (Figures 2–6). Overall, students' scores on

researcher-developed assessments demonstrated academic growth in comprehension of social studies content for English-only students and ELLs. When comparing ELLs' scores across all three phases — hereafter participants 1 through 5 — each of the five ELLs must be looked at separately and as a group, specifically because of their level of English proficiency.

Participant 1 (Figure 2) demonstrated strong academic gains on the researcher-designed assessment, with average academic performance on comprehension of social studies content moving from 30% during baseline to 70% during whole-group use of RT strategies, and dropping to 50% during small-group RT use of RT strategies. It is important to note that participant 1 scored at the “Pre-functional” level on the ELDA assessment in overall English proficiency and comprehension (Table 1). This student may

have needed the additional support of his teacher to successfully use RT strategies to support comprehension of content material. During whole-group instruction, students used strategies under guidance of the classroom teacher and PI, as needed; and the teacher maintained control of the class. During small-group instruction, the teacher facilitated student learning, moving between groups to assist students. This student's academic performance on researcher-designed assessments improved from A-phase (typical classroom instruction) to B-phase (whole-group instruction). However, academic gains were lost during C-phase (small-group instruction). Students who have limited English proficiency may need more support through whole-group instruction when using RT strategies.

Participants 3 and 4 (Figures 3 and 4) both scored “Beginner” in the “Overall English Proficiency” on the ELDA; with participant 3 scoring “Beginner” and

Figure 2
Assessment Performance Data from Participant 1.

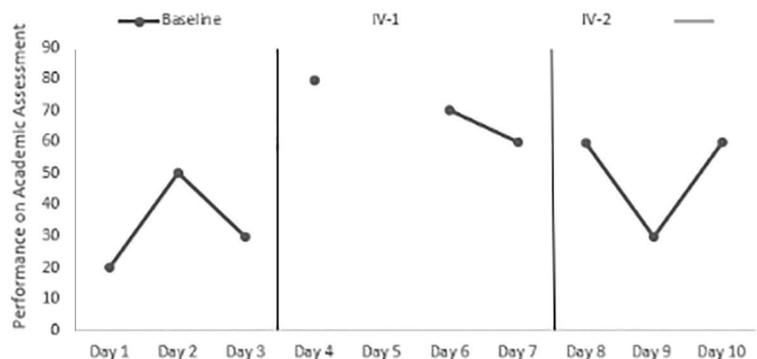
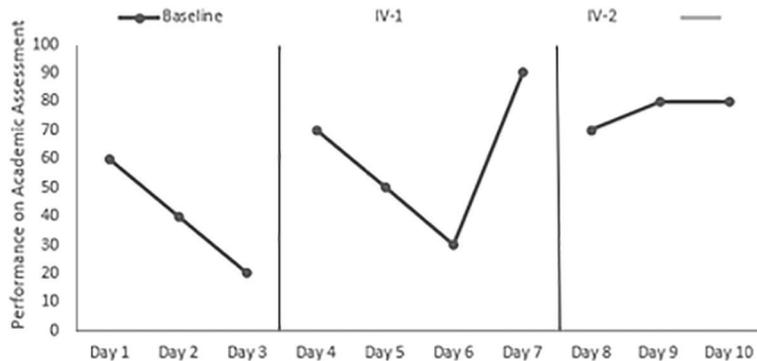


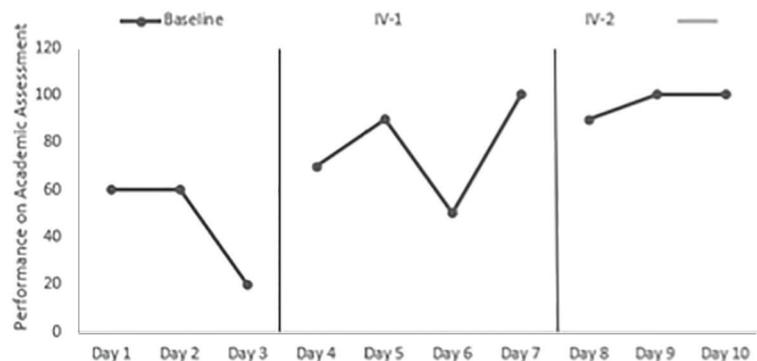
Figure 3
Assessment Performance Data from Participant 3.



participant 4 scoring “Intermediate” on the ELDA Reading Comprehension Level. However, their Lexile levels were quite dissimilar. Participant 3 registered a 308 Lexile level, and participant 4 received a Lexile level of 568. Both participants 3 and 4 benefitted from RT strategies, with participant 4 receiving more benefit. Both participants’ averages on comprehension of social studies content improved: (a) Subject 3 — 40%, 55%, and 77% across phases A, B, and C respectively; and, (b) Subject 4 — 47%, 78%, and 97% across phases A, B, and C respectively.

Participants 2 and 5 (Figures 5 and 6) both scored “Intermediate” on the ELDA Overall English Proficiency; with participant 2 scoring “Advanced” and participant 5 scoring “Intermediate” on the ELDA Reading Comprehension Level. Of all subjects in this study, participant 2 received the highest English proficiency levels on the ELDA. Likewise, Lexile levels for participants 2 and 5 were the highest of the five ELLs. Participant 2 had a Lexile level of 828, and participant 5’s Lexile level was 603. Both participants 2 and 5 benefitted from RT strategies based on students’ academic

Figure 4
Assessment Performance Data from Participant 4.

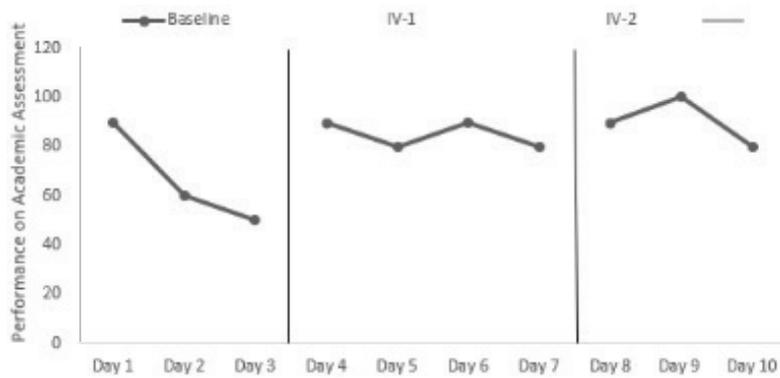


growth as demonstrated on researcher-designed assessments; respectively, their average scores on social studies content improved across all three phases: (a) Subject 2 — 67%, 85%, and 90%; and, (b) Subject 5 — 60%, 83%, and 77%. Participant 5’s average dropped during small-group work, but her English proficiency was the second-highest among student-participants. Participants 2 and 4 had the highest averages on the ten-question, researcher-designed assessments, that were developed to align with content taught during each lesson to assess students’ comprehension of content.

As a group, the mean academic performance of ELLs increased across the investigation. During baseline (typical classroom instruction), the average of all ELLs’ scores on the researcher-designed assessment was 49.3%. During B-phase (RT whole-group instruction), average scores of comprehension of content rose to 75.4%. During C-phase (RT small-group instruction), average ELLs’ scores rose slightly to 78%. When looking at the researcher-developed assessment measure, students’ averages on comprehension of content rose across all phases. This academic growth for student-participants demonstrates that RT is an effective intervention in supporting ELLs in a general-education, social studies classroom. Similarly, academic performance of English-only students increased from a mean baseline performance of 48.7% to 69.0% during whole-group RT instruction, and 78.1% during small-group RT instruction. Effect sizes (ES) were calculated using Points Exceeding the Median (PEM). PEM scores ranged from 0 to 1.0, with scores between .9 and 1.0 reflecting a highly effective treatment, .7 to .9 reflecting moderately effective, and scores of .6 and below reflecting questionable or ineffective treatment. Overall, RT instruction provided in either whole- or small-group settings was demonstrated to be effective for both ELL (ES = 1.0) and English-only students (ES = 1.0) when compared to traditional instruction (baseline). As mentioned previously, the highest mean scores for both groups of students was achieved during RT small-group instruction, even in comparison to RT whole-group instruction (ES = 1.0).

Figures 2 through 6 demonstrate academic gains for all ELLs individually under each of the RT conditions. Three of the ELL students (Figures 2, 4, and 6) showed large academic gains (ES = 1.0) when using whole-group RT (IV-1) as opposed to traditional instruction (baseline), while the remaining students (Figures 3 and 5) showed moderate academic gains (ES = 0.75). Three

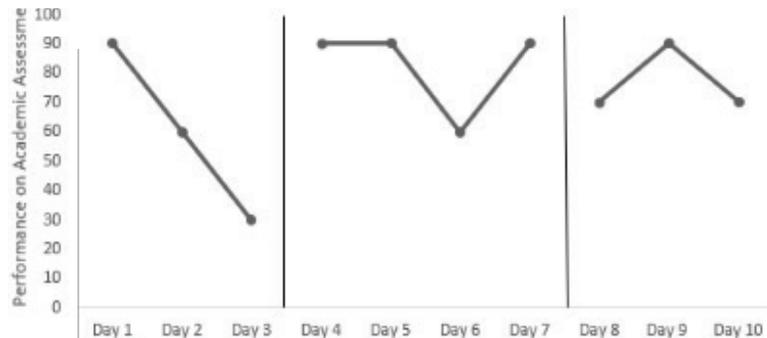
Figure 5
Assessment Performance Data from Participant 2.



students (Figures 3, 4, and 5) showed large gains ($ES = 1.0$) using small-group RT (IV-2) over whole-group RT. One student (Figure 2) showed moderate gains ($ES = 0.66$), while another (Figure 6) showed small-group RT to be ineffective in comparison to whole-group RT ($ES = 0.33$).

Visual analysis of mean group averages (Figure 1) shows implementation of RT in a whole-group setting resulted in an immediate change in both trend and level of academic performance for both ELLs and English-only students. This analysis aligns with the knowledge base on the effectiveness of RT as an intervention that can enhance students' academic performance (Casey et al., 2018; Alfassi, Weiss, & Lifshitz, 2008; DaSilva Iddings, Risko, & Rampulla, 2009; Gersten, Baker, Smith-Johnson, Dimino, & Peterson, 2006; Olson & Land, 2007; Williams, 2010). However, these results and the interpretation of effect sizes noted above must be taken with caution, as the effect sizes are based on data from participants who had different levels of English proficiency.

Figure 6
Assessment Performance Data from Participant 5.



DISCUSSION

The research question under investigation in this study was whether RT strategies would increase the comprehension of ELLs when reading expository text in whole groups and small groups. Reciprocal teaching is a research-based practice that has been shown to be effective in increasing comprehension in a variety of student populations in general and special education settings (Palincsar & Brown, 1984; DaSilva Iddings et al., 2009; Gersten et al., 2006; Yeh et al., 2017); but there is limited research in the effectiveness of RT in supporting the academic growth of ELLs (Casey et al., 2018; Klingner et al., 2007). This study adds to the knowledge base on the use of the RT approach and its effects on increasing ELLs' understanding of content area material as evidenced through researcher-designed assessments. The intervention was effective in increasing students' average scores on a researcher-designed assessment to determine students' comprehension of social studies content (i.e., ELLs and English-only) in the class, during both whole- and small-group instruction.

Across whole- and small-group instruction, when RT was added into classroom instruction, students' comprehension of content improved. On day three of the intervention during whole-group instruction (Phase B), all students' averages fell on the researcher-designed assessment given to students immediately after instruction. The third data point demonstrated a drop in student assessment scores. However, on the fidelity-of-implementation checklist during instruction, the PI noted that the practitioner was using less than half of the RT components and support strategies. The third data point in Phase B (IV-1), which reflects a decrease in assessment performance by the students, can be explained by the fidelity-of-implementation checklist obtained during that time period. The PI realized half-way through the lesson that the teacher was failing to implement RT faithfully. A decision was made to assess students' comprehension, even though RT was not being implemented accurately. Immediately following this, the PI reviewed RT strategies with the teacher-participant, emphasizing the importance of using all of the strategies. The following day, all RT strategies were used and checked on the fidelity-of-implementation check sheet.

During whole-group instruction in this changing-conditions A-B-C design, ELLs outperformed the class average (Figure 1). However, at the end of C phase, students' scores began to stabilize, and slightly decreased for ELLs in the study. This reflects an important point. Struggling ELLs may not be able to separate essential from non-essential information in expository text without explicit, teacher-guided instruction. Although all students benefitted from RT strategies, when the strategies are utilized during whole instruction, it may be more beneficial to ELLs. Therefore, struggling ELLs should be introduced to RT strategies in a teacher-guided, whole-group instructional approach for maximum benefit. This is more important for ELLs who have lower levels of English proficiency.

These results compare favorably to previous studies assessing the effects of RT on students in the general education and special education classrooms (Alfassi et al., 2008; DaSilva Iddings et al., 2009; Gersten, Baker et al., 2006; Olson & Land, 2007; Williams, 2010). Furthermore, research on RT has shown gains in achievement for a variety of student populations (Casey, 2014; Casey et al., 2018; Palincsar & Brown, 1984; Englert & Mariage, 1991; Fergus, 2009; Klingner & Vaughn, 1999). Yeh et al. (2017) noted that students' comprehension increased when RT annotations were added into an online reading program in a study conducted in Taiwan. Finally, researchers using RT strategies, in studies lasting from a few months (King & Parent Johnson, 1999; Lederer, 2000) to many years (Alfassi, 2004; Carter, 2001; Hacker & Tenent, 2002), have noted positive gains in reading comprehension for students across a range of reading ability levels.

New research beyond the scope of this study suggests that bilingualism is "reliably associated with several cognitive outcomes, including increased attentional control, working memory, metalinguistic awareness, and abstract and symbolic representation skills" (Adesope, Lavin, Thompson, & Ungerleider, 2010, p. 207). Again, no conclusions can be drawn; but in this study, English proficiency did seem to aid in the use of RT strategies and enhance comprehension.

Limitations

This study was conducted in a short period of time. Due to state-wide testing, the research was conducted in just over a three-week period. Students took ten assessments over 16 school days; and toward the end of phase C, students were taking assessments daily. In future studies, assessments should be spread out over a longer period of time. Likewise, an extended time period in

future studies would allow students to practice using RT strategies in small groups before assessment data was collected. This would provide more data regarding how students are able to implement the RT method in small groups. With extended practice, students might be better able to separate essential from non-essential information in the text. Furthermore, in this study, students moved from the B phase to the C phase without practicing RT strategies in small groups under the guidance of the teacher.

As previously noted, the five ELL subjects in this study had varying levels of English proficiency. The purpose of this study was not intended to compare the effects of RT on ELLs with varying levels of English proficiency. That is beyond the scope of this investigation. Current research has noted that bilingualism can enhance student learning in a variety of ways (Adesope et al., 2010). However, none of the students in this investigation were fully bilingual; and although RT strategies enhanced the academic performance of all of the ELLs, there were varying degrees of academic growth among the subjects. Regardless of English proficiency, ELLs need effective interventions to enhance academic growth across subject areas. In-service teachers across the U.S. have students in class with varying levels of English proficiency; these teachers need research-based strategies to support struggling learners, including ELLs and students with exceptionalities.

This study demonstrated that RT is an effective intervention. However, the researcher-designed assessments included multiple choice, fill-in-the-blank, and true/false questions. These types of assessments may not be the most accurate in demonstrating comprehension of material when working with ELLs. The language used in creating true/false and multiple choice tests can often be confusing to a student whose primary language is not English (Artiles & Ortiz, 2002; Abedi & Gandára, 2006). An assessment that allows students to write a response may allow for ELLs to more effectively demonstrate what they have learned during instruction. Likewise, any assessment developed to assess comprehension should be carefully constructed to ensure it is not a test of a student's English proficiency (Abedi & Gandára, 2006).

RECOMMENDATIONS, FUTURE IMPLICATIONS, AND CONCLUSION

Analysis of data in this study found that the use of RT strategies demonstrated a positive effect on Hispanic students' understanding of expository material. The results reflect increased averages for all students on

researcher-made assessments of reading comprehension. Results were promising, but more clinical trials would add support to the findings. Future studies, over an extended period of time, might better discern whether academic gains on statewide tests in the content areas were achieved after a RT intervention had been in place during the school year. Although the PI made improvements on researcher-designed assessments during the study to ensure the instrument was not a test of English proficiency, future studies should use assessments that have established validity and reliability if possible. These findings add to a growing knowledge base about effective interventions in supporting ELLs. Data analysis supported the use of RT as an effective instructional strategy that can aid ELLs working with expository text.

This study demonstrated how effective, research-based instructional strategies can support ELLs who struggle with comprehension when reading expository texts. Findings from this study may be useful for practitioners wanting to increase ELLs' comprehension of expository material. As the Hispanic population increases, public schools may see a growth in ELLs among their student populations. As such, in-service teachers need effective research-based strategies such as RT to support the academic efforts of this student population. This study adds to the knowledge base about strategies that can be utilized by practitioners who serve ELLs in school systems. Further studies would provide more data about the effects of RT on ELLs. Finally, future studies should make every effort to include ELLs with and without LD, in upper elementary, middle, and high school classrooms.

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Perspectives on Educational Supports: Two Case Studies of Families with School-Aged Children with Attention-Deficit/Hyperactivity Disorder (ADHD)

Heidi Harju-Luukkainen

University of Gothenburg, Sweden
University of Jyväskylä, Finland
University of California, Los Angeles, USA

Erja Sandberg

University of Helsinki, Finland

Tiina Itkonen

California State University Channel Islands, USA

Abstract

This article examines two families' experiences on the support services for their school-aged child with Attention-Deficit/Hyperactivity Disorder (ADHD). Families' views about the received support were examined using netnography (a form of ethnography). The research was conducted using an online survey directed to 208 families, in a closed social media platform. Thereafter, four families were interviewed. From these interviews, two families were selected for further in-depth analysis. The received set of supports were perceived differently: One set of supports was perceived as "positive" and the other as "negative." According to the analysis, families' perspectives about the received support varied based on how well the student's individual needs were recognized by teachers, how much teachers knew about ADHD, whether families' perspective was heard, and whether they received adequate support in a multi-professional network.

Keywords: ADHD, case study, support measures, special education

INTRODUCTION

When children in Finland have ADHD-related symptoms such as inattention, hyperactivity, and impulsivity, only approximately 50 percent of their families receive adequate support at schools — a situation that Sandberg (2016) describes as alarming. Early intervention and individually designed support structures within a multi-professional context are outlined in legislation (Varhaiskasvatuslaki 1973/2015; Sosiaalihuoltolaki 2014; Perusopetuslaki 2010; Opetus- ja kulttuuriministeriö 2014). Also, a national professional medical policy manual emphasizes early intervention immediately after the onset of symptoms (Moilanen et al., 2013). Families' opinions about the support they should receive, especially when their child receives early childhood education and has ADHD symptoms, are in line with what policy documents highlight as central (Sandberg & Harju-Luukkainen, 2017). From these premises, the researchers/authors of this paper took a closer look at two families in which a school-aged child experiences ADHD symptoms. These families were chosen from among 208 families that took part in a netnography

research conducted in 2012–2014 in Finland. Netnography is a form of ethnographical research, but it is conducted online. This online research was conducted in a closed social media platform where the families answered a questionnaire and were interviewed later on. All families that took part in this research have a family member (child) that experiences ADHD symptoms and has a ADHD diagnosis. Families were asked to examine their past experiences with teachers and other specialists.

From these premises, the authors of this paper formulated two guiding questions, using existing data from the aforementioned larger interview set: (1) How do families perceive the educational supports they receive?; and (2) Are there common themes that may explain the perception of supports received? The authors had two aims. First, they attempted to highlight the voices of families with ADHD-symptomatic children, in how the families experience school supports. This aim is important, especially since there is very little previous research about families' views of the support received at school. The second aim of this study was

to give new information about families' perspective to teachers and others working with families in a school context.

Literature Review

ADHD is a multifaceted disorder, the existence of which is still controversial (Tait, 2014). However, the Nordic countries take a medical approach toward ADHD, where it is seen as dysfunctional brain activity (American Psychiatric Association, 2013; Koski & Leppämäki, 2013). According to Smith et al. (2008), the medical approach identifies mild functional and anatomical differences in the central nervous system as crucial. The important differences, according to Närhi & Klenberg (2010), can be found in inefficiently working parts of the brain that regulate concentration and activation. This naturally appears very differently in different children. Children with ADHD often appear highly impulsive, have difficulties concentrating, exhibit problem behaviors, and experience difficulties in controlling their lives and actions (Terveyden ja hyvinvoinnin laitos, 2012). According to Penttilä, Rintahaka, and Kaltiala-Heino (2011), social abilities might also be underdeveloped. However, according to Home (2008), persons diagnosed with ADHD can be also seen as creative and intelligent if performance restrictions are taken into consideration.

Internationally, ADHD is a common disorder (Kvist, Nielsen, & Simonsen, 2013; McGough et al., 2009). Further, Ruoho and Ihatsu (2012) argue that it is one of the most common chronically longitudinal conditions. In Finland, according to Voutilainen, Sourander, and Lundström (2004), approximately 3–6 percent of children experience ADHD symptoms. Even though the symptoms change over time (e.g., hyperactivity and motoric restlessness decreases), difficulties in steering attention and action remain throughout life. ADHD is also three times more common among boys than girls (Smith et al., 2009). According to Kvist, Nielsen, & Simonsen, (2013), this is linked to genetic factors of the disorder. According to Voutilainen et al. (2004), ADHD-associated challenges can be found in families as well as stretching over generations. Further, Suominen (2006) argues that the genetic factor in this is approximately 70–95 percent. Therefore, the disorder often affects not only the individual but also the entire family across their life spans.

Regular treatment for ADHD is a combination of pharmacological and psychological or pedagogical approaches. However, parents often have reservations about a medical approach for controlling behavior, es-

pecially when it comes to young children (Berger, Dor, Nevo, & Goldzweig, 2008). Therefore, there is, especially from parents' viewpoint, a need for non-pharmacological treatments.

Teacher-Based Interventions

Behavior associated with ADHD is often noticeable in classrooms and in other social situations because teachers and society expect children to behave in ways that might be difficult for children with ADHD (see, for example, Salmelainen, 2002). Early recognition of symptoms, as well as school-based intervention, is important, especially when the diagnosis is associated later on in life with problematic lifecycle development.

However, teachers have an important role when children are diagnosed during their schooling years. Teacher observations about the child's functioning in different situations are used in classification and in different treatment decisions (Vereb & DiPerna, 2004; Moilanen et al., 2013). It is therefore often up to the teacher to decide how a child with ADHD is provided assistance, how information about the child is forwarded to other professionals, and most importantly, how the adults in school treat the child (Itkonen & Jahnukainen, 2010). According to Anderson, Watt, Noble, and Shanley (2012), teachers have reasonable knowledge of the characteristics and causes of ADHD, but only limited knowledge of ADHD treatments. Further, Ohan, Cormier, Hepp, Visser, and Strain (2008) suggest that teachers who lack of knowledge about ADHD may overlook the behavioral signs and therefore the child does not receive needed assistance. Also, teachers' attitudes towards ADHD might affect their choice of a teaching approach (Westwood, 1996). Therefore, according to Anderson et al. (2012), it is important that pre-service as well as in-service teachers have a sound knowledge of ADHD and maintain a positive attitude towards teaching children with ADHD.

METHODS

Research conducted on the Internet has become important in modern societies where people spend much of their free time online, connected to different social networks. It is therefore possible to collect data and conduct different types of research utilizing social media (Laaksonen, Matikainen, & Tikka, 2013). According to Hine (2000), computer-mediated communication can enrich research data collection, especially when done regardless of space and time. All this has moved ethnographic methods to new environments, such as the Internet and the social networks within it.

Netnography that is conducted online has several parallel terms (Isomäki, Lappi, & Silvennoinen, 2013). Online ethnography — also called netnography — is a form of ethnographic research conducted online in different social media networks, with the help of a computer (Kozinets, 2010). Here the researcher can be seen either as an observer or as an active operator (Poynter, 2010; Hine, 2000) depending on the role taken. However, Isomäki et al. (2013) point out that netnographic research includes an inductive approach when it comes to data analysis. This means that larger data sets are broken into smaller components and these components are compared on micro and macro levels, as well among each other. In netnography, like in ethnography in general, the data are studied in different stages. However, also combining these two approaches in research is common (Kozinets, 2010). According to Sumiala and Tikka (2013), this is adequate, due to the fact that the research methods have similar features even though the data are gathered in different environments.

The research for this paper was conducted online, in a national interest or support group, which can be found on a social media network called Facebook. Facebook is the most widely used social media platform, measured by the number of users (Herkman and Vainikka, 2012). Research participants were part of a closed social interest group for adults and/or children with ADHD (often members of the same family) whom have different neuropsychiatric symptoms or neurological diagnosis connected to ADHD. Participants used their own names and pictures, which, according to Hamari (2011), is appreciated in today's social media platforms. Therefore, the research participants were not anonymous and did not use aliases (Laukkanen, 2010). During 2012–2014, data were gathered using nine different surveys, out of which four families were interviewed in greater depth. The entire data set consisted of people from different age groups, family constellations, educational backgrounds, and regions of Finland. Demographics (e.g., socioeconomic status, education, work status, age) were compared with Finnish nationwide statistics. According to these statistics, research participants represented the variations of a typical Finnish family's background (see Sandberg, 2016). Two families were then selected from this larger data set to maximize variation among the variables of interest, perspectives on the received support in a school context, and themes that may explain variation. The families' experiences were very different, and data from both the questionnaire and interviews were used to examine variables that could explain the perceived

quality of support. The unit of this analysis was the family and therefore, besides individual experiences, the family context where these experiences originated was also taken into account.

University of Helsinki, Faculty of Behavioral Sciences reviewed the proposal and granted permission for this research. In terms of ethical considerations, the study was committed into adhering to both national and international guidelines on research ethics, including those set by the Finnish National Advisory Board on Research Ethics (Finnish Advisory Board on Research Ethics, 2002), with special considerations to research with young children and families.

The starting point for this ethnographic research was the need to collect individual experiences of social support services towards families with ADHD. These experiences were collected over the course of three years and with nine different questionnaires. The families were also interviewed. In this empirical research, the families' experiences were put into focus. However, it is important to note that individuals described reality from personal standpoints, in a family context, often from childhood to adulthood, and often even over several decades (Laine, 2001). Participants wanted to express their own perspectives and be understood when balancing between symptoms, label, shame, and getting support (Korkeamäki, Haarni, & Seppälä, 2010). According to different themes emerging from the data, some families were interviewed further to reveal case types. The families could choose whether to participate in the interview, how many family members might participate, as well as if adults and children were interviewed separately. This research used qualitative data from questionnaires and interview data. The data were organized into themes and different classes for workability. Questionnaires give in-depth information of the phenomenon and the interviews complement this picture. The interview material was content analyzed to reveal further the experiences of individuals and families.

Case Study Families

In this study two families were chosen for in-depth analysis. Each family consisted of a mother and son. The mothers had similar educational backgrounds. One family lived in a town and the other in a more urban (in a Finnish context) environment.

The first case consisted of two persons, a single mother (31 years old) and a son. The parents were divorced and the mother and son lived in a town of approximately 20,000 inhabitants. The mother felt she could support

her son properly. The mother had a college degree and worked in a factory. She herself did not experience any ADHD symptoms. The father was experiencing severe ADHD symptoms, but was not interested in getting a diagnosis. His mother and uncle, in turn, were diagnosed with ADHD.

The second case also consisted of a single mother and a son. The mother was 42 years old, had never been married, and the family lived in a city of approximately 100,000 people. The mother had a college degree, but had been unable to work for several years (every now and then in rehabilitation, but not at work) because of her own ADHD symptoms and other problems. These problems prevented the mother from supporting her son.

RESULTS

Four themes emerged from the data regarding determinants of the perceived supports: (1) how the child's needs were recognized and addressed at school; (2) whether the teacher knew about ADHD; (3) whether the cooperation with families was working; and (4) whether the support was received in a multi-professional network. These family perceptions are consistent with the quality indicators outlined in the Finnish policy documents about educational supports for children with ADHD.

Recognition of Individual Needs

In the first, more "positive" case, the custodial parent described how crucial it had been for the child's learning that all teachers had good assessment skills in classroom situations and that the teacher could use that information and combine it with individual pedagogical solutions.

We have had really good teachers and other school personnel. The basic knowledge [of ADHD] has been good and they have been able to assess different situations and what type of support is needed. For example, the teachers have, alongside with their teaching, supported the boy in concentration and have controlled him. I have no other hopes; they have done more than enough.

In the second, more "negative" case, the teachers did not recognize the student's needs, and even though the needs had been written down in an official document, the child did not receive adequate support. This parent tried to fight for the child's rights for individualized support, which the family did not receive.

The student's emotional breakouts were not recognized at the school and even though they were written down [into an individualized education plan], the student did not receive support. When I said, 'I am not interested in your resource problems; when a child has a decision about individualized education, the school must follow it,' the principle said, 'no can do; we have no resources.' And while the student did not need any support in learning, he has an individualized education plan in mathematics and English. The student would need [support] in transitional situations and in social relationships precisely. The student cannot control his power and he is...

The authors labeled the first case as "positive" — the child's needs were recognized and met — and the second case as "negative," because the teacher did not recognize or address symptoms, or provide accommodations.

Teachers' Knowledge

In the "positive" case, the teachers had previous knowledge and interest in finding out more information about ADHD. Also, families' knowledge about how to support their child was used at school.

We are really happy that the teachers have been interested and had information about ADHD. We have actively given out information and instructions on how to work with the student and which support measures and tools might be useful in teaching and in classroom situations. [The student] got all the help and support that was available. We have been really happy with the teachers during the [student's] entire educational path.

In the "negative" case, teachers did not recognize or understand children with ADHD. The environment was not organized to support the child and there were not enough adults available for the child.

In general education, they had no idea about these kinds of things, none whatsoever. The classroom teacher either did not recognize ADHD or did not know how to anticipate different situations. One conflict was about a ridiculous thing like a drawing that [the student] did not want to give to a stranger, and the classroom teacher would not give up on the matter. After that the student's behavior changed; he did not want to go to school. It was totally disturbing and then [we] started getting messages, that this did not work... that the school couldn't handle

[the student]. The student could not cope with the school because they do not have enough assistant teachers and adults to anticipate situations. [Students] are on their own too much, so there are no adults supervising.

Collaboration with Families

In the “positive” case, the teacher engaged in active collaboration and the family was given information about the student’s progress. Also, the decisions concerning education were done in cooperation with the family for the benefit of the child.

The support that the school and teacher offer has been active. With the teacher, we follow the [student’s] learning all the time. During the spring, we make a mutual decision about how to progress the next fall. I think the cooperation is good and done for the benefit of the child.

In the “negative” case, there was little or no cooperation with the family. Decisions were made without parent involvement or without even informing the parents. According to the parent, this affected the children’s learning and wellbeing.

It went like that in the old special school. There were students with dysphasia and then there were the regular education classes. Therefore, these 10 boys are on socio-emotional classes. They were transferred with one week’s notice to a completely different school that had 750 students. I was not told, the teachers were not prepared, the receiving school was not prepared, the entire building was new... in one week! Then this package fell to pieces. There were 10 students in that class. No one knew anything about anything. The boys... they just broke down. When that palette (a Finnish saying) fell to pieces in 2012, then the classroom’s first rule became not to kill which means that anything just went. They tried to keep everything together to avoid violence and so on...

Multi-Disciplinary Team and Support

In the “positive” case, the student’s matters were discussed regularly in a multiprofessional network and the parents had the opportunity to be part of that discussion

and plan support services and accommodations. This was in accordance with Finnish policy documents on supporting students with ADHD.

Once per term there was a meeting in which all of the people working around the child attended and they were in contact when needed. We had the opportunity to take part as well. [Student] also saw a special education teacher. It was more like discussions about cooperation and how to work with school and teachers smoothly.

In the “negative” case, the documents that the law requires were not completed, and the schools were unable to work together. Also, the family felt that professionals working around the child were changing all the time. The family felt like they were the only people with accurate, up-to-date information.

At the previous school they had not done any pedagogical investigations. All of these [were not done]. This makes me annoyed, that I as a parent should know and be capable. Schools can’t even cooperate with one and another. No one was coordinating the big picture. We had the doctors changed and the therapists and everyone. Therefore, the information was forwarded through me, but still the papers were not forwarded and there were no pedagogical investigations.

DISCUSSION

ADHD is a multifaceted disorder, the existence of which is still controversial (Tait, 2014). Despite this, ADHD is internationally recognized as a common disorder (Kvist, Nielsen, & Simonsen, 2013; McGough et al., 2009).¹ Further, Ruoho and Ihatsu (2012) argue that it is one of the most common chronically longitudinal disorders and in Finland, according to Voutilainen et al. (2004), approximately 3–6 percent of children experience ADHD symptoms. This means that there is likely a child with ADHD in every classroom.

In this article, the authors examined two families’ views on received support for their child with ADHD symptoms within a school context. This was done using the method of netnography (a form of ethnography, conducted online). Out of 208 families who took part in a larger research project, two families were selected for further analysis in the present study. The two families

¹ In the United States, ADHD qualifies for special education services. It was added to regulations in 1999 (but not in the statute itself), after a decade of political debate on whether it is a legitimate condition and should be added to the legislation (Itkonen, 2009). ADHD is not an eligibility category in and of itself, but falls under “other health impaired.”

presented similar demographics and backgrounds. The results suggest that in these two cases, four themes or variables explained the extent to which the family perceived the received educational supports as positive or negative. Those were the recognition of student's individual needs; teacher knowledge of ADHD; perceived level of being heard; and level of collaboration within a multi-professional team. All of these common concepts were interrelated and not mutually exclusive.

In the Finnish national medical policy documents about ADHD for professionals, early intervention immediately after the symptoms have appeared is emphasized (Moilanen et al., 2013). A teacher cannot recognize the symptoms of children with ADHD if the teacher has no previous knowledge or understanding of ADHD. According to Ohan et al. (2008), teachers who lack knowledge about ADHD may overlook the behavioral signs and therefore the child may not get the needed support. In the present study, the mother in the more positive case experienced a school environment that recognized the symptoms and provided support measures that were individually designed for her child's needs. In the more negative case, this did not happen. One reason for this type of differences might be the teacher's level of knowledge. Another other might be the attitude toward children with ADHD. According to Westwood (1996), teacher attitudes towards ADHD might affect their choice of a teaching approach, which again might lead to different learning and behavioral outcomes. Therefore, according to Anderson et al. (2012), it is important that teachers have a sound knowledge of ADHD and maintain positive attitudes towards teaching children with ADHD. The Finnish policy documents emphasize early intervention and personally designed support structures within a multi-professional network (Varhaiskasvatuslaki, 1973/2015; Sosiaalihuoltolaki, 2014). In this study, families experienced the multi-professional network very differently. The family's role is central in the network and information must flow in both directions.

Nevertheless, teachers have an important role in school environments for children with ADHD. It is often up to the teacher to decide how a child with ADHD gets support, how information about the child is forwarded, and most importantly, how adults at school interact with the child. Previous studies have found that teachers may have reasonable knowledge of ADHD, but limited knowledge about ADHD treatments (Anderson et al., 2012). Also, according to Sandberg (2016), approximately only 50 percent of families received the

right kind of support. Data from previous research and the present study imply that teacher education programs in Finland should inform teacher candidates about ADHD on all levels of education.

Results of this study suggest that families can have very different experiences in receiving support in the school context. From a family perspective, a successful educational experience depends on teacher knowledge and ability to provide accommodations, school-home communication, and information flow. This suggests that besides receiving pedagogical training on educating students with ADHD, teacher candidates and in-service teachers should be trained in collaboration and active communication in a multiprofessional network.

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Analysis of Vitamin-Mineral Status on Attention-Deficit/Hyperactivity Disorder in Children with Autism Spectrum Disorders in Jos, Plateau State, Nigeria

Rufus Olanrewaju Adebisi

Federal College of Education (Special), Nigeria

Isaiah Sunday Elemukan

University of Jos, Nigeria

Yakubu Doris Gomos

University of Jos, Nigeria

Abstract

The purpose of the study was to establish the vitamin-mineral status of children with autism spectrum disorders (ASD) who exhibit attention-deficit/hyperactivity disorder (ADHD). Four research questions were formulated for the study. A quasi-experimental of ex post facto research design was used. The study was conducted in four special schools and clinical centers in Jos Township, Nigeria. The study population were children with autism spectrum disorders, who were diagnosed with the ADHD characteristics of poor attention (short attention span), hyperactivity (out-of-seat), and impulsivity. The results of the study revealed a missing or reduced vitamin-mineral status of the participating children in most of the vitamin-mineral elements tested. There was also a reduction in the exhibition of ADHD in the experimental group as a result of vitamin-mineral supplementation. The study concluded that vitamin-mineral elements deficiency in children with ASD resulted in their ADHD and recommended regular testing of children to ensure their vitamin-mineral levels are in balance.

INTRODUCTION

The term autism spectrum disorders (ASD) was first used by Eugen Bleuler, a Swiss psychiatrist and author. Bleuler started using the term in 1911 to describe a mental state of fantastical, self-centered thought processes as symptomatic of schizophrenia, but autism did not appear in the scientific literature until 1943 when Leo Kanner used it to name a disorder: a child's inability to relate to their environment (Gallo & Volkmar, 2003). The American Psychiatric Association (2013) described autism as persistent deficits of social communication and interaction, restricted and repetitive behaviors, interests, and activities. Autism spectrum disorders usually start in infancy, or at the latest, during the first three years of life. It is important to note that some children on the spectrum are very severely affected (low functioning) in most or all domains of functioning, while others are only mildly affected (high functioning). In 2018, the Centers for Disease Control and Prevention (CDC) at the U.S. Department of Health & Human Services released new data on the prevalence of autism. The surveillance study identified 1 in 59 children—1 in 37 boys and 1 in 151 girls—as having autism spectrum disorder (ASD).

In addition, children with ASD show restraint in social interactions, which can be a problem because the skills developed in those interactions can help such children live independent lives. According to the *Diagnostic and Statistical Manual of Mental Disorders*, 5th Edition (DSM-5) classification system published by the American Psychiatric Association (APA) in 2013, the separate disorders no longer exist. Instead, under the one classification of Autism Spectrum Disorder, an individual is diagnosed on a spectrum of the severity of the symptoms, as: Requiring Support (Level 1), Requiring Substantial Support (Level 2), and Requiring Very Substantial Support (Level 3). These levels are best represented in a two-domain model of social-communication deficits and restricted and repetitive interests/behaviors. Research on clinical populations supports the frequent co-occurrence of attention deficit hyperactivity disorders (ADHD) traits in children with Autism Spectrum Disorders (ASD) (Davis & Kollins, 2012; Kassam, Tuna, & Mua'zu, 2015).

Attention deficit hyperactivity disorders (ADHD) and autism spectrum disorders (ASD) can coexist in children (Kassam et al., 2015). ADHD, a behavioral disorder which often becomes obvious in early childhood, is a condition in children who have three main kinds of

challenges: overactive behavior (hyperactivity), impulsive behavior, and difficulty in paying attention (Banaschewski & Rohde, 2009). All the above characteristics describe the problems of children who are hyperactive and have difficulty concentrating, thereby disrupting learning and school performance. The inattention or hyperactivity becomes a problem when these behaviors are exaggerated, compared with other children of the same age, and when they affect the child, school participation, performance, social and family life are all affected (Pliszka, 1998).

Children with problems of attention can appear forgetful, distracted, not seeming to listen, disorganised, slow to start tasks, and then when they do start, they rarely finish. These children change frequently from one activity to another, seemingly losing interest in one task because they become diverted to another (World Health Organization, 2010). Children with hyperactivity seem restless, fidgety, full of energy and “always on the go.” They may seem loud, noisy, and/or continuously babbling. Overactivity implies excessive restlessness, especially in situations requiring relative calm. It may, depending upon the situation, involve the child running and jumping around, getting up from a seat when he or she was supposed to remain seated, excessive talkativeness and noisiness, or fidgeting and twisting. Furthermore, children with symptoms of impulsivity do things without thinking, such as answering questions in class without being called upon. They have difficulty waiting for their turn in games or in a queue, and interrupt people in conversation (Ihenacho, 2007).

Vitamins/mineral elements are essential for human health, primarily due to their critical function as enzymatic cofactors for numerous reactions in the body, such as the production of neurotransmitters and fatty acid metabolism (Ihenacho, 2007). Historically, attention has focused on inadequate intake of vitamins/minerals due to poor diet as a major contributing factor to many children’s health problems around the world, including anaemia (low iron), hypothyroid (low iodine), scurvy (vitamin C deficiency), and rickets (calcium and/or vitamin D deficiency). More recently, the focus has shifted to the relationship between relative metabolic disturbances and developmental disorders, such as those associated with ADHD (Nogovitsina & Levitina, 2005; Mousain-Bosc, Roche, Rapin, & Bali, 2004), learning disorders and intellectual development (Schoenthaler, Bier, Young, Nichols, & Janssens, 2000), and children with ASD (Davis & Kollins, 2012).

There are several reasons to suspect that children on the autism spectrum may not be getting sufficient nutrients, for example due to chronic diarrhoea or constipation, gastrointestinal inflammation, and a tendency to restrict food choices (Adams & Holloway, 2004). Children with certain disabilities whose tests show mild, moderate, and severe deficits in trace elements like zinc, calcium, copper, iron, and vitamins Bs, C, and E, could point to the presence of traits of ASD and ADHD (Kassam et al., 2015). In addition, children with autism might not break down or process the nutrients they do consume in expected ways. It has also been suggested that multiple neurotransmitter systems are dysfunctional in individuals with ASD, due to observed clinical features of many individuals with autism (i.e., larger head circumference, larger brain volume, seizures, irregular sleep patterns, and intellectual and developmental disabilities) (Polleux & Lauder, 2004).

Vitamin-mineral supplementation and other nutritional supplements are commonly used to treat social and behavior problems in children with ASD. Recent studies show that over 30% of parents are giving their children with ASD extra vitamins C and B6, and over 25% supplement with essential fatty acids and magnesium (Green, Pituch, Itchon, Choi, O’Reilly, & Sigafos, 2006). Like the evidence supporting them, the rationale for use and the expected benefits of many of these supplements vary. In regards to maintaining a general state of good health, the use of a daily multi-vitamin is widely accepted and supported for children with ASD, especially given the large loss of minerals and the self-restricted diets of many of these children (Kassam et al., 2015).

Vitamin-mineral supplementation can improve behavior and help normalize biochemical markers in children with autism. A number of studies have explored the prevalence of children with ASD using vitamin and mineral supplementation. Normal growth and good body structure depend on the body absorbing and metabolizing the vitamins and minerals that are part of a well-rounded diet. Howland, Dye, and Lawton (2009) reviewed studies and identified several examples of nutrient deficiencies affecting thinking and behavior, such as the ability to focus or stay alert in school. These supplements are given to children with the aim of reactivating cells and tissues, improving brain cells, and enhancing learning. Children taking their required vitamin-mineral supplements could help reduce their restlessness in the classroom and improve their eating habits, thereby enhancing learning and desired behaviors (Ihenacho, 2007; Babudoh & Ihenacho, 2013).

Also, Howland, Dye, and Lawton (2009) reviewed studies about nutrient deficiencies, such as those involving omega 3 fatty acids, that may worsen behavioral symptoms, including irritability and hyperactivity. Thus, taking vitamin and mineral supplements may improve such symptoms in some children with ASD, especially if the children have clinical or laboratory evidence of low levels of crucial vitamins, minerals or other nutrients.

In recent years, researchers have looked deeper into how well some vitamins, minerals, and nutritional supplements lessen the severity or intensity of core symptoms of communication difficulties, social challenges, and repetitive behavior among children with ASD. It is against this background information that the researchers intend to analyse the effect of vitamin-mineral status on attention-deficit/hyperactivity disorder among children with autism spectrum disorders in Jos, Plateau State, Nigeria.

Statement of the Problem

Children with autism spectrum disorders (ASD) tend to have additional health issues that may be related to their underlying medical conditions associated with ASD, such as the issues that can lead to their attention-deficit/hyperactivity disorder. The behavioural concerns include poor attention or short attention span, out-of-seat behaviour, impulsivity, fidgeting, frequent night-waking or general sleep disturbance, repetitive rocking or repetitive movement. These concerns affect the child's school learning and performance. Vitamin-mineral deficiencies undermine these children's health, which may result in behaviour problems (Adebiisi, 2018). In this case, the need for additional health-care that could attend to ADHD symptoms should be sought.

In addition, theories have postulated that most children with ASD benefit from gluten- and casein-free diets (Panksepp, 1979). Children on gluten- and casein-free diets avoid foods, drinks, and medications containing the gluten and casein proteins commonly found in wheat and milk. Children usually crave food high in protein, foods and drinks with artificial colourings and preservatives, canned foods, and drinks high in fat and sugar (Andzayi, 2012). Andzayi maintained that artificial flavours, colouring, and food preservatives contribute to hyperactive behaviour in children. Harris and Card (2012) also suggested that gastrointestinal symptoms are related to behaviour issues in children with ASD, which may be improved by a gluten-free, casein-free diet (Panksepp, 1979; Boyle, Boulet & Schieve (2011).

Furthermore, much of the research used to test the effects of artificial food colours and other additives have shown significant relationships between these chemicals and hyperactive behaviours (Elemukan & Kwandi, 2015). This evidence has led to the widely-held belief among parents, teachers, and most alternative medicine practitioners that sugar and chemicals in the diet may aggravate attention-deficit/hyperactivity disorder symptoms. Studies indicate that certain nutritional supplements may benefit children with ADHD. Hence, this study investigated the vitamin-mineral status on ADHD in children with ASD in Jos, Plateau State, Nigeria.

Research Questions

1. What is the missing vitamin-mineral status of children with autism spectrum disorders exposed to vitamin-mineral supplementation and those without vitamin-mineral supplementation?
2. What are the frequencies of attention-deficit/hyperactivity disorder in children with autism spectrum disorders?
3. To what extent does vitamin-mineral status influence the attention deficit hyperactivity behaviours of children with autism spectrum disorders exposed to vitamin-mineral supplementation and those without vitamin-mineral supplementation?

Hypothesis

1. There is no significant effect in the posttest attention-deficit/hyperactivity behaviours mean scores of children with ASD exposed to vitamin-mineral supplementation and those without vitamin-mineral supplementation?

METHODS

Research Design

The researchers adopted quasi-experimental ex post facto research design for this study. The design used what already existed and look backward to explain why two or more existing groups are compared for significant differences. In this study, the researchers analyzed the relationship between vitamin-mineral status and attention-deficit/hyperactivity disorder among children with autism spectrum disorders in Jos, Plateau State, Nigeria.

Population and Sample

The population of the study were children with autism spectrum disorders, diagnosed with characteristics of attention-deficit/hyperactivity disorder (ADHD) of poor attention (short attention span), hyperactivity (out-of-seat) and impulsivity in four special schools and clinical

centers in Jos Township. The study sample consisted of eight children between the ages of 6 and 14 years—5 boys and 3 girls—who were attending clinical centers or special schools. The children with ASD were diagnosed with attention-deficit/hyperactivity disorder using Conners' Teachers Rating Scale – Revised (CTRS-R). Consent letters signed by the parents or guardians were received.

The study used purposive sampling, a non-probability sampling technique. This technique is relevant to the study because the samples possess the specific characteristics to be studied and they appear to represent the population defined by the research problem. The researcher therefore identified the children with attention-deficit/hyperactivity disorder, not considering the age range, height, body mass, degree of attention-deficit/hyperactivity disorder, or gender. The samples in this study contain the characteristic traits of ADHD as identified by CTRS-R.

The participants were assigned to groups through simple randomization technique. In assigning samples to groups, the researcher used the lottery method. The blindfolded researcher drew the numbers out of a bowl until the required numbers were assigned to groups. Among the eight children identified as children with attention-deficit/hyperactivity disorder, the researcher randomly assigned four children to an experimental group and four children to a control group. Letters for research participation were written to the caregivers (or teachers) of the assigned participants, and these adults agreed to become the research assistants for the study.

Data Collection Instruments

The researchers used three instruments to collect data in this study: Conners' Teachers Rating Scale – Revised (CTRS-R) by Keith C. Conners (Conners, 1997), Behavior Measurement Scale (BMS) by Ihenacho (1985), and Quantum Magnetic Resonance Image Analyser (QMRIA), a calibrated 2013 edition digital machine. CTRS-R was used to help diagnose, identify, and qualify children to be included or excluded from the study. QMRIA obtains magnetic field sensor data of frequency and energy directly from the human body by firmly holding a sensor in the palm of the hand. It compares the individual with the resonance spectra of standard quantum of conditions and nutrition indicators report of the vitamin-mineral levels. BMS is a behavior observation scale that scores the various measurement traits in children with ASD, behavior and social challenges.

Experts in the fields of special needs education, psychology, and paediatrics validated the instruments. Content validity was used, where the experts were required to comment on the adequacy of the instruments in terms of comprehensiveness, clarity of directions, expression, and universality of the items. The adapted CTRS-R was subjected to test-retest analysis with a three-week interval ($N = 92$), with a reliability index of 0.92. The BMS was subjected to interrater reliability and was found to be Cohen's Kappa = 0.79.

Procedure for Data Collection and Administration

The pretest of the target behaviors of both the experimental and control groups was conducted using QMRIA and BMS. The Quantum Magnetic Resonance Image Analyser (QMRIA) was used to determine the pretest vitamin and mineral levels of the children in the two groups. Behavior Measurement Scale (BMS) was used to repeatedly rate the attention-deficit/hyperactivity disorder of the children in the two groups from the start to the end of the pretest.

The QMRIA analysed levels of the reduced/missed deficient vitamin-minerals among the children in the two groups, while BMS collected the behavioral data throughout the pretest. Data collection on each target behavior was done in the classroom setting for a period of five minutes, four times a week (Monday through Thursday) for a period of two weeks.

After the pretest, data on the experimental and control groups was collected, the treatment began for the period of eight weeks with the children in the experimental group in a location. Meanwhile, the research assistants engaged the control group in motor skills activities for the same number of weeks as the experimental group. The caregivers of the children in the experimental group brought their children to receive vitamin-mineral supplements, which the researcher administered. This was done for the entire period of eight weeks at 7:30 a.m. and 6:00 p.m. each day. Administering vitamin-mineral supplements at the same time to all the children in the experimental group was to control the extraneous variables and environments related to individual differences, age, body mass, and possible treatment reactions among the children.

The researcher, with the assistance of the accompanying caregivers, guided the administration and intake of the children's dosage. The children in the experimental group received the same quality of vitamin-minerals, but dosages were adjusted according to each child's age and body weight, as prescribed by the QMRIA, following the results of the digital test conducted with the

children. Supplements administration was monitored by a daily supplementation checklist and compliance was above 95% in all cases. Moreover, the posttest used the same procedure as pretest and took place after eight weeks of intervention.

Data Analysis Methods

Research questions one and three and hypothesis one were presented in tables, while research question two was presented in bar chart. Results of research question one showed the status of the vitamin-mineral status of each participant in both the experimental and control groups as normal (N), mildly abnormal (MA), moderately abnormal (MoA), and severely abnormal (SA) for each element tested, as revealed by the QMRIA. Data for research question three were analysed using percentages. Results of hypothesis one were presented using an independent (unpaired) samples t-test.

RESULTS

Research Question One: What are the pretest missing vitamin-mineral status of children with autism spectrum disorders exposed to vitamin-mineral supplementation and those without vitamin-mineral supplementation?

Table 1 shows the 14 collective vitamin and mineral pretest test reports for participants in both groups for calcium, iron, zinc, magnesium, vitamins A, C, E, and K. Others included folic acid, and vitamins B1, B2, B3, B6, and B12. Participants 1, 2, 3, and 4 in the experimental group tested either Mildly Abnormal (MA) or Moderately Abnormal (MoA) in 12, 11, 11, and 10 out of the 14 items tested respectively. Participants 5, 6, 7, and 8 in the control group also tested either Mildly Abnormal (MA) or Moderately Abnormal (MoA) in 13, 9, 10, and 11 out of the 14 items tested, respectively. However, all participants in both groups tested “normal” in only Vitamin B12. This implied that all participants in both experimental and control groups were deficient, missing or reduced in vitamin-mineral status in most of the items tested. The missing or reduced status brought about vitamin-mineral supplements that were provided to participants in the experimental group.

Research Question Two: What are the frequencies of attention-deficit/hyperactivity disorder in children with autism spectrum disorders?

Table 1

Pretest Reduced/Missing Vitamin-Mineral Status of the Participants.

Testing Item	Normal Range	AVM Par 1 Ex.	AVM Par 2 Ex.	AVM Par 3 Ex.	AVM Par 4 Ex.	AVM Par 5 Cn	AVM Par 6 Cn	AVM Par 7 Cn	AVM Par 8 Cn
Calcium	1.219 - 3.021	MA	MA	MA	N	MA	MA	N	MA
Iron	1.151 - 1.847	MoA	MA	MA	MA	MA	MA	MA	MA
Zinc	1.143 - 1.989	MoA	MoA	MoA	MoA	MoA	MoA	MA	MoA
Magnesium	0.568 - 0.992	MoA	MA	MA	MA	MoA	MoA	MA	MoA
Vit. A	0.346 - 0.401	MoA	MA	N	N	MA	N	N	MA
Vit. C	4.543 - 5.023	MoA	MA	MA	MoA	MA	MA	MoA	MA
Vit. E	4.826 - 6.013	MA	MoA	MA	MA	MA	MoA	MA	MA
Vit. B1	2.124 - 4.192	MA	N	MoA	N	MA	N	N	MoA
Vit. B2	1.549 - 2.213	N	MA	N	MA	MA	MA	MA	N
Vit. B3	14.477-21.348	MoA	N	MoA	MoA	MoA	N	MoA	MoA
Vit. B6	0.824 - 1.942	MA	MoA	MA	MA	MoA	MoA	MA	MA
Folic Acid	1.449 - 1.246	MA	MA	MA	MA	MA	N	MA	MA
Vit. B12	6.428 - 21.396	N	N	N	N	N	N	N	N
Vit. K	0.717 - 1.486	MA	MA	MA	MA	MA	MA	MA	N

Key: AMV = Actual Measurement Value. N = Normal. MA = Mildly Abnormal. MoA = Moderately Abnormal. Ex. = Experimental Group. Cn = Control Group. Par = Participant.

Figure 1
Posttest Frequencies of Attention-Deficit/Hyperactivity Disorder of Children.

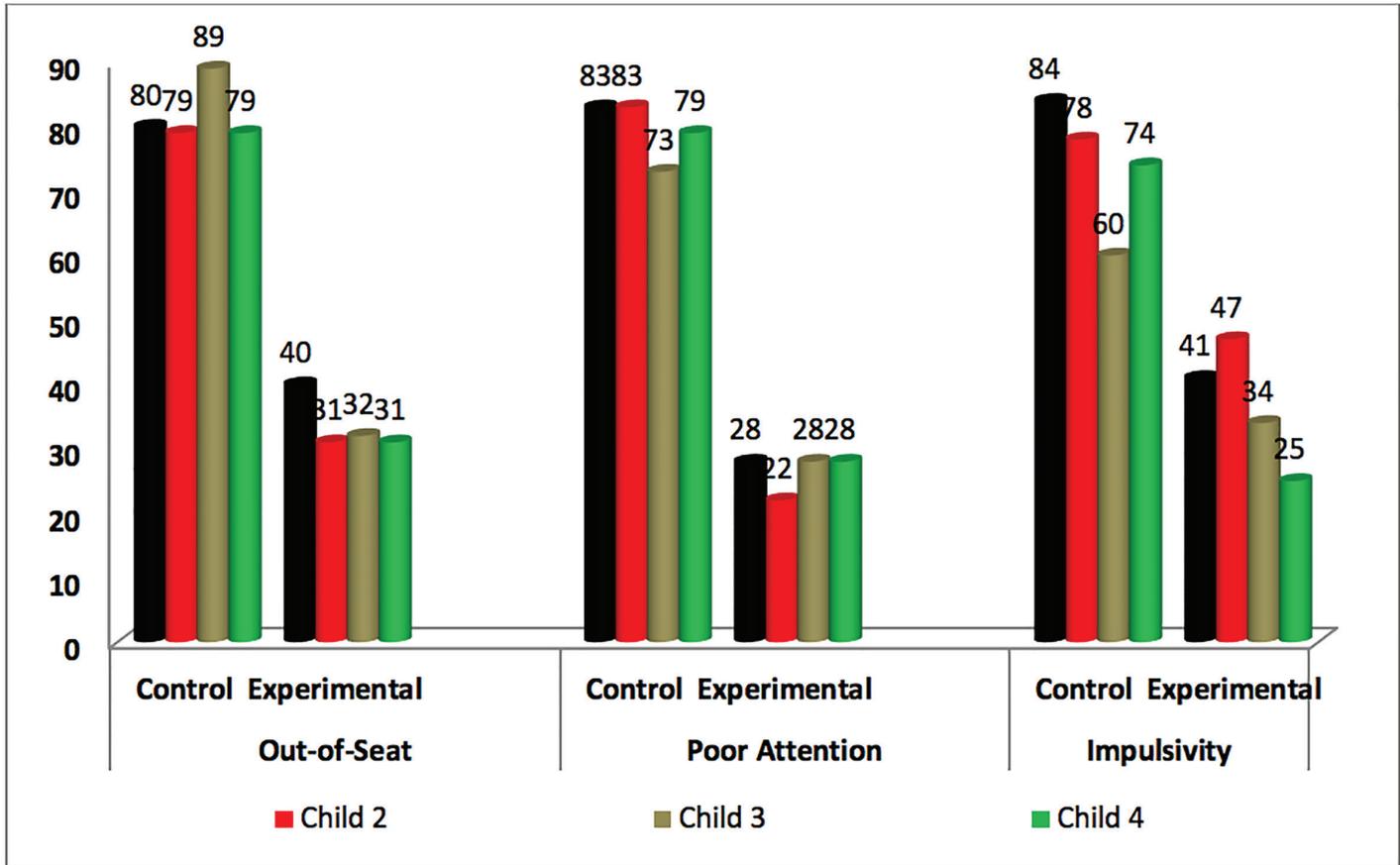


Figure 1 shows the posttest frequencies of the exhibited attention-deficit/hyperactivity behavior of out-of-seat behaviors, poor attention span, and impulsivity of the children in both experimental and control groups. Attention-deficit/hyperactivity behaviors observed for five minutes a day for a period of eight days after treatment showed that participants 1, 2, 3, and 4 in the control group exhibited out-of-seat behaviors an aggregate of 80, 79, 89, and 79 numbers of times, respectively. However, participants 1, 2, 3, and 4 in the experimental group exhibited reduced out-of-seat behaviors an aggregate of 40, 31, 32, and 31 numbers of times, respectively.

Moreover, attention-deficit/hyperactivity behaviors observed five minutes a day for a period of eight days after treatment showed that participants 1, 2, 3, and 4 in the control group exhibited poor attention in aggregate of 83, 83, 73, and 79 numbers of times, respectively. But participants 1, 2, 3, and 4 in the experimental group exhibited reduced poor attention in aggregate of 28, 22, 28, and 28 numbers of times, respectively. Participants 1, 2, 3, and 4 in the control group exhibited impulsivity

in aggregate of 84, 78, 60, and 74 numbers of times, respectively. However, participants 1, 2, 3, and 4 in the experimental group exhibited reduced impulsivity in aggregate of 41, 47, 34, and 25 numbers of times, respectively.

Research Question Three: To what extent does vitamin-mineral status influence the attention-deficit/hyperactivity behavior of children with Autism Spectrum Disorders exposed to vitamin-mineral supplementation and those without vitamin-mineral supplementation?

Table 2 shows the extent to which pretest vitamin-mineral status has influenced the attention-deficit/hyperactivity behavior of children with ASD in the two groups. The vitamin-mineral status indicated abnormality with high percentages (deficient or reduced vitamin-minerals), in the range of 9 (64%) to 13 (92%) out of 14 (100%) test items of all the participants in the two groups. Moreover, the levels of attention-deficit/hyperactivity disorder exhibited by the participants in the two groups rated all eight children “frequent” and “most frequent” (7, 87.5%; 1, 12.5%) with out-of-seat

Table 2

The Influence of Pretest Vitamin-Mineral Status on ADHD of the Children.

Child	Group	VMS	No. of VMD	% of Abn	Pretest Level of ADHD					
					Out of Seat	%	Poor Attention	%	Impulsivity	%
1	Exp.	Abn	12	85	Freq	87.5	Most	62.5	Less	12.5
2	Exp.	Abn	11	78	Freq	87.5	Most	62.5	Freq	87.5
3	Exp.	Abn	11	78	Freq	87.5	Most	62.5	Freq	87.5
4	Exp.	Abn	10	71	Freq	87.5	Most	62.5	Freq	87.5
5	Cnt.	Abn	13	92	Most	12.5	Freq	37.5	Freq	87.5
6	Cnt.	Abn	9	64	Freq	87.5	Most	62.5	Freq	87.5
7	Cnt.	Abn	10	71	Freq	87.5	Most	62.5	Freq	87.5
8	Cnt.	Abn	11	78	Freq	87.5	Freq	37.5	Freq	87.5

Key: Exp. = Experimental. Cnt. = Control. Abn = Abnormal. Freq = Frequent. Most = Most-Frequent. Less = Less-Frequent. VMS = Vitamin-Mineral Status. VMD = Vitamin-Mineral Deficiency.

behaviors; “frequent” and “most frequent” (3, 37.5%; 5, 62.5%) in terms of poor attention span, and “frequent” (7, 87.5%) with “less frequent” (1, 12.5%) impulsivity, respectively. This means that the higher percentages of abnormality or deficiency in vitamin-mineral levels either influenced or is responsible for “frequent” and “most frequent” of attention-deficit/hyperactivity disorder exhibited by the participants, except child 1 who was rated “less frequent” (1, 12.5%) on impulsivity.

Hypothesis One: There is no significant effect in the posttest attention-deficit/hyperactivity behaviors mean scores of children with ASD exposed to vitamin-mineral supplementation and those without vitamin-mineral supplementation?

Table 3, at the degree of freedom of 3 and level of significance of 0.05, posttest scores indicated significant effect in the ADHD behaviors of both the experimental group (M=33.50, SD=4.36) and control group (M=81.75, SD=4.86). A t test showed these effects to be significant; $t(3) = (.001)$, $p < .05$, two-tailed. Therefore, hypothesis one is rejected, which means there is signifi-

cant effect in the posttest ADHD behaviors mean scores of children with ASD in the experimental and control groups.

DISCUSSION

The study revealed an initial missing or reduced vitamin-mineral status in children with autism spectrum disorders. Among participants in the experimental and control groups, the finding showed the 14 areas of vitamin-mineral elements, where Participants 1, 2, 3, and 4 in the experimental group tested as either mildly abnormal (MA) or moderately abnormal (MoA) in 12, 11, 11, and 10 out of the 14 items tested, respectively. Moreover, Participants 5, 6, 7, and 8 in the control group also tested either mildly abnormal (MA) or moderately abnormal (MoA) in 13, 9, 10, and 11 out of the 14 items tested, respectively. The researchers deduced from the findings that, before the administration of the vitamin-mineral supplementation, all the participants were lacking or deficient in virtually all the vitamins and minerals tested.

Table 3

Posttest Attention-Deficit/Hyperactivity Behaviors of Experimental and Control Groups.

Group	N	X	SD	α -level	df	t-cal	p-value
Experimental	4	33.50	4.36	0.05	3	13.89	.001
Control	4	81.75	4.86				

This finding was in agreement with the work of Kassam et al. (2015) who found trace element deficits among children with language disorders, where cases investigated showed mild, moderate, and severe abnormalities in zinc, calcium, copper, iron, and vitamins Bs, C, and E. Ihenacho (2007) posited that the significance of vitamin-mineral elements lie in their functional roles, as determined partly by their changes and mobility, and if these elements are reduced or missing in the body, it may change the activities and characteristics of ADHD in children.

The result in Table 2 shows how the extent of the pretest vitamin-mineral status influenced the presence of ADHD of children with ASD in the two groups. The vitamin-mineral status, as measured by the Quantum Magnetic Resonance Image Analyser, indicated abnormality (deficient or reduced vitamin-minerals). It was inferred that the ratings “frequent” and “most frequent” showed that all the children exhibited all the characteristics of ADHD, except one child who was rated “less frequent” (1, 12.5%) on impulsivity. All implied that the abnormality in vitamin-mineral levels showed no relationship between the two groups. The study of Adams et al. (2011) on the effect of a vitamin-mineral supplement on children and adults with autism using a randomized, double-blind, placebo-controlled, three-month vitamin-mineral treatment study agreed with the present study. The study by Adams et al. (2011) presented the effect of the revised “second generation” supplement on the vitamin-mineral status and symptoms of autism in children and adults. The vitamin-mineral status of those children at the start of the study (pre-supplementation) was compared with that of neurotypical children of similar age and gender. Three measures of autism severity were measured pre- and posttest, and a fourth measure of change in autism symptoms was measured at the end of the study. The result of the study showed the levels and statuses of vitamins and related substances, and significant changes among treatment group members in the exhibited behaviors (Adams et al., 2011).

Figure 1 revealed the frequencies of the exhibited attention-deficit/hyperactivity disorder of out-of-seat behaviors, poor attention, and impulsivity of the participants in the experimental and control groups after intervention. Figure 1 shows the number of times participants in the two groups exhibited attention-deficit/hyperactivity disorder. The posttest frequencies of the exhibition of “out-of-seat” behaviors, “poor attention” and “impulsivity,” after being observed over a period of eight weeks, were higher than posttest frequencies of ADHD exhibited by children in the experimental group.

The researchers attributed the reduction in ADHD behaviors in the experimental group to vitamin-mineral supplementation, as children in the control group showed high frequency of ADHD behaviors. The study is consonant with the finding of a pilot study by Harris and Card (2012) that evaluated nutritional influences on gastrointestinal symptoms and behavior patterns in children with autism spectrum disorder. The pilot study evaluated the relationship between a gluten-free, casein-free diet, and gastrointestinal symptoms on the one hand with behavior patterns in children with ASD on the other. The study suggested that gastrointestinal symptoms are related to behavioral issues, including learning behavior problems in children with ASD, which may be improved by a gluten-free, casein-free diet. Boyle, Schieve, and Boulet (2011) also maintain that in the last decade, researchers have reported increased prevalence of both ADHD and autism spectrum disorder, as well as more cases of co-occurring ADHD and ASD symptoms.

Table 3 shows that posttest scores indicated significant effect in the posttest ADHD behaviors between the experimental and control groups. Since the intervention resulted in significant improvements on ADHD behaviors scores after weeks of intervention, the researcher attributed the decrease in the behaviors of children in the experimental group to the intervention. It also resulted in the children’s overall health.

Ihenacho’s (2007) study on the index of consistently present/absent/excess/low trace element status among hyperactive children with learning disabilities was in agreement with the present study. Ihenacho’s study compiled the index of consistently missing, excess, and present trace elements among children and youths with learning disabilities, and to supply or level up the trace elements with the missing supplements to determine their effect on hyperactivity. The findings revealed improvements in the levels of these trace elements, which helped the sampled population overcome their problems. Similarly, Ihenacho (2007) revealed that megavitamin must have played a vital role in reducing restlessness.

CONCLUSION AND RECOMMENDATIONS

This study analyzed the vitamin-mineral status of, and the impact of vitamin-mineral supplement intervention on, attention-deficit/hyperactivity disorder in children with Autism Spectrum Disorders in Jos, Plateau State, Nigeria. When a child experiences ADHD that interferes with their educational and social life, classroom management, and other behavioral interventions

implemented at school, skills alone cannot solve these problems. Children with ADHD have learning difficulties because they are unable to focus their attention on the learning task at hand (Osorji, 2012; Ihenacho, 2007). Deficiencies in vitamins, minerals, and other nutritional elements could contribute to these learning problems. Optimising or levelling up these deficiencies could reduce or even eliminate these problems.

The findings of this study lead to the following recommendations:

1. Teachers and education stakeholders should encourage parents to provide children with adequate nutrition in their meals to balance their vitamin-mineral levels and those levels should be tested regularly, so that they may be corrected if necessary.
2. Teachers should encourage parents to provide children with proper nutrients to optimize their brain function.
3. Educational interventions should be run concurrently with clinical interventions for adequate overall improvement in health and wellbeing.

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Educating the Educators: Facilitating Bullying Education with Inservice Special Education Teachers

Yvonne Ortiz-Bush

California State University, Bakersfield, USA

Yeunjoo Lee

California State University, Bakersfield, USA

Abstract

Students with disabilities are at risk of being bullied in school settings. Special education teachers should be prepared to address this complex behavioral issue and support students with disabilities. This study surveyed 30 novice special education teachers to investigate the amount of bullying prevention and intervention training they experienced in their teacher education training programs, school sites, and school districts. The impact of a bullying prevention and intervention workshop on the participants' perceptions were also examined. The results demonstrated that the participants improved their confidence and readiness for bullying prevention and intervention strategies. The paper provides suggestions for teacher preparation. A call for systemic and collaborative bullying prevention and intervention training across special teacher education programs and beyond is substantiated.

Keywords: *bullying, special education, in-service teachers, perceptions*

INTRODUCTION

Bullying has long been a major concern. Researchers from around the world have studied the issues related to bullying. A Norwegian researcher, Dr. Dan Olweus, is considered to be the first to study this problem in depth (American Psychological Association, 2014). Research regarding bullying is an international endeavor that has been studied in over 28 countries (Jimerson, Swearer, & Espelage, 2010), with recent studies from Canada (Brendgen & Poulin, 2018), Finland (Sairanen & Pfeffer, 2011; Sentse, Prinzie, & Salmivalli, 2017), and Australia (Skrzypiec, Askell-Williams, Slee, & Rudzinski, 2016). While researchers do not always agree on a definition of bullying, the U.S. Center for Disease Control and Prevention's uniform definition of "bullying among youth" is: "any unwanted aggressive behavior(s) by another youth or group of youths who are not siblings or current dating partners that involves an observed or perceived power imbalance and is repeated multiple times or is highly likely to be repeated" (Gladden, Vivolo-Kantor, Hamburger, & Lumpkin, 2014, p. 7).

According to the National Center for Education Statistics (NCES, 2015), approximately 22 percent of students in the United States, ages 12 to 18, reported experiencing bullying at school. Although this percentage is the lowest since 2005, when NCES began to collect data on the prevalence of bullying, the statistics should be carefully interpreted as data sets often rely

on the self-report of students. One study illustrates this issue with bullying self-report data. The majority of students (64%) who indicated that they had been bullied did not report being bullied to an adult at their school (Petrosino, Guckenbug, DeVoe, & Hanson, 2010).

As bullying has become a critical issue in schools, researchers have expressed concerns that students with disabilities are at an even higher risk of being bullied than students without disabilities (Blake, Lund, Zhou, Kwok, & Benz, 2012; National Bullying Prevention Center, 2016). An analysis performed in several early studies (1989–2003) found that, overall, students with disabilities in those studies encountered more bullying than their regular education peers (Carter & Spencer, 2006). More recently, researchers (Rose, Monda-Amaya, & Espelage, 2011) report that most of the statistics on bullying often did not delineate a "disability" subgroup, which, in turn, underestimated the prevalence of bullying. Concomitantly, other researchers have proposed that the higher risk of bullying among students with disabilities could be related to their struggle with social skills and behavioral difficulties (Farmer, Wike, Alexander, Rodkin, & Mehtaji, 2015; Maag, 2006; Rose & Monda-Amaya, 2012). It is also suggested that students with disabilities may acquire bullying behaviors to avoid victimization (Rose et al., 2011).

Educators are concerned with the shortage of special education teachers (National Coalition on Personnel Shortages in Special Education and Related Services, 2018). Most special education teacher preparation

program courses are aligned with national and state accreditation standards and include required courses on students with disabilities, curriculum development, and clinical practices. One issue not related to pedagogy that special education teachers are likely to face—because their students are likely to face it—is the topic of bullying. Often, the complex needs of special education students are overlooked and research suggests that social and communication skills instruction are not sufficient bullying prevention and intervention strategies for these students (Farmer et al., 2015; Maag, 2006; Rose & Monda-Amaya, 2012). Providing bullying prevention and intervention training to special education teachers, as well as general education teachers, addresses a crucial need. Unfortunately, a recent search of several major research databases (ERIC, Education Full Text, Education Research Complete, Social Sciences Full Text, PSYCHINFO) reveals limited articles for bullying prevention training and special education teachers.

The purpose of this research is to examine (a) the levels of bullying prevention and intervention training in teacher preparation programs, school sites, and school districts, (b) teachers' perceptions of bullying and their readiness for bullying intervention/prevention, and (c) the effects of a workshop on bullying prevention and

intervention. The definition, types of bullying, bullying-related laws and resources, and bullying intervention and prevention strategies were presented in the workshop described in the method.

METHODS

Participants

Participants were 30 novice special education teachers who enrolled in an alternate (i.e., intern) credential teacher preparation program in a medium-sized public university in central California in the United States. An intern credential is given to in-service teachers who are in the process of earning their credential. The participants worked in 16 different local school districts in a geographic area characterized by a high level of poverty, high rates of teenage pregnancy, and a low level of educational attainment. They were informed that there would be a bullying prevention/intervention workshop during one of their intern seminar courses and their participation in this study was voluntary.

The participants were mostly new to the field, with their work experience ranging from 0 to 3 years ($M = 1.44$; $SD = 0.78$). Seventy percent ($n = 21$) of the teachers were 29 years or younger, with the average age of the participants being 30.5 ($SD = 9.9$). The teachers in this sample also tended to be female and the majority

Table 1
Participants' Demographics.

Category	Values	Percentage (%)	Number (n)
Gender (n = 30)	Female	73	22
	Male	27	8
Ethnicity (n = 30)	Hispanic	57	17
	White	30	9
	African-American	7	2
	Asian or Pacific Islander	3	1
	Other	3	1
Age Range (n = 30)	21–29 years	70	21
	30–40 year	13	4
	40 or more years	17	5
Types of Credential (n = 28)	Mild/Moderate	59	17
	Moderate/Severe	41	11
Types of Classroom (n = 29)	Self-Contained	76	22
	Resource	17	5
	Self-Contained and Resource	7	2
Years of Work Experience (n = 24)	0–2 years	73	22
	2–3 years	7	2
	Not reported	20	6

teach in a self-contained classroom environment. Table 1 shows detailed demographics of the participants based on the pre-workshop survey.

Survey Development

This study utilized a pre and a post-workshop survey. The pre-workshop survey was conducted two weeks before the workshop and a post-workshop survey after the workshop. The pre-workshop survey consisted of 10 demographic items and six short-answer questions that inquired about participants' level of bullying prevention, intervention training, and knowledge of school policies about bullying. The pre-workshop survey also contained several statements about bullying. Participants were instructed to utilize a 5-point Likert scale that ranged from 1=strongly agree to 5=strongly disagree. The post-workshop survey included the same statements and instructions as well as three additional questions related to their perceptions of the workshop. The pre- and post-workshop surveys were administered and gathered by the second author after the first author (i.e., the workshop presenter) left the classroom.

Bullying Prevention and Intervention Workshop

The first author designed and delivered the training on bullying prevention and intervention. She is a certified school counselor and had delivered a bullying prevention and intervention workshop previously. The workshop lasted 90 minutes and was accompanied by a Microsoft PowerPoint presentation and a short video clip. Upon completion of the training, copies of the presentation were made available to the workshop attendees.

The workshop addressed a uniform definition of bullying (Gladden et al., 2014) to ensure all participants were informed of the key dimensions of bullying. Types of bullying and laws related to bullying were introduced. The participants were also educated about bystander apathy that often occurs in school-related bullying incidents and factors that may protect or put special education students at risk of being bullied (Pozzoli & Gini, 2013; Stueve et al., 2006). After providing an overview of bullying, best practices were introduced. The best practices included school-based anti-bullying intervention (Chalamaris & Piette, 2015; Jiménez-Barbero, Ruiz-Hernández, Llor-Zaragoza, Pérez-García, & Llor-Esteban, 2016), which creates an educational climate in which students feel safe and connected. At the end

of the workshop, the participants were introduced to resources and encouraged to utilize them. Finally, there was a question-and-answer period, and a post-workshop survey was administered.

Data Collection and Analysis

This study utilized a one-group pre- and post-test design. This design allows a comparison of participants' perceptions before and after a workshop. Dependent t-tests were conducted to examine pre- and post-workshop differences. All participant responses were recorded into SPSS and analyzed using descriptive statistics. The second author administered the first set of surveys two weeks before the training. The second set of surveys were also administered by the same author after the training. The presenter and first author were not present either time.

RESULTS

The results show that novice special education teachers had received limited to no training during their preservice and in-service years. Table 2 shows training hours from their teacher preparation programs, school sites, and school districts. The majority of participants (93%) reported receiving no training in their teacher education program, while two participants (6.6%) received 1–2 hours of training during their pre-service training. Nine participants (30%) reported receiving 1–2 hours of training at the district level, and six participants (20%) had on-site training for 1–2 hours.

When asked if their district has a bullying policy, the majority of participants (79%) responded affirmatively; however, it should be noted that 8 participants (27%) indicated that their district had no policy or they were not sure whether the district had a policy. The school

Table 2
Levels of Bullying Prevention and Intervention Training.

	Training Hours	Percentage (%)	Number (n)
Teacher Preparation Program (n = 30)	0 hours	93.3	28
	1 hour	3.3	1
	2 hours or more	3.3	1
School District (n = 30)	0 hours	70	21
	1 hour	20	6
	2 hour or more	10	3
School Site (n = 30)	0 hours	80	24
	1 hour	13.3	4
	2 hours or more	6.6	2

Table 3
Classroom Rules on Bullying Prevention and Intervention.

Rules for Classroom (n = 30)	Percentage (%)	Number (n)
Respect everyone	23.3	7
Keep hands to yourself	10	3
No name calling	3.3	1
Be a friend	3.3	1
Be nice to everyone	3.3	1
No teasing	3.3	1
Zero tolerance	3.3	1
Treat others as you want to be treated.	3.3	1
Appropriate Language	3.3	1
No rules	43.3	13

office was the most frequently mentioned location in which the district policy was posted (33%). In addition to the district policy, the participants were asked about whether they have a rule(s) about bullying in their own classroom. Fifty-six percent (n = 17) of the participants reported having bullying rules in their classroom while many did not (43%). Table 3 indicates specific participant classroom rules and the frequency with which they were reported. The most common rule, “respect everyone,” was endorsed by 23 percent (n = 7) of participants.

After the workshop, the participants responded to questions about their perception of the training. Twenty-nine participants (85%) felt better prepared to ad-

dress bullying. When asked to identify information from the workshop that they found beneficial, 11 participants (32%) reported resources, 6 participants (18%) reported laws and regulations, and 8 participants (24%) reported strategies/activities. Participants expressed that they were not aware of bullying-related laws until the workshop and that the presented resources would support them in handling bullying incidents. In future workshops, the participants would like to learn more strategies and/or activities (n = 9, 26%), real-life scenarios or examples (n = 5, 15%), and related laws (n = 2, 6%).

The results of the pre/post Likert-scale items are shown in Table 4. Overall, statistically significant results were reported that participants felt more confident in their ability to recognize bullying (item 5) and provide bullying prevention and interventions (items 8 and 9). They also indicated a greater awareness of their responsibility as classroom teachers to assist rather than punish bullies (item 1), as well as a stronger belief that classroom management helps address this issue (item 4). There was a significant difference in their knowledge of the legal requirements related to their professional role between pre- and post-workshops (item 7). Two pre- and post-workshop scores were significantly different at the .05 level (items 1 and 6) and two items

Table 4
Means, Standard Deviations, and Dependent t-test Results of Pre and Post-Workshop Scores.

Statements	Pre-workshop		Post-workshop	
	M	SD	M	SD
1. Teachers should try to help bullies not punish them.	3.17	1.87	2.21*	1.08
2. If I see bullying happen, I'd do something about it.	2.14	2.43	1.38	1.05
3. A teacher can only control what happens in his/her classroom; student's behavior outside of the class is out of his/her hands.	4.31	1.71	4.41	0.87
4. Bullying can be reduced through classroom management.	4.34	1.54	4.14	0.92
5. I feel confident in my ability to recognize what bullying looks like.	2.28	1.98	1.66	0.86
6. If I heard/saw bullying occur I know what steps I would take to end it.	2.66	1.95	1.72*	0.92
7. I am well aware of what the law requires of me with regards to bullying.	3.24	1.94	1.97**	0.87
8. I feel confident in providing bullying intervention to students.	2.97	2.01	1.76**	0.74
9. I feel confident in providing bullying prevention to students.	2.72	2.03	2.00	1.54

Key: 1 = strongly agree. 2 = agree. 3 = neutral. 4 = disagree. 5 = strongly disagree.
 Note: SD = Standard Deviation. * p < .05, ** p < .01.

were significant at the .01 level (items 7 and 8). Participants indicated a significant increase in knowing what to do if they witnessed or heard bullying (item 6) and reported that they would do something about observed bullying (item 2). Table 4 shows the mean difference results and the significance levels.

DISCUSSION

The workshop helped improve teachers' perceptions and readiness for intervention/prevention skills. This study confirms that special education teachers are able to increase their confidence or efficacy in addressing this issue after one workshop. This finding supports previous research in which teacher confidence and responsiveness increased following training in this domain performed in Canada (Craig, Bell, & Leschied, 2011), the United States (Greytak, Kosciw, & Boesen, 2013), and Finland (Sairanen & Pfeffer, 2011). In Finland, teachers with previous training were reported handling bullying incidents more effectively than their counterparts without previous training, regardless of years of teaching experience (Sairanen & Pfeffer, 2011). Unfortunately, the lack of previous bullying intervention and prevention training reported by participants in this study further validates the fact that teachers have limited bullying prevention and intervention training, especially at the level of in-service training in the United States (Bauman & Hurley, 2005) and Canada (Craig et al., 2011). It is recommended that teacher preparation programs, school districts, and school building administrators collaborate and provide the necessary preservice and inservice training.

While teacher training should be comprehensive and continuous, there is also literature to suggest that all school personnel, even paraprofessional and support staff, should be included in bullying prevention and intervention training (Bradshaw, Waasdorp, O'Brennan, & Gulemetova, 2013; Reiter & Lapidot-Lefler, 2007). According to Bradshaw and his colleagues (2013), supporting staff and paraprofessionals also witness bullying, and they would need a clear understanding of school policies on how to report and handle any incidents. In this manner, entire school staffs can build a culture of inclusiveness and anti-violence and invite an ongoing dialogue about bullying-related issues in order to facilitate a safe and productive learning environment for students with disabilities.

It is apparent that training should begin with basic definitions and concepts related to bullying. In addition, training in overarching federal laws and specific state laws would help to prevent costly legal battles

(Maag & Katsiyannis, 2012). This is vital because some researchers have expressed concern about preservice teachers not having a consistent and accurate definition of bullying and, therefore, underestimating the extent of non-physical forms of bullying (Craig et al., 2011). In other words, while it may be easier for teachers to address observable forms of bullying, they may have difficulty recognizing covert bullying. Relatedly, emotional symptoms of bullying were documented in a meta-analysis of bullying research conducted in over 25 different countries (Due et al., 2005). Another noted area of concern is that teachers may experience difficulty discerning bullying from simple student conflict (Rose et al., 2011).

As the participants in this study requested, the use of real-life scenarios, case studies, videos, and activities/methods of bullying prevention and intervention should be included in pre-service and in-service training. While not the focus of this study, Rose and Monda-Amaya (2012) is an excellent resource for specific strategies that teachers can use to impact bullying with students in special education. More specifically, these authors provide brief, fictionalized vignettes dealing with bullying related issues that are interwoven with professional literature relevant to each concern. Also included is a discussion of how teacher strategies can fit into schoolwide programs such as Response-to-Intervention (RTI) and Positive Behavior Intervention and Supports (PBIS). In fact, whole school interventions have been found to be effective in several countries (Carney & Merrell, 2001). Overall, more research is warranted to evaluate the effectiveness of bullying prevention and intervention strategies for students with disabilities.

It is alarming that some school districts do not have a policy on bullying and/or that not all teachers are aware of it. It should be noted that the state in which this study was conducted codified a bullying reporting statute that went into effect on July 1, 2012. The California law, known as Seth's Law, was enacted as the result of the suicide of a student who was bullied at schools near where this training took place. That law requires school districts to post a policy and have timelines to follow-up on reports of bullying (California Education Code, 2011). In addition, all school personnel are required to report bullying and have timelines in place to prevent a report from being overlooked. The U.S. Department of Education's Office for Civil Rights (2014) also issued guidance addressing public schools' responsibilities under various federal laws (Section 504 of the Rehabilitation Act, the Americans with Disabilities Act, and Individuals with Disabilities Education Act). Schools

should be cognizant that they violate the provision of Free Appropriate Public Education if students with disabilities suffer from bullying incidents. Considering that participants are novice teachers, they may not be fully aware of district policies. School districts must comply with all laws related to bullying and ensure their employees are duly informed. For example, per California state law, district policies should be posted and accessible for all employees and students. All special education teachers should obtain ongoing training so they comply with state and federal mandates and can effectively address this issue with the children they serve.

In summary, cultural norms, communication patterns, and educational programs differ in various countries across the globe. Yet, educator concerns about bullying exist and have been studied internationally (Smith et al., 2002; Smith & Brain, 2000). It is important that researchers and educators from across the globe come together to find effective ways to address bullying. In this manner, the researchers support the United Nations' plea for a safe learning environment for all students (Greene, 2006).

Limitations and Future Research

This study was completed with a small convenience sample of novice special education teachers. Replication with larger samples in a variety of geographic locations would increase the generalizability. Research with pre-service, in-service, and experienced special education teachers is also needed to ensure training is effective with each group. Training can inform the development of classroom rules that consider the student population, developmental level, and type of classroom.

Future research might also benefit from a longer training format. Holding a series of workshops over multiple weeks or months, rather than in one sitting, would allow participants time to process and possibly apply some of the presented concepts in their classrooms. It is also suggested to standardize the training, which could facilitate replicating research. Most research, including the current study, involves self-reporting surveys or questionnaires. It is strongly recommended to evaluate the effects of training on various data-gathering methods, including direct observation and interviews.

Overall, novice special education teachers are overwhelmed by the demands of their job. Learning curriculum, developing individual education plans (IEPs), and collaborating with other professionals are demanding job tasks. Bullying prevention and intervention should not be "hit or miss." It should be considered a crucial

part of special educators' daily activities. Future research regarding the documentation of districts that comply with state law and policies might encourage districts to ensure this training is provided. Given that the subjects in this study were new teachers, further research with experienced special education teachers is also needed to ensure the findings were not a function of experience. This study only utilized self-report measures. Triangulation of data about bullying prevention and intervention training and policy could be obtained from the school districts that employ the participants.

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School Culture and its Impact on Special Education Practices in Bangalore, India

Sunaina Shenoy

University of California Berkeley, USA

P. David Pearson

University of California Berkeley, USA

Abstract

The purpose of this qualitative research study was to examine the interviews with principals and teachers before, during, and after data collection using a screening tool in Kannada and English (Shenoy, 2015, 2016), to illuminate the school culture and its impact on special education practices across low-, middle-, and high-income private schools in Bangalore, India. Interviews with teachers and principals revealed that school personnel in low-income schools do not have a referral process in place and are not aware of special education practices. In contrast, personnel in middle-income schools were aware of special education practices, but viewed the identification of students with disabilities as beyond the purview of their resources and practices. Finally, leaders at high-income schools were aware of special education practices, and believed that they had the resources to follow inclusive special education models in their classrooms.

Keywords: School culture, special education practices, socio-economic status, Indian education

INTRODUCTION

Disability through a Socio-Cultural Lens

Disability has been viewed through several perspectives, including (a) the medical model, which focuses on the physical, cognitive, behavioral, psychological, and sensory deficits within the individual that sets them apart from other people; (b) the social model, which focuses on hostile environments, negative attitudes, limited communication and resources within a social context that limit services and supports to the person with a disability; (c) the political model, which purports that a disability interferes with a person's capacity to work and thus limits his/her contribution to the economy, a product of the values of the dominant social group, and (d) the cultural model, which focuses on group belongingness and the distinction between oneself and groups that don't share the disability identity (Gilson & Depoy, 2000). McDermott & Varenne (1995) classify disability from three perspectives: (a) deprivation, which is indicative of one group being better than the other based on the acquisition of certain skills; (b) difference, which is indicative of both groups being different, but celebrating those differences; and (c) culture as disability, which is indicative of a socially-constructed, politically-motivated construct.

Vygotsky (1978) formulated a theoretical framework for the comprehensive and inclusive practice of special education that is relevant even today. According to

his social constructionist view on disability (1978), he argues that the problem is not the primary disability, but the secondary consequences that disability engenders within a social milieu. Vygotsky stressed the importance of identifying a disability in a child from the point of strength, not weakness, and concentrating on the levels of independence and needs for support rather than feebleness of mind. It was this idea that led him to introduce the term "inclusion based on positive differentiation" (Vygotsky, 1995, p. 24). Special education, for Vygotsky, was not just a diminished version of general education, but rather a specially designed setting, that focused on educating the individual using psychological and pedagogical means. The inclusive socio-cultural environment is the only adequate context where it can occur (Vygotsky, 1995). The researchers current models of inclusion are based on this frame, and researchers through the years (Gindis, 1999; Daniels, 2008; Smagorinsky, 2012) have used it as a guide to extend his work. For example, Smagorinsky (2012) described the role of cultures in defining the individual and collective growth of a society. A richer culture is one that values both the needs of the individual and the collective progress of all the individuals in the society. According to Smagorinsky (2012), if a collective goal represents the conceptualization of people with disabilities beyond the diagnostic norm, every person in the culture is invested in working towards inclusion, rather than the person with the disability advocating for themselves. According to

Habib (2008), school leaders play an important role in maintaining a culture that is inclusive of diversity and principals who have succeeded in following inclusive models for students with disabilities genuinely believe that they belong there.

Ainscow & Miles (2008) describe the inclusion of students beyond special education as a paradigm that considers a more global, diverse outlook and encourages students from different backgrounds and learning styles to feel welcomed in classrooms around the world. Ajuwon (2008) emphasized the importance of child-centered education practices to truly embrace the ideology of inclusive education. Biklen & Burke (2006) have suggested a model of inclusion where educators are receptive to all students and are not quick to judge them based on IQ levels or functional and support levels. Choi, Meisenheimer, McCart, and Sailor (2017) employed schoolwide inclusive school reform models in low-income District of Columbia Public Schools in the United States and found that both reading and math scores improved consistently across all schools in the sample. Thus, conceptualizing inclusion as a socially-constructed concept benefits students with and without disabilities.

School Culture and Special Education within the Indian Context

The official languages of India are Hindi and English. The British colonial legacy has led to English being the primary language for government, business, and education. Although Hindi is taught as a primary language and language of instruction in northern India, it is slowly being displaced by English. In the southern states, the medium of instruction in schools is both the state language (e.g., Kannada) and English, with Hindi taking on a third-language status. Again, in the south, English immersion models in schools are displacing heritage languages. Therefore, most of the urban private schools in the country offer an English immersion program with no bilingual support.

According to the Banerji et al. (2013), 80% of Indian schools are government schools; but because of the poor quality of education, 27% of Indian children are privately educated. In urban centers, more than 50% of children (27 million) attend private schools and all these students are English Language Learners (ELLs) as they come from different native language backgrounds, but follow an English immersion model in school. Although this model has been effective with students from a higher socioeconomic status (SES) background,

where they have more exposure to both L1 and L2, it has not proved to be the best option with students from lower SES backgrounds where the L1 is dominant.

In low-income schools, which constitute roughly 50–60% of the private school population in urban centers, there is no mention of special education, and parents and teachers still view it within a segregated context that does not find place in their schools. In middle-income schools, which constitute roughly 30–40% of the private school population in urban centers, special day classrooms for children with moderate to severe disabilities do exist, but although they are located within the school site, the children with disabilities have no contact with their typically-developing peers. The high-income schools that constitute roughly 10–15% of the private school population in urban centers follow inclusive special education models and provide students with resource rooms and pull-out services for children with mild to moderate disabilities.

According to Sanjeev and Kumar (2007), India is one of the few countries where the education of children with special needs does not fall within the purview of the human resource development sector, but rather the social justice and empowerment sector, whose primary focus is rehabilitation, not education. The issue of educating children with disabilities remains imperceptible, hidden from the public domain, a private problem for families and nongovernmental organizations (NGOs) to address. According to Peters (2007), India has 70 million people with disabilities, and this alarming statistic came to light only after the 2001 census, which was the first time the education and employment status of people with disabilities was accounted for. Only 1–2% of people with disabilities are educated, and they attend schools set up by NGOs, since public schools do not accommodate them, and private schools are too expensive. Only 1% of people with disabilities are employed in India, and most others are dependent on their families for basic care, as there is no government assistance for unemployment. Although most developed countries, like the United States, face the problem of over-representation of certain minority groups in special education (Harry & Klingner, 2006), developing countries like India face a paradox where a majority of the population are under-represented in schools (Peters, 2004). Poverty seems to be an underlying cause and consequence of a disability as it is more common in poor families and communities, and limits the access to employment and education; which in turn leads to even greater economic exclusion (Kalyanpur, 2008). Coping with a disability is not just an internal individual struggle of parents and

children, but it is closely tied to the cultural values, beliefs, and coping strategies that a society uses to view and deal with disability. There is still a considerable amount of stigma attached to disability, specifically because people with disabilities are not considered valuable to a developing economy. This attitude trickles down to the culture of education and pedagogy.

Teacher Attitudes and Special Education Practices in India

Although special schools are the predominant option for students with special needs in India, the movement towards inclusive education has started in some parts of the country (Jangria, 1995; Alur & Natarajan, 2000). Teacher attitudes are an important variable to consider while evaluating the efficacy of inclusive education programs (Ringlaken & Price, 1981). Parasuram (2006) conducted a study in Mumbai, India, to learn more about teacher attitudes towards students with disabilities in their classrooms. He was interested in whether characteristic variables such as age, gender, income level, education level, and teaching experience affected teachers' attitudes towards including students with disabilities in their classrooms. He found that teachers' attitudes significantly varied with age and teaching experience. Younger teachers with fewer years of work experience had more positive attitudes towards inclusive education as opposed to older teachers with more work experience. Moreover, if teachers came from a higher socio-economic status, they had more positive attitudes towards students with disabilities when compared to teachers from lower socio-economic groups. Teachers' positive attitudes towards people with disabilities are also positively correlated with higher education levels (Yuker, 1988; Paterson, 1995; Parasuram, 2006).

Context of the Present Study and Research Questions

The current study was part of a larger one in which a screening tool in the native language (Kannada), and the language of instruction (English), was developed to help teachers screen bilingual students for learning disabilities (Shenoy, 2015, 2016). Kannada is one of the languages from the Dravidian language family, and it is primarily spoken in Karnataka, which is located in southern India. The three schools recruited for the study were located in Bangalore, the largest city and the capital of Karnataka, and represented high-income, middle-income, and low-income schools. These schools were recruited because they followed an English-immersion model, even though all their students come from different home language backgrounds. While Kannada was the home language or first language (L1)

for approximately 90% of the students in the low-income school, it was approximately 60% in middle-income school and 30% in the high-income school. An English immersion model within this context refers to an education model where the predominant medium of instruction is in English, or the students' second language (L2). The primary assessment in these schools is restricted to school-based performance scores in English only. To address this research gap concerning methods for assessing potential learning disabilities among vulnerable students, a screening tool was developed as an alternate assessment to help teachers assess students in both Kannada and English in order to parse out language differences from disorders.

The focus for this component of the larger study stemmed from a completely unexpected outcome of the original investigation—the sheer presence of the new assessment tool influenced how each school could imagine meeting the needs of their students in acquiring academic English. The news in this study centers on the vastly different responses of the three school sites to adopting the screening tool in their practice. It addresses an ecological perspective of special education within an Indian context. Access to special education services are predominantly a product of: (a) school personnel attitudes towards special education, (b) resources, and (c) inclusive practices. This in turn is governed by a larger socio-economic system. Thus, the research question for this study is as follows:

How does the culture of the school and access to special education resources impact the utilization of a screening tool in L1 Kannada and L2 English across low-, middle-, and high-income schools?

METHOD

Setting

The three school sites recruited for the study represented three different income levels: low-, middle-, and high-income populations. For the purposes of this study, the low-income school was a private school in Bangalore, India where the annual tuition costs for each student is approximately Rupees 7200 (\$120); the middle-income school was a private school where the annual tuition costs for each student is approximately Rupees 40,000 (\$667); and the high-income school was a private school where the annual tuition costs for each student is approximately Rupees 150,000 (\$2,500). It is important to note that roughly 50–60% of the private school-going population attends low-income private schools; 30–40% attend middle-income private schools and 10–15% attend high-income private schools.

Participants

The participants consisted of principals and teachers from the low-, middle-, and high-income private schools recruited for the study. There were a total of 3 principals representing each school and 16 teachers, of which 5 were from the low-income school, 6 from the middle-income school, and 5 from the high-income school. The teachers in this study were recruited if they taught in Grades 2–5, because that was representative of the sample of students who were administered the bilingual assessment. They were predominantly home-room teachers, teachers of English language arts, and/or special educators.

Measures

Modified CELF-5 screening tool in English and Kannada. An adaptation of the *Clinical Evaluation of Language Fundamentals 5 Screening Test* (Wiig, Semel & Secord, 2013) was utilized for the larger dissertation study (Shenoy, 2015, 2016). It consisted of the following subtests: word structure, word classes, following directions, sentence recall, sentence assembly, and semantic relationships. These items were developed to assess language skills that have been shown to be problematic for and/or indicative of individuals with language disorders. It was rendered culturally appropriate for students in an Indian context by ensuring that the language used and picture prompts were grounded in artifacts and experiences that are relevant to and typical of the culture of the region. Some of the items were changed from American English to reflect Indian English usage, and the picture prompts were changed to be more context-specific, but they still tested the same language skill. For example, item 8: subjective pronoun, under the word structure subtest, had the words “hot dog” and “hamburger” changed to “sandwich” and “burger,” which are more familiar terms in Indian English. Similarly, in the case of item 10, under the word classes subtest, where students had to choose two words from a list of words that fit into the same category (e.g. table and chair), the word “marker” was replaced with “sketch pen,” again a term that the students would know. The only item that had to be dropped was question 37, which uses the phrase “a quarter past three,” because that is not a common way in which time is expressed either in Indian English or Kannada. All other items on the test remained the same and were translated the same way into Kannada.

A pilot study was conducted to develop age- and grade-appropriate items as well as to establish criterion scores. The researchers consulted with a column of three bilingual psychologists and five bilingual teach-

ers who rendered both versions of the tool age- and grade-appropriate. The tests were then administered on a sample of 50 students in Bangalore aged 7–10 years (Grades 2–5); averages were established for each age group and for both Kannada and English versions of the test. These scores served as criterion scores to determine if students were at/above criterion or below criterion on both tests. It was further piloted on a group of 10 students in the non-clinical population and a group of 8 students who were previously identified as having a learning disability. Ninety percent of the former group were identified as “above criterion in L1 or L2 tests” and 100% of the students previously identified as having a learning disability were identified as “below criterion on both L1 and L2 tests” and in need of further language assessment.

Reliability and validity. Cronbach’s alphas for the six subtests were calculated to measure internal consistency for the Indian English and Kannada versions of the test. For the Indian English test, the word structure subtest consisted of 9 items ($\alpha = .72$), the word classes subtest consisted of 5 items ($\alpha = .76$), the following directions subtest consisted of 5 items ($\alpha = .72$), the sentence recall subtest consisted of 7 items ($\alpha = .75$), the sentence assembly subtest consisted of 6 items ($\alpha = .82$) and the semantic relationships subtest consisted of 7 items ($\alpha = .77$). For the Kannada test, the word structure subtest consisted of 9 items ($\alpha = .78$), the word classes subtest consisted of 5 items ($\alpha = .86$), the following directions subtest consisted of 5 items ($\alpha = .83$), the sentence recall subtest consisted of 7 items ($\alpha = .69$), the sentence assembly subtest consisted of 6 items ($\alpha = .77$) and the semantic relationships subtest consisted of 7 items ($\alpha = .73$). Moreover, the content validities of both versions of the test were rendered grade- and age-appropriate by a column of three bilingual psychologists and five bilingual teachers.

The test is not a diagnostic tool designed to provide an in-depth diagnosis of speech/language disability or the degree of impairment of speech or language abilities. Rather, it is used to identify students who are “at risk” for a language disorder, and need to be referred for further language assessment. It helps in measuring whether the students’ language abilities appear to be adequate for their age. The total score attained by the student is compared to a research-based criterion score appropriate for the student’s age and certain recommendations are made. Typically, these recommendations include conducting a diagnostic test and conducting informal assessments, such as teacher and parent interviews as well as classroom observations.

Pre- and post-interviews with principals. Informal meetings were conducted with the principals of the schools during the recruitment period and after the completion of the research study. The former served as an introduction to the larger bilingual assessment study and their thoughts on how it would help their school, or what they hoped to learn from the research study. The latter was conducted after the study was completed, to discuss the findings from the study for his or her school and the actual and potential impact and utilization of the assessment tool.

Teacher interviews. The interviews with teachers, which were conducted during the three-month assessment period, were guided by a set of 24 questions (in Appendix A). These included 8 questions regarding demographic information such as gender, age, educational qualifications, number of years teaching and number of students in their classrooms; 5 questions regarding dominant language use of the teacher and in the classroom; 3 open-ended questions on the culture of the school and his or her teaching style; and 8 open-ended questions regarding the school's special education referral process, resources, and the accommodations used in classrooms to address the needs of students with disabilities and/or low-achieving students who might be at-risk for a disability.

Data Analysis

The qualitative data analysis from these interviews were used primarily to answer the basic research question driving the study: "How does the culture of the school and access to special education resources impact the utilization of a screening tool in L1 Kannada and L2 English across low-, middle-, and high-income schools?" This was a genuinely open question for the researchers in the sense that they had no pre-existing hypotheses to expect any particular pattern of differential responses as a function of school SES. A thematic analysis was utilized to examine the patterns and trends from the interview data. The researchers first transcribed the principal and teacher interviews. Then they generated multiple codes to describe the content of the interviews (e.g. dominant language, instruction, referral process) and used an Excel spreadsheet to organize the data based on these codes. Finally, the researchers searched for and highlighted some converging themes across these interviews that they thought might be interesting to compare and contrast (e.g. current special education practices).

RESULTS

While the researchers entered the qualitative analyses with an open lens, the evidence and categories of findings soon converged around four themes representing the views of the teachers and the principals: (a) reasons for participating in the study, (b) language use in the classroom, (c) special education practices and/or accommodations for persistent low-achieving students, and (d) implementation of the screening tool by the schools in their practice. Based upon analysis of the observations, interviews, and student achievement on the screening tools, the researchers developed a report recommending how the school might better address students' language development needs. Then the researchers met with the principal to discuss the report and seek his or her response to the recommendations. For purposes of comparison and contrast, the recommendations and responses are presented in tabular form for each school.

Low-Income School

Reasons for participating in the study. The principal was very open to the researchers working with the students from her school and wanted to collaborate on the project in order to learn more about the academic needs of her students and how the researchers could help improve overall school performance. She was interested both in student participation and engagement as well as pedagogy to support students so they could reduce the number of high school dropouts. Her main concern was that students came from homes where Kannada was the dominant language and they were typically first generation school-goers who did not have any English language support at home. She collaborated with the researchers on the project because she wanted their report on student performance in terms of English and Kannada scores so she could use that information to guide pedagogical decisions. She also asked the researchers to connect her to resources in the community that could help with professional development based on the results.

Language use in the classroom. Though the school follows an English immersion program, all the teachers mentioned that they used Kannada 20–50% of the time in their classrooms. They all agreed that students below grade 5 would benefit from instruction in their native language, Kannada. One second-grade teacher said, "They [the students] need English in the future, so it is better to start young. But I use English 50% of the time and Kannada 50% of the time in my classroom so that students understand."

Table 1
Recommendations from Researchers and Principal Responses in the Low-Income School.

Recommendations	Principal Responses
The school could introduce a two-way bilingual program, in order to develop proficiency in both L1 (Kannada) and L2 (English).	“The board outside says, ‘English-medium.’ Parents will expect this, so we cannot introduce Kannada [instruction]. Currently, in a typical classroom, half the students understand English. Some students understand the concept when it is repeated in Kannada and others are provided with small group instruction to ‘drill down’ the concept so they pass the exams. English needs to be introduced as early as possible because students are tested in it in high school, and if we provide them with Kannada instruction, they will become ‘complacent.’”
The school could introduce contextual language use in their classrooms like talking to a friend on the phone, story-telling in L2 English, in addition to academic content.	“Our main problem is that we have no support from the parents. It is their job to talk and read to their children, and ours to make them learn for the board exams. We understand that if students are fluent in Kannada, it will transfer to their English language skills, but this is something that the parents need to address.”
They could use the screening tool to provide intensive small group instruction for students who are “at risk” and recommend non-responders to an assessment organization outside of the school.	“We already have an after school program that provides small group instruction to over one-third of our students, and it is helping them improve and pass the exams.”
They could increase parent involvement and point them to adult literacy classes to help them support their children at home.	“We can point parents to literacy classes, but we cannot have them involved with the working of the school because it would be a distraction to the students and the teachers have to do their jobs.”
The school could use local resources/organizations that conduct teacher workshops and complete school overhauls for low-income urban and rural schools, and scholarships available to students from low-income schools.	“We will follow-up with the local resources especially in terms of teacher workshops.”

Special education practices and accommodations for low-achieving students. If students were identified “at risk” and were performing below average on school-based exams, they were given intensive small-group instructional time for an hour after school every day. All the teachers in the study reported that this practice helped many of their students improve. According to a second-grade class teacher, “Five to six children from my class attend the special class from 2:30–3:30pm and it has helped them get individual attention with reading and spelling.”

None of the teachers had any experience working with students with disabilities in their classrooms, they were not aware of learning disabilities, and the school did not have a referral process in place. They were, however, aware of different learning styles and did mention that when they introduced visuals like pictures,

charts, and maps to their lesson plans, a lot more students were interested and participated in class. According to a class teacher who taught science in Grade 5, “I use pictures, activities in science, project work, and computer time as teaching aids, and this helps students who cannot concentrate in class.”

Implementation of the screening tool in their practice. The screening tools were administered by three research staff members. During their visits, the research staff members also observed in the classrooms and interviewed participating teachers. For the record, the students in the low-income school performed better on the Kannada version of the bilingual language screening tool, with 56.25% meeting the pass criterion, compared to the English version of the test, with only 17.18% reaching the pass criterion.

As part of the school report presented to each school at the end of the data collection cycle, the researchers also presented them with some recommendations from research and practice that would be suitable for the context of the school. These recommendations are presented in the left column of Table 1 and the responses/rejoinders of the principal appear in the right panel.

Although the screening tool led to insight about students' bilingual and bi-literate competencies, which could guide pedagogical decisions, especially in terms of language of instruction, the researchers do not expect this school will utilize it in their practice. This expectation is based upon the point-by-point rejoinder that the principal offered for each of the researcher's recommendations. They have "a good reason" for staying with the status quo even though the weaknesses in that position seemed so transparent in the findings presented to them as a school.

Middle-Income School

Reasons for participating in the study. The principal was very open to working with students from his school and wanted to collaborate on the project in order to help teachers and students with a screening tool to identify students who were at-risk for a disability. He mentioned that the school had recently invested in a special education program for students with moderate-severe disabilities and students who attended this program were "very proud to wear the school uniform and attend a regular school" with a self-contained program as op-

posed to being housed in a separate, segregated setting. In addition, the school was moving towards addressing the needs of students with mild-moderate disabilities, which was currently addressed outside of the school site in after-school remedial programs. He expected the screening tool to serve three purposes: (a) build awareness among teachers to look out for warning signs of a potential disability, (b) compare student performance scores on the bilingual screening test to school-based performance scores, and (c) compare student performance at his school with student performance at other schools in the sample.

Language use in the classroom. The school had adopted a 100% English-immersion model and all the teachers agreed that it was working and students did not need native language support. One fourth-grade teacher responded, "They are from Bangalore, so they are fluent in English!" Another teacher said, "Most students start English medium from kindergarten, so they pick it up along the way."

Special education practices and accommodations for low-achieving students. The teachers did not seem to be aware of learning disabilities or any other "invisible" disabilities. Most of the teachers reported that they do not look out for signs of a disability in their classrooms because either the student has behavior problems that are taken care of by the school counselor or they have cognitive deficits for which they are screened in kindergarten and placed in the moderate-severe special

Table 2

Recommendations from Researchers and Principal Responses in the Middle-Income School.

Recommendations	Principal Responses
The large class sizes might reduce opportunities for students to produce learning artifacts, but teachers could introduce project-based learning in small groups and activities from the textbooks that could enhance learning.	"Instead of having three annual exams, we could probably consider a project-based activity to substitute one of them. We can come up with matched student groups, so all of them have access to internet resources and public libraries."
The screening tool can help teachers with an initial classification system in order to form small groups for intensive instruction before students are referred to psychologists off the school site for more comprehensive evaluations.	"This will be very useful to the teachers and we can set up a training session."
If the school was considering setting up a mild-moderate program for their students with disabilities, then investing in a special educator and a classroom for pull-out services in reading and math would be helpful. In the meantime, these services can also be out-sourced to local assessment and diagnostic itinerant services.	"This might be a project for down the road, but we will consider working with local assessment and diagnostic groups and reaching out to you when we have enough capital and need for these services."

education program on the school site. Therefore, special education was viewed outside the purview of their classrooms. When asked about some strategies they might adopt to improve literacy skills in low-achieving students, one third-grade teacher responded with the following, “I repeat the concept, call on the student to present their work on the board...I use positive reinforcement and build confidence by providing them with leadership roles...it changes their whole outlook to learning.”

Implementation of the screening tool in their practice. The students performed better on the English version of the test with 84.37% meeting the pass criterion versus the Kannada test with 9.37% meeting the pass criterion. The bilingual screening tool was efficacious in providing a classification system, and out of the 6 students identified by teachers as being “at risk,” two of them were classified the same by the bilingual tool, while 4 of them had proficient English scores, and low Kannada scores, suggesting that other factors like instructional support at school and home may play a role in their poor school performance. Based on an analysis of the observation, interviews, and trends and patterns that emerged from the assessment battery, the researchers offered a set of top-level recommendations.

The researchers’ recommendations are presented in the left column of Table 2 and the responses/rejoinders of the principal appear in the right panel. Based on the school’s positive response, the researchers hope the school will implement the screening tool to parse out language differences versus disabilities.

High-Income School

Reasons for participating in the study. The principal was very motivated by the study and took a personal interest in recruiting students. She mentioned that the school was invested in differentiating instruction and moving towards inclusive models of special education. She was a pioneer in changing the education system of the school by recruiting teachers after they went through an intensive training program that introduced them to “hands-on instructional strategies and student-centric educational foci.” In addition, the school allowed students to opt out of the national curriculum at Grade 9, and move to an international Cambridge-recognized curriculum that is more “application-based as they go through high school.” She wanted the researchers to visit the school site and learn more about the special educators’ assessment and intervention services as well as provide them with an opportunity to learn more about the present research study.

Language use in the classroom. In contrast to the low- and middle-income schools, the high-income school did not experience any impediments to implementing a full-immersion model for English instruction. Indeed, they followed a 100% English immersion model, and they did not consider native language instruction because a large majority of students came from English-dominant backgrounds. Their curriculum was structured to provide students with intensive oral language development from K-Grade 3, to ensure that that L1 support was not needed beyond Grade 3.

Special education practices and accommodations for low-achieving students. The teachers were very aware of learning disabilities and other high-incidence disabilities, as well as behavior problems that they observed in the students. If students were considered at-risk based on their school-based performance scores, they had support both at home and in school in terms of hands-on reading activities, phonics programs, differentiated instruction, and workshops for parents on shared-book reading practices at home. Moreover, if the students were still performing below grade level, especially on reading and math, even after efforts made by both teachers and parents to support them, then they would be referred to the special education resource room on the school site after parents consented to it. Teachers from different grade levels reported the following reasons why their students were referred for special education services:

- o “the child is not at grade level and they have trouble expressing ideas” (Grade 2)
- o “they cannot read, write, formulate sentences, present with a lot of inverted letters and spellings, find it hard to copy from the board, and are not able to memorize even 2–3 lines of an answer” (Grade 3);
- o Students are “distracted, have trouble with writing and spellings” (Grade 4) and
- o these students “don’t have friends, act out in class...but if we sensitize kids to LD, more of them come forward to help” (Grade 5).

The results of these referrals had been positive in most cases as teachers noticed an improvement in their students. The accommodations and collaboration with the special education department helped teachers understand and work with students with disabilities in their classrooms. They reported having 1–2 students in each cohort who benefitted from special education services. Teachers were also trained to look out for certain red flags and work closely with the special educators to mainstream education for these students.

Table 3

Recommendations from Researchers and Principal Responses in the High-Income School.

Recommendations	Principal Responses
The screening tool is a measure that can help teachers classify students as “bilingual”, “dominant English”, “dominant Kannada” and “at risk for a disability”. If teachers observe persistent low achievers, they could use the screening tool in order to differentiate instruction in their classroom based on student needs.	“We would like to go ahead and set up a teacher-training workshop so they can learn more about the screening tool.”
The screening tool will be an initial introduction to a bilingual language test and informal assessments that could be added to a battery of tests to work with Kannada-speakers.	“The special education department would like to utilize the screening tool in our practice. We currently have one student in Grade 5 who has been identified as having a learning disability and we would like a measure in Kannada to add on to the battery of English tests that we currently have.”

Some modifications in their classrooms that are targeted at these students are activity-based learning, extra time to participate in a discussion or work on assignments, individualized instruction and photocopied notes, and reinforcement by giving them leadership roles.

Implementation of the screening tool in their practice. When the researchers spoke to the special education department on the school site, they were informed that students get intensive one-on-one instruction in math and reading if they exhibited learning disabilities. This, in turn, was determined by a local assessment and diagnostic service that provided assessment reports to the school. The current battery of tests used to make LD eligibility determinations, included *Wechsler’s Intelligence Scale for Children IV* (Wechsler, 2003) and the *Brigance Diagnostic Inventory of Early Development* (Brigance, 1991).

Based on students’ performance on the screening battery, along with the data from the observations and interviews, the researchers offered several recommendations to the school. Their recommendations are presented in the left column of Table 3 and the responses/rejoinders of the principal appear in the right column.

Positive responses from school personnel suggest that screening tools will become an integral part of assessment and pedagogy. The research team noted great interest and a proactive agenda in providing teacher training and modifying the special education referral process.

DISCUSSION

Based on the culture of the schools and the special education resources available to them, the researchers were interested in finding out how they would utilize the screening tools that were developed. A report of student performance and recommendations based on the assessment battery for each school site was generated. The school principals collaborated on the research project for the following reasons: (a) In the low-income school, the focus was on preventing high school dropout rates and helping teachers develop better pedagogical practices; (b) In the middle-income school, the focus was on differentiating between language differences and disorders in a large classroom setting, and, subsequently, moving toward introducing a special education program for students with mild-moderate disabilities; and (c) In the high-income school, the focus was on adding a native language assessment to an existing English assessment in order to test students in both L1 and L2, as a means of accurately referring students for special education services.

In the low-income school, the students performed better on the Kannada version of the test, they came from Kannada-dominant home backgrounds, and teachers suggested that grades K-5 would benefit from Kannada instruction. The researchers’ recommendations included introducing a two-way bilingual program to support both Kannada and English development, as well as increase parent involvement in the school. These data reminded the researchers, somewhat ironically, of the conclusions of Cummins (1992), who observed that bilingual programs that support students’ L1 literacy

skills also help to develop English academic achievement. Moreover, it reinforces students' cultural identity and increases the likelihood of parents being more involved (Cummins, 1992). Unfortunately, the school was not open to new suggestions. Although the screening tool led to many insights about students' bilingual and bi-literate competencies, which could guide pedagogical decisions, especially in terms of language of instruction, the researchers do not expect this school will utilize any of these assessments in their practice.

In the middle-income school, the students performed better on the English version of the test, they came from English-dominant and bilingual homes, and teachers suggested that instruction in English was helping students as they got support in the language at home. Although the language of instruction was not an area of need, they were treating all low-achieving students alike and collaborated on the project to be able to identify sub-groups among these students in an effort to reduce misidentification of learning disabilities. The researchers' recommendations included using the screening tool to make an initial distinction between students who are acquiring a second language and those who might have learning disabilities. This initial classification system can help teachers form small groups for intensive instruction before students are referred to off-site psychologists for more comprehensive evaluations. The school principal had a vision to introduce a special education program for students with mild-moderate disabilities within the school, and wanted to invest in training workshops to sensitize teachers to look for signs of learning disabilities in their classrooms. He viewed the screening tool as a first step towards this goal. Based on these positive responses, the researchers hoped the school will implement the screening tool to distinguish language differences from disabilities.

In the high-income school, the students performed better on the English version of the test, they came from English-dominant and bilingual homes, and teachers suggested that instruction in English was helping students as they got support in the language at home. The differentiated instructional practices in the classroom catered to students' individual needs and provided students with special education resources if they needed it. The area of need in this school was adding a screening tool in a native language to an existing English tool that special educators were already using. Test performance in English, without considering the student's home language, was a primary reason for misdiagnosis, as Maldonado-Colon (1988) and Barrera Metz (1988) concluded with their studies. Teachers at this school

were aware of this, and collaborated on the project to learn how to use a screening tool in both L1 and L2 in their practice. The researchers recommended adding the screening tool as a pre-cursor to the school's existing assessment batteries. In this way, Kannada-speakers could be assessed early on, and the screening tool could serve as a springboard to differentiate instruction in their classroom based on student needs. The school was very open to this suggestion and wanted the researchers to help train their teachers. The researchers believe the school will implement the researchers' screening tool in their practice because school staff are greatly interested, have been proactive with teacher training, and modified the special education referral process.

CONCLUSION

Based on the responses to the presence of the tool and the reports and recommendations the researchers offered to each of the three schools, some predictions and conclusions can be drawn. The low-income school would not consider a screening tool like the one the researchers offered, but the middle-income school was becoming ready for it, and the tool was almost immediately incorporated into the high-income school's assessments. There is a certain irony in these responses because there seems to be an inverse relationship between need and receptivity. The greater a school's need for a tool that could help them distinguish between language differences and language disorders, the less receptivity there was in the school—in this case, the low-income school—and for a variety of understandable reasons, such as the push towards English-medium instruction, no parental support, and no time for language activities in class. Conversely, the high-income school, which immediately wanted to start using the tool, had a very small Kannada-speaking population, and most likely there would be very few students with language disorders. Policymakers should address this mismatch between need and receptivity immediately.

Limitations of the Study

The three schools were specifically chosen because they represented low-, middle-, and high-income private schools in Bangalore, India. The classification of private schools is not specific to Bangalore alone, but very closely matches other schools in large cities in India. A limitation of the study, however, is that the findings cannot be generalized to government and rural schools, so future research in these schools will help establish a more holistic picture of the different types of schools in the country.

The official languages of India are English and Hindi. Modifying the screening tool to Hindi would have a far greater reach throughout the country, as opposed to the limited reach of Kannada, which is predominantly restricted to one Indian state, Karnataka. Even though natives to the state of Karnataka speak Kannada, the study was conducted in a large city, Bangalore, where not all the students spoke the language. Thus, it is important to develop the screening tool in Hindi and other Indian languages in order to serve more students.

Recommendations for Future Research

The primary focus in all private schools in India, whether they serve low-, middle-, or high-income populations, is a push towards English immersion programs with no bilingual support. Though this system seems to be working for middle and high-income schools, where students are exposed to a continuity of their L2 for all literacy practices both at home and school, it does not seem to be in the best interest for students in the low-income schools, who are losing out on literacy skills in both their L1 and L2. In the low-income private schools in India, there is a definite need to restructure education based on the language of instruction. Students from these schools will benefit from bilingual language programs that foster their L1 and help them transition to learning a new L2 by using conceptual and background knowledge that has already been developed in their home language. L1 instruction also helps schools reach out to parents and have them be more involved in their children's education. More studies that focus on the effectiveness of bilingual education for low-income schools would help modify the language of instruction for these programs on a larger platform.

In terms of special education, students are best served in high-income schools, where they follow inclusion programs. In middle-income schools, there is a growing awareness of students' different abilities and needs in the classroom, and there has been an upward trend of investing in special education departments throughout the country. But it is still not on the radar for low-income schools who have more pressing academic needs to take care of before they can address the needs of students with disabilities in their schools. If more studies in the field highlight the efficacy of special education programs in high-income and middle-income schools, there will be a growing body of resources, professional development, and funding for these programs. Moreover, the hope is that there might be a trickle-down effect to low-income schools if these programs succeed in middle- and high-income schools and access to special education services become universal in the country.

This paper summarizes the current context and special education resources available to students across low-, middle-, and high-income private schools in Bangalore. Further research in schools in other parts of the country, including government and rural schools, can shed light on the prevalence of these issues as well as steps that are being taken to better serve all student populations, with or without disabilities. Collectively, this can make an impact on improving educational outcomes and services for all students, especially students in the low-income schools.

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Appendix A
Teacher Interview

1. Gender: Male Female

2. Age: 1) 20–25 2) 26–30 3) 31–40 4) 41–50 5) More than 50

3. Highest Level of Education:

- 1) B.A./B.Sc.
- 2) B.Ed.
- 3) M.A./M.Sc.
- 4) M.Ed.
- 5) PhD

4. Number of years teaching:

- 1) 0–3 years 2) 4–8 years 3) 9–15 years 4) More than 15 years

5. Number of years teaching at this school:

- 1) 0–3 years 2) 4–8 years 3) 9–15 years 4) More than 15 years

6. Which class level do you teach?

- 1) Second standard 2) Third standard 3) Fourth standard 4) Fifth standard

7. Number of years teaching at this class level:

- 1) 0–3 years 2) 4–8 years 3) 9–15 years 4) More than 15 years

8. (a) How many students do you have in your class? _____

(b) Apart from you, are there other teachers' assistants who help you? If so, how many people help you with instruction and classroom management? _____

9. What is your native language?

- 1) Kannada 2) Hindi 3) Tamil 4) Malayalam 5) Telugu 6) English
- Other (Please specify) _____

10. What is your dominant language in speaking?

- 1) Kannada 2) Hindi 3) Tamil 4) Telugu 5) English
- Other (Please specify) _____

11. What is your dominant language in listening comprehension?

- 1) Kannada 2) Hindi 3) Tamil 4) Telugu 5) English
- Other (Please specify) _____

12. What is your dominant language in reading?

- 1) Kannada 2) Hindi 3) Tamil 4) Telugu 5) English
- Other (Please specify) _____

13. What is your dominant language in writing?

- 1) Kannada 2) Hindi 3) Tamil 4) Telugu 5) English
- Other (Please specify) _____

- 14. Do you think some students in your class would benefit from instruction in their native language? If so, how many of them (what percentage)?**
- 15. While you are teaching a concept, and you feel students don't understand what you are saying, do you try to explain it in their native language? If so, what percentage of instruction time is spent in the native language?**
- 16. If students continue to have problems with language that affect their literacy and academic skills, what do you do?**
- 17. What kinds of special education resources do you have at your school? Does your school have a learning lab?**
- 18. If you notice that a child has a learning problem, do you refer them to the learning lab? How many students have you referred?**

19. Based on what factors/evidence do you make these referrals?

20. What are the results of those referrals?

21. How much experience do you have with children who have special needs? Please explain:

23. What kinds of special needs students have you worked with in the past?

Learning Disabled

Autistic

Physically Disabled

Behavior Disorder

Speech or Language Impaired

Intellectually Disabled

Hearing Impaired

Visually Impaired

Other (Please explain)

24. What are some accommodations/modifications that you adopt in your classroom to help these students learn the material that is presented? What in your opinion helps them learn better?

Thank you for your time!

Culturally Sensitive Considerations: Identifying and Using Reinforcers in the Classroom

Miriam C. Boesch

University of North Texas, USA

M. Alexandra Da Fonte

Vanderbilt University, USA

Amy E. Ostroff

Vanderbilt University, USA

Jordan B. Wilson

Vanderbilt University, USA

Jessica Paranczak

Vanderbilt University, USA

Abstract

Reinforcers are helpful for teaching students with special needs. The literature suggests that reinforcers are a useful resource when teaching a new skill. Reinforcers typically fall into four broad categories, which include sensory, activity, tangible, and social. In order to select the most effective reinforcers for a student, an individualized and systematic assessment should be conducted. To accomplish this, teachers will need to consider various factors, including the student's cultural and linguistic backgrounds. Thus, the purpose of this paper is to discuss four considerations for culturally appropriate reinforcers that are highlighted in the literature. These include: (1) practicing cultural self-awareness, (2) valuing other cultures, (3) obtaining family perspectives, and (4) implementing differentiated reinforcers. The goal is to provide practitioners with general guidelines for identifying reinforcers for students with special needs from culturally diverse backgrounds.

INTRODUCTION

Educating students with special needs requires special education teachers to use strategies that optimize their learning outcomes. One effective strategy is to use reinforcers. Reinforcers can enhance students' learning opportunities and increase their academic outcomes (Mangum, Fredrick, Pabico, & Roane, 2012). The effective use of reinforcers is highly supported in the literature (e.g., Cooper, Heron, & Heward, 2007; Leaf et al., 2014; Hagopian, Long, & Rush, 2004; Mangum et al., 2012) as a means to enhance students' learning outcomes.

Given that students with and without disabilities come from various cultural and linguistic backgrounds, teachers could benefit from understanding general guidelines for implementing the use of reinforcers. This is particularly critical for teachers of students with special needs from various cultural and linguistic backgrounds. Teachers' knowledge about cultural and

linguistic considerations during reinforcer use is beneficial in that it allows teachers to engage in culturally responsive teaching. Hill (1991) described the ideal of *conversations of respect* to outline the process of culturally responsive teaching. Hill stated:

Conversations of respect between diverse communities are characterized by intellectual reciprocity. They are the ones in which the participants expect to learn from each other, expect to learn non-incidental things, expect to change at least intellectually as a result of the encounter... In such conversations, one participant does not treat the other as an illustration of, or variation of, or a dollop upon a truth or insight already fully possessed. There is no will to incorporate the other in any sense into one's belief system. In such conversations, one participant does not presume that the relationship is one of teacher to student (in any traditional sense of that relationship), or parent to child, of developed to underdeveloped. The participants are co-learners (Hill, 1991, p. 39).

This suggests that culturally responsive teaching should be grounded on providing students with a culturally supported environment where the focus is student-centered (Richards, Brown, & Forde, 2007). That is, instruction should be individualized to promote positive student outcomes.

Cultural awareness is especially important as special education teachers serve students from diverse backgrounds (Ford, 2012). By ignoring the student's culture, special education teachers may find that the reinforcing value of stimuli may be skewed (Engel-Yeger & Jarus, 2008). To effectively support students, special education teachers should have a clear understanding of what reinforcers are and the role they play in student instruction. Reinforcers are stimuli (e.g., items, activities) that are highly preferred by the student and result in a reoccurrence of a behavior under similar conditions (Tullis et al., 2011). That is, an effective reinforcer can support the student in engaging in positive behaviors during preferred and non-preferred tasks. Cooper and colleagues (2007) categorized reinforcers into four broad categories: (1) sensory (e.g., flashing lights, vibrations); (2) activity (e.g., games, singing songs); (3) tangible (e.g., foods, toys); and (4) social (e.g., high fives, praise). Moreover, it has been suggested that an effective reinforcer assessment should be a systematic process (Cote, Thompson, Hanley, & McKerchar, 2007; Hagopian et al., 2004) that also considers the students' cultural and linguistic background (Chamberlin, 2005).

Four culturally-grounded considerations have emerged from the literature on how to effectively support students with special needs from diverse backgrounds in the classroom (Cartledge & Kourea, 2008; Chamberlain, 2005; Ramkissoon, Dagenais, Evans, Camp, & Ferguson, 2012; Sparks, 2000). These include: (1) practicing cultural self-awareness; (2) valuing other cultures; (3) obtaining family perspectives; and (4) implementing differentiated reinforcers. Therefore, the purpose of this paper is to discuss four considerations for culturally appropriate reinforcers that are highlighted in the literature as well as provide practitioners with general guidelines for identifying and using them with students who have special needs and come from culturally different backgrounds. It is important to keep in mind that the current available literature on culturally differentiated reinforcers is limited. Thus, it is not a strong representation of the various culturally and linguistically diverse groups.

Consideration 1: Practicing Cultural Self-Awareness. Special education teachers should recognize their own cultural identity and values in order to practice

cultural sensitivity when selecting and identifying their students' reinforcers (Cartledge & Kourea, 2008; Chamberlain, 2005; Sparks, 2000). By practicing cultural self-awareness, special education teachers are better equipped to perceive potential differences between their cultural identity and their students' background (Cartledge & Kourea, 2008; Chamberlain, 2005; Sparks, 2000). The goal of self-awareness is to support the special education teacher's ability to engage in culturally sensitive instruction (Cartledge & Kourea, 2008; Chamberlain, 2005; Sparks, 2000). One way to assist teachers to self-reflect on personal beliefs and practices is to complete *The Cultural Competence Checklist: Personal Reflection*. This form is an example of a widely available tool developed by the American Speech-Language-Hearing Association (2010). The purpose of this checklist is for practitioners to self-reflect on their cultural and linguistic practices, perceptions, and beliefs when working with individuals from various backgrounds. To access this checklist, visit: <https://www.asha.org/uploadedFiles/Cultural-Competence-Checklist-Personal-Reflection.pdf>. Once they have a better grasp of their personal biases (e.g., beliefs, values) and cultural competence, special education teachers can have a more open perspective on how to identify relevant and effective reinforcers that are culturally sensitive. It is important to use a culturally responsive approach when conducting a reinforcer assessment. In doing so, teachers are better able to determine what stimuli are most relevant for their students, based on each student's characteristics and needs. This practice deviates from some current practices in which teachers impose their own views and desires about what a student should receive as a reward for completing instructional activities. By taking an instructional approach that is culturally responsive, teachers will be able to teach students in an effective and individualized manner.

Consideration 2: Valuing Other Cultures. A student's cultural and linguistic background could impact how they learn and the extent to which specific stimuli will reinforce (Chamberlain, 2005; Engel-Yeger & Jarus, 2008). Thus, special education teachers should take extra measures to ensure they value their students' culturally and linguistically diverse backgrounds during the reinforcer assessment process. A reinforcer assessment is a systematic strategy used to identify preferred stimuli that can be used to reinforce learning (Cooper et al., 2007). The reinforcers identified in this process can then be used by special education teachers to differentiate instruction for students from diverse backgrounds

(Chamberlain, 2005). This is important given that these individual preferences can affect their learning. Leaf and colleagues (2014) found that, in the U.S., edible items were the most effective reinforcers when students were presented with an assortment of choices, including food, feedback, praise, and toys. Conversely, a review of the literature in Taiwan comparing the most effective reinforcers found that activities were the most reinforcing, followed by tangibles (Ma, 2010). In order to avoid culture biases, special education teachers should select reinforcers from different categories that reflect the preferences and cultural background of the student and the family (Cartledge & Kourea, 2008; Chamberlain, 2005). In addition to identifying culturally sensitive reinforcers, valuing diverse backgrounds requires that teachers engage in culturally responsive teaching in the classroom. To best support this practice, teachers should consider the following guidelines (Artiles & Ortiz, 2002; Klump & McNeir, 2005; Richards et al., 2007):

- Foster the student's culture within the classroom setting by using culturally sensitive reinforcers.
- Acknowledge and embrace cultural and linguistic differences.
- Validate students' cultural identity in instructional practices and materials, particularly when conducting the reinforcer assessment.
- Allow for the students' cultural differences to be meaningful and relevant when identifying reinforcers for using in the classroom environment.
- Use visuals to support the selection and use of reinforcers during instruction to decrease the linguistic demands.

Consideration 3: Obtaining Family Perspectives.

In addition to gathering information from the students, special education teachers should seek input from the students' families (Cartledge & Kourea, 2008; Chamberlain, 2005). The family's beliefs and values may influence a student's selection of reinforcers (Kauffman, Conroy, Gardner, & Oswald, 2008), as well as the student's behaviors and values (Chamberlain, 2005). Fisher, Piazza, Bowman, and Amari (1996) found that potential reinforcers identified by the student's caregivers were more reinforcing when compared to a standard set of items used during the assessment process. This suggests that special education teachers should collaborate with families to identify potential reinforcers (Cartledge & Kourea, 2008; Chamberlain, 2005) as the student's family can provide valuable information about the student's preferences. Although collaboration is highly en-

couraged and recommended, caution is warranted, given that there is currently no empirical evidence between parent-teacher collaboration and effective culturally sensitive practices and reinforcer selection (Kauffman et al., 2008). Considering the families' perspectives is important as they may or may not allow their children to have access to certain items such as specific types of music or foods. By obtaining input from the families, special education teachers may gain insights about the family's beliefs, perspectives, and cultural values to further facilitate culturally sensitive practices. Beyond the importance of identifying effective reinforcers for a student and implementing cultural sensitive practices, partnerships with parents and schools help develop effective instructional plans. To support these efforts, five general practices are suggested in the literature to help promote family and school partnerships (Blue-Banning, Summers, Frankland, Nelson, & Beegle, 2004; Harry, 2008). These include:

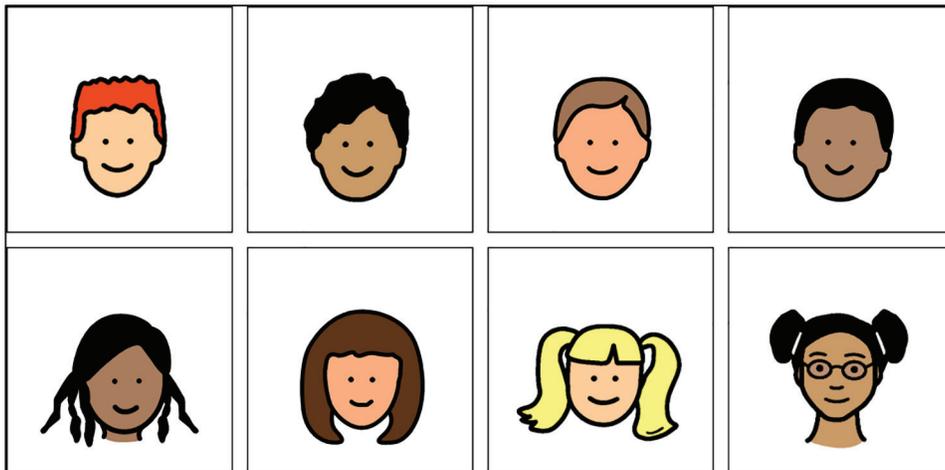
1. Using positive and respectful communication when identifying and creating a list of potential preferences and reinforcers.
2. Committing to individualized instruction for positive outcomes for the student, while considering the families' beliefs, perspectives, and values.
3. Supporting family values and cultural input during the instructional decision-making process (e.g., reinforcer assessment process).
4. Collaborating in the implementation of individualized culturally sensitive practices, including instructional goals and the use of reinforcers.
5. Fostering mutual trust while respecting cultural and linguistic differences, values, and beliefs among the student, family, and professionals.

Consideration 4: Using Differentiated Reinforcers.

To encourage cultural sensitivity, it is important for special education teachers to differentiate items presented as potential reinforcers. In other words, differentiation should occur by using items that reflect the student's ethnic group and the student's first language. Ramkissoon and colleagues (2013) found that when two different ethnicity groups were presented with photographs of people, the general consensus was that each group preferred images from their own ethnicity. Similarly, Durán, Bloom, and Samaha (2013) indicated that students who are second language learners (SLL) may find their first language reinforcing. Hence, special education teachers should consider presenting the students with materials (e.g., Picture Communication

Figure 1

Cultural and linguistic differentiated visual supports. [The graphics are from the Picture Communication Symbols™ by Tobii-Dynavox, Mayer-Johnson LLC.]



Symbols™) that reflect the student's own ethnic group and first language. See Figure 1 for an example of cultural and linguistic differentiated visual supports.

Berkowitz and Martens (2001) found that when given a choice between a high effort task paired with high-preferred stimulus or a low effort task paired with a low-preferred stimulus, students selected the low effort task paired with a low-preferred stimulus more frequently. In light of the potential correlation between student effort and the potency of reinforcers, teachers should ensure there is an instructional match between student skills, task difficulty, and the reinforcer value (Berkowitz & Martens, 2001). For example, the preference assessment may identify computer time as a reinforcer. One minute of computer time is unlikely to motivate a student to complete five instructional tasks. This scenario will likely end without the student completing the tasks, and as a result, they will not earn computer time. Therefore, teachers should try to match the task expectations to the reinforcer's perceived value.

Lastly, Friend and Bursuck (2002) suggested that African and Hispanic American ethnic groups, in general, prefer to engage in cooperative, instead of competitive, learning environments. Therefore, these students may not be reinforced by games that promote competition. That is, group work or tasks may be more engaging and reinforcing for students from these backgrounds. These cultural differences suggest that reinforcers should be individualized and differentiated to mirror each student's cultural and linguistic background.

Final Thoughts

Special education teachers are responsible for providing instruction to an array of learners with diverse needs. Thus, culturally and linguistically responsive practices should be the foundation of their instruction (Cartledge & Kourea, 2008; Cook & Odom, 2013; Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008). This suggests that special education teachers should support and make instructional decisions that are culturally and linguistically sensitive. By doing so, they will be able to support students in a more comprehensive and holistic manner while at the same time implementing best

practices in the classroom.

Moreover, this instruction should include the use of culturally sensitive and appropriate reinforcers, which the literature seems to suggest is useful in promoting and bolstering students' instructional opportunities (Mangum et al., 2012). The use of reinforcers during instruction is crucial when working with all students, and especially when working with students with special needs. To effectively implement these practices in the classroom, special education teachers who are culturally aware may be more likely to eliminate biases during the reinforcer assessment process (Cartledge & Kourea, 2008; Chamberlain, 2005; Sparks, 2000). Therefore, when identifying reinforcers, special education teachers should be mindful of students' culture so that reinforcers are highly effective (Engel-Yeger & Jarus, 2008).

Valuing other cultures is important given that a particular family's cultural beliefs can influence the selection of the student's response to reinforcers (Chamberlain, 2005; Kauffman et al., 2008). As a result, when identifying and individualizing the use of reinforcers, special education teachers should consider students' ethnicity, primary language, and cultural background (e.g., Durán et al., 2013; Engel-Yeger & Jarus, 2008; Ramkissoon et al., 2013). This will not only better support the student, but it will also prioritize the various preferences that students from different cultural backgrounds may have. Likewise, it will make the reinforcers more meaningful for the student, and more effective for instruction. In conclusion, when special education teachers practice

culturally sensitive instruction, including the use of culturally differentiated reinforcers, they are more likely to optimize the full potential of students from diverse backgrounds.

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Special Education Teachers CAN Embed AAC in the Classroom!

Amy E. Ostroff

Vanderbilt University, USA

M. Alexandra Da Fonte

Vanderbilt University, USA

Abstract

Low technology communication systems can be used as a means for students with complex communication needs to communicate and engage in their environment. Evidence suggested that embedding low technology communication systems in everyday activities students can increase their overall communication and social skills. A key component in this process is to identify effective instructional strategies. As a result, the purpose of this paper is to describe non-directive naturalistic teaching strategies and how these can be embedded into everyday routines to support students with complex communication needs. Specifically, this paper outlines three main considerations to arrange the environment for successful communication and participation for these students. These include: (1) creating opportunities, (2) arranging materials, and (3) naturally embedding technology in everyday activities.

Keywords: AAC strategies, instructional strategies, naturalistic teaching

Creating and Arranging Opportunities to Naturally Embed Technology Communication Systems

Students with complex communication needs require augmentative and alternative communication (AAC) to communicate independently (Light & Drager, 2007; Light & McNaughton, 2014; McMillan, 2008). While there are many communication systems within AAC, low technology is often the ideal solution to support students with complex communication needs, as they are affordable, durable, flexible, portable, and easy to make and replace (Cook & Polgar, 2008; Wilkinson & Hennig, 2007). Low technology communication systems include picture symbols (e.g., Boardmaker®), speech generating switches (e.g., BIGmack®), and speech generating devices that are battery operated (e.g., QuickTalker®). One way to embed low technology communication systems in everyday activities is through a combination of environmental arrangement and non-directive naturalistic teaching strategies (McMillan, 2008; McMillan & Renzagila, 2014a). The combination of these has increased initiations and communication skills of students with complex communication needs (McMillan & Renzagila, 2014a; McMillan & Renzagila, 2014b; Olive et al., 2007). As a result, the purpose of this paper is to describe non-directive naturalistic teaching strategies, or more specifically, to outline how teachers and families can embed these strategies in everyday activities through a can philosophy. The *can* philosophy is grounded on *creating* opportunities, *arranging* materials, and *naturally*

embedding technology in everyday activities to enhance the communication skills and opportunities of students with complex communication needs.

Creating Opportunities

Creating opportunities for students to communicate should be based on making the environment and activities responsive to student actions (Sullivan & Lewis, 2000). This will allow all students, including those with complex communication needs, to actively participate and be part of the communicative interaction (e.g., McMillan & Renzagila, 2014a). These opportunities will also offer the student with the possibility to practice communication and social skills that will support their independence (Light & Drager, 2007; McMillan, 2008; McMillan & Renzagila, 2014a)

To create opportunities for students to communicate and participate, teachers and families can provide the student with picture symbols or speech generating switches as a communication system. Some strategies that can be used to promote communicative interactions include: *inadequate portions* and *assistance* (McMillan, 2008; McMillan & Renzagila, 2014a). For example, when providing *inadequate portions*, the teacher or family member can give the student a small portion of an item and then wait for him to request, “more,” by activating a speech generating switch or selecting the picture symbols representing the message (McMillan, 2008; McMillan & Renzagila, 2014a). If using a speech generating switch, initially, the switch can be labeled as

“more” and programmed to say, “more.” Eventually, the message can be expanded to say, “I want more _____, please.” The key is to provide the student with short, repetitive messages, as they will be used multiple times within the activity. An example of this strategy is illustrated in Mrs. Penny and her student Joe’s case study.

Joe is a 2nd grade student in Mrs. Penny’s classroom with cerebral palsy who enjoys playing with blocks and listening to music. He uses a motorized wheelchair in the classroom and can independently steer it using his right fist. During free time, Joe indicates he wants to play with the blocks, and Mrs. Penny places one block and a speech generating switch programmed to say, “more,” on his tray. Joe picks up the one block and then looks at the switch on his tray. Using his right fist, Joe activates the switch and Mrs. Penny acknowledges his request, providing him with a couple more blocks. Joe smiles and then quickly activates the switch again and then Mrs. Penny then provides Joe with more blocks.

Assistance is another non-directive teaching strategy that can be used to create communicative opportunities. To embed assistance in daily activities, assign the student to a task he cannot complete independently and then wait for him to ask for help by selecting the representing picture symbol or by activating a speech generating switch (McMillan, 2008; McMillan & Renzagila, 2014a). For example, when using assistance as an instructional strategy, the speech generating switch can be initially programmed to say, “help.” Over time the message can be expanded to say, “I need help, please.” One way to utilize the assistance strategy is described in the continuation of the case study of Mrs. Penny and Joe.

After free time, Mrs. Penny instructs her class to go wash their hands. Joe goes over to the bathroom with the other students. Mrs. Penny embedded a speech generating switch by mounting it on the bathroom wall. While Mrs. Penny stands at the door, Joe looks around and after he spots Mrs. Penny, he activates the “help” switch. Mrs. Penny, while walking over to Joe, asks, “Joe, do you need something?” He then selects a picture symbol that states, “I need help, please.” Mrs. Penny acknowledges his request and says, “What do you need?,” and Joe points to the faucet. Mrs. Penny turns on the faucet and Joe is able to complete the remainder of the task independently.

Arranging Materials

Within activities, materials should be organized and arranged in ways that will elicit and require communication (McMillan, 2008; McMillan & Renzagila,

2014a). *Sabotage* and *within view out of reach* are two non-directive teaching strategies. These are grounded on how to effectively use reinforcing activities and materials to motivate students with complex communication needs to initiate communication by selecting a picture symbol or activating a speech generating switch. *Sabotage*, also known as *missing item*, is a strategy where the adult does not provide all of the materials the student needs to complete an activity (McMillan, 2008; McMillan & Renzagila, 2014a). Speech generating switches, in this case, can be labeled and programmed with specific messages such as, “I need scissors, please,” or, “Can I have the bubble wand, please?” Alternatively, picture symbols can represent routine messages such as, “I am missing something” or “I need the materials, please.” The following case study of Mrs. Kody demonstrates how to embed switches through the sabotage strategy.

Rachel is a 5th grade student with autism in Mrs. Kody’s class. She is very curious and loves crunchy foods. During learning centers, Mrs. Kody works individually with Rachel. She gives Rachel a worksheet and instructs her to complete the addition problems by cutting out numbers from the bottom of the worksheet and gluing them in the correct place. Mrs. Kody tells Rachel to get started and on the table in front of the student is the worksheet and a sequential message speech generating switch. When Rachel activates the switch the first time, it says, “Excuse me, Mrs. Kody.” Mrs. Kody acknowledges the message by asking, “Do you need something?” When Rachel activates the switch a second time, it says, “I am missing something,” and Mrs. Kody replies, “Oops! I forgot to give you a pair of scissors; here you go.” After Mrs. Kody provides Rachel with a pair of scissors, Rachel quickly starts cutting out numbers.

Within view out of reach is another non-directive teaching strategy that can be used when a preferred object is placed where a student can see it, but cannot access it independently (McMillan, 2008; McMillan & Renzagila, 2014a). That is, before a student is allowed access to the preferred item, she or he must request it by selecting a picture symbol or using a speech generating switch. For example, the student can be provided with a picture symbol labeling the desired item, such as a picture of a cookie, and the message, “I want a cookie, please.” After the student selects the symbol, the request will be acknowledged and provided (McMillan, 2008; McMillan & Renzagila, 2014a). The continuation of the case study of Mrs. Kody is one example of how to implement the within view out of reach strategy.

In Mrs. Kody's classroom, she has all students' snacks on a high shelf in the back of the room. When it is snack time, Mrs. Kody directs all of her students to the snack shelf and asks each one what they would like to eat. Mrs. Kody presents Rachel with two picture symbols, and asks her, "What would you like for snack today?" One of the picture symbols has a picture of crackers and states, "I want crackers, please," and the other picture symbol is labeled with a picture of a banana and it states, "I want a banana, please." Rachel looks up at the shelf and then down at the picture symbols and selects "crackers." Mrs. Kody responds by providing her with a handful of crackers. Mrs. Kody leaves the picture symbols for Rachel on the table and continues to acknowledge Rachel's requests until snack time is over.

Naturally Embedding Low Technology

A consideration to naturally embed low technology in any setting is to provide the student with routine-based messages such as, "I like that" or "more, please." The advantage of these is that they are frequent messages that can be used across activities and communication partners. Routine-based messages can also be used in various contexts, making the use of picture symbols or speech generating switches a natural component of the activity. *Silly situations* and *protest* are two non-directive teaching strategies that can help provide students with frequent opportunities to use the picture symbols and speech generating switches. During a familiar routine or activity, use the *silly situations* strategy to violate the student's expectations by leaving out or changing a step (McMillan 2008; McMillan & Renzagila, 2014a). The communication partner can be theatrical and feign forgetfulness. For this strategy, the students should be provided with picture symbols or a speech generating switch programmed with routine messages such as, "something is wrong" or "this is not right." When the adult violates the student's expectations of a routine activity, it offers the student the opportunity to correct the mistake or resume the activity following the expected routine. The following scenario offers an example of silly situations strategy.

Perry is a kindergartener in Mr. Lou's class. Perry likes to play outside on the playground and especially enjoys hands-on activities. He is working on letter sounds and uses picture symbols. Mr. Lou is preparing a cooking activity and has all of the ingredients to make a cake on the table in front of the students. Mr. Lou goes over to the sink and fills up the measuring cup with water. Without turning off the faucet, he walks back over to

the students and adds the water to the batter, pretending not to notice the running water. On the table in front of Perry are two picture symbols, one with the message, "something is wrong," and the other one with the message, "this is good (yummy)!" Perry grabs the picture symbol that states "something is wrong" and hands it to Mr. Lou. Mr. Lou asks, "What is wrong?" and Perry points to the sink. Mr. Lou looks shocked, thanks Perry for telling him something was wrong, turns the water off, and then rejoins the group to finish preparing the cake.

Presenting the student with a wrong item or an item he does not want so the student has the opportunity to *protest* is another instructional strategy to engage students in conversation (McMillan, 2008; McMillan & Renzagila, 2014a). In this case, a picture symbol or a speech generating switch can be programmed with frequent messages such as, "no" or "I don't like that." Using this instructional strategy can provide students with opportunities to practice rejecting and protesting (Choi, O'Reilly, Sigafos, & Lancioni, 2010; Sigafos, 1999). *Protest* can be implemented with items or activities that the teacher and family already know the student does not like, or after the student has made a choice between two items. An example is illustrated in the continuation of the case study of Mr. Lou and his student, Perry.

During morning meeting, Mr. Lou embeds one single message speech generating switch by placing it on the table in front of Perry. The switch is labeled with a thumbs down and is programmed to say, "no." The students are selecting new classroom jobs for the coming week. Mr. Lou tells each student their choices and then allows them to select the one they would like. When it's Perry's turn, Mr. Lou tells him, "Your choices this week are helping with lunch or going to the main office to turn in the attendance. Would you like to help with lunch?" Perry activates the "no" switch. Then, Mr. Lou asks, "OK, will you take the attendance to the main office?" Perry activates the "yes" switch emphatically, and Mr. Lou responds, "OK, attendance it is!"

Final Thoughts

Low technology communication systems should be implemented early (Light & Drager, 2007; Light & McNaughton, 2014; Sullivan & Lewis, 2000). This provides students with complex communication needs the opportunity to practice with the communication system, enhance their communication skills, and interact socially. To use picture symbols or speech generating communication switches effectively, environmental arrangement and non-directive naturalistic teaching strategies

should be considered (McMillan, 2008; McMillan & Renzagila, 2014a; McMillan & Renzagila, 2014b). The overall goal should be for all students to have equal opportunities to communicate across activities. By doing so, students *can* express their thoughts and interests, and teachers and families *can* better support the needs and development of these students. As a result, more successful communication interaction *can* occur.

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Storybook Reading Interactions: Making it Accessible!

Gwendolyn P. Diamond

Franklin Special School District, USA

M. Alexandra Da Fonte

Vanderbilt University, USA

Abstract

Storybook reading interactions are an important strategy to support and enhance the development of communication and literacy skills. In order to reap the benefits of these interactions, students must be active participants. Unfortunately, for students with special needs, more specifically those with complex communication needs, they encounter various barriers to participation. This article focuses on strategies teachers can use during storybook reading interactions to increase participation for students with disabilities. These strategies include: (a) selecting key vocabulary for students with complex communication needs, (b) responding to communication attempts, (c) following the student's lead during the interaction, (d) prompting student participation, and (e) using manipulatives or props to support students' learning.

Storybook Reading Interactions: Making it Accessible!

Storybook reading interactions (SRI) are critical for both students who are typically developing and students with special needs (e.g., Kent-Walsh, Binger, & Hasham, 2010; Saracho & Spodek, 2010). The benefits of storybook reading interactions are manifold, including increasing emergent literacy, improving communication, and enhancing a student's social skills (e.g., Kotaman, 2013). While these benefits are integral to the education and development of typically developing students, they are critical to students with disabilities, including students with complex communication needs (CCN) whose opportunities in these areas historically have been limited (e.g., Spooner & Brown, 2011). Literacy skills are critical to a student's development, as they can enhance opportunities for independence (e.g., Shurr & Taber-Doughty, 2012) and can help students become familiar with concepts of print (Pentimonti & Justice, 2010). Thus, we need to identify ways to increase and support students with CCN in the development of these skills.

Eliminating the Barriers!

In order to reap the benefits of shared SRI, active participation on the part of the student while the adult reads is essential. By increasing the participation of students with CCN in natural contexts, students more readily learn language (e.g., Beukelman & Mirenda, 2013). However, too often, barriers to student participation exist. For example, the overall attitude and expectations of adults with respect to students with disabilities are often exhibited when prioritizing skills (Shurr &

Taber-Doughty, 2012). Unfortunately, adults often lack the skills to interact appropriately with students with disabilities during story-time. For example, in SRIs with these students, adults often ask "yes or no" questions as opposed to more open-ended questions, which limits opportunities for language development (Kent-Walsh et al., 2010a). Additionally, students who use augmentative and alternative communication (AAC) can be limited by the vocabulary adults make available (Da Fonte, Pufpaff, & Taber-Doughty, 2010). Hence, the goal should be to increase the efficacy of SRI to eliminate any potential barriers that may be impacting the interaction, thus supporting students' language, communication, literacy, and social skills.

Where to Begin?

Despite the various barriers that can occur during storybook reading interactions, the use of AAC strategies have the potential to make it easier for students with disabilities to participate during storybook readings (Machalicek et al., 2010). Once the system of AAC has been chosen (e.g., speech generating device [SGD], communication board, switches), the key becomes the effective selection of appropriate vocabulary. Several strategies are suggested in the literature to aid in selecting appropriate story-specific vocabulary. The strategies include choosing vocabulary that (a) is motivating for the student to use (Harding, Lindsay, O'Brien, Dipper, & Wright, 2011), (b) is used repetitively throughout the story (Johnston, McDonnell, & Hawken, 2008), and (c) is used by typically developing same-age peers when engaging in storybook reading (Da Fonte et al., 2010).

These strategies are especially important for students

who communicate using an AAC system. For example, when students communicate using an SGD, teachers must assure that the system is used frequently throughout the day and vocabulary provided to the student meet the student's current language abilities and needs (Bellon-Harn & Harn, 2008). Further, if the student's pre-existing SGD will be used during an SRI, a new page should be created within or outside of that device designed specifically for the storybook (Kent-Walsh et al., 2010a). If a communication board will be used, the communication board should be separate from any other communication boards the child has access to, so the student does not have the added burden of searching through his or her communication board in order to communicate during the SRI (Kent-Walsh et al., 2010a). Lastly, if a switch will be used, the number of words or phrases that can be selected will depend on the capacity of the system and of the developmental level of the student. For example, the teacher of a student who communicates using one switch will need to select one word or phrase related to the story, while the teacher of a student with a pre-existing SGD or communication board will likely be able to select more vocabulary. The key is to not create systems above the student's current level of language, which would require the student to work too hard to focus on the story and communicate at the same time (Binger, Kent-Walsh, Ewing, & Taylor, 2010).

Making it Work!

In order to promote critical literacy skills in students with CCN, the adults must use best practices that will increase a student's overall opportunities. These include (a) responding to the student's communication attempts (e.g., Jordan, Miller, & Riley, 2011); (b) following the

student's lead (e.g., Jordan et al., 2011); (c) prompting student participation (e.g., Machalicek et al., 2010); and (d) using manipulatives (e.g., Mucchetti, 2013). The goal is to enhance the overall interaction between adult and student, while at the same time promoting communication and literacy skills to ensure the student has meaningful opportunities to participate. See Table 1 for a checklist of best practices to enhance active participation during storybook reading interactions.

Respond to communication attempts. Adults should attribute meaning to any communication attempt, regardless of whether the meaning was clear (King & Fahsl, 2012). For example, if a student points to an illustration of a dog and vocalizes, but the adult is not sure why, the adult could say "A dog, woof-woof." This acknowledges the student's participation and sets the stage for further communication. When students communicate, they should immediately be praised for the attempt and encouraged to continue communicating (Jordan et al., 2011). In other words, acknowledging, reinforcing, and responding to any communicative attempt contingently increases the likelihood that the student will continue taking communicative turns.

Follow the student's lead. Adults should also demonstrate interest in that to which the student is attending. If the student wants to stay on one page, the adult should allow the student to do so (Jordan et al., 2011). If a student starts talking or using an AAC system to communicate, the adult should respond and encourage the student to continue. When this occurs, language expansions are often used to expand the student's communicative attempt. To accomplish this, when a student communicates using a word or approximation, the adult should respond by acknowledging what the student has communicated and demonstrated interest in, but then

Table 1
Effective Instruction Strategies During Storybook Reading Interactions Checklist.

Storybook Reading Interaction Checklist	
Step 1	Step 2
<input type="checkbox"/> Respond to communication attempts	<input type="checkbox"/> Acknowledge and praise all communication attempts <input type="checkbox"/> Attribute meaning to all communication attempts
<input type="checkbox"/> Follow the student's lead	<input type="checkbox"/> Show interest in topics which the student is attending to <input type="checkbox"/> Expand student's language
<input type="checkbox"/> Prompt student participation	<input type="checkbox"/> Provide an aided AAC model <input type="checkbox"/> Use a least-to-most prompting hierarchy

elaborate on it and make the language more complex (e.g., Jordan et al., 2011). For example, if a student said “Run,” the adult might say, “That’s right! The boy is running!” In fact, it has been suggested that, by expanding students’ language, the adult models more complex language, which in turn, facilitates students’ language development (Kaiser & Roberts, 2013).

Prompt student participation. Adults can provide an aided AAC model by accessing the student’s AAC system while using oral language to model appropriate use of the system (e.g., Kent-Walsh, Binger, & Malani, 2010). In other words, the adult should point at the actual object, and then point at the symbol while simultaneously saying the label. Gillett and LeBlanc (2007) found that when language was modeled, the frequency of children’s single- and multi-word utterances increased, thereby promoting vocabulary, syntax, and pragmatic development.

Prompting strategies can also be used to increase students’ communication. For example, the adult can provide (1) a verbal cue to participate, (2) an aided AAC model, and (3) if necessary, hand-over-hand assistance to ensure participation. Adults also can elicit communication through the use of story-related questions or comments (Kent-Walsh et al., 2010b). A part of using the prompting strategies effectively is for the adult to wait expectantly for the student to participate (Browder, Lee, & Mims, 2011). In doing so, the adult conveys that he or she expects the student to participate in the interaction. This pause can occur periodically throughout the story to elicit a student’s comment or after a question has been asked (Jordan et al., 2011). The adult can also pause when a repeated word or phrase appears in the story to encourage the student to use that word or phrase.

Using manipulatives. Manipulatives and props can significantly increase a student’s engagement (Mucchetti, 2013). Commonly-used manipulatives and props during story-time include flannel cut-outs, stuffed figures related to the story, picture symbols, and flaps and dials that can be manipulated on the book itself (Flynn, 2011). The use of these manipulatives can help facilitate students’ understanding of the story by providing a concrete representation of the key concepts (Suggate, Lenhard, Neudecker, & Schneider, 2013). This suggests that the use of manipulatives during SRI can support conceptual development as well as the development of language skills.

Final Thoughts

Although several barriers to participation in SRIs exist for students with CCN, it is critical that educators, families, and caregivers use effective practices during these interactions to ensure and enhance active participation from students with CCN. Using these strategies to enhance participation and making AAC accessible to students with CCN can make story-time a beneficial activity for these students.

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JIASE SUBMISSION GUIDELINES

The Journal of the International Association of Special Education (JIASE)

Articles that have not been previously published and are not under review by any other publication and meet the International Association of Special Education (IASE) mission statement aims are invited for review. Both research articles and articles for practitioners (PRAXIS) will be given equal consideration.

Mission Statement of the International Association of Special Education

The aims of the IASE are to promote professional exchange among special educators and other professionals who work with children with disabilities all over the world, to develop special and inclusive education as a discipline and profession, to encourage international cooperation and collaborative international research, to promote continuing education of its members by organizing conferences, and to foster international communication in special and inclusive education through *The Journal of the International Association of Special Education* (JIASE).

SUBMISSION GUIDELINES

GENERAL

Manuscripts with research as well as practice content must be relevant to international audiences, of researchers, teachers, lecturers, paraprofessionals, parents, etc. Manuscripts that have no clear message for readers in other countries will be returned to the author.

FORMAT

Style

Total length of the manuscript is not to exceed 25 pages and should include all references, charts, figures, and tables. Articles submitted should follow the guidelines of the *Publication Manual of the American Psychological Association* (APA) (6th ed.).

Word Processing

Using American English, manuscripts are submitted in Microsoft Word format using 12 point Times Roman typeface (no bold or italics). The entire document should be double spaced with .75 inch margins all around (top, bottom, left, and right), with exception of long quotations (single-spaced). Tables, charts, figures, and or illustrations should fit in a 3.25 inch width column and are to be on separate pages at the end of the manuscript. Additionally, a copy of any photos, illustrations or other graphics must be attached electronically in jpeg format. References are to be in APA style with hanging indents.

Cover Page

Include this information on a separate sheet:

- Title of the manuscript
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Abstract

On a separate sheet of paper at the beginning of the manuscript describe the essence of the manuscript in 100–150 words.

TO SUBMIT

Manuscripts are submitted via email. Attach as one document in the following order: Abstract, Cover Page, and Manuscript, and e-mail to the JIASE Editor, Dr. Renáta Tichá at tich0018@umn.edu. Any graphics should be attached as a separate document. You will receive an e-mail confirming that we received your attachment.

PRAXIS Submission Guidelines

The PRAXIS section of this journal is intended for readers to be able to apply the methods/strategies described in the articles in their classrooms. These methods/strategies may be new and unique ideas or they can be effective methods/strategies that some teachers have been using, and believe that by sharing them, other teachers can implement them in their classrooms. The articles should be approximately 5–10 pages and describe in detail a specific teaching strategy or informal assessment method. The articles should include specific information on how to develop and implement these methods and/or strategies. These articles are to be submitted following the same submission guidelines and will go through the same review process as all JIASE articles. The format for these articles should include an introduction, step-by-step directions, materials/examples of charts or graphs if needed, recommendations, and references.

We encourage you to consider submitting methods/strategies that you have used with students with disabilities and think would be of interest to our readers. Classroom teachers, university instructors, and other professionals working with students with disabilities are welcome to submit articles for consideration for publication in the PRAXIS section of the journal.

General Mailing Address

Inquiries and other editorial correspondence may be sent to the JIASE Editor at:

Renáta Tichá, Ph.D.
JIASE Editor
Institute on Community Integration
University of Minnesota
150 Pillsbury Drive SE
Minneapolis, MN 55455
USA
email: tich0018@umn.edu

Authors will be notified of the receipt of their manuscripts by e-mail as noted above. After an initial review by the editor, those manuscripts that meet established specifications will be sent to a team of consulting editors of JIASE for blind review and editing. The journal editors reserve the right to make editorial changes. It is the responsibility of the author(s) to ensure the accuracy of the content in their articles. Also, it is the responsibility of the author(s) to obtain appropriate permission and ensure the ethical treatment of research participants. Points of view and opinions are those of the individual authors and are not necessarily those of the International Association of Special Education (IASE).



REGISTRATION
16th Biennial Conference
International Association of Special Education (IASE)

A Collaborative Effort by the
International Association of Special Education
&
Sebastian Kolowa Memorial University (SEKOMU)



**“Empowering Persons with Disabilities:
Developing Resilience and Inclusive Sustainable Development.”**
Magamba, Tanzania, East Africa
July 14 – 17, 2019

Please complete a separate registration form for each participant. **IASE Federal ID# 43-1974089.**

PLEASE PRINT CLEARLY!

Last Name: _____ First Name: _____ Date Submitted: _____

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Gala Dinner: Yes: ___ No: ___ Indicate Special Diet Needs: _____

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REGISTRATION FEES US dollars

Conference registration includes: Opening Reception, three days of conference sessions with breaks, lunches, and transport to and from the airport on assigned days/times, Gala Dinner, and Conference Proceedings. After February 1, 2019, all conference registration fees will increase by \$150 USD. EXCEPTION: developing countries will have a \$70.00 USD increase.

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TOTAL REGISTRATION FEES: (payment in US dollars only) \$ _____ **Date Received:** _____

Payment Options:

1. ___ Check or money order. Make checks or money orders payable to IASE in US dollars. Fill out the registration form and postal mail to: IASE Treasurer, PO Box 2159, Mesa, AZ 85214, USA.

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Note: All presenters are required to register for the conference by April 1, 2019. All conference participants must register no later than April 1, 2019. Cancellations MUST be made in writing for IASE Board approval. Send to IASE Treasurer, PO Box 2159, Mesa, AZ 85214, USA or email dririsdoug@gmail.com. Refund information: All refunds are subject to a \$80.00 USD processing charge. Cancellations requested by April 1, 2019 for full refund (minus the \$80.00 USD); April 2-15, 2019 for 75% refund (minus \$80.00 USD); April 16-30, 2019 for 50% refund (minus \$80.00 USD). No refunds after May 1, 2019.

PLEASE remember to register early as this conference is limited to the first 500 participants.

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