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Comparison of Special Education in the United States, Korea, and China

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Abstract

Given the contextual conditions in each country, the United States, Korea, and China all have their own unique history of special education, which leads to different special education and service systems for students with special needs. The purpose of this paper is to compare the development and current status of special education in all three countries. The researchers did a comprehensive literature review primarily using the database of Academic Search Complete, in addition to national journals, published governmental reports, and official documents from Korea and China. The results of this review provide a better understanding of special education and trends in special education across all three countries.

Keywords: special education, history, the United States, Korea, China

Introduction

Historically, American special education is considered to have been initiated when Howe and Gallaudet started to educate those who were blind and deaf in the early 1800s. Since then, special education has seen tremendous development (Friend, 2013). In particular, the civil rights movement in the 1960s had a critical influence on federal legislative establishment to ensure education services for children with special needs. The most recent inclusive education movement in the United States has emphasized access to equal educational opportunity and a commitment to meet individual needs (Meyer & Patton, 2001).

While supported via numerous litigations and several legislative amendments, American special education also has significantly influenced the development of special education in other countries as well. This comparative study addresses the influence on two countries, Korea and China. Also, this study discusses how these influences have yielded different outcomes due to the different cultural, social, political, economic, and religious backgrounds in both counties.

In Korea, American missionaries first initiated special education in the late 1800s. However, due to the heavy influence of Buddhism and Confucianism in Korean society, only private residential special schools influenced by the Christian missionaries supported the students with special needs until the Special Education Promotion Act (SEPA) was enacted in 1978 (Taegu University Special Education Center, 1993). This national special education law was influenced by American special education law, P.L. 94-142, from 1975. Major influences of P.L. 94-142 on the SEPA were individualized education plan (IEP), mandated evaluation process for special education and delivering IEP in public schools (Taegu University Special Education Center, 1993).

Even though China is geographically adjacent to Korea, it also has a unique historical development of special education due to its own social and political standpoint. Historically, children with special needs did not receive any form of special education nor even general education in China. While China also had Western missionary activities during the same time period as Korea, their influence in special education was not significant in comparison. China formally started special education in 1986 when the National People's Congress adopted the 1986 Compulsory Education Law of the People's Republic of China (Worrell & Taber, 2009). However, most children with special needs had not been served in public schools due to economic and social issues until the early 1990s. Due to the influence of inclusion in the United States, originating from the Least Restrictive Environment (LRE) in American special education law, Individuals with Disabilities Education Act (IDEA) in 1990, the Learning in the Regular Classroom (LRC) movement grew in popularity and saw rapid increase of the population of students with special needs in China from the early 1990s onwards (Ellsworth & Zhang, 2007).

One of the significances of this study is that no previous studies have reviewed the influence of American special education on both Korea and China. Most studies for special education history in both countries have reported only on the history of special education in both countries, not American influence on the same. However, no studies have looked at how the second half of the 20th century had significant changes in their special education history and how these changes were aligned with or transferred from American special education history by reviewing the timeline of changes. This study also highlights how American special education saw a different

influence because of the contextual conditions in both countries historically, such as spreading out the concept of inclusion, equality, and dignity for those with special needs. Furthermore, this study provides the current status of special education in both countries compared with the US, such as different levels of protection for parental rights.

Since this is a literature review-based study, the authors researched traditional formal narrative literatures, and synthesized the search. As a comparative examination of trends in special education across three countries, out of necessity, the historical sources used in this study are primarily the works of secondary scholarly literature from ERIC, in addition to national journals, published governmental reports, and official documents in both countries of Korea and China. The official documents include, but not limited to, the Korean National Institute for Special Education, the National library for Individuals with Disabilities, Taegu University Special Education Research Center, and Beijing Federation for People with Disabilities, National People's Congress, and National Education Committee of the People's Republic of China.

This paper addresses the comparisons of special education in three countries into two major timelines, by the mid-20th century and after the mid-20th century. Prior to the mid-20th century, special education systems in three countries had been developed as mainly religious, philanthropic, or private sector activities instead of government-led legislative activities (Kim & Yeo, 1976; Osgood, 2008). Then, from the 1960s, special education laws have established and influenced the development of systematic public special educations in three countries. After the historical comparison, this paper briefly compares the current special education status in these three countries.

Special Education Development by the Mid-20th Century in Three Countries

As mentioned above, until the mid-20th century, the educational environments for children with special needs were not systematically structured, particularly in public education systems, in three countries. However, the efforts to make educational supports for them had been implemented by religious or private philanthropic activities. Also, importantly, the influence of American missionary groups on special education in China and Korea has been identified from early 1800s (Kim & Teo, 1976; Mou, 2006) as Table 1 presents. This paper also discusses the influences while describing special education history in each country.

Table 1

Historical Milestones of Special Education by the Mid-20th Century in the United States, Korea, and China

Year	The United States	Korea	China
1817	Connecticut Asylum for Deaf & Dumb Persons: the first school for the deaf	--	--
1832	Perkins Institution for the Blind: the first school for the blind	--	--
1864	National Deaf Mute College (Gallaudet University)	--	--

1874	--	--	Moore, a Scottish missionary, established the first special school for the blind
1875	First special class in Cleveland, Ohio	--	--
1877	--	--	The Mills, American missionaries, established the first school for the blind and deaf
1894	--	Hall, an American missionary, educated a girl with blindness	--
1909	--	Hall established a school for the deaf	--
1912	--	--	Zhang, the first Chinese, established a training school for teachers of the blind and deaf
1927	--	--	The government established Nanjing Municipal school for the blind and deaf
1935	--	Kwang-Myoung Blind School, the first private special school	--
1940s – 1960s	--	Multiple Special Schools for Different Special Needs	Laws and regulations for people with disabilities were made in 1950s; 266 special schools by 1965

The United States of America

Special education in the United States has been influenced by social and economic factors, but the most important factor has been the legislation and major court cases which directed its development. In the 19th century, the idea of supporting children with disabilities came to the United States from Europe; France to be specific. Children with deafness and/or blindness were the first group who received special education services, followed by children with intellectual disabilities (Friend, 2013). In the timeline of the development of special education services described by Friend (2013, p. 8), for children with deafness and/or blindness, Connecticut Asylum for the Education and Instruction of Deaf and Dumb Persons opened in 1817. Samuel Gridley Howe opened Perkins Institution for the Blind in 1832, and then established an experimental school for 'feebleminded' youth in 1848. The National Deaf Mute College was established in 1864, which was renamed later as Gallaudet University.

The first special class in public school was established in Cleveland, Ohio, in 1875, but was disbanded shortly afterwards (Scheerenberger, 1983; Friend, 2013, p. 7). During the late 19th and early 20th centuries, changes in the society and economy such as urbanization, immigration, and industrialization led to the growth of compulsory public education (i.e., mandatory school attendance) and assembly line of standardized education (i.e., moving from grade to grade) (Friend, 2013, p. 8). In the first half of the 20th century, however, when people found that not everyone could make appropriate progress within the system of standardized education, it became more common for students, especially those with intellectual, behavioral, physical, and sensory disabilities, to be educated in the special classes separating from their typically developing peers (Friend, 2013, p. 9). Until the 1950s, it was a common practice for students with disabilities to be excluded from attending public schools, or for those who did attend the public school, many of them ended up dropping out. For students with more severe disabilities, they were either institutionalized or remained at home (Pardini, 2002; Hill & Sukbunpant, 2013).

Korea

Before mentioning about the history of special education in Korea, education in general in this country needs to be discussed first. Korea is one country in Asia that is well known for strict and high emphasis on education. Several historical backgrounds have influenced the heavy emphasis on education. During the Choson Dynasty period (1392 – 1910), the last dynasty before the democratic governmental system came into effect, education was the best way for Koreans to become higher-ranking government officers and, to a certain degree was the only way to overcome hierarchical social status; one which was predetermined from birth (Seth, 2005). During the period, Confucianism from China also had a strong influence on the perceived value of education as well. 'Koon-Sa-Boo-Il-Che' is a very famous Korean proverb which means a king (Koon), a teacher (Sa) and a father (Boo) are the same people (Il-Che) to be respected. This shows how much Korean people have respected educators and considered education as one of the most important aspect of life (Chung, 1985). Another well-known Korean saying is "Mangja's mom moved three times for her son's education" (Anonymous, n.d.). This means parents are willing to move anywhere for better educational environments for their children.

In terms of special education, even though people have strongly valued education for more than two centuries, people with disabilities were not considered a priority for education in Korea. They were only considered from a motive of sympathy, charity, or protection. On the other hand, people with disabilities were also neglected, ridiculed, or disregarded because disability itself was considered to be karma for sins committed in previous lives, as believed in the Buddhist world view (Kang, 2002). Due to these perspectives toward people with disabilities, only certain job trainings or humanistic social supports were given to them in history until the end of the Choson Dynasty, and even then, only occasionally (Kim, 2010).

Meanwhile, Korean society - including the education system - underwent a major change when the country opened its doors to western culture in the late 18th century. From this period onwards, special education history can be divided into four stages according to Kim (2010): (1) emerging special education; (2) establishing special schools; (3) establishing special education laws; and (4) full inclusion practice.

The first stage was the period of emerging special education which lasted until the 1930s. During this stage, as a part of western influence, foreign missionaries brought in a new education system including educational approaches for people with disabilities. Particularly, Rosetta Sherwood Hall, an American missionary and a doctor, was known as the first person to initiate special education in Korea by educating a girl with blindness in the Braille language in 1894 (Kim, 2003). The education setting for the girl was a special classroom in a private school. She also established a school for children with deafness in 1909 (Kim & Yeo, 1976). Also, the Kwang-Myoung Blind School was established by Pastor Chang-Ho Lee in 1935 as the first special school by a Korean which was almost a century after the first special school was established in the U.S. Since then, students with special needs were educated mainly in segregated private residential special schools under Christian philanthropy activities (Kim, 1983).

The second stage was the period of establishing special schools, mainly private residential schools and several special classrooms in public schools from the 1940s to 1960s. The majority of special schools in special education history were found in this stage such as Bo-Gun School for the physical disabled, Bo-Myoung School for the cognitively disabled, and Young-Hwa School for the deaf in Daegu, Korea (Kim, Yeo, 1976). During these three decades, two federal education laws had addressed the integration of students with special needs into public schools, but it was hardly practiced in the field due to lack of legal regulations (Ku, et al., 1994).

The People's Republic of China

Special education in China has been heavily influenced by traditional philosophies, as well as social and economic factors. Not until the past 30 years since the late 1980s has China seen more legislation, policies, and regulations established to guide the development of special education. More than two thousand years ago, there existed a sympathetic attitude toward people with disabilities in Chinese society, influenced by traditional philosophies and religions such as Confucianism, Buddhism, and Taoism and so on. People were encouraged to be kind and help individuals with disabilities. However, without an established support, it usually became the individual families' responsibility to support family members with disabilities (Deng, Poon-McBrayer, & Farnsworth, 2001).

Emergence of Special Education in China Prior to 1949. Special education in China first emerged in the mid-19th century. In 1859, during the period of "Tai Ping Tian Guo" (Taiping Heavenly Kingdom), in his masterpiece of "Zi Zheng Xin Pian" (New Treaties on Political Counsel), Hong Rengan systematically introduced how to develop special education schools and how to legislate special education in China. Unfortunately, his idea on special education was never implemented because of the failure of the Taiping Heavenly Kingdom movement (Huang, 1994). In the 19th century, similar to, but much earlier than Korea, the U.S. and European missionaries supported the establishment of special schools in China. In 1874, a Scottish minister, Mu Weilian (William Moore), established the first special school for people with blindness in Beiping (now Beijing city) (Mou, 2006, p. 38). This was about six decades after the first American special school. Also, in 1877, the American missionaries Charlie and Annetta Mills established the first school for students with deafness and blindness in Dengzhou, Shandong province (now Penglai county) (Mou, 2006, p. 38). Zhang Jian was the first Chinese individual to establish a training school for teachers of the blind and deaf in 1912, and then a

special school for blind and deaf students in 1916 (Deng, Poon-McBrayer, & Farnsworth, 2001). In 1927, the government established the Nanjing Municipal School for the Blind and Deaf. Due to continuous wars that lasted for years, before the foundation of the People's Republic of China, there were only 42 special schools serving about two thousand students with blindness and deafness nationwide, mostly run by religious and charitable organizations (Deng, Poon-McBrayer, & Farnsworth, 2001, p. 290; China Disabled Persons Federation, 1996).

Progress in the 1950s and Regression Prior to the 1980s. After the founding of the People's Republic of China in 1949, the Chinese government initiated systematic reforms in special education, based on the socialist humanitarian ideology and perspectives from the Soviet Union. The previously existing schools for the blind and deaf were now owned and run by the state (Jiang, 1986; Deng, Poon-McBrayer, & Farnsworth, 2001, p. 290). In the 1950s, laws and regulations were made to safeguard the rights of education for people with disabilities. The Resolutions on the Reform of the School System (1951) clearly regulated that governments at all levels should establish special schools for the deaf and blind, and educate children, youth and adults with disabilities (Yang & Wang, 1994; Deng, Poon-McBrayer, & Farnsworth, 2001, p. 290). In 1953, the Ministry of Education established the Department of Education on the Blind and Deaf-Mute, which was responsible for making plans, training teachers, and guiding the education for the blind and deaf nationwide. At the same time, the new blind word program and the Chinese finger alphabet program became supplementary means of special education, which promoted the development of Chinese special education (Deng, Poon-McBrayer, & Farnsworth, 2001, p. 290). In 1965, there were 266 special schools serving about 22,850 students with hearing and visual impairments (China Disabled Persons Federation, 1996, p. 56). However, political turmoil in the following 10 years led to neglecting education, including special education.

Special Education from Late 20th Century in Three Countries

From the late 20th century, three countries started to establish federal special education laws as Table 2 presents. Due to legal systems, these special education systems have been more structured and centralized, particularly in public school sectors. Also, the authors identified unique patterns of legal developments in Korea and China which are influenced by American legal systems at different levels. In this section, the paper compares the legislative changes in three countries in terms of similarities and uniqueness.

Table 2
Major Legislation in the United States, Korea, and China

Year	The United States	Korea	China
1973	Section 504 of Rehabilitation Act	--	--
1974	Education for All Handicapped Children Act (EAHCA)	--	--
1975	Education of the Handicapped Act (EHA)	--	--
1977	--	Special Education Promotion Act (SEPA): Public Education, IEP	--

1982	--	--	Article 45 of the Constitution of the PRC: First fundamental law mentioned special ed.
1986	--	--	Article 9 of the Compulsory Education Law of the PRC: Mandated 9-year compulsory education for all students
1988	--	2nd SEPA: FAPE	--
1990	Individuals with Disabilities Education Act (IDEA)	--	Guidelines for the Development of Special Education & Law on the Basic Protection of Individuals with Disabilities: Expanded the scope of disabilities
1992	--	--	The Detailed Regulations on the Implementation of the Compulsory Education: Standards and procedures for special school establishment
1994	--	3rd SEPA: Inclusion, Transition Plan	--
1997	--	4th SEPA: LRE	--
2004	Individuals with Disabilities Education Improvement Act	--	--
2006	--	--	The Compulsory Education Law: Rules and regulations on special ed.
2007	--	Special Education Law for Children with Special Needs: Inclusion in Gen ed. Schools	--
2014	--	--	The Special Education Promotion Plan: Increased funding to support special ed.
2015	--	--	The Special Education Teacher Professional Standards (Trial 2015): National professional requirements for qualified special ed. teachers

The United States

During the Civil Rights movement of the 1950s and 1960s, the landmark case Brown v. Board of Education (Brown) (1954) ruled that it was illegal to separate children by race in separate schools without access to similar resources (Hill & Sukbunpant, 2013). Also, the Elementary and Secondary Education Act of 1965 (ESEA 1965) was the first federal legislation to address the education of children with disabilities, and it provided federal funding for the states to create and

improve educational programs and related services for children with disabilities (Turnbull, Stowe, Wilcox, & Turnbull, 2000; Friend, 2013, p. 11). Section 504 of the Rehabilitation Act (1973) protects all individuals with disabilities from discrimination in federally funded programs, yet it does not provide any federal funding for the implementation of that protection (Friend, 2013, p. 16). The impacts of Section 504 to today's public schools are that students who are not eligible for Individuals with Disabilities Education Improvement Act (IDEIA, 2004) may receive special education and related services in public schools through Section 504, and the schools need to provide funding for its implementation (Friend, 2013).

The Education for All Handicapped Children Act (EAHCA) (1974) was the first federal legislation to mention providing students with disabilities with a free appropriate public education (FAPE) (Friend, 2013; Witte, Bogan, & Woodin, 2015). The Education of the Handicapped Act (EHA) (1975) was the first amendment of EAHCA (1974), and it was also the first federal legislation mandating compulsory education for all students with disabilities (Witte, Bogan, & Woodin, 2015). Its principles are still essential to today's special education in the U.S., which include providing funds to find children with disabilities outside of the public school system, mandating states to follow the law to receive federal funding, and requiring individualized education plans for each child with special needs (Yell, Katisyannis, & Hazelkorn, 2007; Friend, 2013, p. 11).

The year of 1990 was another monumental year for American special education. EHA was renamed and refined to the Individuals with Disabilities Education Act (IDEA). Importantly, this law ensured free appropriate public education (FAPE) and least restrictive environment (LRE) with two major additions: (1) two categories of disabilities: autism and traumatic brain injury; and (2) the needs of transition-related services (Friend, 2013, p. 11). These major changes were influenced by several court cases on inclusion in the 1980s such as Board of Education of the Hendrick Hudson Central School District v. Rowley (1982) supported FAPE, and Roncker v. Walter (1983) and Daniel R. R. v. State Board of Education (1989) ruled in favor of LRE (Hill & Sukbunpant, 2013, p. 125).

IDEA (1990) then was reauthorized in the year of 1997 (IDEA, 1997) with more additions: (1) discipline procedures; (2) parental involvement; (3) classroom teachers' role; and (4) assessment of academic progress of all students with disabilities. The latest reauthorization of IDEA (1997) was the Individuals with Disabilities Education Improvement Act (IDEIA, 2004) with further additions: (1) being consistent with other federal education laws, (2) specific strategies to resolve disputes with parents/families, (3) evidence-based practices when educating students (Yell, Shriner, & Katisyannis, 2006; Friend, 2013, p. 11).

The core principles in IDEIA (2004) are: (1) zero rate of rejection, which entitles all students with disabilities to a free public education; (2) free appropriate public education (FAPE), which is incorporated in the student's individualized education program (IEP); (3) least restrictive environment (LRE), which varies from instruction in a general education setting to separate school setting; (4) nondiscriminatory evaluation, with the use of multiple assessments in an unbiased decision-making process; (5) parent and family rights to confidentiality; and (6) procedural safeguards (Friend, 2013, pp. 14-15).

Korea

The 1970s marked a turning point in Korean special education because of the first-ever introduction of special education law, Special Education Promotion Act (SEPA) in 1977, which was a significant regulation to implement special education. One noteworthy legislative action in the U.S during this period was that The Education for All Handicapped Children Act (EAHCA) was enacted in 1974. From this period, American public special education and Korean public special education have shown a relatively parallel development albeit with some cultural differences in attitudes toward disabilities. As EAHCA, and later IDEA, have led special education system in the United States, SEPA has been a leading law for special education since then (Kim, 2010).

Similar to EAHCA and EHA, in 1977 SEPA ensured public educational support system and mandated individualized education programs for students with special needs. Also, the law enforced public schools to provide special education services although segregated self-contained classrooms were mainly special education models in public schools (Ku et al., 1994). Also, SEPA was reauthorized in 1988 and the second SEPA mandated free special education services in both public and private special education settings (Ku et al., 1994). While SEPA guaranteed free special education services in public schools, it did not immediately increase mainstreaming for students with special needs. Major placements for these students remained in private or public special schools over the next decade.

Several obstacles resulted in this delay of mainstreaming. First, a huge shortage of special education personnel resources in public schools made parents choose to send their children to specialized schools instead of public schools. Also, the Buddhist notion of Karma toward disabilities discouraged parents from actively pursuing the educational rights for their children with special needs in public schools. Having a child with a disability was a stigma in a family (Kwon, 2005). Another aspect was the societal attitude toward education. 1970s and 1980s was the industrial period when Korea had the most dramatic economic growth after recovering from the Korean War in 1960. During this industrial period, education was the most important tool to succeed in society. Thus, education fields became extremely competitive and public schools mainly focused on higher educational achievements. Thus, schools and teachers had less tolerance for substandard performers who were often students with special needs. These attitudes kept the children with special needs and their parents away from being mainstreamed in public schools (Kwon, 2005).

Four years after IDEA 1990 in the U.S., the third SEPA (1994) was reauthorized with major revisions in Korea. This law started to use the term 'inclusion' and included a mandatory transition service plan. Also, in 1997, SEPA was reauthorized again for the fourth time, and the 4th SEPA emphasized 'inclusive education' in public schools which would ensure the least restrictive environment. From this period, there was a significant upward change in the percentage of students with mild and moderate special needs attending public schools (Ku et al., 1994). Yet, support for these students who were in inclusive settings was considerably lacking and the attitude toward these students and their parents was still negative. The students were considered as lazy, and that laziness blamed on poor parenting. After several revisions of SEPA, the law was finally renamed as Special Education Law for Children with Special Needs in 2007

which is considered the latest stage of Korean special education. This was also a couple of years after IDEA was reauthorized as IDEIA in 2004 in the United States. This new special education law ensured free and mandatory special education services from kindergarten to high school while elementary schools and middle schools are the only mandatory education period for typical students. This law particularly aimed to enforce and extend much more inclusive settings in general education settings for students with special needs (Ku et al., 1994).

Even though the movements in Korean special education are closely paralleled with American special education movement since 1977 SEPA, some aspects were not the same due to cultural differences. The legislative changes of American special education were driven by the civil-rights movement and many court rulings driven by parent advocates (Friend, 2013). Due to this, inclusion progressed quite rapidly since legislation was established in public schools. However, in Korea, having a child with special needs was a social stigma, as mentioned above, and Korean parents were very passive in terms of pursuing legal rights for their children (Kwon, 2005). In addition, the highly respected social status of Korean educators from the notion of 'Koon-Sa-Boo-IL-Che' also discouraged parents from expressing their dissatisfaction about the lack of sufficient support (Son & Wang, 2006). Finally, Korean society - which is extremely competitive and impatient toward slow achievement - has little tolerance to work with these people, even in schools together (Kwon, 2005). All of these resulted in a huge gap of inclusion between legislation on paper and practice in reality.

The People's Republic of China
Development of Special Education in the 1980s. The economic reforms in the 1980s led to a mixed influence of western ideologies and the Soviet Union's socialistic perspectives. The Article 45 of the Constitution of the People's Republic of China (1982) was the first fundamental law of the nation to mention special education. The law stated that the nation and society should help make arrangements for work, living, and education for the blind, deaf, and Chinese citizens with other disabilities (the National People's Congress of the People's Republic of China, 1982). Also, The Decisions on Reforming the Education System (1985) stated, for the first time, that special education should include education for children with mental disabilities, and it claimed the government's obligation to develop early childhood education and special education for the blind, deaf, children with other disabilities and mental disabilities (Ding, Yang, Xiao, & Van Dyke, 2008). The Article 9 of the Compulsory Education Law of the People's Republic of China (1986) mandated the compulsory education for students with disabilities, and the responsibility of local governments to establish special schools or classes for students with disabilities (Ding, Yang, Xiao, & Van Dyke, 2008). In 1986, the Gold-Key Education Project made the first trial of integrating one thousand students with visual impairments into general education classrooms, which led to the policy of Learning in Regular Classrooms (LRC) later (Ding, Yang, Xiao, & Van Dyke, 2008). In 1988, the National Conference on Special Education called for special classes attached to regular schools. In that same year, the Five-Year Work Program for People with Disabilities (1988-1992) proposed the concept of LRC formally, integrating children with disabilities into general education classes. The implementation of LRC is a necessity for children with disabilities who do not live in areas where special schools are present or whose families cannot afford special schools to receive education (Ding, Yang, Xiao, & Van Dyke, 2008). However, LRC does not consider whether the educational program is

appropriate or an individualized education program is available for the student with disabilities (Deng & Manset, 2000).

Significant Improvement in the 1990s to Present. In 1990, the publication of the Guidelines for the Development of Special Education (People's Education Publishing, 1990) and the Law on the Basic Protection of Individuals with Disabilities guaranteed the right of education for individuals with disabilities, pushed forward the development of special education, and expanded the scope of disabilities in China (Chen, 1996; Ding, Yang, Xiao, & Van Dyke, 2008). In 1992, the Detailed Regulations on the Implementation of the Compulsory Education stipulated the school age limits for the children with blindness, deafness, intellectual and mental disabilities. It provided standards and procedures for the establishment of special schools, as well as detailed regulations concerning allowance for the economically disadvantaged families who had children with disabilities and training for special education teachers (china.org.cn, 2016). In 1993, the implementation of the Curriculum Plan for Full Time Schools for the Visually Impaired was a success due to the integration of scientific approaches specifically tailored to the needs of students with visual impairments into the general education curriculum (Deng, Poon-McBrayer, & Farnsworth, 2001). The Pilot Project on Implementing Learning in Regular Classrooms for Children and Adolescents with Disabilities (1994) mandated the integration of LRC into development plans of the nine-year compulsory education, and ensured the prompt start of schooling for children and adolescents with disabilities (Ministry of Education of China, 1994; Ding, Yang, Xiao, & Van Dyke, 2008).

In 2006, the Compulsory Education Law formulated special rules and regulations on special education to protect the best interests of children with disabilities. In January 2014, seven Departments, including the Ministry of Education, compiled the Special Education Promotion Plan (2014-2016), which called for refining special education at the universal level, increasing funding to support special education, and improving its quality. This plan also set targets for increasing the enrollment rate of the Compulsory Special Education from 72% to over 90%, and increasing the public funds for the special school budget per student from RMB 2,000 ($287) to RMB 6,000 ($863) in three years (The Central People's Government of the People's Republic of China, 2014). The Special Education Teacher Professional Standards (Trial 2015) became the national professional requirements for qualified teachers of special education and norms of teaching students with disabilities. According to Standards (Trial 2015), a teacher is required to show concerns for every student, to prioritize students' safety, and to promote students' physical and mental health. In addition, teachers should treat every student equally, respect the dignity of the students, and defend the students' lawful rights and interests (Ministry of Education of China, 2015).

Current Special Education System in Three Countries

With long historical developments of special education, this section of the paper briefly describes the current status of special education system in all three countries. First, Table 3 presents the disability categories served in public education system in the United States, Korea, and China. As the table indicates, the United States has 13 categories of disabilities that qualify for special education services, Korea has 10, and China has seven. The disability categories of Korea are very similar to those of the United States, while in China, autism; other health impairment (such

as Attention-deficit/hyperactivity disorder or ADHD), specific learning disabilities, and emotional disturbance are not included.

Table 3

Categories of Disabilities that Qualify for Receiving Special Education Services in the United States, Korea, and China

The United States		Korea	China
IDEA (2000)	PL 94-142 (1975)		
Autism	--	Autism (added 2007)	--
Deaf-Blindness	Deaf-Blindness	--	
Deafness	Deafness		
Emotional Disturbance	Severe Emotional Disturbance	Emotional or Behavior Disorders	--
Hearing Impairment	Hearing Impairment	Hearing Impairment including Deafness	Hearing Impairment including Deafness
Intellectual Disabilities/ Mental Retardation	Mental Retardation	Intellectual Disabilities	Intellectual Disabilities
Multiple Disabilities	Multiple Disabilities	--	Multiple Disabilities
Orthopedic Impairment	Orthopedic Impairment	Physical Impairments	Physical Disabilities
Other Health Impairment	Other Health Impairment	Other Health-Related Disabilities	--
Specific Learning Disability	Specific Learning Disability	Specific Learning Disabilities	--
Speech or Language Impairment	Speech or Language Impairment	Communication Impairment	Speech or Language Impairment
Traumatic Brain Injury	--	--	--
Visual Impairment including Blindness	Visual Impairment including Blindness	Visual Impairment including Blindness	Visual Impairment including Blindness
--	--	Developmental Delays	Mental Disabilities

Table 4 also reports the frequency and percentage of students with disabilities across three countries. One interesting aspect of this data is the different prevalence of disability groups across countries. The three largest groups in the US were specific learning disabilities (*n*=2,333,960, 38.64%), speech or language impairment (*n*=1,014,817, 16.78%), and other health impairment (*n*=934,020, 15.44%). Yet, the three largest groups in Korea were intellectual disabilities (*n*=48,084, 53.80%), autism (*n*=11,422, 12.78%), and orthopedic impairment, identified as physical impairment, (*n*=10,777, 12.06%). China's top three disabilities were intellectual disabilities (*n*=260,500, 52.98%), deaf and hearing impairment (*n*=90,000, 18.30%) and blindness and visual impairment (*n*=36,100, 7.34%). The Chinese data may need to be interpreted differently because the country has the fewest disability categories, and the number of students diagnosed with Multiple Disabilities, Physical Disabilities, Speech or Language Impairment, and Mental Disabilities were combined and reported as "other" (*n*=105,100, 21.37%) (Ministry of Education of the People's Republic of China, 2017).

Table 4

Students with Disabilities who Qualify for Receiving Special Education Services in the United States, Korea, and China (Frequency and Percentage)

Disability	The United States (2016-2017) Frequency (%)	Korea (2017) Frequency (%)	China (2016) Frequency (%)
Autism	578,765 (9.56%)	11,422 (12.78%)	--
Deaf-Blindness	1,278 (0.02%)	NA	NA
Deafness	65,465 (1.08%)	3,358 (3.78%) (Deaf & HI Combined)	90,000 (18.30%) (Deaf & HI Combined)
Hearing Impairment			
Visual Impairment including Blindness	24,706 (0.41%)	2,026 (2.26%)	36,100 (7.34%)
Intellectual Disability/ Mental Retardation	416,205 (6.88%)	48,084 (53.80%)*	260,500 (52.98%)*
Emotional Disturbance	335,301 (5.54%)	2,269 (2.54%)	--
Multiple Disabilities	125,868 (2.08%)	NA	NA
Orthopedic Impairment	36,253 (0.60%)	10,777 (12.06%) (Physical Disability)	NA
Other Health Impairment	934,020 (15.44%)	1,626 (1.82%)	--
Specific Learning Disability	2,336,960 (38.64%)*	2,040 (2.28%)	--
Speech or Language Impairment	1,014,817 (16.78%)	2,038 (2.28%)	NA
Traumatic Brain Injury	25,210 (0.42%)	NA	--
Other	154,034 (2.55%) (Develop. Delays)	5,713 (6.40%) (Develop. Delays)	105,100 (21.37%) (Multiple Disabilities, Physical Disabilities, Speech or Language Impairment, & Mental Disabilities combined)
Total	6,048,882	89,353	491,700

Note: * The largest group in special education population in each country

Even though three countries have different numbers of disabilities categories, the different pattern of prevalence across all three countries deserves attention. For example, the specific learning disability is the highest prevalence group (38.64%) in the US, but it was identified as being only 2.28% in Korea. It is also important that China does not even have (or recognize) a disability category. Speech and language impairment category was the second largest group (16.78%) in the US, yet it was identified as being very small (2.28%) in Korea while the data of this category was not reported separately in China. On the other hand, intellectual disability was the largest group, almost a full half of the overall special education population, in both Korea (53.80%) and China (52.98%) while the US identified the disability as being only 6.88%. Another noteworthy category is autism. The disability category was the fourth largest group (9.56%) in the US. This popular disability was identified as the second-largest group (12.78%) in Korea. However, China does not identify or recognize this disability category.

Table 5
Placement for Students with Disabilities Receiving Special Education Services in the United States, Korea, and China (Frequency and Percentage): From Least to most Restrictive

Placement	The United States (2016-2017) Frequency (%)	Korea (2017) Frequency (%)	China (2017) Frequency (%) (1st-9th Grade)
General Education Classroom with few or no Support Services	80% or more time inside general class: 3,819,290 (63.14%)	Reported as General Education Inclusive Classroom including full and partial inclusion:	Reported as General Education Classroom & Special Education Classroom:
General Education Classroom with Collaboration Teacher Assistance			30,400 (52.52%)
General Education Classroom with Itinerant Specialist Assistance		47,564 (53.23%)	
General Education Classroom with Resource Room Assistance	40-79% of time in general class: 1,109,547 (18.34%)	No separate data for different types of general education inclusive classrooms	No separate data for different types of general education classroom or special education status
Special Education Classroom with Part Time in General Education Classroom	less than 40 of time in general class:	NA	
Full-time Special Education Classroom	811,335 (13.41%)	15,590 (17.45%)	
Special School	173,573 (2.87%)	25,798 (28.87%)	27,480 (47.48%)
Residential School	15,467 (0.26%)		NA
Homebound Instruction	23,334 (0.39%)	Reported as Special	NA
Hospital Instruction	85,008 (1.40%)	Education Supporting	NA
Private School		Centers:	
Correctional facility	11,328 (0.19%)	401 (0.45%)	NA
Total	6,048,882	89,353	57,880

Finally, Table 5 compares the placements for students with disabilities across three countries. According to 2016-2017 national data, appropriately four-fifth of students with special needs in the US were served in inclusive general classrooms. The percentage of students who spent 80% or more time inside the general classroom was 63.14% (n=3,819,290) while those who spent 40-79% of their time in general class made up 18.34% (n=1,109,547). Somewhat differently, about one half of Korean students with special needs were in inclusive general classrooms (n=47,564, 53.23%). Korea does not report inclusion settings per the percentage of times in general classroom. It was only reported as general classroom inclusion, including full and partial inclusion. The percentage of students who were placed in full-time special classrooms in both countries are slightly similar. It was 13.41% (n=811,335) in the US and 17.45% (n=15,590) in Korea. China's data are more unique, which should be interpreted with caution. First, the Ministry of Education of the People's Republic of China (2018) does not report separate data based on different types of inclusion in general schools. It was reported that there were 30,400

(52.52%) students in general schools, including those in general education classrooms and those in special education classrooms. In addition, the data only include students from 1st through 9th grade, that is, elementary to junior high school. The reason is probably because that China has the 9-year compulsory education starting from 1st grade and ending at the 9th grade. The high-school system is more complicated in China, which is composed of the general high school, high school for adults' continued education, and vocational schools (Ministry of Education of the People's Republic of China, 2018).

The placement settings other than general schools show great differences among three countries. Almost a half of Chinese students with special needs are placed in either special schools or residential schools (*n*=27,480, 47.48%). The students placed in special schools in Korea (*n*=25,798, 28.87%) is also significantly higher than the US (*n*=173,573, 2.87%). As previous sections addressed, all three countries have seen progress in moving away from segregation to inclusion and inclusive education, yet the pace of this movement is different for each, being shaped by their unique history, culture, socio-economic status, major legislation, and advocacy of parents (McLeskey, Rosenberg, & Westling, 2009). Future studies need to investigate disability identification processes and placement status in each of the countries in greater depth. Also, more specific cultural and historical factors which caused current disability categories and placement options must be investigated as well.

Discussion and Conclusion

In the present era influenced by increased globalization, influence across countries is inevitable. No single country can stand alone. China and Korea, two adjacent countries, have had a very long history of influencing each other philosophically, economically, and politically. Both also opened their doors to western countries and were exposed to the western special education system, particularly the United States' system in the same time period. However, as this study presented, both countries developed their special education system significantly differently due to different social, economic, and political statuses from the late 19th century and onwards. Furthermore, Korea, which has a much more similar legislative special education movement to American laws than China, also saw unique development due to its own cultural attitudes toward disabilities and education. The researchers believe this study has shown a clear historic comparison of special education development across all three countries.

To summarize, the United States had its first legislation related to special education, the Elementary and Secondary Education Act (ESEA), in 1965. One decade later, Korea had its first legislation related to special education, Special Education Promotion Act (SEPA), in 1977. Seventeen years after ESEA and five years after SEPA, China introduced its first legislation related to special education, Article 45 of the Constitution of the People's Republic of China, in 1982. Even though the legislation in Korea and China started later than in the United States, legislators in these two countries have been working hard on introducing more laws and regulations to improve the quality of life for people with disabilities. Table 1 presents the legislative changes across these three countries.

While this study explicitly described the differences, some limitations in terms of the comparison exist. First, this study did not specially identify how legislative changes were influenced. For

example, this study indicated that Korean special education laws were amended or reauthorized just a couple of years after American legislative changes. However, this study did not address who examined, modified and reflected American laws into Korean special education laws, nor how or why. Also, this study only focused on legislative influences which presented only one of the multiple aspects of historical interconnectivity across all three countries. Any other types of academic, cultural, social, or economic influence which caused those legislative changes were not fully explored. So, further studies in other aspects will provide a complete explanation of how all three countries have developed special education compared with one another. For example, it is necessary to address the question of why certain popular disabilities like specific learning disabilities and autism in the US have not been much identified in Korea and China and what is the implication of the lack of identification.

Finally, this study can be beneficial to the preparation of teacher training programs in terms of working with new immigrant families in special education. Understanding the historic similarities and differences across these countries can provide useful information to teachers how they assist parents of children with special needs from both China and Korea more effectively. For example, Korean families who recently immigrated from Korea to the United States may not be familiar with the now-normal placement of children with special needs in a general education classroom for the majority of school hours. Chinese families will be more unfamiliar with inclusion in general schools in the United States. In terms of disability categories, Chinese families may have more difficulty understanding the concept of specific learning disabilities or autism since those are not categories defined separately in China (Ministry of Education of the People's Republic of China, 2018). Thus, providing more detailed explanation to newly immigrated Chinese parents about these relatively uncommon concepts can help promote a better understanding of the American special education system.

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Mathematical Ability of Deaf, Average-Ability Hearing, and Gifted Students:

A Comparative Study

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Abstract

The purpose of this study was to explore the performance of three groups of students, gifted hearing students (GH), average-ability hearing students (AH), and deaf students (DF) on mathematical ability. The sample consisted of a total of 167 students (91 males and 76 females). Deaf students came from the Al-Amal School (an inclusive school for deaf students in Muscat, the capital of Oman) while average-ability hearing and gifted students came from public school students in Muscat in grades 6, 7, and 8. The tools of the study consisted of mathematical ability tests and Snigders-Oomen Non-verbal Intelligence (SON-R 5½-17). The researchers used the two-way ANOVA to answer the study questions. The results showed a significant main effect of the group (GH, AH, and DF). Post hoc analyses indicated that gifted students' level of mathematical ability was higher than AH and DF students. Deaf students scored the lowest among the three groups. The main effect of gender was not significant. The results of this study are discussed in relation to educational practices required to diminish the gap between hearing and deaf students in mathematical ability.

Keywords: deaf, high-achieving, mathematical ability

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Introduction

Insufficient access to sound may lead to academic delays for deaf children (Madell & Flexer, 2008). Deaf children show a slower achievement rate than their typically hearing peers in mathematical proficiency (Pagliaro & Kritzer, 2013; Edwards, Edwards, & Langdon, 2013). The focus of recent calls related to reform in mathematics education for deaf students was on word problem solving and reasoning skills (Pagliaro, 1998). Researchers encouraged following the National Council for Teachers of Mathematics (NCTM) standards, which focus on problem solving which is "not only a goal of learning mathematics, but also a major means of doing so" (NCTM, 2000, p. 52). Research has shown that deaf students do no perform well in problem-solving tasks compared to their hearing peers. There is a delay in mathematical performance of about two years at the age of and increases to three to four years at the age of 11 in mathematical performance between deaf and hearing children (Traxler, 2000). Researchers attributed this low performance to linguistic, cognitive, and experiential factors. Braham and Bishop (1991) concluded that teachers of deaf students, "when asked about the problems their students are having with mathematics, seem to have an intuitive feeling is at the heart of their difficulties" (p. 180). Deaf students fall behind their hearing peers in standardized achievement tests (Austin, 1975), fractions (Titus, 1995), and arithmetic knowledge (Ansell & Pagliaro, 2006; Kelly, Lang, Mousley, & Davis, 2003). The reasons of delay in numerical and mathematical skills for deaf are not clear.

Hearing impairment is not the cause of low mathematical performance; rather it is more related to the riming, type of instruction, and learning opportunities available to deaf students (Numes & Moreno, 1998). Researchers pointed out that some factors affect deaf students' mathematical learning. For example, Nunes and Moreno (2002) found that young deaf children lack additive composition, additive reasoning (e.g. two more), multiplicative reasoning (e.g. three children sharing two pencils each), ratio (e.g. 2:2 correspondence), and fractions (e.g. pieces of a whole pizza). Nunes and Moreno (1998) found that deaf students had slower reaction times on basic numeral and arithmetic skills. Other researchers focused on deaf students' automatization of number through examining the symbolic distance effects in magnitude decisions, the internal number line, and the skills involving estimation (Bull, Marschark, & Blatto-Vallee, 2005; Bull, Blatto-Vallee, & Fabich, 2006). Researchers also posited that deaf students' observed mathematical difficulties are not the result of low basic numerical skills.

Research also showed that deaf individuals perform poorly on tasks related to considering the relationship between two or more dimensions than their hearing peers (Ottem, 1980). Marschark and Johnson- Laird (2003) posited that deaf individuals have difficulty in benefiting from automatic relational processing in a number of tasks. Ansell and Pagliaro (2006) examined primary level deaf children's ability to solve mathematical story (word) problems and found that they did not connect the story language to the arithmetic functions necessary for the solution. Research shows evidence of deaf children's challenges in acquiring numerical sequence necessary to counting (Nunes, 2004; Zarfarty; Nunes, & Bryant, 2004).

Deaf children have a similar developmental trajectory as their hearing peers in non-linguistic cognitive functions such as block construction, spatial memory, and spatial localization (Bavelier, Newport, Hall, Supalla, & Boutla, 2006; Blatto-Vallee, Kelly, Gaustad, Porter, &

Fonzi, 2007). In a synthesis of research on deaf and hearing children's mathematical achievement, Gottardis, Nunes, and Lunt (2011) concluded that most of the studies reported a delay in deaf children's mathematical achievement. Four studies did not report this delay on preschool children (Aref et al., 2011; Barbosa, 2010; Zarfaty et al., 2004) and elementary school children (Gottardis, 2009). Young deaf children do not seem to have a delay in number representation and deaf children with mild loss may not have a significant delay compared to hearing peers in tasks that involve counting or arithmetic knowledge (Gottardis, 2009). Research shows that deaf children's mathematical achievement from 8 to 18 years tend to have a delay of one year in the first years of schooling while this delay widens to 3 years in the last years (Traxler, 2000).

Deaf Education in Oman

Deaf education in Oman started in 1979 in a special class in a public school. In 1997, Al-Amal school for the deaf was first established. The school has 300 students. The school has a residential unit for male students outside the capital, Muscat. The purpose of the school includes: a) providing educational and instructional services and skills needed to develop students' skills, b) training students on speech, c) informing students' families and society on causes of disability and ways of prevention, and d) sharing with local community in celebrations, symposia, and increasing awareness of students' abilities. The school receives students from 5 to 18 years of age. Conditions for admission are: students should be deaf and do not have any other handicapping conditions, the intelligence quotient (IQ) should not be below 90, and that students should be seen by a physician before they join the school. The educational system in the school developed in parallel with the educational policy in Oman. In the beginning, three levels exist. The first was the preparatory period and lasts for two years. In this period, the student learns the pronunciation of letters and words using earphones for hard-of-hearing students. The second period is the elementary period which lasts for 6 years and the last period is the middle vocational period which lasts for 3 years. Afterwards, with the development of the educational system in Oman and the establishment of basic education system, the Deaf School's educational system was the preparatory period and cycle-one period (grades from 1-4) and cycle two (grades from 5-10). The fourth period was post-basic education which started in 2006/2007 with grades 11 and 12. In these grades, students study adapted basic education curricula according to students' abilities. Services provided by the school include: a) meal services for low-income students, b) school health and dental clinic, c) assessing and diagnosing speech disorders and developing remedial programs, d) providing counseling guidelines to prevent speech disorders, and e) maintenance of hearing aids

The purpose of this study is to examine the performance of gifted students, average-ability hearing students, and deaf students on tests of mathematical ability. Two questions guided the study:

1. Is there a statistically significant effect of gender and ability state (gifted, average and deaf students) on mathematical ability?
2. Is there a statistically significant effect of grade level and ability on mathematical ability?

Participants

The sample of the study was randomly selected from students in grades 6, 7, and 8 from Al-Amal School for the Deaf for deaf students and cycle-two (grades 5-10) schools in the governorate of Muscat for gifted and average-ability hearing students. The total sample was 167 male and female students with 91 males and 76 females. The distribution of the study sample according to grade level, gender, and academic status is presented in Table 1.

Table 1

Distribution of the Study Sample according to Grade Level, Gender, and Academic Status

Group			Grade level			
			6.00	7.00	8.00	Total
Deaf	Gender	Male	11	8	9	28
		Female	8	7	6	21
	Total		19	15	15	49
Average-ability hearing	Gender	Male	7	16	8	31
		Female	11	9	8	28
	Total		18	25	16	59
Gifted	Gender	Male	8	13	11	32
		Female	8	6	13	27
	Total		16	19	24	59

Deaf students had mild hearing impairment. Their ages ranged from 12 to 18 years with a mean age of 15.4 years. Average-ability and gifted hearing students' ages ranged from 12 to 15 years. Most of the deaf students had hearing parents. The parental hearing status for 3 students was not reported. IQs obtained from the Snigders-Oomen Non-verbal Intelligence (*SON-R 5½-17*) ranged from 125 to 135 for gifted students, 95 to 118 for average-ability hearing students, 92 to 115 with a mean of 101.5 and a standard deviation of 15. Deaf students' IQs ranged from 90 to 112 with a mean of 101 and a standard deviation of 15.1.

Instruments

The Mathematical Ability Test. The authors developed a mathematical ability test for each of the three grade levels (6, 7, and 8). Each test consisted of eight main questions. Each question consisted of four sub-questions. For grade 6 test, the standards covered in the test were numbers and number theory, operations on numbers, geometry and trigonometry, pre-algebra and algebra, and data processing and probabilities. An example of one of the questions that assess pre-algebra and algebra is "What is the number that if we add to 11 and divide the result by 9, then subtract the result from 7, the results will be 4". Another example on operations on numbers is "The appropriate number to put in the blank is: 1000 = ………-0.125 X 8888". The student gets one point for each correct answer and zero for each incorrect answer. For grade 7 test, the standards covered in the test were numbers and number theory, operations on numbers, geometry and trigonometry, pre-algebra and algebra, and data processing and probabilities. An example of a question on operations on numbers is "What is the sum of: 0.764+ 0.858+ 0.55+0.45+ 0.236+

0.142?" Another example on data processing and probabilities is "Mohamed chose four different numbers and he recorded by using them 24 possible numbers (resulting from changing the order of numbers) and he added them. John said that the result he obtained was 186648. Which numbers did he choose? And how many solutions are for this problem?" The standards covered in the test were measurement, numbers and number theory, operations on numbers, geometry and trigonometry, pre-algebra and algebra, and data processing and probabilities. An example of a question on measurement is "Ahmed and Sami went from Muscat to Sohar (cities in Oman) with their car. At the same time, it is known that Ahmed was driving half the distance with a speed 100 km/hour, and the other half with a speed 80km/hour. While Sami travelled half the time that he needed to travel all of this distance with a speed of 100km/hour and half of the other time with a speed of 80km/hour. Which one of them got to Sohar first?" An example of a question on algebra and pre-algebra was "Prove that $(X-3)(X+7)(3X-8)= 0$ and prove that $(x-1)^2 + (x^2+1)^2 = 0$. Another question on pre-algebra and algebra is "Calculate using a fast way: $(75.5)^2 - (24.5)^2$.

The mathematical ability test content validity was examined using a group of mathematics professors, math supervisors, and teachers. The test items on the three grades were shown to this panel of experts to capture a feedback. They were told to evaluate each test based on four criteria: (a) language appropriateness, (b) suitability of the concepts used, (c) the suitability of the graphics used to convey the concepts in the test, and (d) whether the test items reflect the math standards in the Ministry of Education books for each grade level. There was a high consensus among the reviewers regarding the four criteria. Few corrections have been suggested by them and the researchers modified the test items accordingly.

The criterion-related validity was obtained by exploring the relationship between the mathematical ability test total score and students' mathematics achievement in the school. Students' mathematics achievement was calculated using an averaged math GPA in three months. The correlation was significant at the .01 level ($r = .37$, $p = .01$). Item difficulty, discrimination, and reliability were investigated using ITEMAN 4 using a sample of 30 students from the three grade levels. The results shown in Table 2 indicate that all the test questions and sub-questions have an acceptable level of difficulty, discrimination, and reliability.

Table 2

Levels of Difficulty, Discrimination, and Reliability of the Mathematical Ability Test Items

Questions and Sub-questions	Grade 6			Grade 7			Grade 8		
	Rel.	Disc.	Diff.	Rel.	Disc.	Diff.	Rel.	Disc.	Diff.
1	.75	.66	.55	.85	.82	.44	.80	.79	.41
2	.88	.93	.56	.77	.80	.38	.82	.82	.39
3	.77	.76	.66	.79	.69	.39	.77	.81	.50
4	.92	.59	.49	.88	.84	.47	.85	.75	.38
5	.88	.65	.39	.77	.53	.32	.78	.85	.33
6	.82	.84	.61	.82	.69	.54	.89	.83	.41

7	.75	.79	.55	.91	.72	.33	.79	.78	.49
8	.83	.81	.36	.86	.82	.45	.82	.86	.45
9	.77	.54	.43	.76	.66	.42	.87	.82	.32
10	.85	.74	.64	.85	.43	.32	.90	.66	.41
11	.80	.82	.52	.83	.62	.51	.82	.73	.48
12	.83	.73	.49	.86	.51	.49	.81	.79	.51
13	.78	.65	.43	.91	.67	.39	.82	.55	.44
14	.83	.78	.66	.85	.79	.41	.77	.81	.56
15	.85	.74	.51	.82	.85	.44	.69	.76	,41
16	.77	.73	.33	.79	.79	.53	.82	.70	.69
17	.87	.52	.59	.87	.84	.46	.61	.64	.80
18	.80	.77	.46	.91	.72	.62	.52	.86	.82
19	.84	.69	.34	.84	.69	.40	.41	.69	.77
20	.84	.86	.41	.81	.89	.41	.33	.80	.85
21	.69	.65	.41	.76	.63	.39	.42	.75	.78
22	.77	.84	.46	.85	.72	.46	.54	.69	.89
23	.82	.66	.51	.83	.84	.51	.35	.80	.79
24	.84	.50	.38	.75	.77	.40	.59	.73	.82
25	.77	.70	.59	.87	.91	.61	.34	.77	.87
26	.82	.55	.46	.82	.58	.44	.52	.59	.90
27	.83	.85	.34	.78	.62	.36	.29	.84	.82
28	.78	.81	.41	.85	.86	.38	.33	.79	.81
29	.69	.55	.61	.86	.66	.45	.30	.66	.82
30	.75	.61	.31	.83	.59	.53	.45	.76	.77
31	.85	.78	.48	.90	.73	.45	.39	.69	.69
32	.82	.88	.33	.83	.59	.36	.45	.89	.82

Note. Rel. = reliability, Disc. = discrimination, Diff. = difficulty The Patterns subtest of *SON-R 5½-17*:

The most recent test version for older children was used, the Snigders-Oomen Non-verbal Intelligence (*SON-R 5½-17*) (Tellegen, Winkel, Wijnberg-Williams & Laros, 1998). Only one subtest of SON-R 5.5-17 (the Patterns subtest) was used in this study. The Patterns subtest contains two groups of items; each has 7 items. The items on each group are ranked based on item difficulty from the easiest to the most difficult items. In the middle of a repeating pattern of one or two lines

in each item, a part is left out. The subject has to draw the missing part of the lines in such a way that the pattern is repeated in a consistent way. The difficulty of the items is related to the number of lines, the complexity of the line pattern and the size of the missing part. The participants gets the item correct (1) if he/she completes the line fully correct, otherwise, the item is wrong (0). As a result, the subtest scores range between 0-14. These instruments were used to measure the intelligence level for deaf students in Sultanate of Oman. Various types of evidence for the reliability and validity of the instrument were collected. Results showed that the Patterns subtest scores have both high internal consistency reliability and test-retest reliability. In addition, the psychometric properties of the items were acceptable and as expected in terms of the order of items on the test by the values of difficulty index. In addition, the Patterns subtest scores were high for both normal students and deaf students but low for mental handicapped students. (Hassan, Al-Mahrazi, Al-Dhafri & Al-Nabhani, 2011). Performance of the students on the test was in the normal range. Their normative scores ranged between 96 and 116 with a mean of 106 and a standard deviation of 15.2. This test was used to make sure that their mental ability fall within the normal level.

Procedure

Tests of mathematical ability were shown to experts and teachers of mathematics to evaluate the appropriateness of the items to students' levels. Few comments related to changing the wording of some items were received. The Technical Office for Studies and Development (TOSD) at the Ministry of Education to granted the researchers the access to school and administration of study tools. Two research assistants consented parents and students to participate in the study. The two research assistants had an experience in Omani sign language. They were available during the administration of the mathematical ability tests to explain any unclear items.

Results

Means and standard deviations of the students' scores on mathematical ability are shown in Tables 3 and 4.

Table 3 Means and Standard Deviations of the Study Participants According to Academic Level on the Mathematical Ability Test and School Adjustment Behavior Scale

		Grade	M	SD
	Deaf	6	3.62	.13
		7	4.26	.28
Math.		8	3.86	.16
	Average-ability hearing	6	4.88	.25
		7	5.04	.21
		8	5.87	.30
	Gifted	6	6.43	.25
		7	6.57	.17
		8	6.62	.17

Table 4

Means and Standard Deviations for Math Ability of the Group and Grade Level

Group	Grade	M	SD	N
Deaf	6.00	7.0526	1.02598	19
	7.00	7.5333	.91548	15
	8.00	7.7333	.88372	15
	Total	7.4082	.97721	49
Average-ability hearing	6.00	9.4444	.92178	18
	7.00	9.4800	.91833	25
	8.00	10.1250	1.45488	16
	Total	9.6441	1.11049	59
Gifted	6.00	11.2500	1.00000	16
	7.00	11.3684	.76089	19
	8.00	11.2917	1.04170	24
	Total	11.3051	.93319	59
Total	6.00	9.1321	1.98104	53
	7.00	9.5932	1.69297	59
	8.00	9.9818	1.85083	55
	Total	9.5749	1.86084	167

To answer the first question "Is there any statistically significant effect of group and grade level on mathematical ability?" a two-way ANOVA was used. The results indicated a significant main effect of group ($F(2, 158) = 195.846$, $p < 0.001$) and the main effect of grade level was not significant ($F(2, 158) = 2.883$, $p < 0.059$). The interaction between group and grade level was not significant as well ($F(2, 158) = 1.058$, $p < 0.379$). Results are shown in Table 5.

Table 5

Two Way Analysis of Variance for Group and Grade Level on the Mathematical Ability

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	416.387[a]	8	52.048	51.908	.000
Intercept	14521.180	1	14521.180	14481.963	.000
Group	392.753	2	196.377	195.846	.000
Grade	5.781	2	2.891	2.883	.059
Group * Grade	4.245	4	1.061	1.058	.379
Error	158.428	158	1.003		
Total	15885.000	167			
Corrected Total	574.814	166			
a. R Squared = .724 (Adjusted R Squared = .710)					

Then a *Post hoc* using Bonferroni test was performed to see the differences among the three groups (deaf, hearing, and high-achieving). The results indicated that high-achieving students

outperformed both deaf and hearing students. Also, hearing students outperformed deaf students. Results are shown in Table 6.

Table 6
Results of Post Hoc Test for Group

(I) group	(J) group	Mean Difference (I-J)	Std. Error
Deaf	Average-ability hearing	-2.23*	.19
	Gifted	-3.89*	.18
Average-ability hearing	Deaf	2.23*	.19
	Gifted	-1.66*	.18
Gifted	Deaf	3.89*	.19
	Average-ability hearing	1.66*	.18

Note *. The mean difference is significant at the .05 level.

To answer the second question "Is there any statistically significant effect of the group and gender on students' mathematical ability?", a two-way ANOVA was used. A two-way ANOVA revealed a main effect of ability state ($F(2, 158) = 200.736$, $p < 0.001$) and there was no significant effect of grade level ($F(2, 158) = 7.062$, $p < 0.009$). The interaction between group and grade level was not significant ($F(2, 158) = 2.665$, $p < 0.073$). Results are shown in Table 7.

Table 7

Two Way Analysis of Variance for Gender and grade level on the mathematical ability

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	418.433^a	5	83.687	86.158	.000
Intercept	14712.005	1	14712.005	15146.487	.000
Group	389.956	2	194.978	200.736	.000
Gender	6.860	1	6.860	7.062	.009
Group * Gender	5.176	2	2.588	2.665	.073
Error	156.382	161	.971		
Total	15885.000	167			
Corrected Total	574.814	166			
a. R Squared = .728 (Adjusted R Squared = .719)					

Then, a *Post hoc* using Bonferroni test was performed to see the differences among the three groups (deaf, hearing, and high-achieving). The results showed that high-achieving students' level of mathematical ability was significantly higher than both hearing and deaf students'. Also,

hearing students' mathematical ability was significantly higher than hearing students. Results of the *Post hoc* test are illustrated in Table 8.

Table 8
Results of Post Hoc Test for Group and Gender

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.
Deaf	Average-ability hearing	-2.2359[*]	.19049	.000
	Gifted	-3.8969[*]	.19049	.000
Average-ability hearing	Deaf	2.2359[*]	.19049	.000
	Gifted	-1.6610[*]	.18146	.000
Gifted	Deaf	3.8969[*]	.19049	.000
	Average-ability hearing	1.6610[*]	.18146	.000

Discussion

The purpose of this study was to explore the differences among gifted hearing students, average-ability hearing students, and deaf students in mathematical ability. The results of the study showed that gifted students' performance was significantly higher both average-ability and deaf students. We expected that that deaf students' performance on mathematical ability tasks would be lower than the other two groups. This result corroborates the finding of Noorian, Azud Maleki, & Abollhassani (2013) who concluded that normal hearing students are better than deaf students in learning mathematics. Also, the results are similar to Ariapooran (2017) who concluded that deaf students' mathematics performance was lower than their hearing peers. Also, mathematics self-efficacy was lower in deaf students than their hearing counterparts. However, Antia, Jones, Reed, & Kreimeyer (2009) concluded that students with hearing loss had average to above average abilities in mathematics.

In addition to the issues associated with reading and writing, achievement in math has been below expectations compared to typical peers, particularly in the area of math problem solving (Kelly & Gaustad 2007 ; Nunes & Moreno 2002 ; Traxler 2000). The source of this is unclear, but educational approaches have been implicated, in addition to potential impacts of language and differences in cognitive processing and experience (Kelly et al. 2003). Deaf students have a difficulty in math word problems due to their lack of coping skills with reading skills (Knight & Hargis, 1977). The biggest difference between deaf and hearing students in is math applications which is more dependent on language (Kidd, Madsen, & Lamb, 1993). Deaf students' difficulty in understanding mathematics (Kritzer, 2009; Pagliaro & Kritzer, 2013), reading, and writing numbers (Kritzer, 2009) may lead to inability to benefit from mathematics classes.

In order to diminish the math achievement gap between deaf and hearing students, there should be a collaboration between mathematics and language arts teachers to focus on reading comprehension and language arts in mathematics classes such as journal entries. Also, all forms

of vocabulary forms such as symbols, examples, activities involving proper sign, and correct fingerspelling should be introduced to deaf students (Kidd et al., 1993). Some social and economic issues such as class attendance, family income, parents' education, teacher-student ratio, presence of expert teachers are indicators of poor mathematics performance for deaf students (Rono, Onderi & Owino, 2014). Deaf students' mathematical performance can not only be improved by resources such as books and learning accommodations, but also they need good teachers who use appropriate teaching methods and maintain appropriate classroom management (Baldacchino & Farrugia, 2002).

Researchers pointed out that barriers facing deaf students in regular schools result from lack of teaching resources, lack of motivation and communication problems (Kiplagat, Role & Makewa, 2012). Deaf students' academic achievement in inclusive classrooms is higher than those in self-contained classrooms (Holt, 1994). The deaf sample in this study came from a self-contained school for the deaf in the county. General-education classrooms are not ready for inclusion services for deaf students although there are hard-of-hearing inclusive classrooms in public schools all around the country. Research shows that deaf students in self-contained programs feel more secure with students with hearing loss (Stinson & Whitmore, 2000). Deaf adolescents, however, had more withdrawal behaviors and depression than their mainstreamed deaf peers and hearing peers (Van Eldik, 2005).

Some limitations of the presents study should be noted. First, deaf students who participated in this study were male and female middle schools students. Accordingly, this limitation may diminish the generalizability of results. Second, the use of mathematical ability test was based on some general problem solving abilities. Future studies may consider different mathematical skills in deaf mathematics curriculum. Despite these limitations, the present study supports the need to inform policy makers, special education professionals, school administrators, and classroom teachers regarding the challenges faced by deaf students in understanding mathematical concepts and the need to provide them with educational accommodations needed to improve their levels of math skills.

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The Effects of a Theatrical Play Programme on Social Skills Development for Young Children with Autism Spectrum Disorders

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Abstract

The purpose of this study was to examine the effects of a theatrical play programme on social skills development for young children with Autism Spectrum Disorders (ASD). Six children with ASD were selected by purposive sampling (M=10.6 years), and their typically developing peers (N=132) (M=10.3 years), attending general primary schools in Greece participated in the study. All participants, both ASD and typical children, attended a theatrical play programme with the physical education regular school programme alongside. A physical education teacher and six integration classroom teachers of six different classes recorded the social skills of six children with ASD after every theatrical play session (16 educational sessions) for eight weeks. Social skills were evaluated using the "Social and Play Skills" checklist of the Collaborative Model for Promoting Competence and Success (COMPASS) by Ruble, Dalrymple, and McGrew (2012). This checklist is composed of three parts: social awareness, joint attention skills and play that facilitate teachers to observe different aspects of social interactions including social skills. Results showed improvement in cooperation, attention, obedience, and empathy in four of the six participants. All six children reduced anxiety risk and repeatability giving a potential promise in improving the social functioning in children with ASD through the cooperation with their peers.

Keywords: theatrical play, cooperation, social skills, physical education, autism

Introduction

Social skills play a pivotal role in the development of a child's ability to communicate with other people, to involve knowing how to act in a certain social situation, to improve and maintain meaningful social and emotional relationships in his/her lifespan (Merrell & Gimpel, 2014). For typically developing children the development of social skills follows a predictable developmental trajectory. On the other hand, children with Autism Spectrum Disorders (ASD) are characterized by marked difficulties in social interaction, communication and restricted and narrowed interest-influence areas of development and learning (American Psychiatric Association, 2013). Teaching social skills to children with ASD present complex instructional challenges for teachers, because they have to identify, interpret and reproduce the general palette of social behaviors and target critical developmental areas related to autism designing programs and plans to generalize skills beyond the initial educational circumstances (Bremner, 2017; Temple, 2014). For instance, both past and recent evidence imply that all strategies for successful educational interventions are based on a classroom environment where positive social interactions are the norm and punitive consequences are minimized (Buehl, 2017; Gilbody, Whitty, Grimshaw, & Thomas, 2003). The positive feedback in a routine, which can also include hugs, smiles, nods, and eye contact, does not always have to be verbal.

The increased number of scholars such as Gibbs (2018), proposes that the general purpose of learning frameworks should not be the change of children and their way of thoughts but the help to understand and respond to their particular preferences and abilities. An important strategy on this perspective is the cooperative learning, which can be developed in a structured social environment such as the physical education lesson. Physical education's scope favors social interactions by creating opportunities where all children can learn, live and play together (Anderson & Glover, 2017). In physical education, children cooperate with one another in a much wider range of contexts and in much more complex ways on different activities (Wuest & Fisette, 2014). In addition, physical education gives children with ASD the chance to ensure equal learning opportunities through psychomotor, movement and play with other peers (Li, Wang, Guo, & Li, 2015). Inclusive fitness theory by Hamilton in 1964 reveals that cooperation can be favored by natural selection owing to either direct fitness benefits or indirect fitness benefits (Marshall, 2015). On the other hand, children with ASD have social impairments and that might as well be a motivation in order to cooperate with others (Schul, 2011; Slavin, 2015). A high-quality physical education curriculum provides opportunities for all children to achieve, through physical activities, objectives such as communication, cooperation, interaction and empathy (Metzler, 2000). According to Johnson and Johnson (1999), there are five aspects of cooperative learning that drive its success.

Vygotsky's sociocultural theory (SCT) (1978), includes cooperative learning as an educational method which actives views children to participate in a social process become active through the Zone of Proximal Development (ZPD) and creates a causal relationship between social interaction and experience with peers (Lantolf & Poehner, 2014). Social interaction for autistic children is viewed as a fundamental feature of social life in which autistic children act with peers (Kiraly, 2000; Smagorinsky, 2016). Therefore, according to Vygotsky the knowledge is within

the learning communities, and requires social interaction (Tennant, Martin, Rooney, Hassan, & Kane, 2017). This finding led some teachers to rebuild the theory of learning in the early 1990s. Lave and Wenger in the early 1990s formulated the "Situated learning" in which learning functions as a tool of social interaction where children participate in structured frameworks and interact in small groups to achieve common goals. Nowadays, and according to Vygotsky's theory, the theatrical play is one of the recreational and pedagogical techniques which teachers use in primary schools to assist ASD children's social skills development in a range of different dimensions of daily life (Bodrova & Leong, 2015; Carlson, 2017; Rubtsova & Daniels, 2016).

Several theatrical play programmes are currently being used on children with ASD. The literature review has led to the identification of a number of theatrical play programmes which have become crucial in terms of developing social skills on ASD children (D'Amico, Lalonde, & Snow, 2015; Guivarch, Murdymootoo, Elissalde, Salle-Collemiche, Tardieu, Jouve, & Poinso, 2017; Müller, Nutting, & Keddell, 2017; Schriber, Robins, & Solomon, 2014; Seale, 2015; Yeh, Stone, Churchill, Brymer, & Davids, 2016). In a pilot study, Corbett, Gunther, Comins, Price, Ryan, Simon, Schupp, and Rios (2011) evaluated the effect of a theatrical program (SENSE) which was designed to improve socio-emotional functioning and reduce stress in children with Autism Spectrum Disorder (ASD). Eight children with ASD were paired with typically developing peers. Participants with ASD showed improvement in socio-emotional through the cooperation with their peers and expressed their own needs. According to Corbett, Swain, Coke, Simon, Newsom, Houchins-Juarez, Jenson, Wang, and Song (2014) and the results of subsequent research, it is necessary to understand that this program has an educational role and is not a "time for a break".

Recent evidence indicated that ASD children develop social skills and interactions towards the cooperation of typically developing peers in theatrical play activities. More specifically, Lerner, Mikami, and Levine (2011) in their study, examined the use of theatre to develop social and communication behaviours for ASD children through the SDARI programme. Six children with Asperger syndrome participated in SDARI programme for 6 weeks. The programme was based on improvisation with an emphasis on non-verbal communication. Results showed improvement among participants in several measures of child social functioning. One year later, Guli, Semrud-Clikeman, Lerner, and Britton (2013) examined the effects of participation in the Social Competence Intervention Programme (SCIP), on a group of children who were diagnosed with Autism Spectrum Disorder (ASD), nonverbal learning disability (NLD) or attention deficit hyperactivity disorder (ADHD). Eighteen participants in the SCIP programme were compared with a clinical control group of 16 on the changes in measures of social perception, social competence, and naturalistic observed social behaviour. The findings showed improvement in the social behaviour in the clinical control group. In a research carried out by Stichter, Herzog, Visovsky, Randolph, Schultz, and Gage (2010) twenty-seven children with ASD participated in the SCIP programme for ten weeks. The study was designed to evaluate their social interactions, communication, and the recognition of their feelings. The results showed that the programme developed the interactions between the children and improved social and emotional skills.

In a pilot study carried out by Bella (2012), the effect of a theatrical play programme on social-emotional skills in a girl with ASD was evaluated. In this study, this girl participated in a theatrical play intervention programme with her teacher. The girl showed interest in the programme and cooperation with her teacher. She improved her socio-emotional profile and that helped her to develop friendships with her peers. According to Ingersoll (2010), most of all these programmes offer a variety of stimuli to autistic children, which are very important for their social lives. The development of social skills through theatrical play programmes and activities is succeeded when the goals are clear. According to Conn (2016), the theatrical play is an educational technique for social skills development for children with ASD because it offers a variety of different ways of communication, necessary to social life. The theatrical activities, according to Adley (2016), give ASD children the opportunity to experience positive social interactions. According to Fortier (2016), an important aspect of theatrical play is the experience, which is extremely important for these children to address their deficient social behaviors.

Many studies describe the benefits of the theatrical play on ASD children's emotional and social relationship development at school. Interventions are needed to build their peer interaction skills. Social skills training are provided directly to the child with ASD in group's context. On the other hand, there has not yet been a study comparing the efficacy of theatrical play through physical education at school on social skills development of ASD children. It is highly likely that for ASD children, peer interaction through theatrical play during the physical education course will do better than in any other school course. Thus, the purpose of the present study was to examine the efficacy of an eight-week theatrical play programme as a part of psychomotor learning through physical education in order for ASD children to develop social skills and positive social interaction with their typically developing peers in terms of social awareness, joint-attention skills and play. Based on prior research in physical education and psychomotor settings, it has been hypothesized that the theatrical play intervention programme can result in social skills development for children with ASD.

Method

Participants

This case study research refers to an in-depth study of a small group of children with ASD. The sample of the study consisted of 6 ASD children (Mage=10.60 years old, SD=.77), from general primary schools in Northern Greece.
The main characteristics of this study are that it is narrowly focused, provides a high level of detail, to document, describe, and analyze the social skills changes that occur in a theatrical play programme which is used with the participation of six children with Autism Spectrum Disorders (ASD). Such an approach was appropriate for this study because it allows the researcher to regard the individual child as a unit of analysis. Cases were drawn in an eight-week theatrical play programme with the physical education regular school programme alongside. Inclusion criteria were a diagnosis of High Functioning Autism (HFA) according to DSM-IV; IQ or developmental quotient ≥80 with the theatrical play. The intelligence was tested through the WISC-III (Wechsler Intelligent Scale for Children, 1991, Wechsler 1991), which is most suitable for children between 6 to 16.1 years. In addition, the CARS (Childhood Autism Rating Scale

CARS; Schopler, Reichler, Rochen & Renner, 1980; 1988) was used to observe and subjectively rate fifteen behaviors about autism. Participants were selected through Purposive Sampling (e.g., ASD children with no mental retardation), while they have been no previous experience with the theatrical play. All children were selected from the last three classes of the elementary schools. Written informed consent was obtained for all children by their parents specifying exactly how their data would be used. The names of all participants were changed in order to make them unrecognizable. (See Table 1 for the characteristics of ASD participants).

Table 1. Characteristics of ASD participants

Participants	SEX	AGE(Years)	Grade	WISC-IV IQ-Verbal Scale	WISC-IV IQ-Full Scale	CARS Diagnosis	
							F-Female M-Male
1	F	10.3	4	82	101	36.5.	
2	M	9.1	3	78	87	34.0.	
3	F	11.4	5	81	98	33.5.	CARS-Childhood Autism
4	M	11.1	5	74	91	36.5.	
5	M	11.2	5	70	89	34.0.	
6	M	10.5	4	67	80	32.0.	

Rating Scale

WISC- Wechsler Intelligence Scale for Children

Information about children's profile was collected by the teachers (physical education teachers-teachers of integration classrooms), while additional information was provided by parents. Specifically, searched: (a) the formal diagnosis of the disorder, (b) the psycho-pedagogical programmes which they are attending and (c) the strengths and weaknesses of their personalities. In addition, they checked children participation in other extracurricular activities and therapies and they interpreted their responsiveness (See Table 2 for behavioral characteristics for each child with ASD).

Table 2. Behavioral profile for each participant student with ASD

Jane	John	Kathrin	Smith	Alex	George
A 10-year old girl who presents disturbing thoughts and impulses.	A 9-year-old boy, who presents good verbal ability, loves writing but he has many interaction difficulties.	An 11-years-old girl polite and smiley. She has many verbal communication difficulties.	An 11-year-old boy who participates in social events but he often prefer loneliness.	An 11-year-old boy with many problems on social interaction.	A 10-year-old boy with many difficulties with social interaction with others peers.
She is able to communicate verbally but has often difficulties with the nonverbal communication.	He prefers to engage only in small groups.	She presents translation difficulties misinterpretations due to clouded judgment and needs to repeat two to three times	He almost getting tired quickly because voices and sounds cause significant stress.	He has fewer friends and a worse perception of friendship, companionship, closeness, security, and	He has difficulties knowing how to play a game with their peer.
She needs such adaptations to					

participate in school activities, as well as to make use of instructional materials but she is unable to focus her attention on something.		a word she cannot pronounce.		help.	
	He's very sensitive to loud voices and strange sounds and sometimes he closes his ears and cry.	She seeks to establish friendship and has many social-interaction limitations and a tendency to engage in repetitive behaviors.	He has two younger brothers with and he has a good relationship with them.	He is usually leads to his isolation, even during inclusive educational settings.	He is angry most of the time, and he seems to have no friends at all.

The six participants can be described as heterogeneous because even though all were diagnosed with ASD, they were showed basic differences in the following factors: a) their age (9 to 11 years), b) the gender (boys-girls), that was a positive element for this research because the sample was represented by both sexes, c) the autism level (borderline or moderate autism), d) their social and adaptive skills, e) their verbal and cognitive abilities. On the other, the children of the class (typical children) were as many as possible to achieve secured results. Over 140 children participated in this research but at least 132 children (N=132) responded (94.28%), while 8 children (6%) left in the research process on their own. The highest percentage of children came from the penultimate class (5th grade) of the elementary school (50%), 33.3% from fourth grade and 16.6% from third grade.

As regards the teachers, a percentage of 33% work with these six children for up to 5 hours a week, while a lower percentage of 16.7% more than 10 hours. The reduction of physical education hours in primary education, is provided an important percentage of teaching hours to the teachers of the integration classrooms. In any case, 91.7% both of two specializations have daily co-operation with parents, which reinforces the quality level of education. By the twelve teachers who participated in this research four of the six integration teachers have a Master in special education. More specifically, a teacher has a Master in speech therapy, two in the field of developmental disorders and one on the integration of children with special educational needs, and has also a diploma on intervention programmes for ASD children. As regards physical education teachers, two of six were attended 400 hours seminars on special education, three have no relation with the field of special education, while one of them has also a diploma in the field of social work. In addition, two physical education teachers have a diploma in dramatherapy for people with mental retardation. Therefore, only 4 of 12 teachers, fewer than half, have experience in programmes for ASD children.

Measures

The philosophy of the theatrical play programme was designed to target the social challenges of ASD by utilizing well-established behavioral intervention paradigms implemented in combination with theatrical techniques. The six ASD participants (4 boys, 2 girls) were participated with typically developing children (N=132) and age from 9 to 11 years (Typ = 10.37, SD = 0.75; Au = 10.60, SD = 0.77) on verbal and nonverbal communication, social,

perception and expression activities in the physical education class in primary school. Under the supervision of the physical education teachers (twelve PE teachers), the children become organized into groups. The schedule was based on a general social community approach which includes an opening circle and small group activities. Activities related: (1) cooperation; (2) coordination; (3) non-verbal activities; (4) improvisation; and (5) body language; the programme takes place two days per week and 45 min per session. The actual trial lasted 2 months. To enhance social interaction with others, teachers helped the participants through modeling appropriate social behavior, shaping techniques, external reinforcement (e.g., stickers), intrinsic reinforcers (e.g., praise). The instruction was provided through one-to-one behavioral support, verbal and physical prompting, social reinforcement, redirection techniques, and verbal cues. The observation protocol (COMPASS; Ruble, Dalrymple, & McGrew, 2012) which was used in this study was assessed with a 10-item close-ended (yes/no) checklist (Social and Play Skills checklist observation) completed by the researcher (physical education teacher) and integration classroom teachers for each child with ASD (the typically developing children did not require an evaluation). The checklist is divided into three different dimensions, a) social awareness, b) joint and attention skills and c) play.

Two weeks prior to the study, physical education teachers were trained on theatrical play programme. It should be noted that four of six physical education teachers had implemented in the past few hours on theatrical play activities in their classes according to the primary school curriculum. The integration classroom teachers which participated as assessors were trained to complete the checklist and they were assessed for the homogeneity of their responses (pilot study). The Intraclass correlation (ICC) was ranged from .899 to .957.

The observation began at the first session and was finished in the last session. In this study "social and play skills" form was selected which examined social interactions between children with ASD and children with typical developing. For each factor in this form (social awareness, joint attention skills, and play) three to four variables correspond. Each factor was observed for ten minutes in every session and the elements were reported in a paper-list. In this study, teachers had the opportunity through this educational strategy to identify the limitations that these children present and the improvement role of co-operative activities in social skills development. Six integration classroom teachers, a physical education teacher and six ASD children which selected by purposive sampling selected from each class, participated in this study. The children participated in a variety range of activities and were observed through a checklist for social-play skills. The results showed that the children with ASD responded satisfactorily to other children and developed social relations (See Table 3 a one-day session plan schedule of theatrical play programme).

Table 3. Theatrical play programme: One day session plan schedule

Main Objective	Introduction	Duration	Main Activity	Duration	Points of Closing
Encouraging and facilitating cooperation between students with ASD and their typical peers (e.g., decision-making processes, problem-solving, take responsibility)	A preliminary discussion of social action with cooperative features (e.g., information sharing, coordination, cooperation, and collaboration)	5'	Pantomime The school class divided into four groups and each group of students selected a phrase of the four seasons	25'	Rewards All students participated in a choreography which that gave them the opportunity to express their feelings about the activity of the theatrical play
	A brief description of the importance of verbal and non-verbal communication (NVC) (e.g., the means of transferring information through verbal messages or with facial expressions, gestures, and postures)	5'	The students tried to express the phrase with gestures and postures without verbal communication (e.g., «i wear jackets, caps, and play snowball», «I hold an umbrella and plunge into the rain», «I pick flowers, make a Bouquet, oups! Run to avoid a bee»)		Discussion (e.g., the students shared some impressions, some ideas, and of course their difficulties with the theatrical play activity)
	A video which showed an example of cooperative learning in a classroom and which it helped students to understand the meaning of interaction.	5'			

Procedure

Informed written consent was obtained from parents and school leaders along with verbal assent from all research participants prior to inclusion in this study. The Institute of Educational Policy (IEP) an executive scientific body which supports the Ministry of Education and Religious Affairs, Culture and Sports approved the study. The teacher's personnel were informed in two educational meetings about the aim of the study and their role in the programme, and then the teachers were trained by the researcher to complete the Social Skills & Play Checklist (COMPASS, 2012), while the physical education teachers were trained in the implementation of the theatrical play programme concerning a small sample of the participants. The entire procedure was observed by the researcher and a teacher in every educational session. In the next eight weeks, the activities of the programme were implemented by all children. The typically developing children were not observed, only the six participants with ASD. Oral instructions were provided to children. All participants were reassured about their right to withdraw if they wished to.

Statistics and data analysis

Inter-observer agreement among two different educators (teachers of integration classrooms-physical education teachers) was evaluated by Cohen's kappa coefficient (K) (Cohen, 1960) which is psychometrically most appropriate because of the predictive capacity (Pereira, Mesquita & Graça, 2009), which has been widely used in the control of the reliability of observations in systematic observation surveys in the field of sport and psychology. A Controlled observation (structured observation) was used by the researcher than an unstructured observation. She decided to use planned observation of a phenomenon and followed certain patterns, rules, and designs for the purpose of what, how and when to observed a behavior. An unstructured observation it would not have a checklist so it would be easy to miss behavior without recording equipment. In this observation the most important factor was that the observers (two teachers) would need to have a tendency to record most eye-catching or noticeable behavior that might not be important or relevant. In controlled observation rather than writing a detailed description of all social skills observed, it was easier to code social skills in a social skills paper-protocol.

Coding involved numbers of a scale to measure social skills intensity, so that the data collected could be statistically analyzed. The descriptive statistics analysis (univariate) was used for the observed phenomena analysis. The three observation categories in this research were the dependent variable and the theatrical play programme was the independent variable. It was needed the discretion of each observer, while they were recorded in a daily diary the intensity of the observed phenomena. More specifically, the observers recorded the intensity of phenomena for each dimension (social awareness, joint-attention skills, play) for 10 minutes on a scale of 1 to 4, where 1 = the smallest intensity, and 4 = the higher intensity).

Results of the recordings were attributed to relative frequencies. It was necessary to sum the frequency of each phenomenon and to convert the raw data into percentages. In order to confirm that the random error was low, followed successive observations per week on the same phenomena. IBM's SPSS (v.23.0) and Microsoft Excel were used for the statistical analysis

Results

Participants reported positive social interactions with peers in theatrical play programme. In this study six cases studies were tested with 12 different observers, in experience to social skills recording procedures. In paired analysis the agreement index (K) achieved was between .571 and .862 which are presented in Table 4, and shows the agreement between observers in three different dimensions of the checklist "social, and play skills. As shown in the first case, the agreement between the two observers ranged between .571 and .784, for the second case between .600 to .771, for the third case between .600 and .805, for the fourth between .600 and .862, for the fifth ranged between .636 and .810, and for the sixth from .667 to .818.

Table 4. Agreement between the two observers across ASD participants

Social and play skills checklist	Jane	John	Kathrin	Smith	Alex	George
A social Awareness						
Cooperation	.614	.771	.714 □	.778	.652	.667 □
Obedience	□	□	.805$^+$	□	□	.750 □
Indifferent	.714	.600	.600 □	.826$^+$	.642	.750 □
Anxiety	□	□	.750 □	.600	□	.714 □
	.617	.600		□	.636	
B. Joint Attention Skills	□	□		.610	□	
Empathy	.619	.619	.619 □	□	.810$^+$	.818$^+$
Acceptance (instructions)	□	□	.758 □			.747 □
Attention			.636 □			.736 □
				.768	.733	
C. Play	784 □	714		□	□	
Risk	.636	□	.628 □	.862$^+$	.667	742 □
Panic	□	.669	.714 □	.758	□	.750 □
Repeatability	.571	□	.667 □	□	.805$^+$	.750 □
		.610 □				
	.750			628	.812$^+$	
	□			□	.862$^+$	
	.673	.610		.714	.742*	
	□	□		□		
	.600	.742		.818$^+$		
	□	□				
		.714 □				

* Substantial agreement 0.6-0.8
$^+$ Perfect agreement 0.8-1
No values were reported to indicate moderate agreement 0.4-0.6
Fair agreement 0.2-0.4

Time sampling

Time sampling in the present study was important because it involves the implementation of direct and systematic observation of both time and place. All behaviors, could not be recorded, therefore it was necessary to select specific time intervals for what to observe. The choice of the

moment was very important because only then observed the frequency of the observable phenomena. The observational duration was 30 second, and was divided into three ten-second intervals.

During of the sixteen theatrical play sessions, the children engaged in activities including role-playings and various improvisation games. The activities took place in a very positive and fun environment, where a total of 960 acts were performed. Percentages show the behaviors which were improved after the end of the theatrical play programme for each child with ASD (Table 5).

Table 5. Presence frequency of variable of Social Skills & Play Checklist

Social and play skills checklist	Jane M (%)		John M (%)		Kathrin M (%)		Smith M (%)		Alex M (%)		George M (%)	
A social Awareness												
Cooperation	2.93	23.5	1.68	13.5	3.25	26	3.43	27.5	2.68	21.5	2.37	19
Obedience	3.68	27.5	2.25	18	3.06	24.5	2.56	20	2.87	23	2.56	20.5
Indifferent	3.18	17.5	2.87	23	2.06	16.5	2.25	18	3.12	25	1.56	12.5
Anxiety	1.75	14	1.68	13.5	1.5	12	2.81	22.5	3.06	24.5	1.31	10.5
B. Joint Attention												
Empathy	3.25	25.5	2.81	22.5	3.18	25	3	24	3.18	24.5	1.15	9.5
Acceptance	3	24	3	19	3.25	26	3.31	26.5	2.25	18	2.25	18
Attention	3.75	29.5	2.31	17	2.87	23	3.56	28.5	3.56	28.5	2.87	23
C. Play												
Risk	1.56	12.5	1.93	15.5	2.31	18.5	2.68	21.5	2.06	24	2.75	22
Panic	1.18	9.5	2	16	1.31	10	1.31	10.5	1.18	9.5	1.37	11
Repeatability	1.37	19	1.31	10.5	2.62	21	1.13	9.5	2	16	1.43	11.5

Of those, 50 (5.3%) acts were unclear and 910 (94.7%) were performed by the autistic participants. Two boys and two girls with ASD had the highest number of cooperation acts (44.8%), followed by the attention (35.4%), empathy acts (26%), and obedience (32.6%). On the other hand, only one child showed low acts of empathy (9.5%) and one in cooperation (13.5%). Four of the six participants improved their anxiety and the others kept it in low level. The observational phenomena in first dimension (Social awareness) are presented high percentages for all children in cooperation, obedience and indifferent. In the second dimension and joint attention skills, the percentages are also high for all children with ASD. In the rest three phenomena in the last dimension of play all observed participants showed low acts on a panic phenomenon (10.5%), but at risk and repeatability, all participants showed a negative stability. Specifically, two of the six participants had the highest number of repeatability (the girl in the first study 19% and the girl in the third study, 21%). In addition, five of six participants had the

highest number at risk which ranged between 15.5 and 22% (see in Figures, 1, 2, and 3 the differences of observed phenomena).

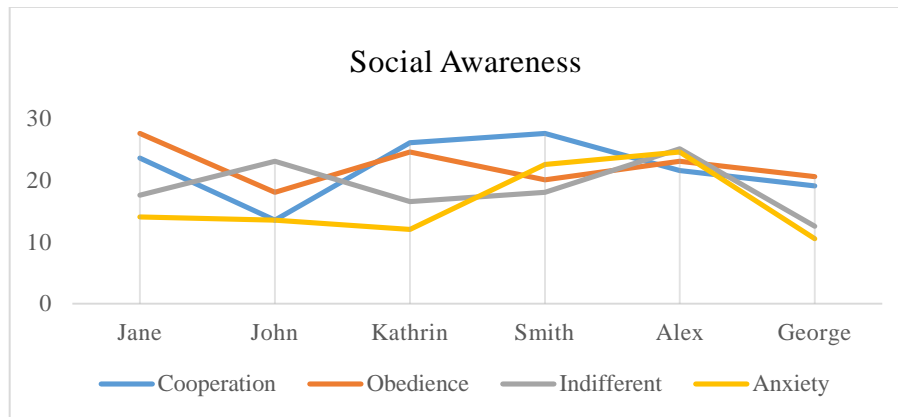**Figure 1.** Six ASD children frequency (%) on Social Awareness

Figure 2. Six ASD children frequency (%) on Joint-Attention
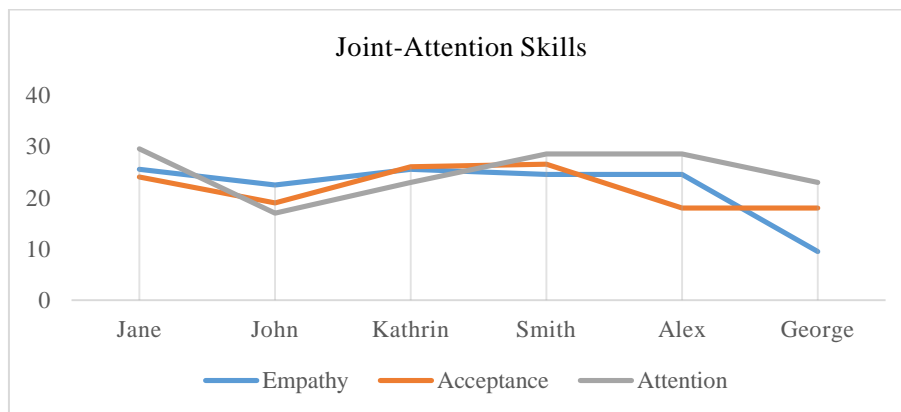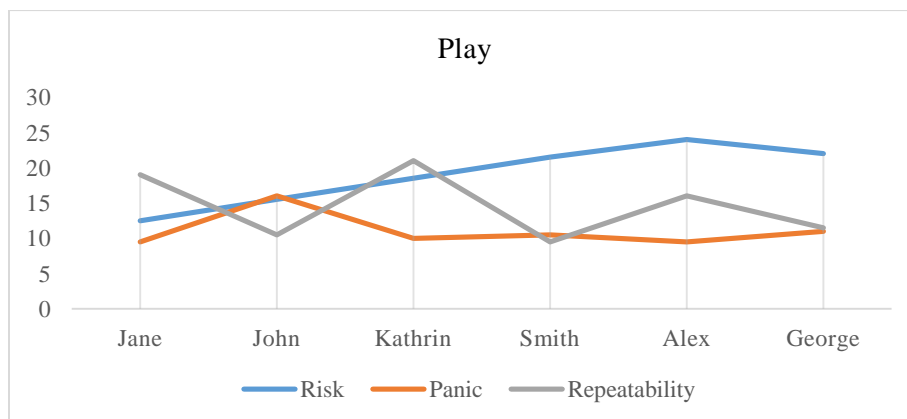

Figure 3. Six ASD children frequency (%) on Play

Based on observations, it was shown that all of the children enjoyed the activities throughout the programme. Specifically, the first, and the third girl along with the fourth and fifth boy made a good deal of progress throughout the study and they showed positive improvement in cooperation and in friendship development. For example, the profile of the first girl was more likely to reach out and attempt interaction with others than the other participants in this research, because she was more cooperative with her peers since the beginning of the program. On the other hand, the third girl, while at the beginning of the period was considered to have many difficulties to cope with complex situations, at the end of this programme she was more prone to use peers opinion, cooperated with them and calmed herself down. All children expressed that they did enjoy the programme and displayed their increased awareness of how their bodies moved and were able to express themselves in a more mature and controlled manner, through obedience in rules while keeping their anxiety at a low level. The programme helped them to learn to express themselves and increased their ability to interact with their peers.

Discussion

Their lack of social interactions prevents children with ASD from developing and improving social skills with the human environment (e.g., with their peers) and from achieving a more successful communication into the school community. On the other hand, finding and promoting educational programmes for the development of social skills has been a primary objective in the researcher communities for these children and the ultimate goal is always to improve the quality of ASD children's social life settings (Block, Radley, & Jenson, 2015; Wong et al., 2015; Yoo et al., 2014). The purpose of this study was to investigate the effect of a theatrical play programme in social skills development for ASD children. More specifically, the study was to develop social interaction between elementary school children with ASD and their peers.

The results of the analysis supported the hypothesis that social skills training combined with a creative programme such as the theatrical play which was especially effective in developing and improving the duration and frequency of ASD children's social interactions with their typical peers and therefore their social skills. These findings provide a replication of previous studies that included ASD children in theatrical play programmes which have confirmed that may increase social skills with their typical peers. (Corbett, Newsom, Key, Qualls, & Edmiston, 2014; Reading, Reading, Padgett, Reading, & Pryor, 2016).

Notable features of this study that expand the literature include (a) participation of elementary school-age ASD children who have limited social skills and play skills, (b) use of groups including the target child and their peers, and (c) use of a checklist to note the occurrence or nonoccurrence of social interactions across conditions. In prior studies, target ASD children have often been preschoolers or adolescents or those with low functioning levels (Feng, Whalon, &Yun, 2017; Gal, Lamash, Bauminger-Zviely, Zancanaro, & Weiss, 2016). In this study the importance of cooperative strategies through the theatrical play for teaching social skills to children with High Functioning Autism (HFA) was demonstrated in elementary schools settings. This study was a great challenge to teachers and peers to encourage reciprocal positive social interactions. For example, the overall occurrence of appropriate social skills increased when the

intervention was in place and the ASD children appeared to enjoy the theatrical play activities more after training, according to the observations of their play with their peers.

These outcomes suggest that for children with more limitations of social skills, such as the sixth case in this study, teachers may need to implement strategies as well as build more specific activities as a part of the theatrical play programme for social skills training. Thus, they might need to use a reinforcement system for social interactions in play sessions as well as for developing social skills. Other positive effects of the theatrical play training in public school settings is that it has become an aid for typical children to initiate effective interactions with ASD peers. Theatrical play activities might also provide opportunities for ASD children to observe similar-age typical children play with each other in school environments focusing exclusively on group teaching such as the physical education lesson. The specific percentages of social skills variables in the use of the effect of the theatrical play programme through the physical education lesson increased during the intervention phases (Nguyen, & Larson, 2015).

Several points can be mentioned to clarify this issue. The ASD children participants showed indifference at the beginning of the first session, which declined over time. It is likely that these findings reflect simple habituation following some early situational anxiety and panic for something they didn't know. Additionally, higher levels of attention, empathy, and acceptance in instructions were shown during the most of the sixteen sessions of theatrical playing programme. It is likely that the activities and the environment play an important role to promote ASD children's participation. Importantly, this study did not specifically utilize theatrical scripts as part of the programme.

Thus, increased familiarity with the social milieu may be an important benefit for these children. Another social variable which was observed, was the empathy, an important element of the communication between typically developing peer and children with ASD.

To summarize the results, the theatrical play programme is a creative program which can be used as an appropriate educational strategy to teach social skills and self-confidence in a structured environment such as school. Cooperation between ASD children and their peers shows a significant improvement in social skills, behavior, confidence and greater awareness and sensitivity toward others (Kempe, & Tissot, 2012). Each session consists of three main components that assist children in addressing the above aspects: conversation skills; non-verbal cues and role plays.
Through these programmes, children incorporated a number of promising strategies for social skills training and successfully managed a number of everyday situations
(Erbay, & Dogru, 2010), such as conflict, friendships, sharing and taking turns appropriate social skills, identifying and expressing emotions. On this basis, music may have also added a positive role. It is likely that several environmental factors were combined to create the encouraging outcome.

Perspectives

Playing is a method of physical education which is useful to face up difficulties of children with emotional and developmental disorders, only when the content of play is adapted according to the special needs of children. The activities of play are based on an interdisciplinary plan which

is necessary for children with ASD (Rosenthal-Malek, & Mitchell, 1997). Although, the educational policy provides more time for one-to-one teaching, it seems that the benefits of group activities are multiple. The children through group activities have opportunities for communication and interaction, and develop initiatives. Social skills developed help them to improve the interpersonal communication, their feelings, and to express themselves **(**Borremans, Rintala, & McCubbin, 2010). This study provided encouraging evidence that theatrical play programme helped ASD children support with their peer's development in creative, social and communicative skills. In particular, ASD children in this research participated in groups, made imaginative contributions to verbal and physical representations and engaged with abstract ideas (Zhang Peluso, Gross et al. 2014). Programme outcomes are given a concrete structure and an invitation to collaborate, since theatrical techniques such as theatrical playing can be a powerful educational tool for ASD children. Despite the promising results, the study did not use a randomized experimental design, was limited by a small sample of cases studies, and did not include a control group. A future study will may address these concerns to a much larger sample in an enhanced experimental design (e.g., the control group, random assignment, etc.) which include (a) multiple theatrical play activities to promote maintenance and generalization of the social skills, (b) promotion of social skills training through physical education for high functioning ASD children and their peers, (c) development of strategies such as cooperation that produce interactions.

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Examining Wraparound Fidelity for Youth with Mental Health Needs:

An Illustrative Example of Two Rural Canadian Schools

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Abstract

Addressing the mental health needs of children and youth is a priority. One way to operationalize the provision of support for children and youth with severe mental health needs is through the wraparound approach. Wraparound is a highly individualized person and family centred planning process which utilizes a clearly articulated practice model, and is led by trained wraparound facilitators. This research examined the fidelity of implementation of the wraparound approach for two youths with severe mental health needs in two rural schools in the province of Manitoba, Canada. Adherence to the guiding principles and primary activities of the wraparound approach were measured using the Wraparound Fidelity Index 4.0 (WFI-EZ), a self-report tool that was administered with caregivers, wraparound facilitators and team members. Facilitation skills and teamwork also were examined through the independent observation of wraparound planning meetings using the Team Observation Measure (TOM-2). These fidelity measures determine model adherence, which has been associated with improved behavioral outcomes for children and youth with severe mental health needs, and quality improvements in service provision. The findings of low average-to-average overall fidelity are encouraging given that these school-based settings are in the emergent stage of wraparound implementation, and demonstrate their ability of schools to adhere to many of the key elements of the wraparound approach. Areas of high fidelity and low fidelity are discussed, and recommendations for quality improvements in wraparound implementation in school-based settings are proposed.

Keywords: wraparound, school-based wraparound, fidelity, children and youth, mental health

Introduction

The increasing incidence of mental health disorders among children and youth is a burgeoning issue (World Health Organization, 2013). As a result, identifying effective means of addressing the mental health of children and youth has become an international priority (Mental Health Commission of Canada, 2012; 2013; World Health Organization, 2013). The wraparound approach has increasingly been identified as a means of care coordination that may improve the provision of support for children and youth with mental health disorders (Washington State Institute for Public Policy, 2016; Bruns et al., 2014). Wraparound involves the development of highly individualized plans of care and the provision of integrated, child and family centred support that is led by a trained wraparound facilitator (Burns & Goldman, 1999). According to Suter and Burns (2009), wraparound differs from other approaches because it is a highly collaborative process in which the needs of children and youth with mental health and behavioral disorders are addressed through the coordination and delivery of services, supports, and resources. There are ten guiding principles of the wraparound approach (see Table 1) (Bruns et al., 2010). While these principles may seem straightforward; the successful implementation of wraparound requires much consideration.

The implementation of the wraparound approach is complex given the diversity of contexts in which it is implemented, the expectation that it will be adapted to meet local needs, and the highly individualized nature of planning (Pullmann, Bruns, & Sather, 2013). The practice model consists of specified activities that take place over four phases of effort: (1) engagement and team preparation, (2) initial planning, (3) implementation, and (4) transition (Bruns et al., 2010; Bruns, Suter, & Leverantz-Brady, 2008; Walker, Bruns, & Penn, 2008).

Need for Fidelity

In a study conducted by Burns and Sutter (2010), nine published outcome studies of wraparound were summarized. According to this summary, Burns and Sutter (2010) found that children and youth in wraparound had better behavioral outcomes and improved overall functioning when compared to youth in other programs. In addition, a meta-analysis conducted by Suter and Bruns (2009) found that wraparound was potentially more effective than other services when it came to supporting youth with mental health and behavior disorders. Despite these positive outcomes, wraparound is not established as an evidence-based practice (Bruns & Walker, 2010; Bruns et al., 2010; Shailer, Gammon, & de Terte, 2017). High fidelity and adherence to the model is likely paramount in terms of wraparound receiving recognition and acceptance as an evidence-based practice (Effland, Walton, & McIntyre, 2011; Henggeler, Melton, Scherer, Brondino, & Hanley, 1997). Adherence to a practice model also helps to understand whether or not an intervention is achieving its intended results.

The fidelity of implementation of wraparound is critical as several studies have found that adherence to the practice model is an integral part of achieving positive outcomes for youths and families (Bruns, Suter, Force, & Burchard, 2005; (Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001; Pagkos, 2011; Cox, Baker & Wong, 2009; Effland, Walton, & McIntrye,

2011). These outcomes include but are not limited to goal attainment, maintenance in community living, improved behavior and community functioning.

Table 1

Ten Guiding Principles of Wraparound

Wraparound Principle	Definition
1. Voice and choice	The perspectives and values of the family and youth are prioritized in the process.
2. Team based	A wraparound team consists of a variety of members chosen by child's family. These people may include informal members, formal members and, community.
3. Natural supports	Participation from the family's informal, formal, and community supports are encouraged. These natural supports are engaged and are directly related to the planning of activities and interventions.
4. Collaboration	Team members' works together to develop, implement, monitor, and evaluate the wraparound plan.
5. Community based	The team seeks to promote safety and strengthen relationships with the home and community by selecting inclusive, responsive and accessible support strategies.
6. Culturally Competent	The team prioritizes the family's cultural values, beliefs, and identity during the wraparound process.
7. Individualized	The strategies, supports, and services that have been identified through the process are customized into an individualized plan.
8. Strength based	The strengths of the youth and his or her team members built upon in the wraparound plan.
9. Unconditional	The wraparound team acknowledges that there may be setbacks and if they occur, rather than blame the family and youth, the team continues to work toward meeting their needs.
10. Outcome based	Success and progress are measured and monitored by linking strategies and goals to observable and measurable indicators of success.

Adapted from Bruns et al. (2010)

Conversely, poorly implemented wraparound, has been found to contribute to poor outcomes for children and youth (Browne, Puente-Duran, Shlonsky, Thabane, & Verticchio, 2016; Bruns, Pullmann, Sather, Brinson, & Ramey, 2014). While model adherence contributes to improved youth outcomes, assessments of wraparound fidelity also support quality improvements in service provision (Kernan, 2014). According to Shailer et al. (2017) measures of wraparound fidelity enable researchers and service providers "to make comparisons across wraparound programmes, assess programme drift and provide quality assurance" (p. 88). Given the individualized nature of wraparound planning, and the extremely vulnerable population it supports, it is essential to ensure adherence to the practice model so that such quality assurances and necessary improvements can be made (Burns & Sutter, 2010).

Training and Fidelity Measurements

In order to support the fidelity of implementation of the wraparound approach, training in wraparound implementation and fidelity assessment measures have increasingly become recognized as essential to the process (Sather & Bruns, 2016). The National Wraparound Implementation Centre (NWIC) has developed rigorous training, coaching and supervision in wraparound for facilitators, coaches and other partners involved in the process (NWIC, 2018). In addition to training in the implementation of wraparound, the Wraparound Evaluation and Research Team (WERT) has developed the Wraparound Fidelity Assessment System (WFAS) which includes tools to measure the implementation and outcomes of the wraparound process. The WFAS consists of the following instruments: (1) the Wraparound Fidelity Index Short Version (WFI-EZ) (Sather, Hensley, & Bruns, 2013); (2) the Team Observation Measure (TOM-2) (Bruns, Sather, Schurer Coldiron, Hook, & Hadfield, 2018), as well as other fidelity tools. Training in the implementation of wraparound and fidelity assessments is critical to the provision of high-quality wraparound, but so too is a supportive organizational context.

Schools Leading Wraparound

Using an implementation science framework, the organizational context for wraparound must be equipped to support and sustain the core implementation components of an evidence-based practice (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Considering the degree of complexity associated with wraparound implementation, schools may serve as an ideal environment for delivering high quality wraparound to children and youth. In a study to determine the readiness of community schools in the province of Manitoba to implement the wraparound approach, Bartlett and Freeze (2018) found that community schools engaged in practices that aligned with the 10 guiding principles of wraparound. Moreover, these school-based settings possessed many of the "necessary conditions" as outlined by Walker, Koroloff and Schutte (2003) to support the implementation of the wraparound approach including: (a) broad-based supports in the local community including skilled staff (e.g., school psychologists, social workers, administrators, resource teachers and school counsellors), (b) agency and community partnerships, (c) strength-based, person-centred planning processes that involved setting goals and measuring outcomes (e.g., Individualized Education Planning (IEP), Behaviour Intervention Planning (BIP), and Planning Alternative Tomorrows with Hope (PATH) (Pearpoint, O'Brien & Forest, 1993). Moreover, these school settings were found to play a pivotal role in the early intervention and prevention of mental health disorders, and in the delivery of mental health supports, and therefore, the implementation of wraparound may be complimentary to the support they already provide. Similar findings were noted by Eber, Hyde, and Suter (2011) who found that wraparound could be embedded into the continuum of School-Wide Positive Behavior Support (SWPBS) provided in schools, and when school staff were trained in wraparound facilitation (e.g., social workers, psychologists, counsellors) they demonstrated the ability to lead this highly individualized approach. Given the many advantages of implementing wraparound support in school-based settings, the fidelity with which Canadian schools are able to implement the approach should be examined.

The Current Study

In 2013, the province of Manitoba released an interdepartmental protocol entitled, *Wraparound Approach for Children and Youth with Severe to Profound Emotional and Behavioural Disorders* (Healthy Child Manitoba, 2013*).* The core components of the provincial wraparound protocol are based on the work of Walker, Bruns and the National Wraparound Initiative Advisory Group (2008) and include a clearly articulated practice model with four distinct phases (plan engagement, plan development, plan implementation, and transition) and 32 activities that are associated with each phase. Some schools in Manitoba are taking a leadership role in the implementation of the wraparound approach for children and youth with severe mental health needs in school-based settings. In order to support this process, school staff (e.g., counsellors, resource teachers, school-psychologists, and school social workers) have received training and certification in wraparound facilitation from Wrap Canada (Debicki & Wrap Canada, 2014). While some schools have taken a leadership role in the implementation of wraparound, schools have not been officially designated as the lead organization in the delivery of wraparound support. In fact, a formal plan for the implementation of wraparound support has not been developed by the provincial government, and therefore there is uncertainty about how wraparound can and should be implemented in Manitoba.

Given that wraparound is in the emergent stage of implementation in Manitoba, fidelity assessment measures may provide valuable insights about how schools are implementing the approach, and identify areas of strength and opportunities for quality improvement. This research seeks to determine the fidelity of implementation of the wraparound approach for two youth with severe mental health needs in two rural schools (School A and School B) in the province of Manitoba. The overall objectives of this study were to: (1) determine the fidelity of implementation of wrapround by administering the WFI-EZ with key stakeholders involved in the provision of the wraparound approach in schools, and (2) to determine the fidelity of implementation of wraparound in schools by observing wraparound meetings using the TOM-2.

Methods

Instruments and Data Collection

In this study, data was collected from participants using two different fidelity measures developed by WERT. Both the WFI-EZ (Sather et al., 2013), and the TOM 2.0 (Bruns et al., 2018) were developed along the above-mentioned research, principles, phases, and activities. In this study, data was collected using both measures to provide an assessment of overall fidelity, key element fidelity, and a detailed description of constituent indicators of fidelity on school-based wraparound teams.

       Wraparound Fidelity Index (WFI-EZ). The WFI-EZ was administered to three different categories of respondents, including wraparound facilitators, caregivers, and team members in order to obtain their unique perspectives. The WFI-EZ is used to collect data on: (1) fidelity to the basic principles of wraparound and model as a whole, (2) adherence to the process level activities of wraparound, (3) the presence of supports at various system and organizational levels. In a nutshell, the WFI-EZ measures "adherence to the primary activities of the wraparound process on an individual child, youth, or family basis" in a self-report questionnaire (Sather et al., 2013, p. 9).

The WFI-EZ is a short version of assessment adapted from the full Wraparound Fidelity Index (WFI-4) (Bruns, Suter, Force, Sater, & Leverentz-Brady, 2009). The WFI-EZ contains five sections however, not all categories of respondents are provided with every section. The five sections of the WFI-EZ are: (1) youth information and demographics, (2) basic information, (3) experiences in wraparound, (4) satisfaction, and (5) outcomes. Sections 1, 2 and 3 are completed by all respondents (e.g., caregivers, youth, facilitators and team members), while only caregivers and youths are asked to respond to questions about satisfaction. Only caregivers and facilitators are asked to respond to questions about outcomes. The WFI-EZ has a strong level of overall internal consistency (Cronbach's Alpha = .937) and strong validity (Sather et al., 2013). In this study, the identifying information that was collected about the youth was limited and included the youths' age, the relationship of the caregiver to the youth, who had legal custody of the youth, and the number of months they were involved in wraparound.

Team Observation Measure (TOM 2.0). The TOM 2.0 (Bruns et al., 2018) has been adapted from the TOM (Bruns & Sather, 2013). The TOM 2.0 measured the extent to which the guiding principles of wraparound were followed, evidence of effective team work, and the degree of skilled facilitation demonstrated by wraparound facilitator during a wraparound meeting. The TOM 2.0 consists of thirty-six indicators divided across seven subscales: (1) full meeting attendance, (2) effective teamwork, (3) driven by strengths and families, (4) based on priority needs, (5) use of natural and community supports, (6) outcomes-based process, and (7) skilled facilitation. Each of these subscales consists of five items with the exception of first subscale which has six. Each item has either two or three possible answers (1) yes, (2) no, and (3) N/A. In order to indicate "yes" the rater has to have observed the item phenomena during the wraparound meeting. A "no" response indicates that the rater did not observe the item phenomena during the wraparound meeting. "N/A" is provided as an option for some indicators. This response may be selected if the rater is unable to provide a yes or no score. The TOM-2 is also reliable and valid (Bruns et., 2015).

Materials, Training, and Process

The principal investigator (PI) is a licensed collaborator through WERT. In order to administer WFI-EZ and the TOM-2 the PI successfully completed the WFI-EZ and the TOM-2 training protocols. Additionally, the PI is a certified wraparound facilitator through Wrap Canada, and as such has a strong understanding of the wraparound process. All interviews and team observations were conducted by the principal investigator who had no affiliation with the schools that were studied.

The first phase of this study involved administering the WFI-EZ by telephone to the caregivers, facilitators, and team members on both school-based wraparound teams. The surveys took between 15 to 40 minutes per participant to complete by telephone.

The second phase of this study involved the principal investigator observing one wraparound meeting for each school using the TOM-2. The TOM-2 is a complimentary tool to the WFI-EZ that provides an opportunity for an independent observer to gather data during the observation of a wraparound meeting (Bruns et al., 2015). The wraparound team meeting for School A was 2.5 hours in length, while the wraparound team meeting for School B was 2 hours. The PI also took notes about what was observed during the team meeting. The notes were helpful in contextualizing both the TOM-2 and WFI-EZ results.

WrapTrack. The WFI-EZ and TOM 2.0 data was entered into WrapTrack. This system produces anonymized quantitative summaries of overall fidelity, key element fidelity and satisfaction when compared to national means. Both researchers were trained to use Wraptrack.

Consent and Ethics Approval

This study was approved by the Education and Nursing Research Ethics Board at the University of Manitoba. In this study, informed consent was obtained from the superintendents of school divisions to conduct research. In order for a school division to participate, the school division met the following criteria: (1) the school division had staff trained in wraparound facilitation who were certified by Wrap Canada, and (b) the school division was in the process of implementing the wraparound approach for a child or youth with severe mental health needs and multi-system involvement. Consent was subsequently obtained from the school principal, parent/legal guardian of the child/youth participating in wraparound, the wraparound facilitator, and additional team members.

Participants and Sampling

This study consisted of 14 participants (N=14) across two different wraparound teams (School A and School B). In School A, data was collected from the following members of the youth's wraparound team: caregiver (N=1), facilitator (N=1), therapists/clinicians (N=2), and teacher/school staff (N=2). In School B, data was collected from: caregiver (N=1), facilitator (N=1), mentor (N=1), teacher/school staff (N=2), minister/faith based (N=1), community member (N=1), other (N=1).

School A is a grade 5-8 middle school located in a rural setting with a student population of approximately 350 students. School B is a grade 9-12 school also located in a rural setting with a student population of approximately 400 students. While both School A and School B are located in rural settings, School B is located in a significantly smaller community, with one-third of the population of School A and twice the distance from a major urban center.

Results – School A

Demographic Information. The WFI-EZ was administered to 6 wraparound team members (N=6). School A's wraparound team consisted of 1 caregiver, 1 facilitator, and 4 team members (2 therapist/clinician, 2 teacher/school staff). The male youth in School A was 13 years old and had been enrolled in wraparound for 11 months. The youth's legal guardian is his birth mother.

Basic Information. The questions in Section A of the WFI-EZ address the foundation of the wraparound process. The WFI-EZ manual suggests that a minimum of 90% of respondents should say yes to each of these for items.

Table 2 summarizes the responses of all wraparound team members for School A. For three of the four items (i.e., A1, A2, and A4) the respondents answered yes 100% of the time. For one of the items (i.e., A3) only four of the six respondents answered yes. A yes response from over 90% of respondents on the first two items (i.e., A1 and A2) is especially important in determining the consistent implementation of wraparound (Sather et al., 2013). Therefore, School A met the criteria for three of the four questions but fell short of the national standards for item A3 which asks about the frequency of meeting.

Table 2

School A Basic Elements of Wraparound

Item	Yes	%
A1. My family and I are part of a team (e.g., "wraparound team," "child and family team"), AND this team includes more people than just my family and one professional.	6	100
A2. Together with my team, my family created a written plan ("plan of care" or "wraparound plan") that describes who will do what and how it will happen.	6	100
A3. My team meets regularly (for example, at least every 30-45 days).	4	66.67
A4. Our wraparound team's decisions are based on input from me and my family	6	100

Overall Fidelity across Respondent Types

The questions in Section B of the WFI-EZ inquire about the details of the wraparound process as well as fidelity to the model. Section B includes 25 items that can be divided into: (a) a global fidelity score and (b) five key element scores. The five key elements score refines the total score into five domains: (1) effective teamwork, (2) use of natural and community supports, (3) based on needs, (4) outcomes based, and (5) driven by strengths and families. The key element score is the average of all the relevant items within these five domains. Similar to the overall fidelity score, each item in the key element score is treated equally (Sather et al., 2013).

According to Bruns et al. (2008) overall fidelity percentage scores on the WFI of 85 to 100 indicate high fidelity; 80 to 85 above average fidelity; 75 to 79 average fidelity; 70 to 74 below average fidelity; and scores below 69 indicate a non-wraparound level of fidelity. WERT (2018) also has established national means which include the average of wraparound fidelity across large wraparound sites in the United States. While comparison to national means is not meant to determine if the wraparound process is being implemented with high or low fidelity, it does provide comparison to a national sample of large wraparound providing agencies.

This overall fidelity score in the WFI-EZ describes the degree, ranging from 0% to 100%, to which all respondents agreed their experiences with wraparound matched the model described by WERT and NWIC. The overall fidelity score provides an impression of the wraparound process from multiple stakeholders. In other words, it provides the average item level score as a percent of the total possible score treating every item equally. The overall wraparound fidelity across all respondent types at School A is 69% which indicates a non-wraparound level of fidelity. This overall score is slightly less than the national mean provided by WERT.

Overall Fidelity by Respondent Type

The guidelines for wraparound fidelity established by Bruns et al. (2008) can be used as a benchmark to assess overall fidelity by respondent type. At School A, the overall fidelity included the facilitator at 73%, which is average and slightly below the national mean, team members at 71%, which is below average and slightly below the national mean, and the caregiver at 56%, which is a non-wraparound level of fidelity and below the national mean.

Key Element Scores Across Respondent Types

The key elements of driven by strengths and needs based were 88% and 85% respectively, which are considered high fidelity and above average fidelity, and exceeded the national means. Outcomes-based was below average fidelity at 71%, and below the national mean. Effective teamwork was at a non-wraparound level of fidelity at 54%, and below the national mean. Finally, natural and community supports was the lowest, at a non-wraparound level of fidelity at 48%, and below the national mean.

Key Element Scores by Respondent Type

Facilitator. The strength and family driven score and needs-based key elements were high fidelity at 100% and 90% respectively, and exceeded the national means. The natural/community supports, outcomes-based and effective teamwork key elements were scored at non-wraparound levels of fidelity at 65%, 65%, and 45% respectively, and all fell below the national means.

Team Members. The strength and family driven score and needs-based score were high fidelity at 88.9%, and 86.1% respectively, and exceeded the national means. The outcomes-based score was an average level of fidelity at 75%, and approximated the national mean. The effective teamwork score and natural/community supports were considered non-wraparound levels of fidelity at 61.1% and 66.1% respectively, and fell below the national means.

Caregiver. The caregiver's needs-based score was average fidelity at 75%, which exceeds the national mean. The strength and family driven score was below average fidelity at 70%, and below the national mean. Outcomes-based, natural/community supports and effective teamwork were 55%, 45%, and 35% respectively, which are considered non-wraparound levels of fidelity, and all fell below the national means.

Satisfaction. The questions in Section C of the WFI-EZ seek to assess caregiver and youth satisfaction with respect to the wraparound process. There are four items in this section. The first two questions inquire about satisfaction of the wraparound process. The third and fourth question inquire about outcomes as the result of the wraparound process. In the case of School A, our total satisfaction score only included caregiver ratings, and was at a non-wraparound level of fidelity of 62.5%, and less than the national mean.

TOM 2.0 Overall Fidelity Score

On the TOM-2, School A had an above average overall fidelity score at 82%, which exceeded the national mean. The overall fidelity score includes all seven subscales on the TOM-2. Full-team attendance was low at 40%, while skilled facilitation was high at 100%. In terms of Key Element scores, School A exceeded the national means in three of five subscales.

Driven by strengths and families, based on priority needs, and outcomes based were all 100%, which is considered high fidelity. The relatively lower score for effective teamwork was 75% which is an average level of fidelity but below the national mean. The presence of natural supports was the lowest and considered a non-wraparound level of fidelity at 60%, and below the national mean.

Results – School B

Demographic Information. The WFI-EZ was administered to 8 wraparound team members (N=8). School B's wraparound team consisted of 1 caregiver, 1 facilitator, and 6 team members (1 mentor, 2 teacher/school staff, 1 minister/faith based, 1 community member, and 1 other). The youth in School B was a 14-year-old female who was enrolled in wraparound for 14 months. The youth's legal guardian is her birth mother. The table below summarizes the responses of all wraparound team members for School B about the basic elements of wraparound. Like School A, School B met the criteria for three of the four questions, but fell short of the national standards for item A3 which asks about the frequency of meetings.

Table 3

School B Basic Elements of Wraparound

Item	Yes	%
A1. My family and I are part of a team (e.g., "wraparound team," "child and family team"), AND this team includes more people than just my family and one professional.	8	100
A2. Together with my team, my family created a written plan ("plan of care" or "wraparound plan") that describes who will do what and how it will happen.	8	100
A3. My team meets regularly (for example, at least every 30-45 days).	7	87.5
A4. Our wraparound team's decisions are based on input from me and my family	8	100

Overall Fidelity across Respondent Types

In the case of School B, the total fidelity score was 74.7%. According to Bruns et al. (2008), this score indicates an average rate of fidelity. It is also above the national comparison mean indicating that the overall fidelity of School B exceeds that of many other larger wraparound providing agencies.

Overall Fidelity by Respondent Type

At School B, team members rated the overall fidelity of wraparound the highest of all respondents at 75.9%, which is an average level of fidelity and exceeded the national mean. The

wraparound facilitator also rated the overall fidelity as average at 73%, which slightly exceeded the national mean, while the caregiver scored the overall fidelity the lowest at 69.9%, which is a below average level and also below the national mean.

Key Element Scores across Respondent Types

At School B, natural and community support was rated the highest at an above average level of fidelity of 85%, and above the national mean. Driven by strengths and families also was rated at 84%, which is considered above average fidelity and exceeded the national mean. The provision of needs-based support was 76% or an average level of fidelity, and exceeded the national mean. While the areas that were rated the lowest included outcomes-based and team work, which were 64% and 63% respectively, and are a non-wraparound level of fidelity falling below the national means.

Facilitator. The wraparound facilitator scored the presence of natural/community supports at 90%, which is a high-fidelity level, and above the national mean. The strengths and family driven and needs-based scores were both above average at 85% and 80% respectively, and exceeded the national means. The effective teamwork and outcomes-based key elements received the lowest scores at 55%, which are below the national means.

Team Members. The team members at School B rated driven by strengths and family at 85.5%, which is a high-fidelity level and above the national mean. They also rated the presence of natural/community supports at 80%, which is above average fidelity, and exceeds the national mean. The needs-based score was 77.6% or an average level of fidelity, and exceeds the national mean. The outcomes-based and effective teamwork scores were both at a non-wraparound level of fidelity at 64% and 63.9% respectively, and below the national means.

Caregiver. The natural/community supports score was above average at 80%, and well exceeded the national mean. The strength and family driven score was 75%, which is an average level of fidelity, but less than the national mean). The needs-based, outcome-based and teamwork key elements were all at a non-wraparound level of fidelity at 65%, 65% and 62.5% respectively, and were all below the national means.

Satisfaction. In the case of School B, our total satisfaction score was 75%, which is an average level of fidelity, and approximates the national mean. This score describes the degree, ranging from 0% to 100%, to which the caregiver was satisfied with the wraparound process and outcomes.

TOM 2.0. Overall Fidelity Score

Based on the independent observation of one wraparound planning meeting School B had an average overall fidelity score of 84.7%, which exceeds the national mean. At School B full-team attendance was low at 33%, and like School A, skilled facilitation was high at 100%. School B exceeded the national means on the TOM-2 in all five subscales. Natural and community supports, effective teamwork, and outcome-based planning were all considered high fidelity at 100%. The score for driven by strengths and families and based on priority needs were both at an above average fidelity at 80%.

Discussion

This study explored the fidelity of implementation of the wraparound approach using the WFI-EZ and TOM-2 in two school sites for youth with severe mental health needs. Overall, the WFI-EZ results for School A indicated that the wraparound approach was being implemented at a slightly below average level of fidelity. While the WFI-EZ results for School B indicated that, the wraparound approach was being implemented at an average level of fidelity. Consistent with other research using the WFI, there was some variability in the perceptions of wraparound fidelity across different stakeholder groups (Bruns, 2010). Interestingly, the TOM-2 results for both schools was significantly higher than the WFI-EZ, and found the fidelity of implementation to be at an above average to high level in both sites. This finding is consistent with the research of Bruns et al. (2015) who found that the TOM correlates negligibly with other fidelity assessment tools at the team level, but does provide a different lens by which to evaluate wraparound implementation. What follows is a discussion of the unique perspectives of caregivers, wraparound facilitators, team members, and an independent observer about the adherence to the key elements of wraparound, which are underpinned by its 10 guiding principles. Examining the fidelity of implementation of the wraparound approach by key elements, constituent indicators, and multiple perspectives may help to identify relative strengths and weaknesses and inform quality improvements in these settings.

Basic Elements of Wraparound

The basic elements of wraparound, which are assessed in part A of the WFI-EZ are described as the foundation of wraparound (see Table 2). In School A and School B, all indicators except meeting regularly were rated at 100% or as being present by all respondents. Overall, these results are encouraging and indicate that a majority of the basic elements of wraparound were adhered to from the perspective of the school-based wraparound teams. The basic elements that were identified as present, parallel other planning processes that are used in schools like the Individualized Education Plan (IEP) and Behavior Intervention Plan (BIP). In both schools, constructive partnerships were forged with families, and team members, and holistic planning occurred across multiple life domains. According to Eber et al. (2011), schools are uniquely positioned to operationalize wraparound support given the existence of partnerships with caregivers and community support providers, a continuum of behavior support, and structured planning processes, all of which were present in the schools that were studied and enabled adherence to these basic principles of wraparound.

The basic element that was rated as not consistently present was meeting frequently every 30 to 45 days. It is not uncommon for the frequency of wraparound meetings to decrease when participants believe that a youth and family are beginning to meet their objectives, or when organizational priorities shift (Mendenhall, Kapp, Rand, Robbins, & Stipp, 2013). This finding of program drift is consistent with related research which has found that in the absence of comprehensive training that includes coaching for wraparound facilitators, the quality of wraparound implementation may be compromised (Bickman, Smith, Lambert, Andrade, 2003; Bruns et al., 2008). While there are future plans to provide coaching for wraparound facilitators, at the time of this study, coaching had not been provided to the facilitators in the schools that were studied. According to Conklin (2012) in order to prevent wraparound teams from "fall[ing] back into their comfort zone of planning" a shared understanding of the wraparound process

across all stakeholder groups and direct hands-on coaching are required. These accountability mechanisms must be established at the organizational level in order to support fidelity to all of the foundational elements of wraparound (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005)

WFI-EZ Key Elements with Highest Fidelity for Combined Respondents

In both schools, the key elements with the highest overall levels of fidelity for combined respondents included strength and family driven and needs based indicators. The finding that the strength and family driven and needs based indicators were rated at average to above average fidelity relative to other key elements is consistent with other wraparound fidelity research (Pullman, Bruns & Sather, 2013; Shailer et al., 2017). Pullman et al. (2013) also noted that these key elements are typically at a higher level of fidelity, relative to other key elements, even in sites with low overall fidelity. According to Walter and Petr (2019), supporting family's strengths and needs requires finding ways to enhance investment in the wraparound plan and process. The schools in this study may have average or above average levels of fidelity in relation to the strength and family driven and needs based key elements because educators are already accustomed to eliciting and developing students' and families' strengths. In addition, these key elements are process oriented and largely dependent upon the professional practice of the wraparound facilitators, who both demonstrated strong facilitation skills during wraparound meetings as measured by the TOM-2.

Natural Supports

Much of the research on wraparound indicates that the key element of natural supports is difficult to attain on wraparound teams (Bruns, 2010; Cox et al., 2009; Moore & Walton, 2013). Many caregivers of youth with severe behavioral needs feel shame and become isolated from individuals who may serve as natural helpers on wraparound teams (Bruns, 2010), or may object to the receipt of natural support (Penn & Osher, 2008), as was the case with the caregiver in School A. While the low levels of wraparound fidelity in the area of natural supports at school A aligns with trends in wraparound research, School B contradicts previous research and had above average fidelity in this area. One possible explanation for these findings may be that School B utilized a community mobilization team to support the implementation of wraparound. This meant that key service providers (e.g., education, family services, mental health, health, and justice), as well as natural supports (e.g., local faith-based and volunteer community mentors) met on a regular basis, and when the needs of high-risk youth arose, to: (1) determine risk, (2) identify needs, and (3) provide wraparound support facilitated by the school. In addition, the broad-based partnerships that were established through the community mobilization team in this rural area, contributed to the relative ease with which natural supports could be enlisted to provide support on the wraparound team. Related research has found that community mobilization teams can be effective in engaging community members to serve as a source of natural support on wraparound teams (Debicki, 2008).

WFI-EZ Key Elements with the Lowest Fidelity for Combined Respondents

One of the lowest fidelity key elements on both school-based wraparound teams included outcomes-based indicators. An examination of the constituent indicators on the WFI-EZ, which led to a low fidelity score in this key element, is important in order to facilitate quality improvement. The outcomes-based indicator that was rated with the lowest fidelity for combined respondents included: the wraparound team and family have talked about how they

will know it is time to transition out of formal wraparound (B21). Only 3 out of 14 participants across both settings indicated that transitioning out of wraparound had been discussed at wraparound meetings. This finding of low fidelity in the area of transition is consistent with related wraparound research, which has found that the transition phase of wraparound is often not adequately addressed (Bruns, 2010; Moore & Walton, 2013; Kernan, 2014). This finding may indicate a need for increased focus on the transition phase in wraparound facilitator training, and in more broad-based training with wraparound teams. In a study exploring quality improvements in wraparound implementation Kernan (2014) found low levels of fidelity in the transition phase as reported by parents/caregivers and youth. In order to address this issue, the following quality improvements were identified: (1) providing transition training and education programs for care coordinators/facilitators, families and youth; (2) requiring that transition planning be included on the agenda of every planning meeting; and (3) providing an orientation workshop for families that involved a discussion of the transition phase. Given the low level of fidelity in the area of transition in the school sites that were studied, similar quality improvements also may be beneficial in these settings.

Facilitators' Variability in Perceptions of Team Work

The other key element that was scored at a lower level of fidelity was effective teamwork; however there was some variability among facilitators about the reason this key element had a lower score. For example, the facilitator in School A agreed to the constituent indicator, which asks whether the facilitator is concerned that the wraparound team does not include the correct people to help the youth (B4). Considering that this was the only indicator of teamwork that was rated at low level of fidelity by the facilitator, it may be more of a reflection of the fact that the wraparound team did not have any natural supports, which was reflected in other items on the WFI-EZ. The facilitator also stated that the team had not had any success in fostering such connections for the caregiver and youth. Interestingly, during a team meeting that was observed while completing the TOM 2.0, the caregiver strongly indicated a preference not to have natural supports on the wraparound team. Based on their lived experience, a caregiver may believe their personal, natural connections, and natural supports in the community are unhealthy, and thus may oppose their involvement on a wraparound team. Since wraparound is predicated on family voice and choice, it may be appropriate to honor caregivers' preferences in this area (Penn & Osher, 2008). This finding draws into question whether (B4) on the WFI-EZ accurately captures the teamwork that was occurring on this wraparound team, or instead might be a reflection of the absence of natural support. While natural support may be an important element to sustain youth and families when they transition out of wraparound, there may be some personal and local factors, which may preclude such involvement that must be taken into consideration in the wraparound process and assessments of fidelity.

The only indicator of teamwork that the School B facilitator rated at a low level of fidelity was the item which states, members of the wraparound team sometimes do not do the tasks that they are assigned (B15). The facilitator indicated he or she strongly agreed to this item. The facilitator candidly shared that there were times that members of the wraparound team did not complete expected tasks. This finding is consistent with a study conducted by Bruns, Pullman, Denby Brinson, and Ramey (2014) that compared service experiences and outcomes for youth with severe emotional disorders supported by wraparound and intensive case management. When observing wraparound meetings, the researchers noted that some team members did not follow through on tasks. This observation may reflect the reality that large caseloads and multiple and

competing demands on caregivers may sometimes interfere with following-up on commitments. In addition, the team meetings that were observed at both schools did not have all team members in attendance. Palamaro Munsell, Cook, Kilmer, Vishnevsky, and Strompolis (2011) found that inconsistent team attendance variables also may negatively affect perceptions of team functioning and of wraparound fidelity by facilitators, service providers, and caregivers. Wright et al. (2006) suggest that one way to overcome this challenge may be to have smaller team sizes, as they found that smaller teams contribute to greater role clarity, follow through on tasks, and thus higher levels of fidelity.

Variability in Perceptions of Fidelity by Respondent

The results of this study indicate that there are differences between how caregivers, facilitators and team members perceived the fidelity of implementation of the wraparound approach. This finding is consistent with related research conducted by Kernan (2014) which also found variability in perceptions of wraparound fidelity among groups. However, at both School A and B, the differences in overall fidelity ratings between facilitators and team members were negligible. For example, the facilitator in School A rated overall fidelity only 2% higher than team members, while the facilitator in School B rated overall fidelity only 2.9% lower than team members. Related research has found that facilitators' often rate fidelity higher than all other respondent types because they are engaged in self-evaluation (Bruns, 2010; Kernan, 2014, Painter, 2012, Shailer et al., 2017). However, this study found that facilitators' ratings of fidelity aligned closely with that of other team members. Both of the wraparound facilitators were school-based social workers and wraparound facilitation was only a portion of their overall responsibilities. In their current context, adherence to wraparound fidelity was not a measure of their job performance, which may have prevented the inflation of their responses, which has been reported in other studies. When assessments of wraparound fidelity are not used to evaluate the performance of facilitators, they may be more willing to provide transparent feedback, which may help to identify areas for growth and facilitate quality improvements.

Caregivers' Perceptions of Fidelity

Consistent with related research on wraparound fidelity, the caregivers at both schools rated the overall fidelity lower than other respondent types; however, in School A, the difference was more significant (Bruns, 2010). It is not uncommon for caregivers to express less satisfaction with the wraparound process given that many typically have experienced several failed interventions before they receive wraparound support (Eber et al., 2011). During the team meeting the caregiver at School A shared several negative experiences prior to the receipt of wraparound (e.g., constantly advocating for support, giving up employment, and being unable to secure consistent respite), which created much stress within the family. While the caregiver felt that the current wraparound plan was largely effective in meeting their needs, and that their child had improved outcomes (e.g. in the outcomes measure the caregiver indicated positive outcomes with the exception of a school suspension), the events that transpired pre-wraparound continued to negatively influence the caregivers' perceptions of the process. While the WFI-EZ collects data on wraparound and the current context, it may be difficult for caregivers to bracket out their journeys leading up to wraparound. The facilitator and other team members who may not have a long history with the youth and family may find it easier to focus on current events, which may account for higher fidelity ratings. In order to reduce response bias, it may be important for caregivers to participate in some form of formal wraparound training to address these issues

(Conklin, 2008). This finding also demonstrates that caregiver satisfaction as measured on the WFI-EZ may not necessarily correlate with the outcomes of their child (e.g., improved outcomes do no necessary lead to higher levels of parent satisfaction).

WFI-EZ and TOM-2

Multiple methods of fidelity assessment likely contribute to a more complete picture of the wraparound process. It may further provide concrete information to inform training, quality improvements and policy development. Even though the TOM-2 results were higher than the WFI-EZ, they were consistent in that the WFI-EZ and TOM-2 both found higher levels of fidelity in School B as compared to School A. In fact, several of the TOM-2 observations confirmed and aligned with the findings in the WFI-EZ. For example, both the WFI-EZ and the TOM-2 found higher levels of fidelity in the driven by strengths and families and needs based indicators. These indicators are process oriented and largely based on the skills of the facilitator to lead the wraparound process and adhere to the practice model (e.g, prepared necessary documents, followed a clear agenda, reflected and summarized all participants contributions, and was dynamically engaged etc.). During the observation at School B, it was noted that the facilitator used a form of graphic facilitation used in the PATH process (Pearpoint, O'Brien & Forest, 1993), which enhanced both the meeting structure and team engagement. Therefore, it is not surprising that these key elements had average to above average levels of fidelity. They further highlight the skills of the school-based social workers in these settings to lead the wraparound process. This finding aligns with the work of Eber et al. (2011) who found that school-based social workers were highly effective in engaging team members and facilitating wraparound.

Other consistent findings between the WFI-EZ and the TOM-2 included the degree of natural support in both settings. Moreover, in the area of teamwork, the observation conducted using the TOM-2 affirmed specific responses that were made by participants on the WFI-EZ. For example, at School B one facilitator indicated that some staff do not complete the tasks that they are assigned (B15). During the team meeting, this was affirmed as one of the team members indicated that they had not met with the caregiver as planned. Additional indicators of teamwork also were consistent when comparing the results of both instruments. For example, the relatively lower fidelity scores on the WFI-EZ related to teamwork were supported by the TOM-2 in that lower than desirable levels of attendance were noted at both wraparound meetings.

The most significant difference between the WFI-EZ and the TOM-2 was found in the area of outcome-based indicators. Part of this difference involves the fact that some of the outcome-based indicators on these tools assess different elements of wraparound. For example, some of the outcome based indicators on WFI-EZ asks respondents to state the degree to which they agree with statements such as: I am confident that the wraparound team can find services or strategies that will help this youth succeed in school and stay in the community in the long term (B19), and because of wraparound I am confident that the family will be able to manage future problems (B24). Given the complex needs of the youths in this study, it is reasonable that participants may have difficulty strongly agreeing with these statements. In contrast, the outcomes-based indicators on the TOM-2 were similar to the driven by strengths and families and needs based indictors in that they were process oriented, and linked to the degree to which the facilitator adhered to the wraparound practice model (e.g., reviewed how close the team and family were to achieving the mission, reviewed the status of tasks since the last meeting,

monitored progress toward meeting needs and achieving outcomes, the team discussed ways to evaluate progress). The concrete and highly observable nature of the outcome-based indicators on the TOM-2 facilitated scoring these items during the team meeting, and provided detailed feedback about the meeting process (Kernan, 2014).

Implications for Practice and Research

While this study was small in scale and only consisted of two wraparound teams (i.e., School A and School B), there are several important conclusions that may be drawn from the data. These findings may have significant implications in terms of understanding the possible strengths, limitations and opportunities for quality improvement in the provision of wraparound in the province of Manitoba. In addition, research that examines the assessment of wraparound fidelity from multiple perspectives and using multiple fidelity tools may lead to quality improvements in service provision (Kernan, 2014), and ultimately to improved behavioral outcomes for children and youth (Bruns et al, 2005; Pagkos, 2011). In this section, we present several recommendations for wraparound implementation and future research. The limitations of this study also are discussed in this section.

The first recommendation for wraparound teams is to explore ways to foster the presence of natural supports. According to research, youth who have sustainable and positive natural supports within their family and community are more likely to experience greater socio-emotional health and a successful transition to adulthood (Masinga & Pecora, 2004; Munson, Brown, Spencer, Edguer, & Tracy, 2015). As such, considering ways to include at least one or two natural supports on the wraparound team with the support of models like community mobilization teams, may enhance overall fidelity, as well as contribute to positive youth outcomes.

A second recommendation may be to engage caregivers and team members in a formal wraparound training process (Conklin, 2008). The purpose of this training may be to increase caregiver knowledge about the wraparound principles and process, which may in turn increase buy-in. In addition, it may also help caregivers to separate the wraparound process from their previous experiences. Team members may receive training that focuses on ways to support the family's perspective during the wraparound process. According to Allen & Petr (1998), families and professionals often view emotional and behavioral problems differently. In fact, professionals may lack confidence in a caregiver's ability to make choices that will lead to desired outcomes (Allen & Petr, 1998). In turn, caregivers may be mistrustful of professionals due to previous experiences. Training for caregivers and team members may lead to more positive youth outcomes by clarifying the wraparound process and encouraging strategies that foster effective teamwork. In addition to the above-mentioned recommendations, we have also considered implications for future research. One implication for future research is to investigate how school based wraparound approaches are affected and influenced by other individualized support initiatives implemented by schools. For example, in the case of School B, the wraparound facilitator and one team member were trained in the Planning Alternatives Tomorrows with Hope (PATH) process (Pearpoint, O'Brien & Forest, 1993), which is commonly used to support Individualized Education Planning in schools. Another example may be schools implementing wraparound within or under a larger school-wide framework such as Positive Behavioural Interventions and Supports (PBIS) or Response to Intervention (RTI).

Subsequent research on wraparound also may consider investigating the impact of the number of members on a team. According to Wright et al. (2006), smaller teams contribute to higher levels of fidelity, and may be beneficial in terms of achieving necessary outcomes because tasks are unilaterally assigned. In larger groups, some members may occupy similar roles and functions and as a result, responsibilities and tasks may be seen as shared and lead to confusion or inaction and adversely affect perceptions of teamwork. While Wright et al. (2006) posit that smaller wraparound teams may be beneficial, there is likely that a "sweet spot" that exists. In other words, wraparound teams cannot consist of so few members that the family and youth are not receiving adequate support, but also cannot be so large that it reduces the impact and contributions of its' members.

Future research conducted on the wraparound also may consider investigating the transition stage of the process. According to research, the transition phase of wraparound is often not adequately addressed (Bruns, 2010; Moore & Walton, 2013; Kernan, 2014). In this study, findings also suggest a need for improvement in this area. One possible area of investigation may be to consider the impact of family and community-based natural supports and transition as research indicates that natural supports play an integral role during transition phases. In addition, research also indicates that while professional supports are useful, they often are not sustainable overtime (Cook & Kilmer, 2010).

Limitations

In this study, an illustrative example of wraparound fidelity in two schools was provided. As such, this study was small in scale and comprised fourteen participants divided across two rural schools. One limitation is that due to the small sample size and the fact that both schools were located in a rural Manitoban setting, the results of this study are not generalizable. That being said, this study was successful in replicating several results consistent with other studies on wraparound fidelity. A second limitation is that data was not collected from the two youth in this study. In addition, demographic information was not collected from School A or School B. This was purposeful in order to maintain the anonymity of the youths in wraparound as well as the. While maintaining anonymity for the youth in this study was important, it also means that we did not receive key information regarding how either of the youth perceived their wraparound process. A third limitation is that the WFI-EZ is a self-report tool and therefore is subject to response bias and "ceiling effects" (Pullmann, Bruns, & Sather, 2013; Bruns et al., 2015).). While independent observation of wraparound team meetings using the TOM-2 was used to provide an additional measure of fidelity and reduce bias, the team meetings were observed by one person and therefore lacked measures of inter-rater reliability. A fourth limitation is that much of the comparative research on wraparound fidelity used the Wraparound Fidelity Index (WFI-4). In this study, the WFI-EZ was used. The WFI-EZ is a short version of assessment adapted from the full Wraparound Fidelity Index (WFI-4). Similarly, the comparative research on wraparound fidelity, as observed during team meetings uses the TOM, an earlier version of the TOM-2 which was used in this study. While both instruments assess wraparound fidelity, there are differences between them.

Conclusions and Implications

The scope of this study, while small in scale, provides much needed information about the fidelity of implementation of the wraparound approach in school-based settings in a Canadian context. The findings of low average-to-average overall fidelity are encouraging and demonstrate the ability of the schools, in the emergent phase of implementation, to adhere too many of the key elements of the wraparound approach at a satisfactory level. The overall strengths that were scored at an average to above average level of fidelity included strength, family and needs driven key elements, and in one school, the provision of natural supports. The relative weaknesses included perceptions of teamwork, outcomes-based measures, and natural supports in one of the schools.

While the small scale of the study may be regarded as a limitation, it enabled the disaggregation of indicator data from both the WFI-EZ and the TOM-2 from multiple perspectives (e.g., caregivers, facilitators, team members and an independent observer) at the level of the youth and family. The granular data obtained from multiple fidelity tools and multiple perspectives, provided a more comprehensive picture of wraparound fidelity in these settings (Bruns et al., 2015) and these details may support quality improvements at the direct level of service provision. In addition to supporting quality improvements in the settings that were studied, these findings also may be important to Wrap Canada, as they may provide valuable feedback about the ability of school-based wraparound facilitators, trained by this organization, to adhere to the practice model. The findings also may be of value to policy makers in the province of Manitoba given the absence of a formal plan to support the implementation of wraparound in this province. Evidence that school-based staff can implement wraparound with fidelity for youth with severe mental health needs, may encourage policy development and the investment of resources at the system and organizational levels to support the implementation of wraparound in school-based settings.

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Inclusive Education and the "Balkanization" Professionalization of the Specialized Field of Studies in Special Education Postgraduate Programs: The Case of Sweden

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Abstract

This short paper has two pronged purposes. The first is to reflect on policies and practices of inclusive education in Sweden and the second is to problematize the implications of the continuous proliferation of the specialized field of studies in Special Education postgraduate programs in Sweden. The current Swedish political and educational discourses reflect contradictions and dilemmas among varied dimensions of the educational arena. Policy and practice decisions involve dilemmas. Sweden may be characterized by an embodiment of a strong philosophy of universalism, equal entitlements of citizenship, comprehensiveness, and solidarity as an instrument to promote social inclusion and equality of resources. Within the past decades, however, the country has undergone a dramatic transformation. The changes are framed within neo-liberal philosophies such as devolution, market solutions, competition, effectivity, and standardization, coupled with a proliferation of individual/parent choices for independent schools, all of which potentially work against the valuing of diversity, equity and inclusion (Berhanu, 2011, 2016). The second concern of this paper is: Does the current specialization or diversified form of studies within Special Education postgraduate programs (Teacher Training Programs) support the inclusive agenda, or does it hamper the vision? In addition, recent developments to create new categories or subcategories of special education have the potential not only to tie up administrative and diagnostic resources but also to create an increasingly less manageable array of separate special education programs. This Balkanization process with regard to a number of select disorders has advantages and disadvantages. My concern is that the very existence of "highly specialized knowledge domains" may result in a new form of exclusion and segregation. This is a scenario that one can imagine or expect with the proliferation or balkanization of specialized studies in numerous strands unless we plan carefully as to how to utilize these skills and expertise within inclusive settings.

The Notion of Inclusive Education

Inclusive education is widely discussed, debated, and applied in varied arrangements in Sweden as in many other countries. The debate has a long history both internationally and nationally (see, e.g., Kaufman, 1989 Kaufman & Hallahan, 1995; Armstrong, Armstrong, & Barton) The two extremes of the debates along a continuum, are those who view inclusion as a policy driven by an unrealistic expectation and that "trying to force all students into the inclusion mold is just as coercive and discriminatory as trying to force all students into the mold of a special education class or residential institution" and, on the other hand, those who view strongly that students/pupils belong in the regular educational arrangement and competent teachers are expected to meet the needs of all pupils regardless of what those needs may be (Bakken & Obiakor, 2016; Corbett & Slee, 2000; Mock & Kauffman, 2005; Avramidis & Norwich, 2002).

There is minimal consensus as to what the concept is and is not. Integration and inclusion have been used interchangeably in Swedish educational discourses. Most people are familiar with the term *integration*. The term *inclusion* has been difficult to translate into Swedish. That has left many with considerable ambiguities about the use of the term. As in many other countries, there is confusion and controversy over the semantics of inclusion. This demonstrates the problematic nature of terms when they cross over into use in other cultures. Many have questioned whether the new terminology means only a linguistic shift or a new agenda. In the first translations into Swedish of UNESCO's Salamanca Statement and Framework for Action, *inclusion* was translated as *integration*. I would dare say that the message of inclusive education as outlined in the Salamanca statement has just now begun to permeate the Swedish language, at least in official documents. The social model of disability and the relational nature of disablement have been officially accepted, which implies that schooling as such "is more or less disabling or enabling" (Corbett & Slee, 2000, p. 143). This in turn requires schools to restructure and adjust their learning environments, pedagogical methods, and organizational arrangements. Despite or, rather, because of the inflated discourses of inclusion and revamping of inclusion policies, the practice is often short of advocacies.

Oxymoronic and Paradoxical Nature of the Inclusive Agenda

Education is a basic right for all citizens in Sweden. School communities must be inclusive of all children regardless of disability, socioeconomic background, creed, gender, or ethnicity. Schools should also recognize the unique contributions that children with special needs make to community life. With this basic tenet in mind, Sweden has adopted inclusive education as a guiding principle to guarantee equality of access in education to all as well as part of a human rights approach to social relations. The values involved relate to a vision of a whole society, of which education is a part. Issues of social justice, equity, and choice are central to the demands for inclusive education. This vision is concerned with the well-being of all pupils and with making schools welcoming institutions (Skollag (1985:1100; Skollag (2010:800; Berhanu, 2016).

In their analysis of inclusive education in Sweden and Germany, Sansoura and Bernhard (2017) rightly concluded that that the Swedish system has a different understanding about how to support children with learning difficulties to prevent discrimination. These students can receive support without being diagnosed. This leads to a discussion of how to secure resources to support children in a proactive manner. Classifying a child as different from others may, on one hand,

secure sufficient resources and provide equal opportunities. On the other hand, diagnosing special needs may increase the risk of discrimination and may foster social exclusion. "It is important, therefore, to scrutinize all categorization systems carefully, asking questions about whose interests are being served in the identification of difference, and whether the life chances of particular groups of children are being enhanced or diminished as a result" (European Union, NESSE report, 2012: 25). It is important, therefore, to scrutinize all categorization systems carefully, asking questions about whose interests are being served in the identification of difference, and whether the life chances of particular groups of children are being enhanced or diminished as a result" (European Union, NESSE report, 2012: 25).

During the latter part of the 1960s to the early 1970s, special education expanded and one could see that about 20% of students did not perform well (Nilholm & Björck-Åkesson, 2007). It turned out also that special education became *too costly* for the state. The situation forced the government to set up an inquiry committee. After a detailed investigation into the inner workings of schools by the inquiry committee (SOU [Swedish Government Official Report], 1974:53), the concept of mainstreaming was introduced. Class teachers were now faced with the requirement to deal with diversity of students in their class and thus adapt teaching to pupils' differing abilities and needs. Teachers would take care of several students who previously had special education support. When the curriculum Lgr 80 (curriculum for the compulsory school) came into being, it was stressed with even greater force that the services of the school should be adapted to the individual student's abilities and that the school would work proactively to prevent the onset of school difficulties. Special education as an organizational form was not mentioned in the curriculum. This curriculum's hallmark was a "school for all."(cf. Emanuelsson, 1998; Emanuelsson et al., 2001)

Alexadou et al. (2016:13) argue that the last 40 years have seen great political attention paid to issues of inclusion in education, both from international organizations and also individual nations. This flexible concept has been adopted enthusiastically in education reforms concerned with increased standardization of teaching and learning, decentralization of education management, reduced teacher autonomy, and marketization of school systems.
A number of educational reforms have been devised and implemented in Sweden, especially in the 1990s [and even up until now], the consequences of which have yet to be properly mapped out and evaluated. The reforms revolve around the political management of schools, including a decentralization of school management that empowers municipalities to be in charge of school affairs within their jurisdiction. Marginalization and segregation of socially disadvantaged and ethnic minority groups has increased. Resultant resource differences have widened among schools and municipalities and among pupils. The paradox is that all these trends that work against inequity are happening, while at the same time the rhetoric advocating a school for all and inclusive education have become policy catchwords. As Skidmore (2004) observed, based on his experiences in the U.K., inclusion has become a buzzword in educational discourse. Although inclusion has been adopted as a policy goal, to date much of the Swedish debate has amounted to little more than the trading of abstract ideological positions, which has little connection with the daily realities in schools. In practice, the trend may be described as *excluding the included* (Berhanu, 2011; Berhanu & Dyson, 2012).

Göransson et al. (2011) analyzed and critically discussed current policy and practices at various levels of Sweden's compulsory school system for pupils in need of special support and pupils with disabilities. They argue that, "a rather complex picture emerges from this analysis. Several conclusions are made: (1) state policies leave a lot of room for interpretation at the municipal and school levels, and this results in an extensive variation; (2) Swedish state policy is not as inclusive as is often stated; (3) celebration of difference seems to be hard to achieve; (4) learning goals can be a double-edged sword with regard to inclusion; and (5) most pupils appear to enjoy participation in school, and in an international perspective, Swedish classrooms seem to be largely democratic" (p. 541).

Special Education as a Profession and/or Occupation: The Growing Demand for Specialized Fields of Study in Teacher Training Programs

Although at this stage, there is lack of comparative data available on special needs students' school performance, knowledge gains, graduation rates, preparation for post-secondary schooling, work life or satisfaction/attitude/feelings based on their placement in segregated settings, non-inclusive versus inclusive arrangements, the existing sporadic evidences that exist in Sweden indicate a positive trend; but caution is needed not to jump into making conclusive statements on the benefits or disadvantages of inclusive settings. We have yet to conduct a meta-analysis and a number of reviews on the academic and social outcomes of special needs students (Sonnander, Emanuelsson, & Kebbon, 1993).

Because of a growing number of young people leaving school without a full education, subsequent policy measures came up, with a completely new approach to special education as a field of knowledge and profession. A motive was that the adaptation of mainstream education in schools should work better so that fewer students would need special education. Consequently, the dominant individual-based and medically oriented approach to school problems was replaced largely by the system-based approach (or school- or context-based approach) with regard to school difficulties. In practice, the policy change led to the introduction of the profession, Special Pedagogues (Special Educators), whose functions were more than just teaching pupils with special needs but also working at the organizational level in helping teachers to include pupils with special needs and to help meet their needs within regular school/class settings so that fewer students would need special education in a segregated setting. These special Pedagogues [as opposed to Special Teachers] are entrusted with the responsibilities to serve mainly as mentors and advisors for colleagues who have special needs pupils/students in their classes. They also conduct school improvement tasks as well as teach students with the greatest problems in school. In the beginning of the 1990s, a Special Educator Program mentioned above was launched that would have significant impact on the praxis of special/inclusive education in Sweden. The program was in line with a relational or system-based perspective on educational difficulties. In addition to carrying out teaching tasks, Special Educators are expected to supervise, consult, and counsel regular teachers on how to meet the needs of all pupils. In line with this, all teacher trainees study special needs education within the so-called General Field of Education and may also study this field of knowledge within an eligible field of study or in

specialization courses. The program was well under way until 10 years ago. Then, a new conservative government came into power and "discredited" it.

In 2008, the government reinstituted a special teacher program in which trainees will be expected upon completion to work directly with individual pupils (the programs are: Postgraduate Diploma in Special Needs Training with specialization in Intellectual Disabilities; Postgraduate Diploma in Special Needs Training with specialization in the Development of Language, Writing, and Reading; Postgraduate Diploma in Special Needs Training with specialization in Mathematical Development). The focus will therefore be the student, not the system, a dramatic shift from the previous perspective. Currently both programs exist side-by-side, are offered at an advanced level, comprise 90 credits, 1-1/2 years of full-time study, and qualify graduates for specialist tasks in schools. The new Special Education Teachers should be able to analyze school difficulties at the individual level in different learning environments and be able to *personalize* the school activities. The vision from the government's side is now that equivalence is strengthened through early identification/detection and interventions for students in need of special education and individualized support measures. Special needs education (SNE) in Sweden: Pupils in need of special support have the right to specialist provision. Special support shall be given to pupils who have difficulties in completing their education successfully. If a pupil needs special support, an action plan shall be drawn up. The regulations regarding plans for pupils in need of special support have been further clarified. The pupil's need is to be assessed and the subsequent action plan shall contain information regarding the pupil's needs, what measures will be taken and how these measures will be followed up and evaluated. All education corresponds as far as possible to national curriculums, but with the emphasis upon meeting individual learning needs. Approximately 14 per cent of the pupils in compulsory mainstream schools have an action plan (2013). The action plan is decided by the principal. In a few circumstances, this provision is offered in special programmes, e.g. special needs schools with sign language communication are available for pupils with severe hearing impairments, and a special programme is offered to pupils with learning disabilities. The pupils' needs are assessed by a multi-disciplinary team. Medical, social, psychological and pedagogical tests are carried out. Once the statement has been completed, the pupil is allowed to attend these special programmes. Attending a special programme or a special needs school is voluntary. If the pupil does not choose to attend a special programme or a special seeds school, the pupil attends the mainstream school with support and an action plan. (https://www.spsm.se/om-oss/english/the-swedish-education-system/laws-and-rights-in-swedish-schools/special-needs-education-sne-in-sweden/). From school authorities, the importance of special education expertise of all categories of teachers is strongly emphasized. The tricky question is whether this trend enhances or hinders the inclusive school agenda that the government itself set as a goal. All these changes have implications on the process of differentiation, individualization, segregation, and categorization.

Specialized Field of Studies: Implications for Inclusive Education

This brings us to the second point of the paper: Do these specializations or diversified studies within special education postgraduate programs support the inclusive agenda? Alternatively, do they hamper the vision? This is a complex question. It is critical that schools aimed at more

inclusive practices take the time necessary to plan effectively how they use the resources of the new graduates. Genuine inclusion involves restructuring of a school's entire program and requires constant assessment of practices and results on how to use the special education knowledge. Research that is more comprehensive must be done in this regard, as inclusion can easily be hijacked. Constant appraisal of our schools is important to create occupationally competent, socially adequate, and happy citizens.

A quick look in Sweden's degree program in special education at advanced levels reveals that there are many specialized courses and programs focused on specific groups of students. In addition, recent developments to create new categories or subcategories of special education have the potential not only to tie up administrative and diagnostic resources but also to create an increasingly less manageable array of separate special education programs. This Balkanization process with regard to a number of select disorders has advantages and disadvantages. My concern is that the very existence of specialized knowledge domains may result in a new form of exclusion and segregation. For instance, self-contained classes for neuropsychiatric disorders; self-contained classes with specialized academic instruction for students with mild to moderate learning disabilities; self-contained classes or special school forms for the "gifted"; self-contained classes with specialized academic instruction for students with moderate to severe disabilities; self-contained classes with specialized academic instruction for students with severe social-emotional and behavioral needs; self-contained classes with specialized academic instruction for students on the autism spectrum and/or with severe language disorders. A Swedish government (Regeringskansliet, 2017) has recently passed a bill that require post graduate studies in special education to include modules which incorporate Neuropsychiatric Disabilities(Neuropsykiatriska funktionsnedsättningar NPF). Adhd, autism and Tourette's syndrome are some of the most common neuropsychiatric disabilities. Education on neuropsychiatric disabilities (NPF), such as ADHD, autism spectrum conditions (formerly known as Asperger's syndrome) or Tourette's syndrome, becomes mandatory for all students who will be educated as specialist teachers and special educators. The argument is that people with these disabilities have different *cognitions*, that is, they think and perceive information in different ways and experience and process sensory impressions in different ways.

These are scenarios that one can imagine with the proliferation or balkanization of specialized studies in numerous strands unless we plan carefully as to how to utilize these skills and expertise within inclusive settings. The confluence of factors that has hastened this — the balkanization, specialization, including the diagnostic culture—growth and popularity, particularly in specialized, high-need areas, should be carefully investigated. It is also high time to deepen our understanding of the efficacy of the various approaches and programs and of the process and outcome variables used to assess program impact, particularly in relation to the inclusive agenda as stipulated in the Salamanca statement.

A preliminary result compiled by Barow, Bernhard, and Berhanu (2017 ongoing research) indicates credentials are at the core of the postgraduate study in special education. A number of students used the metaphor of a *toolbox* concerning the expected encounters with professional challenges. The students expect better job opportunities, new professional challenges, and

increasing competences to work in diversified settings and with diverse groups. My observation is also that more and more advocacy groups (including parent groups) are emerging demanding separate specialized high-quality school settings.

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Parents' Attitudes to Inclusive Education: A Study Conducted in Early Years Settings in Inclusive Mainstream Schools in Bangkok, Thailand

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Abstract

The purpose of this study was to explore the under researched area of parents' attitudes towards inclusion in inclusive mainstream early years settings in Thailand. The sample consisted of 71 parents: those with typically developing children (TDC) (50 parents) and children with special educational needs (SEN) (21 parents), residing in Bangkok, Thailand. Data was collected through the use of a mixed methods approach. The results of this study indicate that overall parental attitudes toward inclusion are positive. Parents of TDC identified social development of their children as the key benefit of inclusion but seemed to be concerned about the need for teacher training. Parents of children with SEN identified social acceptance and improved academic skills as advantages of inclusion for their children. Their concerns also focused on mainstream teachers having appropriate training to successfully integrate students with disabilities, and the deployment of special education staff in the regular classroom.

Keywords – inclusive education, parent attitudes, early years, Thailand, special educational needs, disability, mixed methods research

Introduction

The World Conference on Education for All (UNESCO, 1990) (a global movement committed to provide quality basic education for all children, youth and adults) was held in Jomtien, Thailand in 1990, and the endorsement of the Salamanca Statement and Framework for Action on Special Needs Education (UNESCO, 1994) recognized the inevitability of providing education for all children in 1994. Since then many countries have aspired to implement inclusive schooling (Leyser & Kirk, 2004) and brought about reforms to enable inclusive education. Inclusive education may be seen as the practice of educating children with SEN in the regular classrooms along with offering them the required services and support (Rafferty *et al.*, 2001). This form of education seems to have achieved prominence in more western (i.e. non-Asian) countries as compared to Asian countries, where well-developed policies prohibit discrimination in education and support implementation of Education for All (UNESCO, 1990). With a focus on Asia and the Pacific, UNESCO (2009) states that the "gap between the idea of inclusive education and the current provision for children with disabilities in most countries of the region is still too great, even in countries like Thailand, where policy and legislation mandate the right to education for every child with a disability" (p.144). In Southeast Asian countries like Hong Kong and Singapore where inclusive education is still developing, children with severe disabilities attend separate special schools whereas children with mild disabilities are included within the mainstream schools (Yeo et al., 2014).

A National Education Act was introduced in Thailand in 1999 (later revised in 2002) which had as key elements the provision of free education for 12 years and education for all (Fry & Bi, 2013). Furthermore, the Act mandated that every school should provide opportunities for children with disabilities to be included (Fulk et al., 2002). In 2004, the Ministry of Education of Thailand took the required steps to support the movement towards inclusion recognizing the need for all children to have an educational setting that helps to create and develop friendships, respect and understanding both in the classroom and society at large (Bevan-Brown et al., 2014). To enable this, it was mandatory to develop an Individual Education Plan (IEP) for each student with additional needs and for teachers to differentiate curriculum, instruction and evaluation to meet diverse needs of all students (Bevan-Brown et al., 2014). Subsequently in 2008, Thailand ratified the United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2019).

Vibulpatanavong (2017, p. 68) reports that the "number of students with disabilities in regular schools in Thailand had increased significantly from approximately 60,000 in 2012 to approximately 25,000 in 2015." Yet such progress in the inclusive movement in Thailand could be affected by inadequate funding and limited or insufficient resources to implement inclusion effectively (Vorapanya & Dunlap, 2014). An additional influence is thought to be the understanding of the Buddhist mind-set of the people of Thailand which considers good and bad fortune in a current life as being based upon merit achieved in a previous life (Carter, 2006). Whilst some Chinese-Thai families are reported as believing that having a child with Down Syndrome can bring good luck, some families may believe they are being punished for wrongdoings in a previous life (Fulk et al.,2002). As a result, some families may feel a sense of shame about having a child with disabilities (Vorapanya & Dunlap, 2014). This may result in parents being in denial regarding the differently abled condition of their child.

Parents can have a key role in the demanding and dynamic process of inclusion that begins with their decision to place their child in a mainstream setting (Dimitrios et al., 2008). Parents are now believed to be "integral partners in developing a more inclusive system", wherein they share the responsibility of decision-making and its consequences (Swart et al., 2004, p.81). Since parents promote significant changes in early childhood education (Tafa & Manolitsis, 2003) and affect both the process of transformation and standards of practice, it is essential to determine the perceptions of parents towards inclusion and what governs them. Parental support is perceived to be critical in ensuring that children with disabilities not only participate in educational experiences but also benefit from them (Shah & Priestley, 2010; Timmons & Walsh, 2010).

Literature suggests that parents, with their positive attitudes (Miller & Phillips, 1992), and advocacy towards inclusion (Soodak, 2004), have been the stimulus behind the developments to include children with disabilities in mainstream education (de Boer, Pijl & Minnaert, 2010; Palmer et al., 2001). Furthermore, children's attitudes and behaviour may be influenced by those of their parents and carried on later in life, thus implying that parents who are not in favour of inclusive education might unfavourably impact the formation of their child's attitudes (de Boer et al., 2010).

Parents of children with Special Education Needs (SEN) may determine whether their children study in a regular mainstream school or a special school (Engelbrecht et al., 2005). Additionally, since parents possess unique knowledge about their child's abilities and needs, they can facilitate a more effective delivery of education and support by collaborating with school staff and professionals (Green et al., 2007). Parents may also believe that inclusion promotes socialization of their children with their non-disabled peers (Scheepstra, Nakken, & Pijl, 1999). Several studies suggest that parents are supportive of inclusive practices (Leyser & Kirk, 2004; Seery et al., 2000) and highlight their opinion that their children will benefit from mainstream education with positive social and academic outcomes (Downing & Peckham-Harding, 2007).

It has been noted that while some parents are positive towards inclusive practices, others have reservations regarding the same. Bullying, victimization, social isolation and rejection are some of the key concerns in mainstream classes of parents for their children with SEN (Kasari et al., 1999; Leyser & Kirk, 2004). Parents of children with SEN are also concerned about the willingness and capability of mainstream schools to educate and cope with the needs of their child (Wong et al., 2015). Parents not favouring inclusive classrooms argue that regular education settings cannot accommodate their child and that the teachers could be burdened with inclusion of students with disabilities in their classes (Green & Shinn, 1994; Kavale & Mostert, 2004). These parents are primarily concerned with the class size and teaching capabilities of the teachers to meet the demands of a diverse range of students. Parents also tend to have their doubts about the kind of training and experience that teachers have handling children with disabilities, and the schools lacking the resources and provision to educate their children properly (Grove & Fisher, 1999). They have often expressed their interactions with school staff as being frustrating and non-supportive (Staples & Diliberto, 2010).

Generally, the attitude of parents of children without SEN towards inclusion of children is found to be positive (Purdue, 2006; Stoiber et al., 1998). Peck et al. (2004) states that parents of TDC prefer an inclusive setting as they observed a growth in personal development and improved self-worth in their child by helping others. Parents of TDC have also reported that exposure to diversity in inclusive education helps their young ones demonstrate more open-mindedness and

acceptance towards individual differences (Rafferty et al., 2001; Rafferty & Griffin, 2005; Ruijs & Peetsma, 2009). Additionally, most parents of children without disabilities may also believe that the availability of increased teaching resources within the inclusive classroom can benefit their children academically (Peck et al., 2004; Tichenor et al., 2000). It has been shown that with sufficient support and resources, typically developing students can achieve better academic results in an inclusive class as compared to non-inclusive classroom settings (Demeris et al., 2007; Rouse & Florian, 2006).

Nevertheless, Palmer et al. (2001) report that parents are concerned that the severity of the disabilities of children with SEN can preclude benefits of inclusion, and that the children with SEN are behaviourally disruptive and can hurt others. Parents may also be anxious about their child developing inappropriate behaviour in an inclusive setting (Rafferty et al., 2001). Studies have also revealed that parents of students without SEN are apprehensive that students with SEN monopolize teachers' time and attention (Kalambouka et al., 2005). Teachers are inclined to spend more time on students who have behavioural problems or those who work at a slower pace (Shipley, 1995), thereby resulting in the lowering of the general academic standards of education (Huber et al., 2001). Good students may also be at a risk of getting bored owing to the slow-paced teaching atmosphere in the classroom and they may be disappointed on discovering that other students, despite studying less, secure same or even better grades (Shipley, 1995).

Over two decades ago Buysse and Bailey (1993) advocated inclusion during the preschool years as they believed that (a) young children have maximum probability of accepting their peers with SEN as they do not form stereotypes about individuals; (b) the early interaction between young children who have disabilities with their typically developing peers increases the possibility of acceptance of people with disabilities in the future; and (c) the integration of children with SEN in mainstream classrooms promotes the conviction among parents and professionals that inclusive environment provides a foundation for the child to successfully function in a typical environment. Inclusion in the early-years settings has been recognised as the best practice in education where young children with SEN learn together with their typically developing peers (Wolbery & Wilbers, 1994, as cited in Brown et al., 1996, p. 364).

Research Questions

1. What are the attitudes of parents of TDC towards inclusive education in Early Years Settings of inclusive mainstream schools in Bangkok?
2. What are the attitudes of parents of children with SEN towards inclusive education in Early Years settings in inclusive mainstream schools in Bangkok?

The mixed methods approach of quantitative and qualitative analysis is not only compatible but also complimentary (Sale et al., 2002; Tashakkori & Teddlie, 2003). It involves collecting, analyzing and interpreting both qualitative and quantitative data in a single study or a series of studies targeted to investigate the same underlying phenomenon (Leech & Onwuegbuzie, 2009). Surveys allow for flexibility including a variety of mixed questions to gather data and provide standardized information (Cohen et al., 2007). Therefore, despite being a tool typically used for gathering quantitative data, a survey was used in this study to elicit the attitudes of the parents. Furthermore, the survey allowed the respondent to remain anonymous and this benefitted some

Thai parents, in particular, who may feel embarrassed in admitting that they have a child with SEN (Vorapanya & Dunlap, 2014).

The research used a purposive sampling approach which ensured that the participants were included because they possessed the characteristics required for the study (Cohen et al, 2011). A purposive sample of six schools which had both typically developing children and children with SEN attend were approached, of which two schools agreed to participate in the survey. Additionally, network groups of parents who were acquaintances of the first author were approached and asked to distribute the survey to the target population. This sampling approach which started as purposive, transformed into "snowball" sampling (Cohen et al., 2007; Visser et al., 2000), a method wherein a small number of individuals having the characteristics required for the survey were identified, and each person was requested to suggest other members of the subpopulation for the first author to contact.

The final web based questionnaire was a mix of closed and open-ended questions. The highly structured closed-ended questions encouraged a higher rate of response and facilitated comparisons to be made across groups in the sample (Oppenheim, 1992). They also facilitated quicker analyses than qualitative data (Bailey,1994). Open-ended questions, on the other hand, were particularly appropriate for investigating this study's complex issues, to which simple answers could not be provided in the exploratory questionnaire (Bailey, 1994). Subsequently, a process of thematic analysis was applied to the qualitative data whereby relationships between different parts of the data and similarities and differences where elicited and explored (Matthews & Ross, 2010).

Ethics

Ethical guidelines for educational research issued in 2011, by the British Educational Research Association (BERA) were implemented in this study. In any research, it is paramount to address confidentiality (Cohen et al., 2000; Robinson & Lai, 2006) and to inform the participants of their rights (Cohen et al., 2000; Winter, 1996). Particularly in a web-based research, privacy, anonymity and confidentiality are fundamental ethical considerations as online survey requests are identified as more intrusive (Cho & LaRose,1999). The purpose of the research was fully explained to the intended participants at the start and they were made aware of the fact that participation in the survey was voluntary and that they had the right to withdraw at any given time. An information sheet along with the consent form that explained the purpose and the benefits of the research while guaranteeing confidentiality and anonymity of the respondents was included and distributed with the survey.

Results

Most of the questions that asked the parents to express their attitudes towards inclusion were in 5-point Likert scale format. There were three sets of questions in the survey:

1. Questions meant to assess attitudes towards inclusion that would apply to both group of parents – parents of TDC and parents of children with SEN.
2. Questions presented only to the parents of TDC because these covered potential benefits and concerns applicable for parents of TDC
3. Questions presented only to the parents of children with SEN because these covered potential benefits and concerns applicable for parents of children with SEN.

The responses to the 5-point Likert scale questions were assigned values 1 through 5, with 5 representing the response of "Strongly Agree" and 1 representing "Strongly Disagree" response. The responses to the open-ended questions – participants' understanding of inclusion, their statements about two advantages, and two disadvantages of inclusion -- were also reviewed in context of the three research questions.

Findings from parents of typically developing children

The biggest benefit of inclusion agreed upon by 80 percent of parents was that it would help their children to be more sensitive towards others' needs and individual differences. The other benefit to which 50 percent of the parents agreed was that an inclusive environment had helped their children become more helpful and supportive of other children with special needs. 90 percent of the parents agreed that inclusion was socially advantageous for children *with* disabilities.

Parents expressed similar benefits in their written statements for the open-ended question about listing two key advantages of inclusion. Most of them expressed that inclusion provides the environment for their child to understand individual differences. Typical statements included: *"My child has learnt to understand that some children learn at a different level and might require more help - not that they are different from others"; "My child will learn that each person has his/her own unique behavior"*.

Compassion and kindness towards others was the other key benefit of inclusion pointed out by the parents, as indicated in the following written statements: *"My child has learnt to be compassionate towards SEN and developed an understanding of certain behaviours and has learnt to exercise patience when interacting with a SEN child."; "They realise how to be sensitive, understanding and accept the difference even in their future making a world a better place for all special need people"*

Ninety percent of the parents expressed the need for the mainstream teachers to have specialized training in order for an inclusive program to be successful. Thirty three percent of the respondents indicated that they felt it was difficult to maintain discipline in an inclusive classroom. A similar percentage of the parents expressed the concern that their child may be frightened by the strange behaviour of children with special needs. In terms of how they felt about the academic environment in an inclusive setting, 33% of the respondents expressed the concern that children with SEN could monopolize teacher's time at the expense of their child's learning.

In response to the open-ended question of identifying two key disadvantages of inclusion, the majority of them identified that children with SEN will or can prove to be a distraction, slowing down the pace of teaching and learning in the classroom. Some of the written statements highlighting this concern were: *"Disruption to the class and that my child's objectives are not met"; "Having (child/children with) SEN in a classroom can disturb the other children and affect their concentration"*.

The parents of TDC were positive about inclusion, in spite of their share of concerns. 60 percent of the parents agreed that benefits of the inclusion outweigh its disadvantages, while 70 percent of the parents agreed students with SEN have the right to be educated in the same classroom as typically developing children, with the same percentage agreeing that they would re-enroll their

child in an inclusive school. Thematic analysis of the qualitative responses to the open-ended questions suggests that parents identify social development of their children as the key benefit of inclusion.

Attitudes Parents of Children with SEN

Thirty percent of the parents (n=21) who completed the survey had children with special needs, ranging from mild to severe disabilities.

Parents were extremely supportive of inclusive education settings and unanimously agreed (i.e. 100% of the responses were either "Strongly Agree" or "Agree") on the following 3 benefits of inclusion:

1. Inclusion is socially advantageous for their children
2. Inclusion helps prepare their children for the real world
3. Inclusion helps their children develop self-help skills

Furthermore, the majority of the parents (90%) agreed that their children will develop increased self-esteem in an inclusive setting and that they will have good role models to follow in an inclusive classroom. 70% of the parents agreed that their child would develop academic skills more rapidly in an inclusive setting and that their children have the right to be educated in the same classroom as TDC.

Parents responded with similar benefits when asked to state two key advantages of inclusion. Social acceptance and improved academic skills were the two advantages identified by majority of the parents, as indicated in the following written statements: *"My child is accepted socially for who he is, this will impact on his happiness and comfort at school and his ability to learn"; "She will relate with her age mates (academically and socially) and make friends"*.

Parents of children with SEN also had their share of concerns and needs too. There was an overwhelming agreement between the parents (more than 90%), that mainstream teachers need to be trained in order to successfully integrate students with disabilities. 75% of the parents expressed the need for a special education teacher to be present in the regular classroom to help assist their child to learn. Thirty three percent of the parents expressed the concern that their child may not receive an appropriate implementation of an Individualized Educational Program (IEP) while 20% of the parents expressed social exclusion as a concern.

Analysis of the responses to the open-ended question asking the parents to express disadvantages of inclusion revealed some additional insights. Social exclusion emerged as one of the key disadvantages of inclusion, as suggested in the following written statements: *"Other children being young may not accept the child and make the child feel excluded"; "Unless well managed some kids can be subject to bullying"*. Two other significant concerns emerged in the analysis of the written statements – difficulty of the children with SEN to keep up with the learning pace, *"My child may not be able to handle the fast-paced academics due to his limitations and learning difficulties"*, and the likelihood of them getting labelled, *"My child would be labelled stupid and slow by others"*.

In summary, quantitative analysis of the closed-ended questions showed that 75% of parents of children with SEN agreed that the benefits of inclusion outweighed its disadvantages with 95%

agreeing that they would re-enroll their child in an inclusive classroom. Qualitative analysis of the responses to open-ended questions indicated that parents are convinced that inclusion will be beneficial to their children, both, academically and socially, so long as the teachers were adequately trained to develop IEPs and manage the classrooms effectively to prevent their children from getting socially excluded and labelled.

Discussion

Inclusion is perceived to be a desired education practice by parents (Guralnick, 1994; Hilbert, 2014; Leyser & Kirk, 2004; Palmer et al., 2001; Peck et al., 2004). Studies suggest that parents of TDC favour inclusion (Jung, 2007; ElZein, 2009; Bradshaw et al., 2004). This finding was also confirmed in this study. The parents were in agreement to enroll their children in inclusive classrooms, further affirming their support for inclusion and consistent with other studies (Bradshaw et al., 2004; ElZein, 2009; Gallagher et al., 2000; Guralnick, 1994; Hilbert, 2014; Leyser & Kirk, 2004; Palmer et al., 2001; Peck et al., 2004; Rafferty & Griffin, 2005; Salend, 2008).

The key benefit pointed out by the parents was that inclusion allowed their child to be more understanding and compassionate of children with special needs, respecting their individual differences leading to greater acceptance which aligns with findings from other studies (Gallagher et al., 2000; Miller & Phillips, 1992). Research supports that genuine inclusive education permits children to build and foster friendships that they may not encounter otherwise (Finke, McNaughton, & Drager, 2009; Green & Stoneman, 1989; Peck et al.,1992).

While the parents agreed that children with special needs have the right to be educated in the same classroom as typically developing children, they were concerned that their children may be frightened by the strange behaviour of the children with SEN. Rafferty and Griffin (2005) also reported that parents felt that their child would be frightened by behaviours of children with disabilities. Parents also expressed that being present in the same classroom as children with disabilities would expose their children to the risk of injury. Elkins et al. (2003) found similar concerns for parents who felt that peers would be impaired by the presence of a student with special needs in a general classroom. Research conducted by Palmer et al. (2001) also indicates that in inclusive settings many children can be behaviourally disruptive and could hurt others.

Children tend to emulate behaviour of peers. This survey confirmed that parents were also apprehensive of their children picking up undesirable behaviours from other children. Similar observations have been observed by Rafferty et al. (2001) and Reichart et al. (1989) who found that parents were anxious about their child developing inappropriate behaviour in an inclusive setting.

Parents identified the need for the mainstream teachers to have specialized training in order to effectively integrate students with disabilities, as the most important criteria for inclusion to be successful. Multiple studies have revealed the same concern about adequacy of teacher qualification (Green & Stoneman, 1989; Reichart et al., 1989; Seery et al., 2000; Turnbull & Winton, 1983) and preparation of staff (Peck et al., 1989, as cited in Rafferty et al., 2001, p. 280; Turnbull et al., 1983). Teaching staff are crucial when considering development of inclusive education practices (Ainscow, 1994; UNESCO, 2005). It is essential for all teachers to have the abilities and self-confidence to help children with SEN achieve their aptitude (DfES and QCA, 2004).

Parents were concerned that children with special needs would slow down the academic pace and monopolize teachers' time. Several studies have confirmed similar concerns (Huber et al., 2001; Kalambouka et al., 2005). A reduction in individual time with the classroom teacher was one of the main apprehension discovered in a study conducted by Peck et al. (2004). They assessed concerns of parents of TDC and found that the parents had two major concerns – a) the teachers concentrated more on the children with disabilities compared to those without disabilities and, b) children with disabilities caused behavioural disruptions. This study also affirmed that 33% of the parents shared a similar concern of difficulty in maintaining discipline in inclusive settings.

Sometimes an additional adult may be present in the classroom to support the children with SEN and this role in Thailand is often termed 'shadow teacher'. Manansala and Dizon (2008) suggest there are five strands to this role, namely: curriculum planning, direct teaching, behavior management, social skills management and team working. The parental observations identify the need for the teachers to be professionally trained in managing and supervising inclusive classrooms. Potentially therefore having shadow teachers for children with special needs in the classroom may serve in some way to address this concern (Balachandran, 2014). Both, the Bullock Report (D.E.S., 1975) and the Warnock Report (D.E.S., 1978) recommend more in-class support for children with special needs. Teachers should address such concerns in the parent-teacher meetings as there is evidence that greater partnerships between teachers and parents is essential in alleviating the concerns of parents for a successful inclusive education system (Salend, 2008).

Parents of children with SEN were positive about the impact of inclusion on their child's social emotional growth. This observation resonated with findings from other existing studies. Nakken and Pijl (2002) found that integration of children with SEN in regular classrooms led to a positive effect on their social development and that inclusive settings inspired higher levels of interaction than isolated settings (Anita et al., 2011; Baker-Ericzén et al., 2009; Odom et al., 2011; Theodorou & Nind, 2010). Studies by Blacher and Turnbull (1982), Guralnick (1994), and Turnbull and Winton (1983) concluded that inclusion provides greater preparation of the children with disabilities for the real world.

Parents of children with SEN further highlighted that inclusion provided for an environment wherein their children had good role models to follow. Results of the study by Downing and Peckham-Harding (2007) support this observation in which parents of children with disabilities advocated the need of students with moderate to severe disabilities to have mainstream students as role models for cultivating desirable social and academic behaviours. Bennet et al. (1997), and Guralnick (1994) reaffirmed that inclusive settings provided the opportunities for modelling age appropriate skills.

Parents highlighted some concerns about having their child with special needs in an inclusive classroom with other children. Parents of children with SEN in this study feared that in an inclusive setting, their children would get labelled and could be socially excluded. Studies have also indicated that assigning a label can result in social disadvantage and exclusion from the mainstream society (Sutcliffe & Simons, 1993; Gillman et al., 2000). While labels can offer people a social identity and a sense of belonging to a group, it may also lead to harassment, bullying and low self-esteem (Dimitrova-Radojicic & Chichevska-Jovanova, 2014).

Children with additional needs who are included in mainstream schools are offered opportunities

to be involved at higher academic levels and achieve success, that may not be possible otherwise (Finke et al., 2009). Parents in this study were also in strong agreement (with more than 90% agreeing) that children have better learning outcomes in an inclusive setting. Studies suggest that this could be due to the fact that children become more motivated to succeed when they are placed in regular classrooms where the focus on academic achievement is more (Cole et al., 2004; Myklebust, 2007). However, parents identified two key concerns which must be addressed in order for inclusion to be more academically conducive as compared to special schools.

Parents of children with SEN expressed that mainstream teachers need better training to ensure smooth implementation of inclusive practices. Seventy five percent of parents were of the opinion that a special education teacher or a shadow teacher should be present in the classroom. The majority of the parents were convinced that proper inclusion can only be realized when teachers have the expertise and the experience in effectively dealing with the needs of children with disabilities (Buysse et al., 1999; Crane-Mitchell & Hedge, 2007). Successful implementation of IEPs was the other key concern identified by the parents in this study. IEPs are inherently a collaborative effort, where teachers and parents need to work together to determine the educational goals of children with SEN (Eccleston, 2010; Reio & Forines, 2011).

Conclusion

Thailand supports policies and legislation that command the right to education for every child with a disability in the country but gaps continue to exist between the current provision and the ideal for inclusive education. Assessment of parents' attitudes toward inclusion is vital in order to have an effective inclusion program (Salend, 2008; Lewis et al., 1994). The results of this study indicated that the parents of both TDC and children with SEN, were supportive of inclusion and its implementation in the early-years settings in Thailand. Similar rates of agreement were found between the parents of TDC and parents of children with SEN that inclusion was socially advantageous for their children. However, inclusion is at a relatively nascent stage in Thailand, as compared to Western nations, and again a similar percentage of agreement was found for parents of TDC and parents of children with SEN that mainstream teachers needed to have specialised training to effectively manage inclusive classroom settings. It may therefore be seen as important to provide training to equip teachers with effective inclusion practices (Rafferty, 2002, as cited in Rafferty & Griffin, 2005, p. 190) in order to support children with different needs in inclusive settings. Thus, focussed strategies need to be developed by schools in Thailand to warrant that the education systems are well equipped to meet the individual needs of a diverse population of students, treating them equally.

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A Review and Synthesis of the Response to Intervention (RtI) Literature: Teachers Implementations and Perceptions

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Abstract

The researcher briefly reviewed the Response to Intervention (RtI) framework and explained how Individuals with Disabilities Education Improvement Act (IDEIA, 2004) and No Child Left Behind (NCLB) enhanced RtI implementation in general education classrooms. The main focus of this paper is to identify general educators' roles when implementing RtI components such as evidence-based interventions and assessment. In addition, empirical studies that focused on general educators' perceptions of RtI reforms were presented. The reviewed of the RtI literature show the need for more research on the impact of professional development, general educators' perceptions and implementation of RtI.

Introduction

Response to Intervention (RtI) has been an important subject for research in special and general education disciplines (Fuchs & Deshler, 2007). RtI involves early intervention services for students who are struggling and identifies students for special education services who qualify for learning disability and related disability categories (Fuchs, & Deshler, 2007). The response to intervention (RtI) model utilizes high quality research-based interventions as well as a continuum of multiple assessments to measure students' progress toward tiered intervention (Richards, Pavri, Golez, Canges, & Murphy, 2007). The Individuals with Disabilities Education Improvement Act (IDEIA, 2004) discontinued the use of Intellectual Quotient (IQ)-achievement discrepancy formulas as the only tool for identifying students with learning disabilities (LD) (Bradley, Danielson, & Doolittle, 2005; Klingner & Edwards, 2006). Gersten and Dimino, (2006) explained that RtI does not only deliver interventions for students who are at risk for school failure but also establishes a more valid assessment to identify students with LD. The effectiveness of RtI implementation is related to the quality and consistency of instruction students receive at each tier because continuous progress monitoring through each tier informs instructional delivery, which can be altered as needed (Brown-Chidsey & Steege, 2005). Implementing RtI effectively requires a shift in how school administrators and teachers collaborate with each other to support the RtI process, especially when it comes to the collaboration between special and general education teachers (Richards, et al., 2007).

Historical Context of RtI

In 2004, U.S federal law changes, with the reauthorization of IDEIA and previously with the 2001 NCLB legislation, resulted in rapid RtI implementation in the American schools (Villarreal, Rodriguez, & Moore, 2014). Fuchs, Fuchs and Stecker, (2010) explained that IDEIA of 2004 and NCLB share a common goal in RtI initiative, which is using research-based interventions to support students in general education settings. Stuart, Rinaldi, and Higgins- Averill (2011) stated that RtI's approaches are included in IDEIA regulation that suggests a systematic process of monitoring, intervention, and screening to determine the response of a child to research, scientific-based intervention. They added that in RtI, multiple tiers of intervention are more valid to determine if a student has a disability (Stuart et al., 2011). One of the attempts of RtI from IDEIA perspective was to address the problems of over identification as well as for the disproportionate of minority students in special education (Cartledge, Kea, Waston, & Oif, 2016). RtI begins with universal screening for all students (Tier 1) and identifies students who are at risk of academic failure. Progress monitoring continues to measure students' responses to research-based instruction. Students who do not respond adequately will receive supplemental tier 2 instruction in order to receive more intensive support in addition to tier 1 core instruction (Fuchs & Fuchs, 2006). Fuchs and Fuchs, (2006) points out that the IDEIA considers RtI instruction as a test to determine students' ability to respond to instruction. They also assert that the RtI intervention must be valid, evidence based and implementation-based upon pervious researchers' suggestions, (2006).

The NCLB views RtI as part of the general education system, asserts that students with disabilities have the right to be educated in general education classroom and are involved in state assessments, and mandates that states, districts, and schools are accountable for students' performances (Fuchs & Fuchs, 2006). The NCLB requires high-quality teachers for this reason. Additionally, the intent of hiring high quality teachers is to reduce the number of unnecessary special education referrals of high incidence disabilities such as LD and emotional behavioral disturbances (EBD) by providing effective instruction in hopes of preventing learning and behavioral difficulties. The NCLB supports services for students with disabilities in general education classrooms through tiered support (2006). The IDEIA established valid and reliable way to prevent low achieving students from being labeled as having a disability by providing universal screening and RtI.

RtI Alternative Method

Many researchers have discussed the instruments used to identify students with LD. Since 1975, there has been a debate related to identifying and serving students with LD, and how to serve those who are at risk of failure (Bradley, et al., 2005; Richards et al., 2007, Werts et al., 2009). Prior to the IDEIA (2004), the diagnosis of specific learning disabilities (SLD) was predominately demonstrated by the discrepancy model (Werts, et al., 2009). IDEIA, (2004) defines SLD as a significant discrepancy between achievement and cognitive ability in oral expression, reading, writing, listing, or math (Bradley et al., 2005).

Multiple researchers have critiqued the discrepancy model as only tool to identify students in learning disability category. For instance, Aaron (1997) was concerned with how much discrepancy was required to identify students with LD. Bradley and his colleagues (2005) found that the eligibility criteria for diagnosing LD were not well operationalized. Policies related to diagnosing LD vary from a state to another (Hosp & Reschly,2004), and discrepancy between intellectual ability and achievement is difficult to decipher in early elementary grades (MacMillan & Siperstein, 2002). The discrepancy model does not identify all students with SLD, which often leaves them struggling academically well into the upper grades of elementary school until the discrepancy becomes significant enough to require services (Bradley et al., 2005). Further, students who are at risk of failure cannot receive services until they fall behind and qualify for special education services (Richards et al., 2007). Moreover, the discrepancy model is not helpful to provide information about how to deliver instruction to teach students; thus, it does not benefit teachers when planning instruction (Bradley et al., 2005). Additionally, with IQ-discrepancy tool, the prevalence of students classified as having LD has grown more than 200% since 1977 (Vaughn, Linan-Thompson, & Hickman, 2003). Historically, students who are from a minority culture and are English language learners (ELL) have been over-represented in the high-incidence disabilities such as SLD category (MacMillan & Reschly,1998) leading to these students being placed in more segregated special education settings compared to White and Native American students (MacMillan & Reschly, 1998).

In response to the variability and difficulties in the discrepancy model, the National Joint Committee on Learning Disabilities (NJCLD) expressed their concern about the accuracy of

discrepancy as the only tool to identify students with LD (2005). OSEP's response to the NJCLD was an LD intuitive, which proposed that an IQ-discrepancy test was not sufficient or necessary to identify students with LD. Instead, OSEP suggested that teachers could evaluate their students through their response to evidence-based interventions (Bradley et al., 2005). Policymakers and professionals in the field of special education suggested RtI as a more effective method for identifying students with LD (Bradley et al., 2005). This shift of LD identification also shifted researchers' focus from the inaccuracy of discrepancy model to the effectiveness of RtI implementation (Bradley et al., 2005).

In 2004, the reauthorization of IDEIA changed the eligibility standards for LD (Richards et al., 2007). Based on RtI model, students should receive effective instruction with progress monitoring before being referred for special education services (Fuchs, Fuchs, & Speece, 2002) School district encouraged by IDEIA (2004) to use 15% of special education fund to provide early intervention support through the implementation of school –wide academic and behavior assessment (Fuchs & Fuchs, 2006). RtI advocate groups believe that RtI is an effective tool for making special education referral decisions based on scientific data, problem solving, and progress monitoring through tiers of intervention (Bradley et al., 2005). A possible reason for the wide acceptance of RtI is because it benefits all students through ongoing assessments that identify students who need services early (Cortiella,2009). Subsequently, the IDEIA reauthorization in 2004 suggested documenting the use and using evidence-based interventions and instruction before referring a student to special education. In agreement with IDEIA (2004), Swanson, Solis, Ciullo, and McKenna (2012) stated that this step would ensure that the quality of instruction would never be a substantial reason for receiving special education services. As such, IDEIA (2004) allows states to implement RtI as the model for providing evidence-based instruction at the state level (Wiener & Soodak, 2008).

To summarize the benefits, RtI promotes early identification and prevention of school failure for students who are at risk or have a disability, which leads to a decrease in the number of referrals to special education. RtI has potential for reducing the overrepresentation of minority students in special education and address the issue of disproportionality because it provides multiple tiers of evidence-based interventions with increasing intensity (Harris-Murri, King, & Rostenberg, 2006). RtI system also focuses on student data and seeks to identify instructional strategies that address student need in general education classroom (Hosp, 2008). Therefore, RtI model intends to avoid an immediate or unnecessary referral for special education, and students get support through tiered intervention. Thus, aforementioned are some of issues why RtI is considered as a promising tool to address the underlying issue lighted by d*isproportionality perspectives.*RtI also serves students who may be suspected of having dis*ability without first labeling* them as having a disability. For instance, students in Tier 3 may be eligible to receive long term intense intervention/instruction, in which students may receive the intervention for months or even years (Ringlaben, & Griffith, 2013). RtI also has the potential for enhancing the collaboration between teachers and administrators in schools in order to provide effective interventions (Fuchs & Vaughn, 2012; Learning, 2009; Division of Learning Disabilities, 2012 As cited in Johns & Lerner, 2015).

However, the Council of Exceptional Children (CEC), and the Learning Disabilities Association (LDA, 2006), point to concerns about RtI may be the potential cause of delays in comprehensive evaluation for students with suspected disabilities, and requires therefore, partnership of all school staff and families to identify and meet the needs of students (Mellard, Stern, & Woods, 2011). In addition, many schools lack the personnel and resources to implement RtI with fidelity (Fletcher & Vaughn, 2009). Thus, the National Association of State directors of Special Education (NASDES), 2006) and Hughes and Dexter (2011), stated that "the most successful factors for RtI implementation are continuation of professional development, ongoing support from administration, and extensive meeting time for coordination" (p.10).

RtI Tiers

There is no standard procedure of implementing RtI (Fuchs & Deshler, 2007; Werts et al., 2009). RtI is a framework that ensures high-quality instruction and ongoing assessments in general education classrooms (Berkeley, Bender, Peaster, & Saunders, 2009; Richards et al., 2007; Werts et al., 2009). Barnes and Harlacher (2008) defined RtI as a multitier approach of teaching support in which students receive appropriate levels of support based on their needs. Within RtI, schools are responsible for providing a range of evidence-based instruction in tiers, and teachers place students into these tiers based on the students' data from screening and progress monitoring (Cummings, Atkins, Allison, & Cole, 2008). Current research focuses on two critical principles of RtI: implementation of evidence-based intervention and ongoing assessment to monitor student response (Cummings et al., 2008). General education teachers deliver instruction based on scientifically validated research and collect data on individual students' performance.

Students who do not respond to general education instruction in Tier 1 receive supplemental Tier 2 interventions in addition to Tier 1 instruction, which providing these students with more intensive instruction compared to Tier 1 instruction only. If students still do not show progress with supplemental Tier 2 instructions based on assessment data, they receive even more intensive Tier 3 intervention support (Werts et al., 2009).

Models of RtI

RtI mostly utilizes one of two models, which are the problem-solving and standard treatment models. The problem-solving model utilizes interventions that a particular team selects, which serves each student's needs. Fuchs and Deshler, (2007) also identified problem solving in three ways. Problem solving describes the process of how to identify differentiated instruction at Tiers 1 and 2 to indicate evidence-based interventions for teachers to use for the students with most significant academic needs, and then how building – based teams collaborate to support general educators to address the needs of students demonstrating increased academic difficulties. "Problem solving evolved from the work of curriculum – based measurement (CBM) research which sought to develop systematic decision- making processes that would promote effective use of data collected through CBM and enhance outcomes for children" (VanDerHeyden , et al., 2007, p. 226). Kovaleski and Pedersen, (2008) suggested that RtI teams could use problem-solving techniques to analyze data from universal screening at the tier 1 level to support teachers

in designing and utilizing instructions that are different based on the level of students' needs. Problem solving teams should determine what tier intervention matches the students' needs after reviewing the benchmark assessment (Kovaleski & Pedersen, 2008). Therefore, team discussion is a critical part of RtI implementation, especially when designing interventions and making decision related to placement of students in tiered systems. Fuchs and Deshler (2007) called for further research to measure the effectiveness of the problem solving RtI approach in designing intervention that improves students' outcomes.

The standard treatment model utilizes one consistent intervention that the school selects, which addresses the needs of multiple students based on universal screening and continuous progress monitoring through CBM. Standard treatments are those that have an evidence base as to their effectiveness. For instance, general educators could use an evidence based standard treatment intervention for students in Tier 2, which targets students who did not respond to an evidence based intervention in Tier 1 (Barnes & Harlacher, 2008). So, both models utilize universal screening to inform tiered instruction and to support all students.

There are at least three tiers of instruction/intervention in RtI (Fuchs & Fuchs, 2006; Richards et al., 2007; Werts, et al., 2009). In most situations, high-quality instruction in Tier 1 should meet the needs of the majority of students in the classroom (Richards et al., 2007). Tier 1 can also be labeled as a universal core program/curriculum/instruction (Council for Exceptional Children [CEC], 2008). McKenzie (2009) considered the first tier as consistent with the whole- group instruction and the administration of universal screening to identify students who perform lower in basic skills. Students who perform higher in the basic skills are thought to not require more intensive instruction/intervention.

Fuchs and Fuchs (2006) suggested that at risk students on Tier 1 should be monitored on their progress to confirm non-responsiveness to core instruction before moving at risk students to further intervention/instruction. Students who do not progress in Tier 1 will receive more support in supplemental Tier 2 (McKenzie, 2009).

Tier 2 is targeted, and systemic interventions are designed for students through small groups with progress monitoring (Vaughn & Roberts, 2007). In Tier 2, students may receive interventions for 20 minutes per day up to 20 weeks in addition to Tier 1 core instruction (Bradley et al., 2007). Richards and his colleagues (2007) indicated that some students receiving Tier 2 instruction/intervention may not demonstrate any progress with not meeting the grade level benchmark; therefore, students who do not respond to Tier 2 will receive Tier 3 instruction/intervention.

Students in Tier 3 are usually 2-5% of all students and receive instruction/intervention in smaller groups than Tier 2. Instruction/intervention in Tier 3 are more intense and explicit, and they may take 45-60 minutes (Vaughn, Wanzek, Woodruff, & Linan-Thompson, 2007). As with Tier 2 instruction/intervention, students receiving Tier 3 instruction should also receive Tier 1 core instruction (Allsopp, Alvarez-McHatton, Ray, & Farmer, 2010). His colleagues (2007) point out that the school district determines whether Tier 3 instruction/intervention is considered to be special education services or not. Berkeley and his colleagues (2009) noted that within tiered

instruction, special education referral should be considered only after tiered instruction/intervention within RtI has been delivered. However, Fuchs and Fuchs and Compton (2007) point those students who do not respond to Tier 2 intervention/instruction are key for LD identification. Overall, "There is no clear methodological definition of how or when a student should be identified as non-responsive to intervention/instruction" (Hughes & Dexter, 2011, p.8).

According to Werts and his colleagues (2009), "Throughout the process, a team reviews data collected on a systemic, ongoing basis to determine the best instructional options for a student" (p. 246). In the general education classroom, all students are to receive high-quality instruction with universal screening. Students who do not respond will receive intensive instruction in small groups or individually (Werts, et al., 2009) in addition to Tier 1 core instruction. Progress monitoring data is constructed in order to define if the intervention that is implemented is adequate or inadequate (VanderHyden et al., 2007, p.227). Some studies note that when RtI is implemented effectively, there is potential to reduce the proportion of students who are referred to special education (Fuchs, Mock, Morgan, & Young, 2003). Johns and Lerner, (2015) noted that since the inception of RtI, the percentage of students identified with disabilities had decreased from 4.4% to 4.0% by the year of 2006.

A major element of RtI is that all students receive research-based instruction in the general education classroom. Incorporating evidence-based instruction into teachers' methods can increase students' academic achievement (Harlacher, Walker, & Sanford, 2010). General educators have to conduct screening to determine students' progress (Werst, et al., 2009). For instance, if students perform poorly in a particular area, teachers could use formative assessment during or after the lesson to inform them about the efficiency of instruction and the skills that students have acquired (Gersten & Dimino, 2006).

Moreover, teachers have to make sure that the intervention and instruction are implemented with fidelity (Bradley et al., 2005). When students do not respond to research-based interventions, special education referral will be considered (Barnes & Harlacher, 2008). Hence, teachers are responsible for applying the intervention procedures with fidelity in order to ensure the accuracy of intervention implementation.

RtI Implementations

The implementation of RtI is different from the traditional methods used for special education referral with the emphasis on utilizing of evidence-based assessment techniques, instructional strategies, and regular progress monitoring to inform possible referral decisions (Villarreal et al., 2014). Bradely et al., (2005) stated that implementing RtI can be challenging for general education teachers. General education teachers are required to implement individual and small group intervention/instruction within the substantial numbers of students' complex needs (Kratochwill et al., 2007). Fuchs and Deshler, (2007) asserted the importance of school leadership in the implementation of RtI, which includes teachers' understanding the conditions and social factors that ensure the success of RtI. They claim that poor implementation of RtI can be due to the lack of support provided to teachers by administrators.

In Tier 1, general educators are required to screen all students in order to identify students who struggle or are at risk of failure (Bradley et al., 2005). General educators are also required to conduct assessment to decide which students are in need for Tier 2 interventions (Richards et al., 2007). Tier 2 instructions require teachers to select interventions that are evidence-based instruction and to be able to administer assessments to determine students' response to the interventions and then making decision about students' placement. Hagger and Mahdavi, (2007) indicated that the roles of both general and special education teacher is not identified clearly in the literature, so schools can decide which teacher is responsible to deliver Tier 2 intervention/instructions. Fuchs and Deshler, (2007) argued that one of the gaps in RtI literature is which teacher is required to deliver the instructions of Tiers 2 and 3 intervention/instruction. However, in reality many schools consider general educators to deliver Tier 2 interventions/instructions in small group of four to five students in classroom (Richards et al., 2007). Thus, general educators are responsible for applying RtI components in general education classroom through the tiers intervention/instruction. To ensure the effectiveness of RtI implementation, teachers should be supported in order to deliver evidence-based interventions.

Classroom teachers can be supported by many school members such as special education teachers, reading specialists, and school psychology who can specifically interpret and analyze students' assessment in order to design strategies that meet the students' needs (Richards et al., 2007). Therefore, general educators in RtI have the responsibility of offering different levels of support, ensuring that all learners receive benchmark assessment, and delivering the core curriculum with fidelity (Villarreal et al, 2014). The degree to which general educators can implement RtI efficiently depends on the social and cultural context of their schools. It also depends on whether critical features and systems are in place since they support teachers' roles in applying RtI effectively (Reynolds & Shaywitz, 2009). Students in Tier 3 may receive intensive interventions/instruction that are delivered by special educators or reading specialists and other content specialists (e.g., mathematics), which ultimately requires skillful teachers who can effectively deliver individualized instruction and progress monitoring (Richards et al., 2007).

In addition, effective RtI implementation across any school is complicated and it requires coordination, training, and support from a team. In RtI, many schools experience difficulties that are associated with providing the necessary resources that address the academic needs of all students. A variety of interventions, instructional practices, and assessments have various levels of demonstrated effectiveness and school personnel can encounter challenges when choosing which practices have the potential to be the most effective including meeting the needs of students receiving special education services (Tilly, Harken, Robinson, & Kurns, 2008).

Subsequently, implementing RtI on a large scale (especially across all the grade levels in an academic area) has been challenging for teachers with limited experience (Fuchs & Deshler, 2007). In essence, effective implementation of RtI has potential for improving students' learning outcomes regardless of their disabilities in the general education classroom. Fuchs and Deshler (2007) point to very critical points in RtI implementation for this to come to fruition - RtI implementation must be valid and effective because the aim for RtI is to identify students with disabilities based on respond to evidence-based instruction in tiers. Implementing RtI

interventions with fidelity enables teachers to make valid decisions when referring a student to special education services (Fuchs & Deshler, 2007). If RtI is to improve upon IQ discrepancy as a means to identify students with LD, the implementation of RtI should be applied with fidelity and integrity. Further, Fuchs and Deschler (2007) asserted that effective implementation of RtI requires a significant investment in professional development in order to equip teachers with the skills needed to implement effective RtI. They noted that there are many situational supports inside and outside school that help teachers develop their skills, which ultimately lead to effective implementation of RtI (Fuchs & Deshler, 2007). Fletcher and Vaughn (2009) assert that "the effective implementation of RtI requires ongoing and close collaboration and implementation with classroom teachers, special education teacher, Title 1 and other entitlement program" (p. 33).

Professional Development

To meet the RtI implementation standards, teachers should be supported by their schools and school district through professional development. In order to implement RtI efficiently, teachers need to possess knowledge of evidence-based instruction, tiered instruction, multiple assessment tools, progress monitoring, and fidelity of implementation (Danielson, Doolittle, & Bradley, 2007). In addition, ensuring the success of RtI implementation requires educators to possess knowledge of and the ability to collaborate with other education professionals (Fuchs & Deshler, 2006) and families.

However, studies have indicated that teachers and other school personnel lack knowledge related to evidence-based practices (EBPs) across tiers in RtI (Danielson et al., 2007; Harlacher et al., 2010). A report published by The National Council on Teacher Quality (2006) revealed that the majority of general education teacher preparation programs do not effectively train teachers to use research-based reading instruction. Also, most graduate programs in school psychology are not training their students to use evidence-based prevention and intervention programs (Shernoff, Kratochwill, and .Stoiber, 2003).

In addition, previous studies have reflected on general education teachers' ability to work with diverse group of students. For instance, studies conducted by Baker and Zigmond (1990), and Simmons and Kame'enui (1998) demonstrated that the majority of classroom teachers in their studies were not able to: (1) meet the needs of diverse students, (2) develop instructional strategies, and (3) enhance the academic outcomes of students who were at risk of school failure. Moreover, Zigmond (2003) argued, "Researchers recognize that general education teachers cannot focus intensively on particular students to the extent that different instructional activities for different students are being implemented at the same time" (p. 197).

In an RtI framework, general educators encounters difficulty in utilizing the student data in order to plan interventions for struggling students in Tiers 2 and 3 intervention/instruction (Greenfield et al., 2010). Moreover, Danielson and his colleagues (2007) indicated that general education teachers may require training at the first and second tiers intervention. They argued that teachers should be trained to develop their knowledge and skills in conducting assessment, and progress

monitoring to link students' performance to intervention. This training could be effective if the professional development actually helps teachers to apply such skills in their practices.

Professional development (PD) has been an important topic for teacher educators. Professional Development (PD) is defined as a variety of "learning activities related to enhancing skills needed to successfully meet the expectations of one's occupation" (Kratochwill et al., 2007, p. 621). Previous studies related to PD have demonstrated the impact of PD on teachers' knowledge and practices as well as students' outcomes (Kratochwill et al., 2007). Gresten and Woodward (1990) argued that if general educators were supported with the implementation of RtI aspects, especially instructional strategies, the number of students referred to special education services would be decreased. They added that classroom teachers who are aware of evidence-based instruction do not only benefit students with disabilities, but also students who struggle with assessment benchmarks.

Stuart et al., (2011) conducted a qualitative study to explore the impact of PD on teachers' abilities to practice RtI reform, which ultimately reduces referrals to special education services. This study also explored the impact of school and university partnerships and its impact on teachers' performance when implementing RtI elements such as progress monitoring and planning for instruction. In the first year, teachers received support for two years through collaborative planning. General and special education teachers met with a professional collaborative group to learn how to effectively link the process for progress monitoring to designing individual instruction. In this collaborative model, participants shared their classroom artifacts in order to plan instruction. Collaborative groups were utilized to help teachers with assessing their students and designing interventions based on students' data. In the second year, the intense support continued for developing knowledge and skills in universal screening, progress monitoring, and planning for instruction. The result of a focus group interview indicated that teachers' perceptions changed in the second year after receiving the support. Before the intervention, the number of referrals to special education was 10% of the students' population. However, after the university-school partnership, the number of referrals to special education services was decreased to 3% (Stuart al., 2011). In this study, teachers' perceptions and assumptions of their students changed to be positive (Stuart et al., 2011).

Further, professional development can be focused on helping teachers to learn about and reflect on their own practices in order to develop their awareness of these practices. For example, teachers can be engaged in structured discourse around practices that are contextualized within their actual school-based experiences. Previous studies related to PD suggest that ambiguous guidelines of practices are not beneficial for teachers to successfully implement general education reform frameworks such as RtI. For instance, asking teachers to use students' data assessment to modify their instructional strategies is not critically helpful, especially if teachers did not receive any concrete examples and the implementation procedures (Fuchs & Fuchs, 1986).

Research related to teacher knowledge of instructional strategies has indicated that teachers must have the opportunity to practice instructional strategies in order to demonstrate in- depth understanding of these strategies (Darling-Hammond & McLaughlin, 1995; Gresten & Woodard,

1990). Further, Gersten and Woodward (1990) suggested that teachers should have the opportunity to meet with other school staff to reflect about their practices, which enables teachers to reflect on their practices. A well-known model of professional development is coaching. In RtI, general educators need coaching, especially when identifying and utilizing evidence-based intervention in order to meet the needs of all students (Gersten & Wooward, 1990, Darling-Hammond & McLaughlin, 1995). Gersten and Woodward (1990) explained the procedures of effective coaching models. Principally, coaches should model the functionality of instructional strategies and teachers' active roles in using new techniques while the coach facilitate teachers' learning and encourage them to assess the impact of the unique students (Gersten and Woodward, 1990). Research found that when teachers reflect on and analyze their practices, students' outcomes significantly increase (Cruickshank, 1985). The coaching model could assist general educators who encounter challenges in conducting curriculum-based measurement (CBM) (Gersten & Woodard, 1990).

Supports from reading specialists, other content specific pedagogical specialists, and RtI facilitators are necessary in order to both provide coaching to teachers in the application of evidence- based instructional practices and to encourage them to try new practices (Gresten & Woodard, 1999, Darling - Hammond & McLaughlin, 1995). RtI cannot be successful without a school-wide collaboration in order to assist general educators (Darling-Hammond & McLaughlin, 1995). However, more studies related to the effectiveness of PD and teachers' practices and knowledge are needed (Garet et al., 2001).

General Education Teachers' Perceptions of RtI

Fletcher and Vaughan (2009) point to the need for more research focusing on how schools successfully implemented and or struggle to implement RtI models. Few qualitative and quantitative studies have examined or explored general education teacher perceptions to RtI model. Cowan and Maxwell (2015) conducted a qualitative study to explore elementary general education teachers' perception of RtI program implementation. Participants demonstrated inability in understanding the RtI process in tiers and evidence-based interventions, learning about RtI paperwork that is not consistent, feeling overwhelmed and stressed out about the RtI implementation. Participants demonstrated positive attitude toward RtI in tracking students' progress, so they were able to see the log behind classroom benchmark. The study suggested school personnel should support teachers and evaluate of fidelity of RtI components. Another in-depth qualitative interview conducted by Tillery, Varjas, Meyers, and Collins, (2010) indicated that most elementary general education teachers did not demonstrate comprehensive knowledge of RtI components, struggled to demonstrate a clear understanding of the real purpose RtI, and viewed it simply as an additional block to referral for special education evaluation. Villarreal, et al., (2014) conducted qualitative study using computer-based text search program to explore teachers' (who were directly involved in RtI) perceptions. The majority of teachers demonstrated poor knowledge of RtI, lacked adequate training in evidence- base intervention, had confusion about the procedures of implementing RtI tiers, and lacked time and resources to implement RtI. They also complained about RtI paperwork that is lengthy and duplicate. Another survey study was conducted to examine elementary teachers' knowledge of the implementation

of RtI model in reading (Spear-swerling & Chesman, 2012). The study results revealed that most teachers were not familiar with research-based instruction approach and intervention. However, teachers who had an effective PD were likely to know more about certain interventions. The study suggested that professional development is a critical factor that enables teachers to effectively implement RtI.

Greenfield, Rinaldi, Proctor, and Cardarell, (2010) conducted a qualitative study exploring teachers' views after one year of RtI implementation. The teachers indicted that RtI is a valuable program because it provides them with the data needed to inform their decision and students' progress in order to measure the efficiency of intervention. Teachers suggested that they need more time to analyze and interpret the data and intervention.

Researchers who have examined teacher perceptions of educational research are Hargreaves (2005) and LaRocco & Murdica, (2009). Hargreaves indicated the factors that affect teacher's perceptions of education change because of age, personal development, and career stage (2005). Finding their perceptions is significant on knowing their challenges and their positive experiences on RtI reform, which contributes to supports teachers in RtI reform (Darling-Hammond, 2009). LaRocco & Murdica (2009) found that teachers' concerns related to RtI focused on individual learning reducing anxiety.

Conclusion

RtI provides students with intervention and assess them frequently to ensure that all students receive support before referral to LD identification. The historical context of RtI from the IDEIA and NCLB perspectives enhanced RtI implementation. This review highlighted educators' roles in RtI, e.g., evidence-based interventions and assessment, when implementing RtI components in general education classrooms. Moreover, teacher education programs, professional development for in-service teachers, and policy makers' considerations were identified and discussed. However, only a limited number of published studies that focusing on explaining and reporting the RtI process were found. Therefore, results of the review of the published studies stressed the need to implement an alternative tool such as RtI instead of only using IQ- achievement test. Additionally, high level of transparency in describing the implementation of the RtI process is necessitated. For example, the literature review revealed that RtI Tier 2 intervention/instruction does not provide clear provisions in terms of how to make decisions about nonresponsive students to Tier 2 intervention/instruction, and when to refer them to Tier 3 intervention/instruction. The literature addressed general education teachers' role in RtI implementation were identified in terms of screening, selecting research – based intervention/instruction, and monitoring students' progress to inform decision-making. Varieties of PD for teachers were synthesized to show the impact of these activities that informed teachers' knowledge and practices. This study addresses the need for further work related to PD and teachers' practices and knowledge. Teachers' perceptions of the concerns related to RtI implementation includes: (1) lack of time to construct instruction, (2) lack of support from schools, and (3) the lack of knowledge about evidence-based practices (EBPs) related to their content area.

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How a Change in State Law Affected the Provision of Mental Health Related Services

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Abstract

After 25 years, because of a change in state law California returned the responsibility for providing mental health related services to students receiving special education from county mental health departments to local education agencies. The study is secondary analysis of survey data that focuses on understanding how the change affected the mental health services children receive as part of their individualized education programs (IEP) from the perspective of four groups of stakeholders (i.e., parents of children with disabilities, attorneys/advocates, mental health service providers, and school district administrators). The findings indicate that many parents perceived that their children with emotional and behavioral problems were not receiving the services that they needed and were likely entitled to under federal special education law. Advocates and attorneys, in general, found it more difficult for students with IEPs to receive the mental health services that they needed. However, some data indicated that school districts had expanded their services and were serving the mental health needs of at least some of their students with IEPs.

Keywords: mental health services, special education, related services, change in law

Introduction

Approximately 12% of school-age children in the United States have moderate to severe emotional or behavioral disorders (EBD) (Forness, Freeman, Paparella, Kaufman, & Walker, 2012). In California, 11% (700,000) of school-age children have been found to have a serious emotional disturbance (California State Auditor, 2016). California serves three percent (24,318) of its students who receive special education services under the category of emotional disturbance (California Department of Education [CDE], 2017) in comparison to five percent who are served nationally (Kena et al., 2016). Children served under other special education eligibility categories than emotional disturbance also may have emotional or behavioral problems that are exhibited at school (Hutchins, Burke, Hatton, & Bowman-Perrott, 2017).

Despite known effective mental health treatment, many children nationally and in California do not receive needed care (California State Auditor, 2016; Kataoka Zhang, & Wells, 2002). School-based services can play a significant role in the early detection and treatment of mental health problems (Atkins et al., 2010; Mathur et al., 2017). However, schools may not provide the mental health services needed by students with emotional and behavioral disorders and the quality of services varies considerably (George, Zaheer, Kern, & Evans, 2018; Santiago, Kataoka, Forness, & Miranda, 2014). Lack of needed mental health treatment is connected to poor educational outcomes (Edmonds-Cady & Hock, 2008; Green et al. 2017).

Mental Health Services as Part of a Free Appropriate Pubic Education (FAPE)

Under the Education for All Handicapped children Act (EAHCA) (1975) (currently the Individuals with Disabilities Education [IDEA] [2004]), children with disabilities are entitled to special education and related services that enable them to receive educational benefit. This entitlement under IDEA, a free, appropriate public education (FAPE), includes mental health related services (other than those that must be provided by a physician) if they are needed to provide FAPE to a child with a disability (Yell, Smith, Katsiyannis, & Losinski, 2018).

Responsibility Transferred to County Departments of Mental Health

In order to provide mental health related services to students who receive special education services, in 1984 California took advantage of a provision in EAHCA that allows public agencies other than an education agency, when obligated in state law, to provide or pay for special education or related services directly or through another arrangement [§612(a)(12)(B)]. Based on this provision, California passed Assembly Bill 3632 (AB 3632), Interagency Responsibility for Providing Services for Children with Disabilities (1984), which, among other things, transferred responsibility for providing mental health services to students who receive special education to the local county departments of mental health (CMH). Assembly Bill 882, passed in 1985, made it clear that local education agencies (LEAs) (e.g., school districts) no longer had the responsibility for the provision of mental health related services to these students. The laws took effect in 1986 (McGuire, 1996), although implementing regulations were not in place until 1999 (Referral to Community Mental Health Services, 1999).

Mental health services available under AB 3632 included mental health assessments, individual or group psychotherapy, family therapy, medication evaluation, intensive day treatment, case

management, and residential placement. Except for residential placement that was available only for students eligible for special education on the basis of an emotional disturbance, all other services were available to students with any special education eligibility. Students would have these mental health services added to their individualized education programs (IEP) on the same basis as any other special education related service, that is, if they were needed to assist a student in benefitting from special education (Yell et al., 2018). Furthermore, LEAs throughout the state were still to provide of other related services, such as counseling, psychological services, social work services, parent counseling and training, and behavioral intervention, among others. This requirement was further clarified in 2004 legislation in California's Senate Bill 1895 (Special Education: Mental Health Services, 2004).

Responsibility Returned to Local Education Agencies

After 25 years, California returned the responsibility for these mental health services to LEAs. In 2010, because of a severe budget shortfall, the governor cut all the funding from the state budget for mental health related services from CMH, indicating that doing so would lead to cost containment and a stronger connection between services and educational outcomes (California State Auditor, 2016). The following year, as part of Assembly Bill 114, a bill to implement the state Budget Act, all language from California law was eliminated regarding the provision of mental health related services by CMH and full responsibility for these services was transferred back to LEAs. Funding was provided to LEAs to facilitate the change. When AB 3632 ended 21,443 students were receiving mental health related services from this program.

Effect of Returning Mental Health Related Services to Local Education Agencies

A few studies have examined the effects of mental health related services returning to the LEAs. Lawson and Cmar (2016), in a case study of three Southern California school districts, found that significant problems occurred when mental health related services were returned to school districts. These problems included: a lack of sufficient time for the transition; a reduction in services; interns rather than licensed clinicians providing services; and a lack of agreement on when to assess for these services, which students to assess, and what to assess. Wiener (2014) found in her analysis of residential treatment services before and after mental health services were returned to LEAs that in twelve of California's largest school districts there was a reduction in the percentage of special education eligible students who were placed in residential treatment facilities, between a 22% to 78% reduction depending on the school district. At the request of the California Legislature, the State Auditor (2016) reviewed the IEPs of 60 students in four California school districts and determined that in the two years following the end of AB 3632 73% of the IEPs had one mental health service removed; 37 IEPs did not indicate why a mental health service or placement change had occurred; no documentation was provided about the reason residential placement was removed from students' IEPs; and none of the districts could provide information on cost, graduation, or drop-out rates related to returning mental health related services to school districts.

This paper adds to the current literature on how the end of AB 3632 affected the mental health services children receive as part of their IEPs from the perspective of parents of children with disabilities, attorneys and advocates who advocate on behalf of children with disabilities, mental

health service providers, and school district administrators. The study addresses three research questions: (1a) What mental health services do children receive as part of their IEPs? (1b) What are the perceived challenges in obtaining these services? (2) What are the factors that predict the inclusion of mental health services in an IEP? (3) How have mental health services changed since county departments of mental health in California no longer are mandated to provide these services to children with IEPs?

Method

Participants

The study participants included four groups of California stakeholders: 81 parents of children with disabilities, ten advocates and attorneys, seven mental health providers, and 15 special education administrators. The participants responded to surveys sent out to individuals and organizations by two nonprofit law offices in Southern California. The parent respondents had children with emotional, developmental, and behavioral disorders; 79 had children who had IEPs. The children attended 45 different school districts in California. The parents reported the race/ethnicity of their children as predominantly White, Non-Hispanic (55.5%), Hispanic (22.2%), and Asian (8.6%), with low percentages of other groups (see Table 1).

Table 1. Parents' Report of Child Race/Ethnicity

Race/Ethnicity	*n*	%
While, Non-Hispanic	45	55.5
Hispanic	18	22.2
Asian	7	8.6
African-American	3	3.7
Native American	2	2.5
Pacific Islander	1	1.2
Other/No Response	5	6.2

The ten advocates and attorneys worked in offices that served over 900 children with mental health needs throughout the state. The seven mental health service providers worked in mental health agencies that served between 40 and 500 children in twenty different urban and rural California counties. The 15 special education administrators were from Special Education Local Plan Areas (SELPAs) (i.e., consortia of local and regional education agencies that provide for all special education services in their region) throughout California.

Measures

Four related surveys were created by one of the law offices with doctoral students from a special

education Ph.D. program in a large public university in Southern California. The purpose was to determine the impact of the repeal of AB3632 on mental health services for students receiving special education services. An examination of policies and research related to the provision of mental health services for such students formed the basis for the development of the surveys. The surveys were piloted with several respondents and edited for clarity before they were uploaded to an online platform for data collection (i.e., Survey Monkey).

The survey questions included general demographic information, students' mental health needs, services before and after the repeal of AB3632, and respondent opinions on ways to improve current practices. The number of items per survey differed based on each group of stakeholders: 16 items for parents, 25 items for advocates/attorneys, 14 items for mental health providers, and 10 items for school district administrators. All surveys included multiple choice and open-ended questions. An example from the parent survey included "Are your child(ren) receiving any of the following mental health services at school as part of her/his/their IEP? Check all that apply: individual therapy/counseling, group therapy/counseling, or family therapy/counseling, day treatment, behavior support services, social work services, wraparound services, in-home support services, parent training, medication management, and residential placement." One open-ended example from the advocate/attorney survey included "What are the most common concerns you hear from parents regarding accessing mental health services for their child as part of individualized education plans?" To capture changes related to a change in the law, an example from the survey for special education administrators included "Since the repeal of AB3632, how have mental health services for students in special education changed?" To address how to improve services, mental health providers were asked "What do you think is needed to improve mental health services for children and families in California?"

Procedure

Data collection occurred between the summers of 2016 and 2017. The two nonprofit law offices sent out the surveys via an anonymous email link. The four groups received a link via email requesting that they answer questions about their experiences with the change in mental health services. The link to the surveys was sent to parent organizations throughout California that provide training and information to parents of children with disabilities, legal services agencies and individual advocates and attorneys throughout the state, agencies that provide mental health services to children, and 47 SELPA administrators from counties throughout the state.

The surveys were completed online and took approximately 10 to15 minutes to complete. The participants did not receive compensation for their participation. Participants' responses were anonymous (other than the school district or county) and kept confidential. To obtain the data from the law office to use in a secondary analysis of the data for this study, an agreement was obtained by the law office as well as the University's Institutional Review Board (IRB). The project was reviewed and approved by the IRB and the data received from the law office were de-identified.

Data Analysis

The analysis of the quantitative data included first cleaning the data for incomplete survey responses using statistical software (i.e. SPSS). To address the study aims, the analysis calculated descriptive statistics (frequencies and percentages). Specific quantitative data sources included parents' report of child race/ethnicity, parents' report of frequency of child's behavior interfering with success in school, parents' report of mental health services received as part of the IEP, administrators' report of mental health services available by disability category, and parents' perceptions of people at the school being helpful in finding mental health services for their child. Data tabulation used percentages based on the total number of responses, since some participants did not answer all survey questions.

Furthermore, this study aimed to examine parents' perceptions in regards to services received before and after the termination of AB3632. To examine associations between frequency of problem behavior (i.e. parents' report of frequency of child's behavior interfering with success in school) and supports received in the IEP (e.g., behavior support plans, counseling), the analysis used logistical regressions between the independent variable category of frequency of problem behavior as a predictor (i.e., several times a day, few times a week, once a month, other) and responses of support services in the IEP as a dependent variable in terms of behavior support (e.g., Yes, No) and counseling (Yes, No). To do this, the elimination of incomplete data (i.e. incomplete survey responses) occurred as well as and the dichotomization of the dependent variable (i.e. receiving or not receiving service in the IEP). This resulted in a binary logistic regression between frequency of problem behavior and behavior support (n=36). Additionally, the analysis included a binary logistic regression between frequency of problem behavior and receiving counseling in the IEP with the fully completed surveys (n=33).

The analysis used content analysis to analyze on the open-ended survey responses provided by special education advocates and attorneys, school administrators, parents of children with disabilities, and mental health service providers. A content analysis approach offers a useful method for reporting common issues mentioned in the data (Green & Thorogood, 2011) and a descriptive approach, in general, offers an effective way of capturing the concerns that stakeholders or participants have regarding an event (Sandelowski, 2000, 2010) – in this case the provision of mental health services for students with disabilities. Two members of the research team then examined the open-ended responses and identified emerging ideas starting with key words mentioned in participants' responses (e.g., renegotiation). The quotes from the open-ended responses were then integrated to answer the research questions.

Results

Research Question 1- Mental Health Services Children Received and Perceived Challenges

Parents. Over 28% (n=23) of the 81 parent respondents reported that their child received behavior support and almost 25% (n=20) reported that their child received individual therapy/counseling as part of their IEPs. Few students received other services as reported by their parents (see Table 2).

Table 2 Child's Mental Health Services in IEP

	n	%
None	12	14.8
Individual Therapy	20	24.7
Group Therapy/Counseling	5	6.1
Behavior Support Services	23	28.4
Social Work Services	1	1.2
Medication Management	2	2.5
Family Therapy	3	3.7
Day Treatment	1	1.2
Wrap-around	0	0
In-home Support Services	2	2.5
Parent Training	3	3.7
Residential Placement	1	1.2
Not Sure/No Response	8	9.7

Importantly, 73.3% of parents (*n*=55) reported that school personnel were not helpful in finding mental health services for their children, while 26.7% (*n*=20) said school personnel were helpful (6 parents did not respond to this item). The open-ended responses provided additional insight on how parents were accessing services for their children. Some parents reported that the schools provided them with evaluations as well as appropriate services. However, other parents expressed concern regarding the lack of mental health services at schools as well as the need to pay for services outside of the school.

Other Stakeholders. Services also varied by stakeholders. Mental health providers reported that students for whom they provided mental health services that also received special education services generally varied between less than 25% and 100% depending on the agency. For one provider the variation was considerable, between 5% and 100%, depending on the particular mental health program students attended. Four of the mental health providers reported that their organization had a contract with an LEA. All advocate/attorney respondents indicated problems regarding obtaining mental health services as part of a child's IEP. Seventy percent (n=7) of the advocates/attorneys indicated that the advocacy they provided to parents (via due process proceedings) to help them negotiate and renegotiate mental health services secured more services for their children. In addition to reporting on services provided in the IEP, survey respondents reported where these services were being provided. The special education administrators

reported that their school districts provided the majority of the mental health services (73.3%). However, 53.3% (*n*=8) of the special education administrators also reported using outside mental health providers, and 40.0% reported that their school district continued to use CMH as a service provider. Only 53.3% (*n*=8) of special education administrators reported having a clear policy for handling a student in mental health crisis. Although the administrators reported improved services, they also reported varying levels of mental health services depending on the disability category (**see Table 3**).

Table 3. Administrators' Reports of Students Eligible for Mental Health Services by Disability Category

	LD[a]		Aut[a]		ID[a]		ED[a]	
Services	*n*	%	*n*	%	*n*	%	*n*	%
DIS[b] Counseling	10	100	9	90	7	70	10	100
Informal Counseling	6	60	7	70	6	60	7	70
Individual Therapy	8	80	7	70	5	50	9	90
Group Therapy	8	80	6	60	5	50	7	70
Day Treatment	4	40	2	20	1	10	8	80
Residential Placement	5	50	5	50	3	30	10	100
No MH[c] Services	0	0	1[d]	19	2[d]	20	0	0

[a] LD is a Specific Learning Disability, Aut is Autism, ID is an Intellectual Disability, and ED is an Emotional Disturbance.

[b] DIS means designated instruction and services, which are defined as related services (CA Educ. Code §56363). DIS counseling typically is counseling provided at school that focuses on school-related matters rather than mental health issues.

[c] MH means Mental Health.

[d] One school in this category also noted DIS counseling and/or residential placement although they marked No Mental Health Services.

Only 10 of the 15 school administrators answered the question about the mental health services that their LEAs had available. The administrators reported that they had available school counseling (referred to as DIS counseling) for students in each disability category, with fewer administrators reporting having it available for students with an intellectual disability. More school districts had a fuller complement of mental health services (i.e., individual therapy, group therapy, day treatment) for students eligible for special education based on an emotional disturbance. The fewest mental health services reported as available were for students with an

intellectual disability, followed by those with autism. Except for students with an emotional disturbance, 50.0% or fewer of the school districts had day treatment (i.e., school combined with intensive mental health therapy) or residential placement. Sixty percent reported that their LEA had individual therapy available for students without an IEP and 70.0% indicated their LEA had group therapy available for the same group of students.

The stakeholders also noted different challenges. Examples include a lack of privacy where the LEA provided the services, limited consultation with general education teachers, and breaks in services when school was not in session. A special education advocate described some specific inadequacies of the services available: "The services are targeted more at controlling behaviors instead of addressing real mental health issues. The kids don't get enough, don't get them on time, and get them at a time during the day that isn't convenient, such as during class or on a place on campus where it's obvious and the kids are embarrassed to get them." Others described students' needs as not being met as the services were more reactive than proactive. These stakeholders also reported that students did not receive any form of mental health services when they were on winter and summer break.

The survey asked advocates/attorneys: "What are the most common concerns you hear from parents regarding accessing mental health services for their child as part of their individualized education programs?" In response, four advocates/attorneys highlighted the high turnover rates of service providers and the lack of qualifications to serve students with mental health needs. Mental health services in some school districts were provided by school psychology interns. A special education advocate reported: "The services aren't offered; the services aren't provided by appropriately trained personnel. They're provided by a school counselor or intern who isn't experienced enough." A parent indicated that there are "… not enough people, resources available, to get that help quickly or effectively." One advocate/attorney stated that one way to improve mental health services is to have "better trained professionals and wraparound services to ensure that everything is consistent." The lack of training and collaboration between school staff and parents were highlighted by other advocates/attorneys as well.

A few special education administrators indicated that they hired new providers and trained school psychologists to address the mental health needs of students with disabilities. One mental health provider also mentioned "we have more counseling, after-school services, social work services."

Research question 2 – Factors that Predict the Provision of Mental Health Services in an IEP

In order to evaluate the potential predictors for mental health services in a student's IEP, the analysis used different factors as reported by parents (e.g., problem behavior). Forty-six percent of parents responded that the "frequency that their children's behavior interfered with their success in school" occurred "several times a day." Almost 78% of the parents (n=63) that responded to the item regarding their children's behavior interfering with their school success indicated that it occurred "from several times a day to a few times a week" (see Table 4).

Table 4. Parents' Report of Frequency of Child's Behavior Interfering with Success in School

Behavior Problems in School	*n*	%
Several times a day	36	44.4
Few times a week	20	24.7
Once a month or less	6	7.4
Other	9	11.1
Not Sure/No Response	10	12.3

A binary logistic regression between "frequency of problem behavior" and "behavior support in the IEP" suggested a positive association (β= 0.23, *p*= 0.48, OR= 0.492). However, this association was not significant (*p*= 0.48). A binary logistic regression between "frequency of problem behavior" and "receiving counseling in the IEP" resulted in a negative association (β= -0.126, *p*= 0.71, OR= 0.136). Nonetheless, this association was not significant either (*p*= 0.71).

Though the results are not significant, it is important to note the open-ended responses suggest that renegotiation was an indicator for the provision of mental health services in a student's IEP. A need for constant renegotiation of mental health services by parents and their advocates/attorneys was a common theme throughout many of the open-ended responses. A special education advocate described the difficulty of obtaining mental health services in some cases: "Sometimes kids get them immediately, other times we have to fight. Even if the services are obtained, they are frequently insufficient." One parent reported: "Services [are] delivered based on how hard [a] parent pushes." Parents and their advocates/attorneys needed to negotiate with the school district to receive the appropriate services. They reported that a "one-size-fits-all services" model was not beneficial for students.

Research Question 3 – The Effect of Returning the Provision of Mental Health Service to LEAs

The advocates/attorneys reported that the transfer of mental health services back to school districts often led to students not receiving the services they needed. An attorney wrote: "Since the law was changed the collaboration with school districts has become worse in terms of attaining mental health services as part of a child's IEP." A parent reported the denial of services to address her child's behavioral problems: "She needs behavior support services but is denied by the school." Another parent reported that "there is no family therapy, parent training, etc." A special education administrator offered an alternative view. The administrator stated: "Services are working well in our county … we are working to increase more site-based services for non-severe students."

Parents. Parents reported that if their child's school did not provide mental health services, 38.3% (*n*=31) sought them through private insurance, 13.6% (*n*=11) through MediCal (i.e., what

Medicaid is called in California), 7.4% *(n=6)* from CMH clinics, and 13.6% *(n=11)* through other means (see Table 5).

Table 5. Parents' Report of Provider of Mental Health Services if not Through School

Provider of MH Services	*n*	%
Private Health Insurance	31	38.3
MediCal	11	13.6
County Mental Health Clinic	6	7.4
Other	11	13.6
Not applicable/No Response	22	27.2

Advocate/Attorney Responses. Fifty percent (*n*=5) of the advocates/attorneys indicated that their collaboration with school districts in the last two years was worse; 30.0% (*n*=3) indicated that it was about the same or somewhat improved; and 20.0% (*n*=2) indicated that they had never collaborated with school districts. The majority of advocates/attorneys (83.0%) whose offices served 750 children indicated that collaboration with school districts had been worse over the last two years.

Mental Health Providers. Four mental health providers reported that since the repeal of AB 3632, collaboration with school districts was about the same (although one reported that some districts were better and others worse), one reported that it was worse, and one that his organization never collaborated with school districts. Six of the mental health providers reported serving large numbers of students in the foster care system, between 50% and 100%. Only three mental health providers reported on the ethnicity/race of the children they serve, with African American students being the largest group served followed by Latinos for two service providers.

Special Education Administrators. Almost 32% of special education administrators responded to the survey. Over 73% (*n*=11) of the 15 surveys received reported that mental health services had improved in their school districts. Some administrators indicated that their counties had hired new staff, developed new programs, and provided additional training to school psychologists. However, 33.3% (*n*=5) failed to answer the question describing new programs developed.

Discussion

The study results indicate that, for many families, mental health related services became harder to obtain for their children with disabilities after AB 3632 ended and the provision of these IEP related services became the responsibility of LEAs. The study suggests that many children may not be receiving the mental health related services that they need to benefit from their education. A high percentage of parents (69.1%) reported that their children had behavior problems that interfered with their school success at least on a weekly basis. However, less than 30% of parents indicated that their child received behavior support or counseling to address the behavior

problems that interfered with their school success, services that have been shown to help address behavior problems (Marsh, Morgan, Higgins, Lark, & Watts, 2017). Furthermore, there was no statistically significant relationship between parents report of the frequency that their children had behavior problems in school and their report of their children receiving behavior support or counseling services through their IEPs. In addition, few parents reported receiving parent training as part of their child's IEP, a service that has been found to reduce behavior problems of children with serious emotional disturbance (Ruffolo, Kuhn, & Evans, 2005) and improve the interventions that children with disabilities receive (Siller, Reyes, Hotez, Hutman & Sigman, 2014). Some parents reported that obtaining mental health services for their children subsequent to the end of AB 3632 was difficult. Advocate/attorney responses largely indicated that since the law was changed their collaboration with school districts had become worse in terms of attaining mental health services as part of a child's IEP. Parents and advocates/attorneys also indicated concerns about the provision of the mental health services by practitioners with limited training, a problem also found in the study by Lawson and Cmar (2016). A high percentage of parents reported seeking mental health services for their children through other means than through their child's IEP, another indication that these services were not available or not forthcoming through the IEP process.

Special education administrators painted a more positive picture of the provision of mental health related services provided by their LEAs than did the parents, advocates/attorneys, and mental health providers. However, the administrators reported limited availability of certain mental health related services, such as residential placement, which was also found by Wiencr (2014), and day treatment. Furthermore, one third of the administrators responding failed to answer the questions about the services their school districts provided.

Policy implementation research (Marshall & Gerstl-Pepin, 2005; Mitra, 2018) suggests that adequate resources, ongoing training, and strong oversight or incentives are needed to appropriately implement new laws and policies. Consequently, a law that returns mental health service provision for students receiving special education services to LEAs will likely need more than simply a change in the law and funding stream to ensure that students receive the services they need to benefit appropriately from their education.

Limitations

The study is a secondary data analysis and, except for special education administrators whose response rate was 31.9%, response rates could not be calculated. The local law offices sent links to the surveys to individuals and organizations but, other than the special education administrators, the total number sent was not known. Consequently, participants who responded to the survey may not have been representative of the diverse backgrounds of families of children with disabilities who have mental health and behavioral needs in the state. Furthermore, a larger sample of respondents, particularly from ---LEAs, would help clarify the mental health related services they have available. Finally, advocates/attorneys, by the nature of their work, would necessarily interact with parents and LEAs where disagreements over service provision occurred. However, the advocates/attorneys very specific descriptions of the problems of children and their families receiving mental health related services are important and require

further attention and inquiry. In addition, the reports by parents of children with disabilities about the mental health services their children were receiving (and not receiving) through the IEP process and through other means adds important information to help understand the impact of the change of state law in providing mental health services to students who receive special education services.

Future studies should include interviewing a variety of stakeholders to understand the impact of the repeal of AB3632 and recommendations for how to improve mental health services for students with disabilities. This would allow for further understanding as well as assure that complete information on the topic had been ascertained. Additional recruitment efforts could also assist in obtaining responses from hard to reach populations (i.e., under-resourced ethnic/racial minority parents and schools) to more fully understand the impact of the repeal of AB3632 on these communities.

Conclusion

This study adds to the limited research on the effect of a change in state law on the provision of mental health related services to special education students. The change in state law returned the provision of these services to school districts after having been provided by county department of mental health. The findings indicate that many parents perceived that their children with emotional and behavioral problems were not receiving the services that they needed and were likely entitled to under federal special education law. Advocates and attorneys in general found it more difficult for students who receive special education services to obtain the mental health services that they needed. However, some data indicated that school districts had expanded their services and were serving the mental health needs of at least some of their students with disabilities.

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Inclusion of Children and Adolescents with Mild Disabilities in the Scientific Area Through a Novel Workshop as a Didactic Strategy

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Abstract

Despite the effort to provide equal scenarios and a higher inclusion for students with mild disabilities, few experimental activities intended to improve their science performance were reported during the last decades. This work presents different ludic-experimental activities and their impact on children and adolescents with special educational needs and/or disabilities related to the chemistry in the human body. The workshop was specifically designed considering contents included in the curriculum design of different schools with special modality. The constructivism strategy proposed in this workshop enhances the inclusion of children and adolescents with mild disabilities in the scientific area. The idea of educational inclusion transcends the concept of integration-physical inclusion and implies the use of the same scenarios for everybody. The workshop showed that students participated in the different activities observing, reproducing, and understating phenomena of daily life. This contribution improved their self-esteem and socialization with their peers and tutors. Finally, this workshop is a novel didactic strategy in the natural science for special education modality.

Introduction

The educational system in Argentina is regulated by the National Law of Education N° 26206 (2006). This law assigns to the State the responsibility of providing free education opportunities. In addition, it supports the access to qualified education and equal opportunities to students without considering the social backgrounds. The educational system consists on initial; primary; secondary; and superior education levels that comprise different modalities, including special education. The aim of special education is to ensure education for individuals with temporary or permanent disabilities. This modality also attends to specific difficulties not provided by common education (National Law of Education Nº 26206).

The concept of disability refers to persons with cognitive limitations and adaptation difficulties (Stavroussi et al., 2010). In Argentina, 10% of the total population presents disabilities representing around 4 million people, including those with disability certificates and those who declare to have permanent difficulties or limitations to see, hear, move, understand, and/or learn (Padin, 2013; National Institute of Statistics and Censuses of Argentina –INDEC-, 2012 and 2018).According to INDEC (2018), people with disabilities report to present one (59.0%); two (18.3%); three or more (12.2%); or any difficulty even though having a certificate of disability (10.5%). Regarding the number of individuals with only one impairment, the difficulties reported are distributed in: motor (42.7%); visual (23.3%); hearing (18.6%); mental-cognitive (12.7%); speech/language (1.5%); and self-care (1.2%).[5] Motor impairment prevails on population aged 65 and over, while mental-cognitive or mild impairments are predominant for children between 6 and 14 years old (48.3%). It is important to note that special modality of Argentina's educational system imparts education for children and adolescents between 6 and 21 years old.

Nowadays, around 120,000 students receive special education (National Educational System of Argentina, 2017) distributed in 3,502 educational centers: a). initial (28.2%); b). primary (40.0%); c). secondary (12.7%); and d). comprehensive training (19.1%) (Padin, 2013; National Educational System of Argentina, 2017). The progress of inclusive education for children with disabilities in all levels has received extensive academic attention (Shogren et al., 2012). As a consequence laws, resolutions, and practices were legislated and performed worldwide (Ferguson, 2008). In Argentina, Law of Education and FCE (Federal Council of Education) attends children and adolescents with disabilities. The advantages of implementing these regulations include: a). the access to education for a higher number of individuals with disabilities; and b). the integration of disabled to the regular classrooms, achieving a higher level of educational inclusion (Padin, 2013). These achievements should be complemented with appropriate teaching methods and education programs.

In the last decades, there was a growing interest in implementing teaching practices through construction of scientific knowledge in special modality. This educational philosophy enhances students to construct knowledge out their own experiments, the connection with real life (environment and society), and the use of technology (Salend, 1998; Kirch et al., 2005; Villanueva et al., 2012; Cersonsky et al., 2017). Constructivism not only provides knowledge about nature (Scruggs & Mastropieri, 2007) but also develops the skills and attitudes necessary for life in society (Salend, 1998). The effort on the development of didactic strategies based on constructivism for children with mild disabilities is an interesting topic of research in special education. According to Scruggs and Mastropieri (1999), students with mild disabilities can be

coached to actively construct scientific knowledge, increasing their academic performance.

The activities proposed in literature for disabled are mainly focused on persons with blind or motor disabilities (Lusfor & Bargerhuff, 2006; Neely, 2007; Reglinski, 2007; Stender et al., 2016; Kumar et al., 2018; Jagodzinski et al., 2015). Lunsfor & Bargerhuff (2006) proposed a project that promotes chemistry topics (physical properties, periodic table, reactions balancing, acids and alkalis) during different summer workshops. Neely (2007) has implemented technology support and different assistive strategies for students with physical and visual impairments in the science lab setting, and all educational centers involved in the activities clearly recognized the value of empowering each student throughout the education process. Reglinski (2007) presented pictorial representations of chemistry concepts as test questions requiring students to "give a detailed explanation of the diagram", and as a result there was a significant increase in student performance, including those with learning disabilities. Kumar et al. (2018) proposed four modules that discuss data analysis, electrical conductivity, optical lenses, and endothermic/exothermic reactions for blind persons.

This work proposes a workshop for children and adolescents with special educational needs and/or disabilities related to the chemistry in the human body, and based on contents included in the academic contents. This workshop presents ludic-experimental activities distributed in four modules: a). An introduction to learning senses. Everybody is different; b). How good it is to eat! The digestive system; c). Heart race!; and d). Breathing hard. Each module consists of didactic resources specific and adequately produced according to the topic. In addition, this workshop is a novel didactic strategy in the natural science for special education modality.

Workshop and Implementation

The activities were carried out in primary and secondary schools from Santo Tomé, Santa Fe, Argentina, which offer the modality of special education. The educational resources of the schools visited were relatively limited, although one of the centers provided job training in bakery area. The program was also implemented in private institutions of early stimulation and in therapeutic centers. The students were distributed in small groups accompanied by a special teacher and three assistants. A tutor guided the classes. Assistants and tutors were researchers and professors belonging to local research institutes (INTEC and INCAPE) and universities (UTN); and students from different careers including teacher training in chemistry, biotechnology, history, and medicine. The staff involved eight people. The success and impact of this workshop on the students was measured though anonymous surveys of both primary and secondary teachers at the end of the workshop.

The pros and cons of the workshop were discussed in order to improve future workshops. The details of the lesson modules are presented below, and can be tailored for students with different disabilities to promote science education. This workshop could also be suitable as model for future workshops.

Presenting Skeleton! The modules presented in this work used a synthetic skeleton as didactic resource (See Figure. 1). In the first lesson, the skeleton was presented to the class, and students proposed a name. The tutor stated that the body is supported by bones. In this context, the following comments were introduced: a) the ear is constituted by small bones; b) even though bones stop growing when persons are around twenty, new bone cells are rebuild; ic) the spine is

made up of thirty three bones; d) the red bone marrow can produce around 5 billion red blood cells each day; e) if the body doesn't have enough calcium, it will take it from bones making brittle bones.

In addition, the tutor mentioned that the body is also constituted by organs, explained some aspects related to organs, and then introduced the importance of the five senses (the topic of first module).
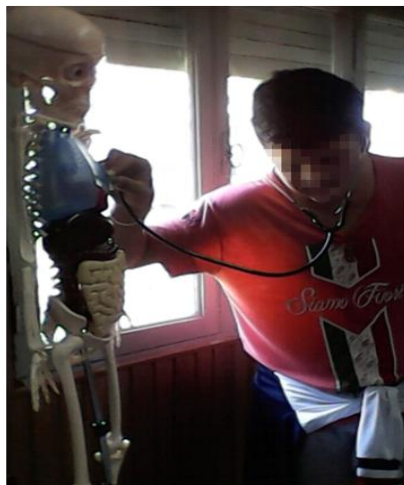
Figure 1. **Presenting skeleton**

Module 1. An introduction to learning senses. Everybody is different.
The first module intends to introduce the students to the five senses by focusing on the relation with brain, emotions, the effect of light, and the differences between humans. The module consists of five activities.

Activity 1. Hearing, touch, sight, smell, and taste

Persons understand and perceive the world using the five senses: taste, smell, touch, hearing, and sight. The stimuli from each sensing organ in the body are related to different parts of the brain.In this activity, students used colored circles to indicate the organs involved in the five senses by adhering them onto the skeleton. Then, the tutor joined the circles with the corresponding area onto the skull by employing a new circle. Figure 2 illustrates the three steps of Activity 1.
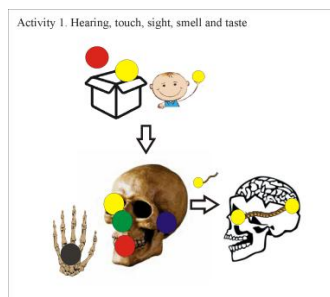
Figure 2. **Recognizing senses**

Activity 2. What are we touching?

The sense of touch describes if something is hot or cold, dull or sharp, rough o smooth, wet or dry. The sense receptors of skin are responsible for the different sensations. In this activity, the tutor presented cards representing familiar objects (jelly, sand, rice, sponge) that were previously placed into black closed boxes. Students were divided into two groups and one student per group alternated taking *turns.* The selected student had to describe the object characteristics assisted only by the sense of touch. The rest of the group had to match the object inside the box with the corresponding card.

Activity 3. What are we smelling?

The sense of smell, or olfactory system, is sensible to millions of different odours. The olfactory system also has direct nerve connections into parts of the brain that deal with memories and emotions.This activity was similar to activity 2, but considering the following objects: chocolate, coffee, perfume, and citric fruit.

Activity 4. The cow taste!

The gustatory system comprises tongue, papillae, taste buds, and receptor cells. In particular, the texture of the tongue is very rough because its surface consists of about ten thousand taste buds, found on the papillae. Each taste bud has about a hundred receptor cells connected with the brain. For this reason, the tongue presents different taste zones. In this activity, students observed and took pictures of cow tongue with a USB microscope.

Activity 5. Let's recognize the eyes!

The eyes are constituted by different parts: a) eyebrows prevent sweat, and other foreign objects from falling down into the eye socket; b) *eyelashes* protect the *eye* from foreign objects and are sensitive to being touched, thus providing a warning that an object is near the *eye,* reflexively closing; c) levator palpebrae superioris muscle voluntarily or involuntarily retracts the eyelid to open the eye; d) *nasolacrimal duct* carries tears from the *lacrimal* sac into the nasal cavity; and iv) iris changes its shape to control how much light goes through the pupil. In this activity, students first recognized the different parts of the eye by looking at their partners eyes with flashlights and magnifying glasses.

In the second part of the activity, the student learns about the color perception and the use of Newton Disk. The perception of a picture or a color remains in the human brain for a fraction of a second. Newton's color disk is a mechanical device that rotates an array of colors arranged as petals or gradients around an axis at a high rate in order to change the perception of the colors to white. Colors exhibit different wavelengths and due to the high speed, light of all wavelengths is mixed and perceived as white. The students identified different colors on the Newton's disk paperboard clamped in a fan. The tutor turned on the fan and they observed that the disk became white.

Finally, students learned about the unique and different patterns (pupils and fingerprints) that human exhibit. The tutor took photographs of the eyes of each student and showed that each pupil is different. Also, in order to obtain fingerprints, the following procedure was carried out: 1) a small amount of talc was spread into a dish and students pressed their thumbs onto the talc; 2) a piece of packaging tape was used to cover the entire fingerprint revealed by the talc; and

3) the fingerprints of each student were presented in a black cardboard. All students observed their pupils and fingerprints, and concluded that everybody is different.The special teachers implemented at their classes the new concepts acquired during the workshop and constructed Newton disks with recycled materials.

Module 2. How good it is to eat! The digestive system
The second module intends to illustrate the chemical reactions involved in the digestive system. The module consists of 5 activities.

Activity 1. Recognize the digestive system!

The digestive system is a series of organs that break down food in order to provide energy. It is comprised by: a) mouth: produces physical and chemical digestion; b) oesophagus: passes food into the stomach by peristalsis; c) stomach: begins protein digestion; d) small intestine (six meters long): absorbs nutrients into the blood; e) pancreas: contains digestive enzymes; f) liver: produces bile (for the digestion of fats); g) large intestine: absorbs water from food remains; h) rectum: stores food and water; and i) anus: removes no essential nutrients. In this activity, the class was divided in two groups and students raced in order to make a puzzle with pieces of the digestive system. Then, they marked the organs involved in the digestive system onto the skeleton presented at the beginning of the workshop.

Activity 2. The power of saliva!

Enzymes are naturally produced in the body by the pancreas, stomach, and small intestine. In addition, the salivary glands produce digestive enzymes to start breaking down food molecules. The enzymes found in saliva are essential for beginning the digestion process of dietary starches and fats. For example, starch is hydrolyzed into glucose units. The students recognized the mouth, teeth and tongue as the organs involved in the first step of digestive system.

In this activity, the tutor introduced the following topics: what happens when food is placed over their dry tongue, and which is the function of the tongue. Then, students dried their tongues with paper tissue and put a cookie over the tongue. This activity allowed understanding that saliva and tongue are important to distinguish flavors and textures, respectively. Then, the tutor asked whether the unique function of saliva is to recognize flavor, and subsequently asked whether saliva helps to triturate food with teeth. In order to answer these questions, the following experiment was carried out by each student. Students received two transparent glasses and a slice of bread; they crushed bread with their hands, put pieces of bread into one of them, and chewed and salivated bread and put it into the other glass. Then, they added into both glasses two or three drops of Lugol (a iodine solution) that turns blue in presence of starch; and finally observed and marked changes. Starch turns into a blue colour upon addition of Lugol, due to the formation of an intermolecular charge-transfer complex. In the absence of starch due to enzymatic action, the brown color of the aqueous solution remains.

Activity 3. Stomach to the attack!

The stomach digests food using acid and enzymes while its muscles periodically contract, churning food to enhance digestion. The pyloric sphincter is a muscular valve that opens to allow food to pass from the stomach to the small intestine. In this activity, the students carried out the following instructions. They fill three glasses with water, and added two tablespoons of

biological washing powder to two of them, and left the third as a control with just water. Then, they cut the white of the hard-boiled egg into lumps of similar size, and put a lump into each jar and leave them for 2-3 days in a template place. After that period, at regular classes the special teacher showed the differences observed between the eggs and made conclusions with the help of the students. Enzymatic activity of biological washing powder degrades food in tiny parts.

The special teachers also developed an activity about the importance of minerals in the consumption of food. They placed an egg in a cup filled with vinegar, so that the egg was completely covered. The students made hypotheses about what could happen and then observed if they were right or not.

Activity 4. Far, far away intestine!

The intestines are a long and continuous tube that connects the stomach with the anus. In this activity, the tutor questioned about the length of the intestine before using a 9 m cord to show that the length of intestines is greater than the student's height. Then, different organs from the digestive system of cows were observed at microscope.

Activity 5. Art with digestion

This activity was coordinated with art special teachers and consisted of representing the digestive system with modelling clay. Then, they explain the path of food through the digestive system.

Module 3. Heart race!
The third module intends to present to the students aspects related to the circulatory system, such as blood color, and oxygenation. The module consists of 4 activities.

Activity 1. The blue blood

The circulatory system allows blood to circulate and transport oxygen, carbon dioxide, hormones, blood cells, and nutrients such as amino acids and electrolytes to and from the cells. Blood absorbs light at different wavelength although skin does not absorb much light. Red light absorbs at 564-580 nm (a high wavelength of visible spectrum), and for this reason it color reflects easily. However, the red light of veins is absorbed by hemoglobin (the protein that makes our blood red). On the other hand, blue light does not penetrate the skin as well as red light. If a vessel is near the surface of the skin, almost all blue light is absorbed by the vessel, so even though only about 1/4 of the red light is reflected, the ratio of red light reflected to blue light reflected is about 10:1. And thus, this vessel appears red. If the vessel is deeper (about 0.5 mm or more), not as much blue or red light will be absorbed. Importantly, this effect will be more pronounced on blue light than on red light since blue light does not penetrate skin very well (the ratio of red light reflected to blue light reflected is about 3:2 or less). This is the case for the "blue veins" observed in skin. Once the vessel is deep enough, it won't be seen at all, as light of all wavelengths will be reflected before it can interact with the blood. Consequently, this 0.5-mm-deep vessel appears blue despite reflecting slightly more red light than blue light. This is where relative color perception comes into play. The surrounding skin reflects more red light than blue light (by a ratio of about 5:3), and it does not absorb as much of either type of light as a blood vessel does. Since vision is influenced in part by relative perception, if something purple is placed next to something red, the purple object will appear blue.

In this activity, students observed their arm veins, and the tutor explained that the blue color of blood is caused by a light effect. Then, students marked the pulse in the blood vessel and the heart in the skeleton; and they heard the heart matter using a stethoscope.

Activity 2. Wholeheartedly

This activity consists of playing a game intended to reproduce the blood path. The idea of this game is to show that the contaminated and clean blood does not mix and that the heart acts as the connector of different types of blood. The game is for turn and for two students (Fig. 3).

Figure 3. The experience in the workshop.

A cars track consisting of blue and red paths is a simplified scheme of circulatory system including the heart, head, and lungs. The blue path represents the circulation of low content oxygen blood with high content of residues, while the red path represents the circulation of clean blood. There are two types of cards: "Oxygen load" and "Oxygen unload". The car represents the blood, and red and blue pellets respectively represent the oxygen and the residues. At the beginning of the game, the car and a plastic glass with red pellets are situated in the heart; and six glasses (with and without pellets) are divided in pairs in the lung, head and body. Red pellets are initially contained in the lung, while blue pellets are contained in head and body. One student takes an "Oxygen unloads" card, and reads it, and the other student executes the indicated action and moves the car. See the indications in Fig. 4. The game finishes when all the cards are read.

Activity 2. Wholeheartedly
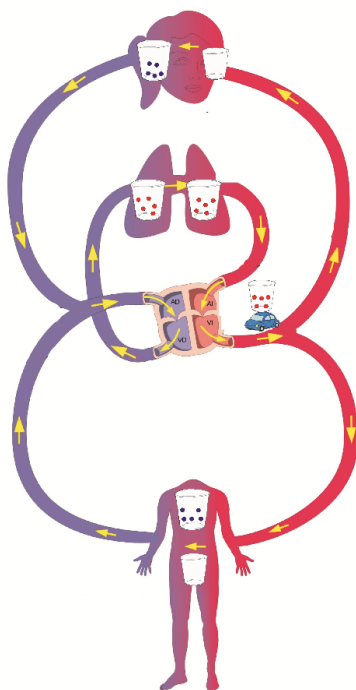
"Oxygen Discharge" Cards

o Eat a cookie: your stomach needs oxygen to digest food. Move the car to the body, unload 3 red pellets and load 3 blue pellets, and return to the heart.

o Jump three times: your legs need oxygen to move fast. Move the car to the body, unload 5 red pellets and load 5 blue pellets, and return to the heart.

o Make hula-hula with one arm: your arms need oxygen to move quickly and coordinate. Move the car to the body, unload 5 red pellets and load 5 blue pellets, and return the car to the heart.

o Write your name on a piece of paper: your brain needs oxygen to think. Move the car to the head, unload 4 red pellets and load 4 blue pellets, and return the car to the heart.

o Lie down and rest on the floor: your body needs oxygen to maintain the body warm. Move the car to the body, unload 2 red pellets and load 2 blue pellets, and return the car to the heart.

o Try to see or hear something happening outside the classroom: your brain needs oxygen to use senses. Move the car to the head, unload 4 red pellets and load 4 blue pellets, and return the car to the heart.

"Oxygen Load" Cards

o Breathe deeply two times, inspiring air through the nose, inflating the belly and exhaling through the mouth: you oxygenated your blood well. Move the car to the lungs, unload 5 blue pellets and load 5 red pellets, and return the car to the heart.

o Breathe quickly three times, inspiring and exhaling air through the nose: you oxygenated your blood a little. Move the car to the lungs, unload 3 blue pellets and load 3 red pellets, and return the car to the heart.

o Cover your nose and mouth and do not breathe for a while: you did not oxygenate your blood. Move the car to the lungs, unload 2 blue pellets but do not load any red pellets, and return the car to the heart.

o Breathe normally three times: you oxygenated your blood. Move the car to the lungs, unload 4 blue pellets and load 4 red pellets, and return the car to the heart.

o Cover your nose and mouth with a bag and breathe: you oxygenated your blood very little. Move the car to the lungs, unload 1 blue pellet and load 1 red pellet, and return the car to the heart.

Figure 4. Schematic representation of the car path and instructions for Activity 2. Wholeheartedly

Activity 3. Open heart

In this activity, the students looked at the microscope slides with samples of cow heart that they had previously prepared. Then, they took photos of different slides.

Activity 4. Foam of blood

Hydrogen peroxide (H_2O_2) is degraded into water (H_2O) and oxygen (O_2) by the catalase enzyme. H_2O_2 has been used as an antiseptic since the 1920s because it attacks bacteria by destroying their cell walls. Unfortunately, H_2O_2 also destroys healthy skin cells. This is why many physicians and dermatologists currently advise against using H_2O_2 to clean wounds, as it has been found to slow the healing process and possibly worsen scarring by killing the healthy cells surrounding a cut. Despite its negative effect on healthy cells, the body naturally produces H_2O_2 to produce energy.

In this activity, a glass is filled with cow blood, and students add oxygen water into the glass. Then, they measure the reaction temperature with a thermometer in order to observe that reaction is exothermic.

Module 4. Breathing hard

This module presents different activities intended to comprehend the respiratory system. The module consists of 3 activities.

Activity 1. Oxygen to live!

A pulse oximeter is a medical device that indirectly monitors the oxygen saturation of a patient's blood. Normal values are higher than 95%.

In this activity, each student, assisted by a tutor, used an oximeter to measure the oxygen saturation of a partner, and compared it to the normal values.

Activity 2. Danger smoking

Individuals with mild disability experience poorer health than those in the general population, with even delays in access to diagnosis, investigations and treatment (Lodge et al., 2011). Consequently, people with an intellectual disability who smoke are particularly vulnerable to the detrimental impact of smoking on their health, and on their financial and social wellbeing.

In this activity, the harmful effects of smoking are highlighted employing a smoking robot. This device consists of a cigarette, a pump, a smoke collecting chamber, and a filter pad. As the cigarette burns, smoke is pumped through the filter. Students compared the clean and dirty filter and discussed the differences observed.

Activity 3. The total lung capacity

The total lung capacity is measured through body or lung plethysmography, one of many pulmonary function tests that help to determine how much air is present in the lungs when a deep breath is taken and how much air is left in the lungs after exhalation is performed.

In this activity, students followed the instructions provided by the tutor to measure lung capacity using a homemade water displacement method. This method consists on replacing the air lung by the place of water in a transparent bottle. To use the water displacement method, is necessary to take a big, deep breath and then blow it fully into a tube connected to a container filled with water. The resulting volume (amount) of water that is pushed out is equal to the volume of air the lungs can hold. Finally, students compared the different marks.

Results and Discussion

The special teachers were surveyed about their experience thorough out the Workshop. The questions were related to different aspects of the performance of activities, such as motivation, and increases of self-esteem of students. One question was even related to the use of experiments, in order to promote the incorporation of these kinds of activities into regular classes. In general, the responses were very positive.

Regarding to the workshop in general, from thirty surveys, 86.7% of teachers answered that the workshop could be adapted to children with mild difficulties of all years, and that it could also be incorporated as a modality in the curriculum design. The rest of surveyed teachers answered that the workshop could be repeated considering a different place specially destined to carry out these types of activities and that students can be selected according to similar disabilities. In addition, one of the teachers commented that it would be interesting to perform the workshop including

children with and without disabilities.

Regarding to the performance of activities, 59% and 33% of surveyed teachers were very satisfied and satisfied with the activities proposed in the workshop. The rest answer that the activities were moderate safe, and that some of them could be improved. These results are very positive taking into account that the activities were develop by researchers and professors that are not in daily contact with children and adolescent with disabilities. Adaptations of the activities could be performed in order to increase the acceptability among surveyed teachers.

The answers about the motivation and self-esteem of students were very positive (see Fig. 5).
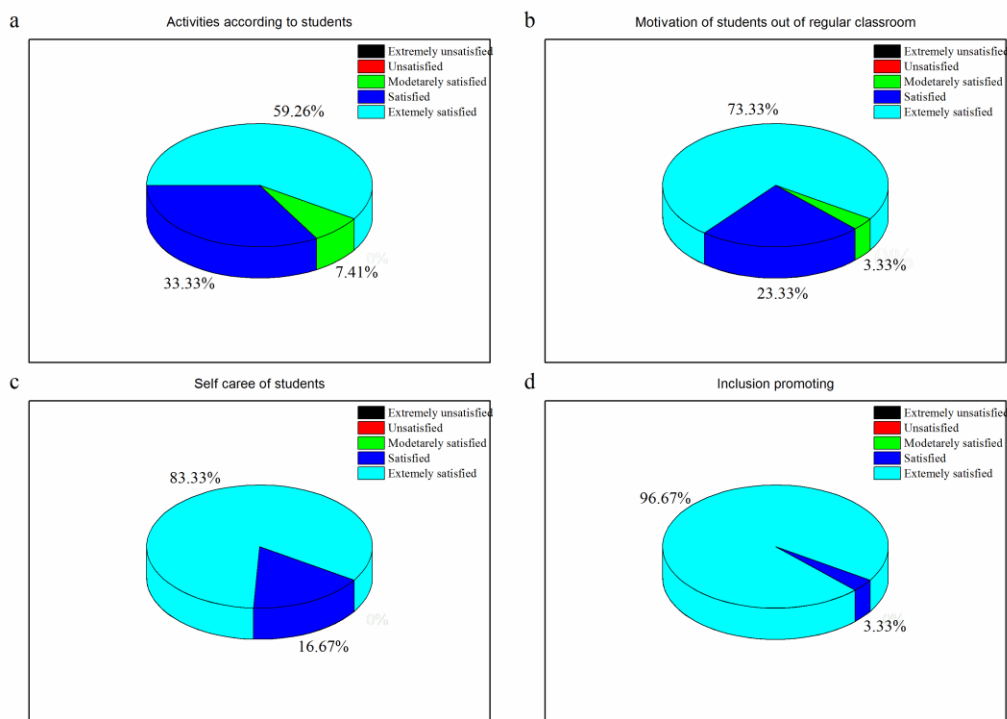
Figure 5. Responses of surveys.

The students accomplished different objectives related to senses and human body systems. The experience of workshop allow them improve their self-esteem and socialization. They also had the opportunity to demonstrate what they learned to society in science and books exhibitions (events that are intended for the general public). Adolescents from one of the secondary schools performed the activity of the cigarette and the harmful effects of smoking in a primary school.

The inclusion promoting was acceptable. It is important to continue with these activities in order to adapt them to children with blindness and motor problems.

Another topic was discussed in another course that includes concepts of chemistry and the chemistry of different foods. Finally, we believe that these modules could be applied and improved by the readers of this journal from a pedagogical and didactic point of view.

Conclusion

The constructivism strategy proposed in this workshop enhances the inclusion of children and adolescents with mild disabilities in the scientific area. The idea of educational inclusion transcends the concept of integration-physical inclusion and implies the use of the same scenarios for everybody. The workshop showed that students participated in the different activities observing, reproducing, and understating phenomena of daily life. This contribution improved their self-esteem and socialization with their peers and tutors.

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Problem Solving and Resilience Self-Efficacy as Factors of Subjective Well-Being in Greek Individuals With and Without Physical Disabilities

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Abstract

The way that individuals perceive their well-being may vary depending on their self-efficacy especially towards a difficult life situation, such as the physical disability. The aim of this study is to examine the relationships among problem solving self-efficacy, resilience self-efficacy and subjective well-being and the differentiation among these factors between people with and without physical disabilities. A self-report questionnaire was administered to 150 individuals with physical disabilities and 150 individuals without disabilities in Greece. Results showed positive correlations among problem solving self-efficacy, resilience self-efficacy and subjective well-being, while statistically significant differences were found in the level of the above factors between participants with and without disability. Furthermore, the need for an escort and the satisfaction with transportation autonomy could predict much variance in self-efficacy and subjective well-being for individuals with physical disabilities. The implications of findings for the psychosocial adjustment of people with physical disabilities are discussed.

Keywords: physical disability; problem solving self-efficacy; resilience self-efficacy; subjective well-being; satisfaction with transportation autonomy.

Introduction

The way that people evaluate their well-being is associated with how efficient consider themselves in various areas of life. Beliefs about personal efficacy have a vital role in the actions that people choose and they are related to various domains of human functioning (Luszczynska, Gutiérrez-Donã, & Schwarzer, 2005). The relationship between behavioral change and perceived efficacy was initially supported by Albert Bandura (1978), who introduced the psychological concept of "self-efficacy" in the context of his social-cognitive theory. *Self-efficacy* is defined as the individual's beliefs about his capabilities to organise and to perform specific actions which are required in order to achieve the outcomes that he desires (Bandura, 1997).

Self-efficacy is a multidimensional concept (Bandura, 1978) and the level of perceived self-efficacy might vary in different areas of life. For this reason, there are discrete and different dimensions of self-efficacy. A specific dimension of self-efficacy is *problem-solving self-efficacy,* which refers to person's beliefs about his abilities to efficiently manage and to resolve a difficult situation or a serious problem (Karademas, 2006; Karademas, 2007). High problem-solving self-efficacy leads the person to distinguish the most appropriate behavior or to find the best possible solution (Heppner, & Lee, 2005). *Resilience self-efficacy* is another dimension of self-efficacy which concerns personal beliefs about the capability to deal with the negative effects of an unpleasant situation (Karademas, 2006; 2007).When people believe that they are able to resist towards an event which appears as threatening or stressful -such as the situation of physical disability- they can adapt to it more positively (Masten & Reed, 2005).

Depending on the level of his self-efficacy the individual decides how to react under certain circumstances, after he has assessed his abilities to succeed (Maddux, 2005). For example, towards a difficult and a serious objective situation, high self-efficacy could affect adaptation, leading people to focus more on the positive aspects of life and on the pleasant experiences and to continue their coping efforts despite any kind of problem or stressful event. Physical disability is considered to be such an objectively difficult situation which has important psychological effects to those who experience it. However, when people with disabilities regard themselves as effective, they are adapted more adequately and they evaluate their everyday lives more positively regardless of the type or the severity of disability (Schiaffino & Revenson, 1992; Schiaffino et al., 1991)

Among the most important factors that are related to how someone assesses his well-being, self-efficacy is also included. These subjective assessments about life are characterized as a key aspect of optimal functioning (Ryan and Deci 2001). The concept of *subjective well-being* refers to the assessments or to the reactions that people make about their life (Diener, 1994; Diener et al., 1985). The term is defined as 'a person's cognitive and affective evaluations of his or her life. "These evaluations include emotional reactions to events as well as cognitive judgments of satisfaction and fulfillment" (Diener et al., 2005, p. 63).

The relationship between self-efficacy and subjective well-being has become an object of investigation among scientists especially during the last decades. However, the studies, which examined the association between the two factors in general population, are limited and there are even fewer studies that were targeted on the population of people with physical disabilities.

The study conducted by Hampton (2004) in a sample of 127 individuals, who had spinal cord injuries, examined how demographic variables and self-efficacy influence the level of subjective well-being. Among the results, it was found that self-efficacy accounted for a significant variance in subjective well-being, but gender was not correlated with subjective well-being. In the quantitative study conducted by Middleton et al. (2007), 106 individuals, who had spinal cord injuries and had received treatment in a rehabilitation unit, completed a self-report questionnaire. It was found that participants with spinal cord injury had lower quality of life compared to the general Australian population. Furthermore, the low level of participants' self-efficacy was associated with low quality of life. Peter et al. (2014) conducted a quantitative research, which involved 516 individuals with spinal cord injury, living in a community in Switzerland. It was shown that general self-efficacy was positively associated with the level of life satisfaction. In another quantitative research (Krause et al., 2004), which involved 309 African-Americans adults with traumatic spinal cord injury, gender differences were found in subjective well-being as measured by a self-report questionnaire. Women reported a lower degree of subjective well-being and they had a higher frequency of depressive symptoms and negative emotions compared to men.

Other researchers have used two sample groups (individuals with and without disabilities) in order to investigate if there were differences in the levels of self-efficacy and of subjective well-being between the two groups. Dijkers (1997) performed a meta-analysis in a total of 22 studies, showing that people with spinal cord injuries reported lower subjective well-being compared to people without disabilities. Bunketorp-Käll et al. (2007) focused on the possible effects of whiplash associated disorders on the self-efficacy. The exposed group consisted of 47 adults who had subacute whiplash associated disorders and the control group of 113 adults without disabilities. Participants of the exposed group had lower level of self-efficacy compared to those of the control group. In his study, Hampton (2008) used self-report scales in a sample of 119 Chinese individuals with spinal cord injuries and 109 individuals without disabilities in order to examine any differences in subjective well-being between the two groups. It was found that participants with spinal cord injuries had lower subjective well-being and lower self-efficacy compared to participants without disabilities. Furthermore, in each sample group, self-efficacy was related to subjective well-being.

Differences in subjective well-being have also been found in other studies, focusing on the examination of this factor between two sample groups. In their comparative cross-national study, Van Campen and van Santvoort (2013) examined the level of subjective well being of people with disabilities within 21 European countries as well as the determinant variables which could explain the differences in subjective well-being observed in these countries. Self-report measures as for emotional well-being, satisfying life and other variables (e.g. disability, socio-demographics, participation, and personal resources) were completed by 40,605 persons. Results showed that individuals with disabilities had lower subjective well-being compared to individuals with no disabilities across all countries. The inequality of subjective well-being was higher in Eastern European countries (Russia, Ukraine, Slovakia and Poland) than in Northern countries (Finland, Denmark, Sweden, The Netherlands, United Kingdom and Ireland). The factors that explained the variance of subjective well-being, concerned mostly personal resources (e.g. vitality, social supportiveness, optimism, resilience, perceived autonomy, perceived accomplishment, perceived capacity and engagement) compared to other variables, such as the

level of disability, socio-economic status or the level of participation in work. In another study, Van Campen and Iedema (2007) compared the level of subjective well-being between individuals with and without disabilities in a sample of 5,826 Dutch individuals (1,899 participants with physical disabilities and 3,927 participants without disability), using self-report measures. It was found not only that people with disabilities had lower subjective well-being compared to the participants of the control group, but also that the severity of physical limitation affected the level of subjective well-being.

The literature review reveals that it has not been systematically examined yet whether there are differences in the levels of self-efficacy and of subjective well-being between people with and without disabilities. As demarcated by reviewed research, most studies took place in the European context and fewer studies were conducted in a sample of American or Chinese participants. Despite the fact that the investigation of this research topic has a special importance for the lives and the adaptation of people with disabilities, similar studies have not been conducted in Greece. A cross-cultural commonality of the level of subjective well-being between Greek individuals with and without physical disabilities is expected based on the cross-cultural comparisons in the study by Van Campen and van Santvoort (2013). The finding of this study showed that in all countries under investigation individuals with disabilities were in a disadvantaged position in terms of subjective well-being. Although there are differences across countries in terms of social, economical, and cultural background, it is assumed that the presence and the direction of relationships among the targeted variables in the present research conducted in the Greek context would not radically differ from the findings of past studies conducted in other economically developed countries.

For this reason, this study was designed to focus on the relationships among problem solving self-efficacy, resilience self-efficacy, subjective well-being and factors related to disability in people with physical disabilities as well as on the presence of differences between people with and without physical disabilities. In particular, the present study aimed to address the following research questions:

(1) Is there any differentiation in the levels of problem-solving self-efficacy, of resilience self-efficacy and of subjective well-being between individuals with and without disabilities?
(2) What is the relationship among the level of problem-solving self-efficacy, the level of resilience self-efficacy and the level of subjective well-being in individuals with and without physical disabilities?
(3) What is the relationship among factors related to disability situation (need for an escort, satisfaction with transportation autonomy), problem-solving self-efficacy, resilience self-efficacy and subjective well-being in individuals with physical disabilities?
(4) Does the level of subjective well-being differ in individuals with physical disabilities according to gender?

Method

Participants

A total of 300 Greek individuals (N = 300) participated in the study. Specifically, the sample consisted of 150 people with physical disabilities and 150 people without disabilities. Although people with physical disabilities is a heterogeneous group due to the type, the cause and the severity of the motor impairment, physical disability was considered as any kind of limitation or loss of movement which affects the person's everyday life (Jones, Morgan, Shelton, & Thorogood, 2007). Convenience sampling method was used for the selection of participants with physical disabilities, so that this sample group cannot be considered representative of the Greek population in terms of physical disability. In the group of participants with physical disabilities, individuals who had –either inborn or acquired– orthopedic impairment, limb amputation or crippling deformities were included. The criteria for the participant recruitment were as follows: (a) In the group of people with physical disabilities, each participant had a motor but not a cognitive impairment; b) in both groups each participant was at least 16 years old at the time of the study; c) the sample consisted of native individuals who lived in urban centers of North and South Greece and d) participants without disabilities were selected from the same urban areas in order to fit the gender and age distribution of participants with physical disabilities. The substantial difference between the two sample groups was the presence or the lack of disability.

According to gender, each group included 76 men and 74 women. As for the age of participants in each sample group, 5 individuals (n=5) belonged to the age group of 15-18 years old, 27 individuals (n=27) to the age group of 19-24 years old, 91 individuals (n=91) to the age group of 25-30 years old and 10 individuals (n=10) to the age group of 31-39 years old. The age of 9 individuals (n=9) ranged from 40 to 49 years old and the age of 8 individuals (n=8) ranged from 50 years and older.

Study Procedure

A self-report questionnaire was administered to the participants. At first, the aim and the importance of the study were explained in general terms and afterwards participants completed the questionnaire. Informed consent was obtained from all individuals included in the study and underage adolescents participated in the study, after the parental permission was obtained. The questionnaire was anonymous and there was no time limit for its completion.

Measures

In order to collect the survey data, the questionnaire was divided in three sections. In the first section, demographic questions were included, which concerned the gender, the age, and two questions related to the situation of disability.

In the dichotomous question (yes/no) "*Need for an Escort*" participants with physical disability were asked if they had a permanent necessity for support and assistance provided by a third person who had to be always present in order to satisfy fundamental needs (such as nourishment, getting on and off toilet, putting on and of clothes, bath and motion). This person (a parent, a spouse, a friend, a nurse, a caregiver etc.) is characterized as an escort and he is indispensable,

because the person cannot be engaged in self-care behaviors without assistance. In the question named as "*Satisfaction with Transportation Autonomy*" participants with physical disabilities were asked to rate how satisfied they felt with their autonomy during transportation on a five-point Likert scale (1=not at all to 5=very much).

In the second section, *Self-Efficacy Expectations Scale* (Karademas, 2006) was included. The scale consists of two factors. "Problem-solving self-efficacy subscale" consists of 6 items (e.g., ''capable of planning action'', ''capable of thinking alternative solutions'', Cronbach a = .79) and "resilience self-efficacy subscale" consists of 7 items (e.g., ''capable of bearing the negative consequences of a problem'', ''remain calm when dealing with a problem'', Cronbach a = .90). Individuals indicate the level of their agreement across a four-point Likert-type scale ranging from 1 (not at all) to 4 (a lot).

In the third section, the *Subjective Happiness Scale* [SHS] was used (Lyubormisky & Lepper, 1999). The Scale consists of 4 items. Participants are asked to report the level of their agreement across a seven-point Likert-type scale (1=strongly disagree to 7=strongly agree). The scale has been translated in Greek using the multiple forward and backward translation protocol and validated in a sample of 856 Greek adults. The Greek translation of SHS has good construct and discriminant validity and its internal consistency is satisfactory (Cronbach's α=0.77) (Lyrakos et al., 2013).

Data Analysis

For the quantitative data analysis, the Statistical Package SPSS (Statistical Package for Social Sciences, Version 21) was used. A probability level of $p < .05$ was set for all tests of statistical significance.

Results

Comparisons of problem solving self-efficacy, resilience self-efficacy and subjective well-being between individuals with and without disabilities

Independent samples t-tests were used in order to compare the means of problem-solving self-efficacy, resilience self-efficacy and subjective well-being between participants with and without physical disabilities. It was found that there was a statistically significant difference in the means of problem-solving self-efficacy between the two sample groups, $t(287.498)$=-4.162, p=0.00<0.01. Thus, individuals with a physical disability (*M*=2.80, *SD*=0.71) had a lower level of problem-solving self-efficacy compared to individuals without disability (*M*=3.11, *SD*=0.59). Furthermore, a statistically significant difference was found in the means of resilience self-efficacy between the two sample groups, $t(287.498)$=-4.162, p=0.00<0.01. Individuals with a physical disability (*M*=2.80, *SD*=0.71) had a lower level of resilience self-efficacy compared to those without disability (*M*=3.11, *SD*=0.59). The results (See Table 1) also showed that there was a statistically significant difference in the means of subjective well-being between the two sample groups, $t(282.878)$=-5.436, p=0.00 <0.01. Participants with physical disabilities (*M*=2.77, *SD*=0.76) had a lower level of subjective well-being compared to participants without disabilities (*M*=3.20, *SD*=0.60).

Table 1. Comparisons of problem solving self-efficacy, resilience self-efficacy and subjective well-being by sample group

| | Sample Group | | | | | |
| | Individuals with physical disability | | Individuals without disability | | | |
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*
Problem-solving self-efficacy	2.80	0.71	3.11	0.59	-4.162*	287.498
Resilience self-efficacy	2.80	0.71	3.11	0.59	-4.162*	287.498
Subjective well-being	2.77	0.76	3.20	0.60	-5.436*	282.878

Note. *=p< 0.01. M=Mean and SD=Standard Deviation. Problem-solving self-efficacy, resilience self-efficacy and subjective well-being ranged from 1 (Not at all) to 5 (Always).

Correlations among problem solving self-efficacy, resilience self-efficacy and subjective well-being in individuals with and without disabilities

Pearson's correlation coefficient (*r*) was calculated in order to examine the relationships among problem-solving self-efficacy, resilience self-efficacy and subjective well-being for each sample group. For participants with physical disabilities, there was a positive statistically significant correlation between problem-solving self-efficacy and subjective well-being, $r(150)=0.899$, p=0.00 <0.01 and a positive statistically significant correlation between resilience self-efficacy and subjective well-being, $r(150)=0.899$, p=0.00 <0.01. For participants without disabilities, positive statistically significant correlations between problem-solving self-efficacy and subjective well-being [$r(150)=0.805$, p=0.00 <0.01] and between resilience self-efficacy and subjective well-being [$r(150)=0.805$, p=0.00 <0.01] were also found (See Table 2). In order to examine whether the correlations for the two sample groups were significantly different, Fisher's r to z transformation was used. At first, correlation coefficients (*r* values) were converted into *z* scores and then the observed values of *z* (z-critical values) were calculated. Results showed that there was a statistically significant difference in the strength of the correlation between subjective well-being and problem solving self-efficacy for individuals with physical disabilities and individuals without disability, $Z=3.04$, p=0.00<0.001.

Table 2. Bivariate correlations among problem-solving self-efficacy, resilience self-efficacy, subjective well-being in individuals with and without disabilities

Variable	Individuals with physical disability (n=150)			Individuals without disability (n=150)		
	1	2	3	1	2	3
1. Problem-solving self-efficacy	--		.899*	--		.805*
2. Resilience self-efficacy		--	.899*		--	.805*
3. Subjective well-being			--			--

Note. *=p< .01. The Pearson correlation coefficient was calculated for each sample group separately.

Relationships among need for an escort, satisfaction with transportation autonomy, problem solving self-efficacy, resilience self-efficacy and subjective well-being

A series of multiple linear regression analyses were calculated in order to examine the relationships among factors related to disability, problem solving self-efficacy, resilience self-efficacy and subjective well-being in the group of individuals with physical disabilities. A multiple linear regression analysis was used to predict subjective well-being based on need for an escort and satisfaction with transportation autonomy. The prediction model was statistically significant, $F(2,147) = 89.105$, $p < .001$, and accounted for approximately 55% of the variance of subjective well-being ($R^2 = .548$, Adjusted $R^2 = .542$). A multiple linear regression analysis was also used to predict problem-solving self-efficacy based on need for an escort and satisfaction with transportation autonomy. The prediction model was statistically significant, $F(2,147) = 90.117$, $p < .001$, and accounted for approximately 50% of the variance of problem-solving self-efficacy ($R^2 = .551$, Adjusted $R^2 = .545$). Finally, another multiple linear regression analysis was calculated to predict resilience self-efficacy based on need for an escort and satisfaction with transportation autonomy. The prediction model was statistically significant, $F(2,147) = 90.117$, $p < .001$, and accounted for approximately 50% of the variance of problem-solving self-efficacy ($R^2 = .551$, Adjusted $R^2 = .545$). For all multiple regression analyses the raw and standardized regression coefficients of the predictors for each dependent variable (subjective well-being, problem-solving self-efficacy and resilience self-efficacy) are shown in Table 3.

Table 3. **Regression coefficients resulting from three different multiple regression analyses (n=150)**

Predictors	Subjective well-being			Problem-solving self-efficacy			Resilience self-efficacy		
	b	SE-*b*	Beta	*b*	SE-*b*	Beta	*b*	SE-*b*	Beta
Need for escort	.247	.179	.146	.006	.169	.004	.006	.169	.004
Satisfaction with transportation autonomy	.410	.071	.612	.469	.067	.739	.469	.067	.739
R^2	.548			.551			.551		

Demographic differences in individuals with physical disabilities

In order to examine whether the level of subjective well-being differed according to the gender of participants with physical disabilities, one-way analysis of variance (ANOVA) was performed. Levene's test was initially applied in order to assess the equality of variances for the variables, proving that the assumption of variance was fulfilled (p=0.75>0.05). The results showed that there was a statistically significant difference in the level of subjective well-being between men and women with a physical disability, $F(1,148)$=9.71, p=0.00 <0.01. Women with physical disabilities (*M*=2.58, *SD*=0.72) had a lower level of subjective well-being than men with physical disabilities (*M*=2.96, *SD* =0.74) (Table 4).

Table 4. **One-way analysis of variance of subjective well-being by gender in experimental group**

	Experimental Group (N=150)					
	Gender					
	Male		Female			
Variable	*M*	*SD*	*M*	*SD*	*df*	*F*
Subjective well-being	2.96	0.74	2.58	0.72	1.148	9.71*

Discussion

The aim of this study was to examine the presence of differences in the levels of problem-solving self-efficacy, resilience self-efficacy and subjective well-being between people with and without physical disabilities, as well as the relationships among these factors.

Concerning the first research question, results showed a statistically significant difference in problem-solving self-efficacy and resilience self-efficacy between participants with and without disabilities. Individuals with physical disabilities had lower levels of problem-solving self-efficacy and of resilience self-efficacy compared to those without disabilities. This finding is also confirmed in the study conducted by Hampton (2008) in which the experimental group consisted of participants with spinal cord injuries and in the study conducted by Bunketorp-Käll et al. (2007), in which participants had subacute whiplash associated disorders. In both studies, participants of the experimental group had lower level of self-efficacy compared to those of the control group (individuals without disabilities). The difference, which was found between the two sample groups, could be explained due to the fact that the physical disability is an objective situation that can create constraints and barriers in the person's daily life. The disability could restrain individuals from having experiences of success in various areas of everyday life (e.g. work, entertainment, education), so that they believe less in their capabilities compared to people without disabilities.

The level of subjective well-being also differed between people with and without physical disabilities. Specifically, the level of subjective well-being of people with physical disability was lower compared to that of people without disabilities. The study which was conducted by Hampton (2008), showed similar results, because individuals with spinal cord injuries, who participated in this study, reported a lower level of subjective well-being compared to those of the control group. Van Campen and van Santvoort (2013) also confirmed that people with disabilities had lower subjective well being than people without disabilities across 21 European countries. Individuals with disabilities have to face various challenges and problems arising from the disability situation. The differences that are detected in the level of subjective well-being between people with and without physical disabilities might turn up due to the fact that the physical disability reduces the individuals' functioning, setting limits to activities of everyday life. A person with disability experiences even more intensely the reduction of his functioning and he feels weaker to satisfy his needs, when the social environment does not provide the necessary conditions for accessibility and social participation (e.g. leisure activities, employment, etc.).

The second research question concerned the investigation of relationship between self-efficacy and subjective well-being in both sample groups. The results showed that problem solving self-efficacy and resilience self-efficacy were positively associated with subjective well-being in participants with and without physical disabilities. Previous studies (Caprara et al., 2006; Karademas, 2006; Karademas, 2007; Luszcyzynska et al., 2005; Magaletta & Oliver, 1999; Santos et al., 2014; Weber et al., 2013; Zumberg et al., 2008) which were conducted in group of individuals taken from the general population, also led to the finding that self-efficacy was strongly associated with the sense of personal well-being. Self-efficacy is closely related to the perception that an individual has about his life, as it affects the behaviour when the individual faces severe problems and unfamiliar events (Bandura, 1978). High self-efficacy leads the person to a better psychological adjustment and to a greater degree of subjective well-being, even if he faces a difficult situation, such as the disability. This finding is confirmed by studies which were conducted in a sample of people with disabilities (Hampton, 2004; Hampton, 2008). These studies showed not only a positive correlation between the two factors, but also that self-efficacy was a significant predictor of subjective well-being of people with disabilities. On the contrary, the low sense of personal efficacy leads to less positive evaluations about life (Caprara & Steca,

2005; Lent et al., 2005; Pinquart et al., 2004; Strobel et al., 2011). For example, in a relevant study (Middleton et al., 2007) the low level of self-efficacy of participants with spinal cord injuries was associated with the decrease in the level of their quality of life. Self-efficacy could explain a significant proportion of the variance in the adaptation of people with disabilities (Cunningham et al., 1991). Furthermore, Van Campen and van Santvoort (2013) showed in their study that the variance in the level of subjective well-being among individuals with physical disabilities was explained more by personal resources, such as resilience and perceived autonomy than by other factors (e.g. socio-demographic variables). Thus, the limitations in functioning, which people with disabilities experience, are determined more by the sense of their personal efficacy compared to the actual disability situation, the type of disability and its severity (Baron et al., 1987). For this reason, individuals who have even the same type and degree of disability, but differ in the level of self-efficacy, have different adjustment and various degrees of well-being.

Addressing the third research question, the need for an escort and the satisfaction with transportation autonomy were factors with a significant influence on the variance in problem-solving self-efficacy and resilience self-efficacy predicted by the model. People who needed an escort and they did not feel satisfied with their independence during transportation, had lower problem-solving self-efficacy and resilience self-efficacy compared to those who did not need an escort and reported greater satisfaction during transportation autonomy. This finding is confirmed in a previous study (Becker & Schaller, 1995), which involved 28 adults with cerebral palsy. The results showed that there was a negative correlation between the level of self-efficacy and the need for personal assistance. Physical disability is a condition that undoubtedly affects the quality of life (Connolly et al., 2014). The severity of the disability is an important factor that can affect the person's judgments about his abilities. The difficulty in movement and transportation due to limitations of motion is a serious objective problem which influences the autonomy of the individual. Barriers in social participation are often based on the severity of the situation, so that people belonging to this socially vulnerably group lag behind compared to people without disability in various domains of society (Van Campen & Iedema, 2007). The person with a physical disability is likely to experience constantly failure as for his ability to move, so that his sense of personal efficacy remains low.

The need for an escort and the satisfaction with transportation autonomy could also predict much variance in subjective well-being for people with physical disabilities. People, who had the need for an escort and felt less satisfied with their autonomy during their transportation, had lower subjective well-being. Physical health is related to subjective well-being. Van Campen and Iedema (2007) showed that the level of subjective well-being decreases, as the severity of physical limitation gets higher. Thus, when the person is restricted in his movement and he is forced to ask for help and support during transportation, he feels less satisfied over his own life. However, although an objectively difficult situation experienced by the person –such as the disability–, is associated with subjective well-being (Watten et al., 1997), subjective judgments about his health affect more the level of his subjective well-being (Diener et al., 2005; Diener et al., 1999). The strong association among factors related to disability and subjective well-being in the Greek sample might show that support services and facilitation addressed to people with physical disabilities that exist in Greece are inadequate or underfinanced. In a different context where assistance services and facilitation measures were systematically applied to meet the special needs of these people, the replication of this research would probably show not such a

strong association among these variables, because these individuals could overcome barriers related to their physical disability with formal disability resources.

The results concerning the last research question showed that there was a significant difference in subjective well-being according to the gender of participants with disabilities. Women had a lower level of subjective well-being compared to men. Previous studies, which were conducted in a sample of individuals without disabilities, confirmed the difference in the level of subjective well-being between the two sexes (Diener et al., 1999). However, the findings of studies, in which the sample consisted of people with disabilities, are not always consistent. In the study conducted by Krause et al. (2004), it was found that female participants with spinal cord injury had lower subjective well-being compared to male participants with the spinal injury. Small differences in subjective well-being according to the gender were also found in another study (Krause, 1998), where the sample consisted of people who had disabilities after spinal cord injuries. However, other studies (Hampton, 2004; Krause et al., 2009), which involved individuals with spinal cord injuries, did not show any statistically significant difference in subjective well-being by gender. The differences between men and women in the level of subjective well-being might be due to the different behaviour of each gender (Costa et al., 2001; Nolen-Hoeksema & Rusting, 1999). In particular, women experience unpleasant feelings more frequently and more intensely than men, they are more vulnerable emotionally and they tend to be quiet overwhelmed by negative emotions when they encounter unexpected events. Different social expectations for both sexes may also be responsible for the differentiation between men and women in the level of their subjective well-being (Nolen-Hoeksema & Rusting, 1999). Women often feel that they are weak in their relationships, thinking that they have no control over daily decisions, so that they end up having a negative mood. The roles of each gender influence the emotional reactions of men and women as well as the way they express their feelings (e.g. if they externalize them or not) (Brody & Hall, 1993; Nolen-Hoeksema & Rusting, 1999). Provided that the findings of previous studies vary as for the existence of difference in subjective well-being between men and women with disabilities, a more systematic investigation of the issue is needed.

Self-efficacy is a determinant factor of psychological adaptation of the person with disability (Cunningham et al., 1991; Zumberg et al., 2008), affecting perceived well-being (Dahlbeck & Lightsey, 2008; Karademas, 2007). Thus, the level of psychological well-being would be increased, if self-efficacy beliefs were optimized (Benka et al., 2014). The difference between Greek individuals with and without disabilities in the levels of self-efficacy and of subjective well-being, which was confirmed by the present study, shows that it is essential for individuals with disabilities to be trained in order to enhance their sense of personal efficacy, reaching gradually rich psychosocial outcomes. When the individual with physical disability believes in his capability to perform various life tasks and to face negative events, he manages to overcome more efficiently the difficulties and the constraints which arise from disability situation. These successful experiences, which are closely linked to his high self-efficacy, usually lead to a positive perception about his well-being, as he finds out that his capabilities in daily life are not actually hindered by his disability and he can achieve or cope with his problems despite his poor physical condition.

Thus, findings support the need for the design and the implementation of psychological intervention programs, aimed to increase the level of self-efficacy. These programs would be specifically addressed to individuals with physical disabilities, but would also be adapted to the

features of Greek population. Self-efficacy could be included in a range of personal strategies that the individual could use in order to deal with the negative psychological consequences of disability situation (Marks, 2014). Such measures are absent in the Greek context and they are not broadly promoted by the Greek society. This might be a reason for the lower level of subjective well-being and of self-efficacy reported by participants with disabilities compared to those without disabilities.

While this study is the starting point for the investigation of the relationship between self-efficacy and subjective well-being in people with physical disabilities, it has certain limitations. The sample derives from specific cities of Greece and it cannot be regarded as representative of the total population of people with physical disabilities. Furthermore, the areas where participants lived, were major urban centers. Though, participants' responses would probably differ, if the sample derived from rural areas.

It would be useful that future research would focus on other demographic variables related to the disability situation which could differentiate the level of self-efficacy and of subjective well-being. Such variables could include the time of disability onset (inborn or acquired disability), the severity of the injury, and the type of disability or the degree of pain. Furthermore, it is necessary to investigate whether the family and the social environment, where the person with disabilities lives, give the opportunities to him to develop his self-efficacy. Various studies showed that the variance, which was observed in the level subjective well being of individuals with disabilities in European countries, could be partly explained by the different national policies applied as for this socially vulnerable group in each country (van Campen & van Santvoort, 2013). Even if the person regards himself as effective, local barriers and the lack of social support might prevent him from maintaining a high level of self-efficacy and his participation in activities might be restrained in various spheres of life, affecting also his subjective well-being.

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Learning Strategies for Twice -Exceptional Students

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Abstract

A twice-exceptional student who is gifted but also has an additional exceptionality challenges teachers and educators to deliver the best teaching strategies. This paper reviews the current learning strategies, interventions and practices that specifically focused on twice-exceptional students. Research articles were obtained on online database of published articles. The scope is focused on intervention practices or instructions in the behavioral, developmental, emotional, or educational areas. By making a systematic review, this article summarizes 44 research studies on twice-exceptionality interventions between 2000 and 2018, regardless of the areas of disability. The findings are categorized into five main themes, preceded by the most used in studies which is academic or learning strategy, followed by support, strength or talent-based, art or music, and technology. An effective intervention must be tailored to their strengths and potentials as well as providing remediation and support for their social and emotional needs. This study is vital and meaningful for educators and parents to provide these twice-exceptional students the best intervention that suits their own strengths and needs.

Introduction

Twice-exceptional learners, commonly known, as gifted students with learning disabilities. Their characteristics are diverse and different from each other. They have specific talents, higher-level intellectual abilities, superior vocabulary and exceptional comprehension of abstract ideas and concepts, high levels of creativity, unusual imagination, but may exhibit poor reading and writing skills, lack organizational and study skills, have a low self-esteem, and creates sophisticated humor (Buic & Popovici, 2014; Foley-nicpon, 2013; Nielsen, 2010). However, the lack of understanding of the criteria of twice-exceptionality, often interferes with parents and teachers recognizing the problems of twice-exceptionality students. Typically, twice-exceptional students fit into one of three categories (Baldwin, Baum, Pereles, & Hughes, 2015; Buic & Popovici, 2014):

(a) Students are identified as gifted (with no diagnosed disability):
These students' disabilities are masked by the student's talents. Moreover, students are often considered underachievers due to poor self-concept, lack of motivation, or seen as lazy.

(b) Students are diagnosed with a disability (with no identified giftedness):
These students' giftedness is covered up by their disability. They are rarely referred for gifted services as they often being underestimated or their potential is not identified.

(c) Students are neither identified as disabled, nor as gifted:
These students are considered to be average, so neither giftedness nor disability is clearly distinguishable and they usually sit in general classrooms. Failing to recognize and identify the twice-exceptionality students denies their right to take advantage of effective treatments or programs to accommodate their limitations and strengthen their potentials.

For all three of these categories, specific strategies must be used to accommodate their limitations, and at the same time develop their potentials and talents. Teachers have to understand and recognize their student, then provide the best learning strategies or interventions. Their educational experiences and curriculum must support their strengths and potentials (Schultz, 2012), otherwise, the culture of education which focuses more on accommodating their limitations, will prevent their potentials and talents to be developed (Dole, 2000; Hua, Shore, & Makarova, 2012). To date, the review of intervention for twice-exceptionality is still limited. Nicpon, Allmon, Sieck, & Stinson, (2011) study the empirical investigation of twice-exceptionality focused on Specific Learning Disabilities (SLD), Attention Deficit Hyperactivity Disorder (ADHD), and Autism Spectrum Disorder (ASD) only. Therefore, this article summarizes 44 research studies on interventions with twice-exceptionality students between 2000 and 2018, regardless of the areas of disability.

Purpose

The purpose of this study was to identify learning strategies, intervention and practices for twice-exceptionality students. This study is vital and meaningful for educators and parents to provide twice-exceptional children with the best interventions that suit with their own needs and conditions. An intervention helps twice-exceptional children to be better adapted, independent persons valued members of society (Leroux & Levitt-perlman, 2000).

Methodology

Criteria of the Studies in the Review
Research articles were obtained on online database of published articles. Article included in this review were published between 2000 and 2018, and can be either qualitative and/or quantitative studies. A Boolean search is used to combine the keyword to ensure the true concept of review achieved. The keywords used are "gifted with disability", "twice-exceptional", "2e", "gifted", "talented", "intervention", and "learning strategy". After eliminating duplicated articles, 94 articles have been obtained. Then, after the screening process where title and abstract been screened, to ensure the article included the inclusive criteria. Articles with non-intervention were also eliminated.
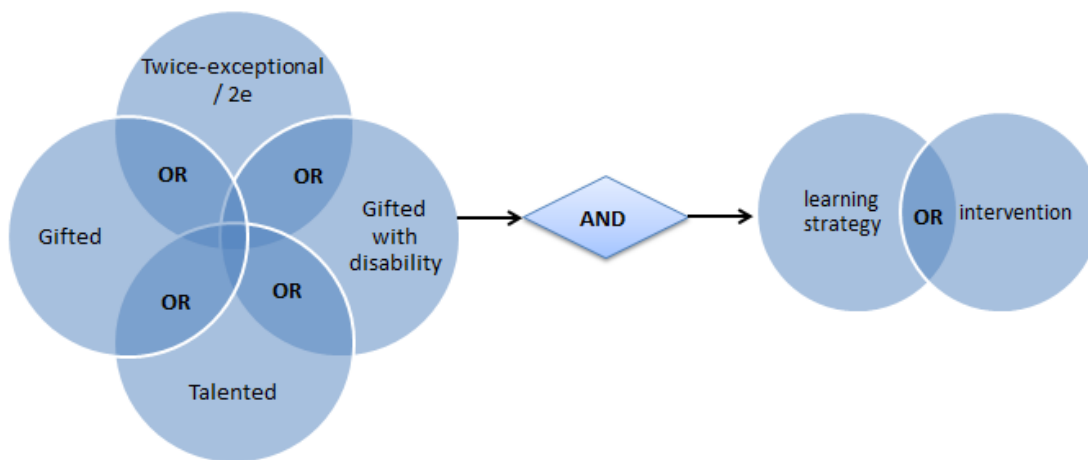
Figure 1: Criteria of the Studies

Identific | Database searching (n = 94 articles)

Screenin | - Duplicates article removed - Title and abstract screening (n = 56) → Duplicate article, non-human subject, and non-intervention

Eligibili | Full text of articles assessed (n = 48) → Study that have participant without gifted with disability

Included | Total articles obtained (n = 44)
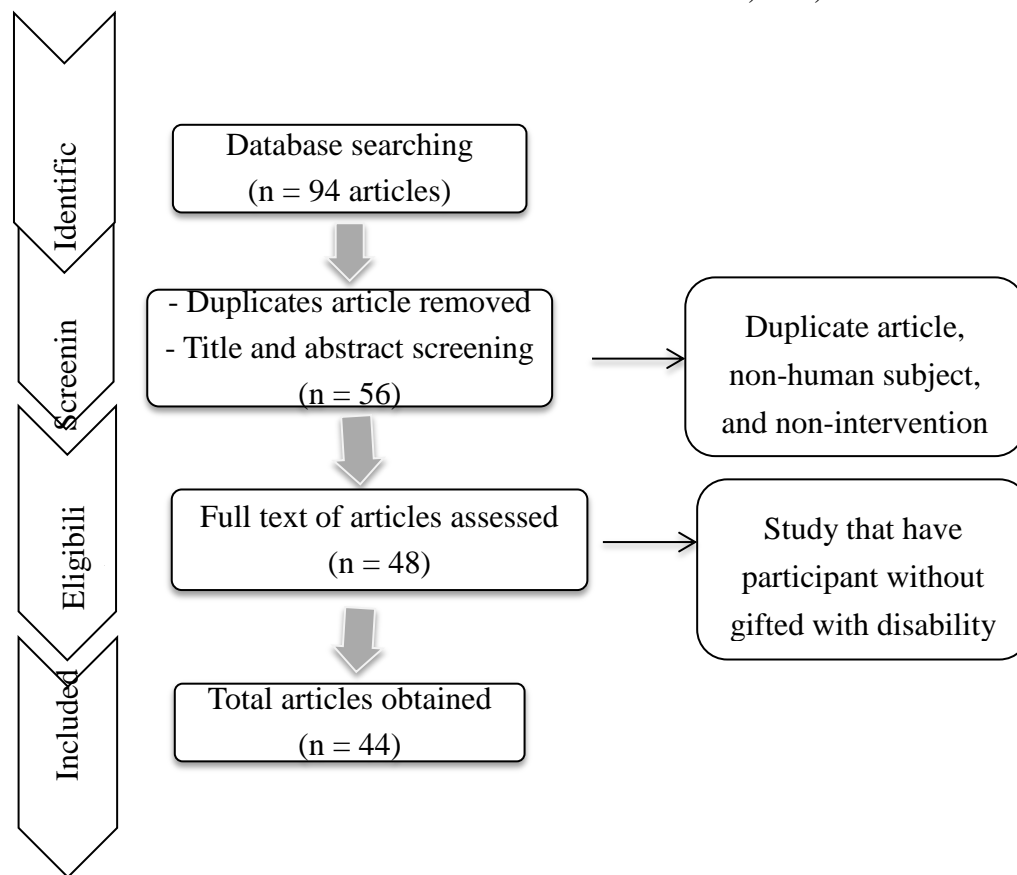
Figure 2: Systematic review process

Participants
All studies are specifically conducted on twice-exceptional (2e) students, which are gifted with any disabilities. The disabilities including Learning Disability (LD), Autism Spectrum Disorder (ASD), Asperger, Attention Deficit Hyperactivity Disorder (ADHD), Cerebral Palsy (CP), Obsessive-Compulsive Disorder (OCD), Emotional and Behavioral Disorder (EBD), hearing impairment, neurological (processing) disability, sensory disability (cortical visual impairment), anxiety, dyslexia and other Specific Learning Disabilities (SLD).

Interventions
To be selected for this review, the article had to be focused on intervention practices or instructions in the behavioral, developmental, emotional, and/or educational area in an educational, clinical, home and/or community setting. The participants were identified as being gifted with other exceptionalities, such a.s autism spectrum disorder (ASD), Asperger syndrome, Attention Deficit Hyperactivity Disorder (ADHD), dyslexia, Emotional and Behavioral Disorders (EBD), learning disability, pervasive developmental disorder, and so forth.

Results

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
ACADEMIC / LEARNING STRATEGIES				
Boxtel (2016)	Strategy / self -checklist in math: R-read problem twice E- Express the problem. (Translate into equation) A-answer S-Share O-Offer explanation N-notice how peer solve it & compare	Student can express his/her reasoning process during problem solving situations.	Qualitative: case study	gifted-ASD
Wang & Neihart (2015b)	Strategies: repetitively reading text, asking questions, and managing time, note-taking and audio-recording of lessons academic engagement: good teaching & caring teacher, parental support, peers influence academic self-efficacy (expectations from others and friends influence in practice of discipline and school rules)	Peers support was the most influenced factor in twice-exceptional s' academic achievement.	Qualitative	Six 2e's Singaporean secondary school
Lee & Olenchak (2014)	Individual attention from teacher, shorter assignments with more directions and feedback. leadership activities provide challenging topics set realistic expectations organizational strategies interactive learning (technology) opportunities to express creativity interact with likeminded peers appreciate their individual differences counseling and social skills training	The interventions suggested are broad strategies, not focused on gifted-ADHD (can be applied to all types of students).	Review article	gifted-ADHD

Table 1. **Continued**

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
Crepeau-Hobson & Blanco (2013)	Small-group counseling response to intervention (RTI) model behavioral/ social-emotional intervention creative graphic organizers	Improved participant's academic skills, but still struggles with boredom due to not being challenged in his areas of gifted.	Qualitative: case study	gifted-LD
Willard-Holt et al. (2013)	Learning strategies: choices or flexibility in learning, assessment, and rate use reward strategies and use strengths to face weaknesses work together in a group	Participants perceived that overall school experience fails to assist them in learning their potential. However, they were able to use their strengths to deal with weaknesses.	Mix-method (Qualitative)	16 males (10-23 years). Gifted with ASD, LD, OCD, CP, emotional, hearing impairment, neurological (processing), & sensory disability (cortical visual impairment)
Schultz (2012)	school culture that allows 2e to be in Advanced Placement (AP) student goals and transition plan test and environmental accommodations early education impact mentoring and familiarity with twice-exceptional student positive experiences of teachers	School culture and early placement decisions affect enrollment in AP and for-college-credit classes for the twice-exceptional student.	Qualitative	Six college students of twice-exceptional students in Advanced Placement (AP)
Assouline & Whiteman (2011)	Academic acceleration / advance academic work. comprehensive evaluation of student characteristic assessment psychoeducational reports must include information about giftedness as well as the disability	Improved understanding of twice-exceptionality will enhance their unique role in assessing twice-exceptional students and in recommending appropriate interventions in schools	Qualitative - case study	3 students. gifted with ADHD, gifted with ASD, gifted with SLD

Table 1. **Continued**

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
Kuo, Su & Maker (2011)	Problem solving strategy Group student based on similar talents and interests	Students gained significantly higher scores on closed problems, and lower scores on open-ended ones in the Multiple Intelligence class.	Quantitative	61 students (aged 4-6 years) 2e: (ASD, LD, Asperger, hearing or visual impairment)
Yssel et al. (2010)	Group study among twice-exceptional students Project-based & structured Small activities, form large projects Creating secondary and tertiary activities in learning (retaining student focus)	Parents' perception on child's learning and socio-emotional reactions children are not getting recovery and strengthening strength of child neglected, because focused on child's weakness difficult to handle child's socio-emotional problems	Qualitative	gifted-LD
Hannah & Shore (2008)	Increasing student's comprehension in reading.	Metacognitive skills of secondary students are better due to understanding the verse they read. However, lower secondary students are more confident with existing knowledge (reject new information read) than secondary students.	Qualitative	13 male gifted-LD students
Mann R.L. (2006)	Effective teaching practices to students of gifted (spatial) - verbal weaknesses: attitude of caring teachers, learning based on student's strength, student-	Successfully reduced LD's weaknesses and improved learning achievement.	Qualitative	LD with gifted (spatial strength)

Table 1. **Continued**

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
	centered learning.			
Weinfeld et al. (2005)	Instruction in the student's area of strength and weakness. differentiated program (individualized instructional adaptations and accommodations) comprehensive case management to coordinate all aspects of the student's individual educational plan. appropriate training and making important resources available	Successfully handling complicated GLDs: by providing facilities and adaptation to GLD students.	Review article	gifted-LD
Yssel et al. (2005)	Camping program: gifted programming (enrichment), social and emotional skill development, and organizational skills.	Student achievement increased in science and math. Students are highly motivated to learn topics they interested. But, poor academic self-concept (afraid to fail and not a risk-taker), and difficult to make self-expression.	Qualitative	12 gifted-LD secondary school students
Winebrenner (2003)	Teach to appreciate their individual differences (build self-esteem) teaching the larger concepts first, then the details teaching organizational strategies set realistic expectations for themselves	Compaction and differentiation opportunities must be offered to twice-exceptional students.	Review article	gifted-LD

Table 1. **Continued**

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
Nielsen (2002)	Continuum of alternative service options access to gifted curriculum access to technology counseling curricular interventions (social and emotional strategies, enhancing giftedness, compensation strategies in academic areas & behavior management)	Recommendations were provided to educators to develop programs and strategies to help students access their giftedness while compensate their disabilities.	Review article	gifted-LD
Baum et al. (2001)	Solve problems creatively Highlight abilities, maximize potential Focus on strength	A dually differentiated curriculum of Project HIGH HOPES, helped 2e's student compensate for problematic weaknesses by applying basic skills creatively to an authentic problem.	Review article	gifted-LD
Zental et al. (2001)	Shorter assignments with detail directions, checkpoints and feedback, simplify, breakdown, or categorize assignments, projects, materials, and ideas, include elements of play.	Teaching how to simplify, breakdown, or categorize assignments, projects, materials, and ideas, and then providing checkpoints along the way would be more effective.	Qualitative - case study	9 boys (8-10 years) ADHD, gifted, gifted with ADHD
Leroux & Levitt-Perlman (2000)	Varied instructional interventions, emotional and social support, and collaboration between educators and parents.	Effectiveness of intervention according to twice exceptional strengths and weaknesses.	Qualitative - case study	1 boy of gifted-ADHD (8 - 9 years)

Table 1. **Continued**

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
Reis et al. (2000)	study strategy parental support compensation support counseling self-perceived strength	Perspective of successful twice-exceptional students towards an academic learning experience: compensation strategy was effective all participants experience a negative experience during schooling (teachers assume they are lazy, focus on weaknesses, follow LD programs that are not organized and suit them)	Qualitative	12 university students of gifted with SLD

STRENGTH / TALENT - BASED

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
Baldwin (2015)	Strengths and Interests Accommodations and Modifications Learning Needs Social-Emotional Needs Support	Recognizing characteristic, strengths and weaknesses facilitated teachers to deliver an appropriate service, and specific strategies to support students' needs across the spectrum.	Qualitative - case study	3 students gifted with ASD / emotional / behavioral problem
Wang & Neihart (2015a)	develop interests in academic domains create experiences of success parental and teacher support positive peer influence	Academic concepts and efficacy has been achieved and led to academic success.	Qualitative-Interpretative Phenomenon-logical Analysis (IPA)	Six 2e's Singaporean secondary school
Baum et al. (2014)	(a) psychologically safe environment (b) extra time (without rushing) (c) tolerance for asynchronous behaviors (d) positive relationships (e) strengths-based, talent-focused environment	Potential development program helps to overcome social, emotional and cognitive challenges.	Qualitative - case study	10 students (8 males, 2 females 2e: GAD/ OCD/ Asperger/ anxiety/ ASD/ ADHD

Table 1. **Continued**

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
Hua et al. (2012)	Focus to develop the talent of 2e (rather than improve deficits) 1. Inquiry-based learning 2.Negotiation better than accommodation	Help 2e's students to understand their identity, obstructs the underachievement, opportunity to involve and contribute in community.	Qualitative-semi-autobiographical narrative	gifted-ADHD
Foley Niepon et al. (2011)	Focus on ability, opportunity to explore their strengths and receive support in their own needs / weaknesses	Academic learning improved by using self-strength (creativity, problem solving skills, and analysis capabilities)	Review article	gifted-LD, gifted-ADHD, gifted-ASD
Newman et al. (2009)	The Museum projects (based on Leonardo Da Vinci works): play and grow into art, architecture, engineering and science (Japanese toys and technology, rubber-band powered cars, aero modeling, and boat building).	Participant's self-efficacy increased and organizational skills improved. However, students did not show significant improvement in academic skills.	Quantitative	visual spatial gifted- LD
Mann R.L. (2006)	Effective teaching practices to students of gifted (spatial) - verbal weaknesses: attitude of caring teachers, learning based on students' strength, student-centered learning.	Successfully reduced LD's weaknesses and improved learning achievement.	Qualitative	LD with gifted (spatial strength)
Weinfeld et al. (2005)	instruction in the student's area of strength and weakness. differentiated program (individualized instructional adaptations and accommodations) comprehensive case management to coordinate all aspects of the student's individual educational plan. appropriate training and making important resources available	Successfully handling complicated GLDs: by providing facilities and adaptation to GLD students.	Review article	gifted-LD

Table 1. **Continued**

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
SUPPORT / COUNSELING				
Park et al. (2018)	Parental involvement in children's education advocate for their children diverse enrichment activities switched to school with specific learning needs constantly educated themselves and whole family	Asian-American parents have a strong parenting style and the pursuit of continuous advocacy in addressing the complexities of 2e children.	Qualitative	10 Asian-American twice-exceptional parents
Baldwin (2015)	Strengths and Interests Accommodations and Modifications Learning Needs Social-Emotional Needs Support	Recognizing characteristic, strengths and weaknesses facilitated teachers to deliver appropriate services, and specific strategies to support students' needs across the spectrum.	Qualitative - case study	3 students gifted with ASD/ emotional/ behavioral problem
Wang & Neihart (2015a)	develop interests in academic domains create experiences of success parental and teacher support positive peer influence	Academic concepts and efficacy has been achieved and led to academic success.	Qualitative-Interpretative Phenomenon-logical Analysis (IPA)	Six 2e's Singaporean secondary school
Wang & Neihart (2015b)	strategies: repetitively reading text, asking questions, and managing time, note-taking and audio-recording of lessons academic engagement: good teaching & caring teacher, parental support, peers influence academic self-efficacy	Peers support was the most influenced factor in twice-exceptional s' academic achievement.	Qualitative	6Six 2e's Singaporean secondary school
Lo & Yuen (2015)	Coping strategies: trial and error method positive influence family/parental support matching talents to	Negative experience on their path to learning. However, opportunity and positive influence to motivate them (to ignore criticisms and labeling)	Qualitative: case study	3 university students, gifted with SLD

Table 1. **Continued**

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
	opportunities	and create good achievement.		
Neumeister et al. (2013)	Recognition (gift & disability) Providing and seeking support despite cost/inconvenience Framing child's beliefs and expectations: normalizing disability Maintaining high expectations	Caregiver / parents belief they play an important role in their children's academic success by recognizing the advantages and disadvantages of the children, and the responsibility for the development of their potential children.	Qualitative - grounded theory	10 twice-exceptional individuals that successfully graduated or working.
Foley Niepon et al. (2011)	Focus on ability, opportunity to explore their strengths and receive support in their own needs / weaknesses	academic learning improved by using self-strength (creativity, problem solving skills, and analysis capabilities)	Review article	gifted-LD, gifted-ADHD, gifted-ASD
Olenchak (2009)	Counseling based in 5 Talents Unlimited aspects: productive thinking, communication, future expectations, decision making, planning.	Positive impact on attitudes, self-concepts and creativity of twice-exceptional students.	Mix method (Quantitative)	gifted with LD 57 students
O'brien & Giovacco-Johnson (2007)	trust (parent know their child best) believe in child's potential and strengths-focus. involve inclusively (social skill) participation in extracurricular activities (develop motor skills & self-concept)	Recognize each part of unique children's development, their strengths and weaknesses, as gifts. Positive belief creates hope and confidence to success.	Qualitative: case study	intellectually gifted with learning disability
Thomas & Ray (2006)	3 models of counseling: Belin-Blank Center Model Structural-Strategic Model Imaginative-Postmodern Model	Family pressure reduce, help to express feeling within twice-exceptional family, parents begin to support twice-	Qualitative	twice-exceptional student

Table 1. **Continued**

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
		exceptional children, help creating solutions / modifications according to interests and potential of children.		
King (2005)	Self-understanding and self-acceptance, continuous support, coping strategies when frustrated, group counseling, social relationship, parent understanding and emphasize child's potential, career planning, and mentorship.	Students must be encouraged to recognize their own strengths and limitations to prepare for future.	Review article	gifted with LD
Kennedy, Higgins & Pierce (2002)	understand program goals and create students profile building trust communication and information sharing modifying instruction evaluation	Collaborative relationship helps teacher to plan, solve problem and design instructions that meets the academic and emotional needs of twice-exceptional students.	Review article	general and special educators and teachers of gifted students.
Reis et al. (2000)	study strategy parental support compensation support counseling self-perceived strength	Perspective of successful twice-exceptional students towards an academic learning experience: compensation strategy was effective negative experience during schooling (teachers assume they are lazy, focus on weaknesses, LD programs not organized and suit them)	Qualitative	12 university students gifted with SLD

Table 1. **Continued**

Reference	Strategy / Intervention	Result / Main findings	Methodology	Participants
ART/ MUSIC				
Nelson & Hourigan (2015)	multisensory teaching isolating musical components learning of jazz and popular music using technology small group instruction	Including multisensory techniques to music instruction, help dyslexia students in reading text and music, and increases self-confidence.	Qualitative	5 professional music, gifted-dyslexia
Abramo (2015)	highlight strengths and mitigate challenge emphasize integrative thinking and deemphasize dispersive thinking flexibility of choice teach organizational skills, self-regulation, and compensation strategies building relationships	Multisensory approach is ideal to 2e student.	Paper concept	gifted with disability
TECHNOLOGY				
Sullivans et al. (2017)	Minecraft game: freedom and variety simulated and real-world problems adaptable environment that pleasing to students	Minecraft allow teachers to easily implemented learning environments for twice-exceptional students (based on their challenges).	Developing / designing	no participant
Gunter & Kenny (2012)	Improve student motivation Use of technology / media	Successfully motivated students to read and improved their understanding in reading.	Quantitative	48 (16 males , 32 females) gifted with reading difficulty

Table 2. Number of studies based on intervention strategy

Intervention Strategy	Studies
Academic/ learning strategies	19
Strength / talent-based	8
Support	13
Art/music	2
Technology	2
Total studies	**44**

Table 3. Participants

Reference	Participants
Leroux & Levitt-Perlman (2000)	1 boy of gifted with ADHD (age 8 - 9 years)
Reis et al. (2000)	12 university students of gifted with SLD
Baum et al. (2001)	gifted with LD
Zental et al. (2001)	9 boys (age 8-10 years): ADHD, gifted, gifted with ADHD
Nielsen (2002)	gifted with LD
Kennedy, Higgins & Pierce (2002)	general educators, special educators, and teachers of gifted students
Winebrenner (2003)	gifted with LD
Yssel et al. (2005)	12 secondary school of gifted with LD
Weinfeld et al. (2005)	gifted with LD
King (2005)	gifted with LD
Mann (2006)	gifted (spatial strength) with LD
Thomas & Ray (2006)	twice-exceptional student
O'brien & Giovacco-Johnson (2007)	intellectually gifted with learning disability
Hannah & Shore (2008)	13 males gifted with LD students
Newman et al. (2009)	visual spatial gifted with LD
Olenchak (2009)	57 students gifted with LD
Yssel et al. (2010)	gifted with LD
Kuo, Su & Maker (2011)	61 students (age 4-6 years): gifted with ASD/ Asperger/ hearing impairment/ visual impairment/ LD
Foley Niepon et al. (2011)	3 students: gifted with LD / ADHD / ASD
Assouline & Whiteman (2011)	3 students: gifted with ADHD, gifted with ASD, gifted with SLD
Schultz (2012)	6 college of twice-exceptional students in Advanced Placement (AP)
Hua et al. (2012)	gifted with ADHD
Gunter & Kenny (2012)	48 (16 male, 32 female): gifted with reading difficulty
Willard-Holt et al. (2013)	16 males (age 10-23 years): gifted with ASD/ LD/ OCD/ emotional/ CP/ hearing impairment/ neurological (processing)/ sensory disability (cortical visual impairment)
Crepeau-Hobson & Blanco (2013)	gifted with LD

Neumeister et al. (2013)	10 twice-exceptional individuals that successfully graduated or working.
Lee & Olenchak (2014)	gifted with ADHD
Baum et al. (2014)	10 students (8 males, 2 females) gifted with GAD/ Asperger/ anxiety/ ADHD/ OCD/ ASD
Baldwin (2015)	3students: gifted with ASD/ emotional/ behavioral problem
Wang & Neihart (2015a)	6 twice-exceptional Singaporean secondary schools
Wang & Neihart (2015b)	6 twice-exceptional Singaporean secondary schools
Nelson & Hourigan (2015)	5 professional music: gifted with dyslexia
Abramo (2015)	gifted with LD
Boxtel (2016)	gifted with ASD
Lo & Yuen (2015)	3 university students: gifted with SLD
Sullivans et al. (2017)	no participant
Park et al. (2018)	10 Asian-American twice-exceptional parents

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Discussion

Participants

All studies conducted are focused on twice-exceptional students, which are gifted with particular disabilities. Majority participants of the studies are having Learning Disability (LD), while the others are having Autism Spectrum Disorder (ASD), Asperger, Attention Deficit Hyperactivity Disorder (ADHD), Cerebral Palsy (CP), Obsessive-Compulsive Disorder (OCD), emotional and behavioral disorder, hearing impairment, neurological (processing) disability, sensory disability (cortical visual impairment), anxiety, dyslexia and other Specific Learning Disabilities (SLD) that not being mentioned specifically (see Table 3). The age of participants ranged between the age of 4 and 23 years, where the participants were including pre-school students, primary and secondary students, college or university students, as well as twice-exceptional individuals who were graduated or employed. Nevertheless, few studies did not mentioned detail of participants specifically. Furthermore, study of Sullivan, Robb, Howell, Marshall, and Goodman, (2017) did not involve any participants directly as their study was developing or designing method. Sullivan et al. (2017) developed mine-craft video game to allow teachers to easily implemented learning environments for twice-exceptional students based on their challenges.

Intervention Strategy
Based on the findings of all the studies, author categorized the intervention strategies into five main themes, which are academic or learning strategy, strength or talent-based strategy, support, art or music, and technology. Not all interventions recommended are suitable for all type of twice-exceptional children. Thus, treatment matching is crucial. Therefore, effective interventions must tailor to the unique strengths and needs of the twice-exceptional individual.

Theme 1: Academic / Learning Strategies
A number of studies recommended academic or learning strategies for twice-exceptional learners. Assouline and Whiteman (2011) and Schultz (2012) proposed that academic acceleration or Advanced Placement (AP) should be considered for the twice-exceptional students with additional behavioral and emotional interventions. These recommendations reinforce the suggestion of Nielsen (2002) to give an opportunity for twice-exceptional student to access to gifted curriculum and their right to sit in gifted programming or advanced academic work should not be denied (Assouline & Whiteman, 2011; Yssel, Margison, Cross, & Merbler, 2005).

Besides that, Leroux and Levitt-perlman (2000) and Weinfeld, Barnes-robinson, Jeweler, and Shevltz (2005) highlighted the importance of differentiated program and varied instructional interventions according to student's area of strength and weakness. Furthermore, an organizational skill also has been emphasized by some researchers as it help to motivate and improve student academic performance (Crepeau-hobson & Bianco, 2013; Lee & Olenchak, 2014; Winebrenner, 2003; Yssel et al., 2005; Yssel, Prater, & Smith, 2010). In addition, Yssel et al. (2010) recommends the learning should be project-based and structured. They are also encouraged to make small activities, then forming large project. In contrast, Winebrenner (2003) recommends teaching the larger concepts first, then the details. Meanwhile, finding indicated that twice-exceptional students were easier to learn from shorter assignments with detail directions, simplify and breakdown technique, categorize tasks, projects, materials, and ideas, provide checkpoints and getting feedback (Zentall, Moon, Hall, & Grskovic, 2001).

Other academic and learning interventions strategies were used by researchers to increase student's comprehension in reading (Hannah & Shore, 2008), set student goals and transition plan, and set realistic expectations (Lee & Olenchak, 2014; Winebrenner, 2003), self-checklist in solving mathematic (Boxtel, 2016), problem solving strategy (Kuo, Su, & Maker, 2011), leadership activities (Lee & Olenchak, 2014), express creativity in learning (Baum, Cooper, & Neu, 2001; Lee & Olenchak, 2014), providing challenging topics (Zentall et al., 2001) student-centered learning (Mann, 2006), and group activities (Kuo et al., 2011; Yssel et al., 2010). Grouping the students based on similar interests and strengths in learning session, increased self-confidence and help students to gained significantly higher academic achievement.

Theme 2: Strength / Talent – Based
Most researchers also emphasize the use of strength or talents-based to support the twice-exceptional learners. In fact,, the strength-based approach is proven successful in developing a positive mindset, healthy self-esteem, strong self-efficacy and higher academic achievement in twice exceptional students (Baldwin et al., 2015; Newman et al., 2009; Wang & Neihart, 2015a). Therefore, it is efficient to view them as being gifted first and consider their disability as secondary. First and foremost, the children must understand their identity and recognized their own strengths and weaknesses. (Hua et al., 2012). So that, the twice-exceptional children will appreciate their individual differences, build self-

esteem and self-acceptance (King, 2005; Lee & Olenchak, 2014; Winebrenner, 2003). Teachers are encouraged to frame the child's belief and expectations to overcome their disability (Neumeister, Yssel, & Burney, 2013).

Educators have to maximize their potentials, explore their strength and interest, strengthen their abilities, and appreciate their uniqueness in teaching practices (Baldwin et al., 2015; Baum et al., 2001; Hua et al., 2012; Lee & Olenchak, 2014; Mann, 2006; Nicpon et al., 2011). Several technique used were develop interests in academic domains and create experience of success (Wang & Neihart, 2015a), use inquiry-based learning (Hua et al., 2012), create talent-focused environment with suitable accommodations and modifications (Baldwin et al., 2015; Baum, Schader, & Hébert, 2014), provide extra time to allow changes without rushing or demanding (Baum et al., 2014), matching talents to opportunities (Lo & Yuen, 2015) and give instruction in the student's area of strength and weaknesses (Weinfeld et al., 2005). Overall studies found that emphasizing strength-based strategies has improved learning achievement, increased self-efficacy, and help to overcome social and emotional challenges. Indeed, focus on student's strengths giving them an opportunity to thrive and be successful in any way they are good at.

Theme 3: Support
Having lack of social skills, social isolation, low self-esteem are the personality traits of twice-exceptional children. Thus, few researchers focused on support interventions in order to overcome it. Strong parenting style with continuous parental support help growing children's potential, improved self-efficacy and overcome their weaknesses (Lo & Yuen, 2015; Neumeister et al., 2013; Park, Nicpon, Choate, & Bolenbaugh, 2018; Reis, Mcguire, & Neu, 2000; Wang & Neihart, 2015a, 2015b). Furthermore, Park, Nicpon, Choate, and Bolenbaugh (2018) found that strong parenting style rouse them to find and switch their children to school with specifics learning needs, involve in their children's education, involved in diverse enrichment activities, providing and seeking support despite cost or inconvenience, trust and believe in child's potential, constantly educate whole family and continuously advocate others about their children's complexities (King, 2005; Neumeister et al., 2013; O'Brien & Giovacco-johnson, 2007; Park et al., 2018) .

Besides that, understanding and caring teachers with good teaching practices influence the academic engagement of twice-exceptional students (Wang & Neihart, 2015b). Comprehensive counseling program for gifted with disability offered good results in students social skills, self-efficacy and attitudes (Nicpon et al., 2011; Olenchak, 2009), create positive belief that build hope and confidence to success (O'brien & Giovacco-johnson, 2007), reduced family pressure and provide opportunities to express feeling within twice-exceptional family (Thomas & Ray, 2006), recognize children's strengths and limitation, and help creating solutions or modifications (King, 2005; Thomas & Ray, 2006), abolish children's negative experience during schooling (Lo & Yuen, 2015; Reis et al., 2000), and make a career plan and future expectations to encourage them to prepare for future (King, 2005; Olenchak, 2009).

In addition, positive influence and peer support help them ignore criticisms and labeling (Lo & Yuen, 2015) and it became the main contribution in twice-exceptional s' academic achievement (Wang & Neihart, 2015b). Support for the unique social and emotional needs of twice-exceptional students was very challenging to the educators. Therefore, teachers must be trained to understand the characteristics and needs of gifted students with learning disabilities, as well as strategies to facilitate their learning, set realistic expectations, and support students' needs across the spectrum (Baldwin et al., 2015; Neumeister et al., 2013). Besides, educators are encouraged to collaborate their knowledge, skills, and support of other educators or professionals in the schools (Kennedy, Higgins, & Pierce, 2002).

Theme 4: Technology
A dynamic, real-time response, enjoyable and engaging environments has made technology become an effective strategy in learning (Gunter & Kenny, 2012). Moreover, by using technology, a concept of static pictures in book can be visualized. Learning in technology environment provide modifications and accommodations to their learning content and environment, allow students to explore areas of particular interest in greater depth, developed experimental learning, has opportunity to express their creativity and critical thinking, motivated them in learning, increased self-confidence and independence (Gunter & Kenny, 2012; Sullivan et al., 2017).

A tremendous variety of assistive technology is available today, providing the opportunity for gifted with disability students to access information technology, enhances learning, and performs daily living for students with disabilities. However, study of technology intervention that focused on twice-exceptional students is still limited.

Theme 5: Art /Music
Intervention in art and music emphasized the multisensory approaches that highlight an integrative thinking and deemphasize dispersive thinking, provide flexibility based on their potentials and strengths, motivate them, sharpen their creativity, increase self-efficacy, improved organizational skills and grow the strengths and mitigate challenges (Abramo, 2015; Nelson & Hourigan, 2015). Nonetheless, there is still limited research on music intervention specifically on students who are gifted with disabilities.

Conclusion

The current review identifies focused intervention practices for twice-exceptional students. Teachers must develop a plan to provide modifications and accommodations to their learning content and environment based on student's strengths and potentials as well as provides remediation and support for their social and emotional needs. Celebrate student's differences with positive influences and continuous support, and using effective instructional approaches, help twice-exceptional learners to overcome their academic

difficulties, social and behavioral challenges and provide an opportunity for them to thrive and be successful in satisfying careers and lives. Furthermore, educators are encouraged to collaborate with other educators, parents, professionals, and therapists to share knowledge, experiences, and skills in creating solutions or modifications according to strengths and needs of twice-exceptional children.

Acknowledgement

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The Importance of Knowing Linguistic Content in Speech Therapy

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Abstract

Linguistics and speech therapy are two directly related areas whereby the first one, with appropriate development, should follow the latter as a support in a theoretical and practical sense. In a study carried out amongst Slovene speech therapy students, the researcher was interested in their views regarding the importance of linguistic content in their studies. The sample included all active students who were enrolled in the first-level and second-level study program of speech therapy at the Faculty of Education of the University of Ljubljana in the academic year 2018/19. In total, we received 43 appropriately completed questionnaires. All participants were female. A descriptive and causal-non-experimental method of pedagogical research was used. The study also offers a comparison of answers according to the study year (1st, 3rd and 5th) and results verifying the connection and dependence between different variables.

Key words: linguistics, linguistic competences, speech therapy, speech therapist education, student attitudes

Introduction

All-important European documents and organizations in the field of speech therapy classify linguistic competence as basic knowledge which indicates that the speech therapist, in their work, must be empowered with a wide range of such knowledge. Speech therapy is a science that studies speech - language communication; notes the presence of disorders, the causes and consequences of their emergence, as well as the methods of their prevention and rehabilitation, and a speech therapist is an expert with an appropriate level of education (see chapter Education of speech therapists in the Republic of Slovenia), which deals with the prevention and elimination of all kinds of speech - language communication disorders (Association, 2019; Vidmar, 2016; Levc, 2014; Omerza, 1984).

The International Clinical Phonetics and Linguistic Association (ICPLA, 2019) emphasizes that a speech therapist requires different types of knowledge, specifically, besides a knowledge in the fields of biology, physics, psychology, sociology, medicine and pedagogy, also expertise in the fields of communication science and linguistics (see also Smole, 2002). Bloothooft (1997), who deals with the recommendations regarding education and the work of speech therapists, summarize the views of the European Expert Commission of the Socrates / Erasmus program; the latter mentions the field of linguistics as one of the most important areas within this profession which must be a key element in the education of the speech therapist. The Standing Liaison Committee of Speech and Language Therapists / Logopedists in the European Union (CPLOL) have established the minimum standards of knowledge that should be mastered by speech therapists. They are published in the Revision of the Minimum Standards for Education (2007) and, in addition to a wide range of skills in the fields of social sciences and biomedical sciences, and the field of speech and linguistic disorders, also have a high regard for knowledge and expertise in the field of linguistic sciences, especially phonology, semantics, morphology, syntax, pragmatics and psycholinguistics, neurolinguistics and sociolinguistics as well as multilingualism.

Linking Speech Therapy and Linguistics

Stabej (2003) claims that speech therapy and linguistics, especially Slovene linguistics and Slovene didactics, have many common points. Both sciences deal with language, speech and communication - from the point of view of the individual and from the point of view of the linguistic or social community. Both are entwined with interdisciplinary; In addition to linguistic and communicative aspects, speech therapy also includes content from other areas, such as developmental, psychological, pedagogical, andragogical, sociological and medical content. The participation of linguists in speech therapy research and practice is indispensable, according to the author, and to this we can also add that the integration of speech therapy and linguistics is also necessary in the study of speech therapy and discussed topics. Stabej (2003) also claims that in order to understand the speech-linguistic problems well, and to identify them and eradicate them, and then it is necessary to know the common image of speech, language and, ultimately, the communicative habits of

speakers and the linguistic community. He also points out that the classical descriptive grammar of the literary language and the dictionary of the literary language are decisively insufficient for satisfactory linguistic knowledge. The same author (ibid.) is also critical of the current state of linguistics. He believes that linguistics will need to be organized not only in terms of tradition, but also in the context of more recent theoretical approaches to describe different parameters of the language and linguistic community in general, mentioning sociolinguistic, corporeal and psycholinguistic research for a more modern and detailed description. This is important in understanding the language in concrete circumstances and in respect of actual speakers.

In the field of speech therapy, in conjunction with language and linguistics, we are also faced with terminological problems; because the field of speech therapy is interdisciplinary, it is not only confronted by the integration of several areas, but the profession is also in contact with several foreign languages through which it develops and is updated. In our opinion, linguistics should play a key role here. Kalin, Goloband & Logar (2008, p. 663) notes that: "Editing the conceptual world of the profession with the formation of appropriate professional expressions is, according to the theory of literary language, and as developed by the Prague linguistic school in the 30s of the 20th century, one of the basic tasks of the linguistic culture as the theoretically supported development of the literary language." First of all, it's primarily linguists who should be aware of "the importance of proper monitoring and terminological planning since only in this way can they constructively monitor and classify conceptual innovations that are the result of the intensive development of society and the changed (newer) views on language and profession (cf. Jemec Tomazin, 2010). "Expert-scientific communication is even more important in a knowledge-based society," notes Jemec Tomazin (2010, p. 103). It is certainly one of the starting points for this design of modern terminology. In practice, according to Žagar Karer (2018), "it is often not easy to reach a terminological agreement between experts since there is a need to find a compromise between different opinions and views on individual concepts and at the same time the chosen term must also be appropriate from the language perspective. We use a terminological agreement when we want to choose the most appropriate one among several terms which can be used to designate the same concept, but also in the naming of a (usually new) concept. If we want a terminological agreement to be successful, it is necessary to set criteria for choosing the most appropriate term" (ibid., p. 237).

The Foundations of Linguistics in Speech Therapy

Golden (2001) states that "linguistics is a science because it is a subject of study, it examines this subject with clearly described procedures that can be used by everyone, and because it offers theories on the subject of study" (pp. 24–25). We can look at linguistics in the narrower (micro-linguistics) or wider (macro linguistics) sense. The subject of the study of linguistics in its narrower sense is the linguistic system; its use and development, while linguistics in its broader sense form disciplines that connect knowledge about language with aspects of knowledge of other sciences. Some of the main categories

includes: psycholinguistics, neurolinguistics and sociolinguistics (ibid.) with the field of speech therapy where linguistics, as we have already mentioned, plays an important role. Let us first focus on the study of linguistics in its narrower sense, bearing in mind the language system and its use in concrete circumstances already mentioned by Stabej (2003). The language system is understood as a closed, orderly whole in which all the components are interconnected and have a function within the whole. Toporišič (2000), in Slovene Grammar, deals with the following areas in linguistics: the nature of language, phonology, vocabulary, word formation, morphology, syntax and communication.

Golden (2001) for example, emphasizes the language constructs of the four planes, i.e.: phonological, morphological, syntactic and semantic. This linguistic structure, which is mentioned all the time in connection with speech therapy, must be well-known to the speech therapist in theoretical and practical terms. The narrower view of language and linguistics as a science extends further of course when we enter the areas of other disciplines that are directly or indirectly related to linguistics and speech therapy, at the same time or are complementary. Psycholinguistics, for example, as Golden (2001) points out, combines linguistic abilities with other cognitive abilities that an individual possesses. Among the main areas of psycholinguistic research are questions regarding how a child acquires knowledge of their mother tongue and which mental processes are involved in the creation and understanding of the sentence in addition to language knowledge. Neurolinguistics examines the neurological basics of language and speech, and sociolinguistics examines what are the systematic elements in the use of language in the concrete processes of linguistic communication from the point of view of actual participants and social and cultural norms of the linguistic community.

Educating Speech Therapists in the Republic of Slovenia

In the Republic of Slovenia, the study of speech therapy takes place only at one educational institution, namely the Faculty of Education at the University of Ljubljana. The program is combined with the field of surdopedagogy and is called Undergraduate Studies of Speech Therapy and Surdopedagogy. In order to carry out the work of a speech therapist, the study must be continued in the Master's Study Program (Presentation Bulletin, 2018).

Speech therapy studies are undertaken within the Department of Special and Rehabilitation Pedagogy. Entry into the program is possible only every other year. 20 places are available. The study program is in line with the Bologna Reform and offers two levels. The first stage, i.e. the undergraduate program, lasts four years and offers 240 credits. The first-level university study program is concluded by a diploma project. The student receives the title of Graduate Professor Logopedist (specialist educator of the deaf and hearing impaired). To undertake independent work in the field of speech therapy, it is necessary to continue studying at a second level which lasts a year. This program offers 180 credits and upon successful completion the student is awarded a master's degree. The student acquires the title Professor, Master of Speech Therapy (with specialist education for the deaf and

hearing impaired). Thus, they can perform autonomous speech therapy activities (cf. Presentation Book, 2018). Linguistics is directly or indirectly present within the following subject areas: phonetics and phonology, linguistic sciences, phonological development of children and delayed phonological development, neurolinguistics and neuropsychology and working with multilingual people. In comparison with, e.g., Belgium and Portugal, Slovenia has the largest number of hours in the linguistic learning program associated with linguistics, namely 715. In Belgium they only receive 390 hours, and in Portugal 546 (Šumak, 2016).

Methodology

Purpose and Aim of the Research

Different research and reports on the education system in speech therapy) attach great importance to the knowledge of linguistics as a science which speech therapists should master in various situations in their work. The purpose and aim of the research was to examine the views of Slovene speech therapy students on the importance of the linguistic content in the course of their studies using a questionnaire. Regarding the categories observed, the goal was to form common factors within linguistic topics, to compare answers to various questions regarding the year of study and to check the (potential) connection and dependence between the various variables.

The questions to be answered in the research were: How important they believed the presence of linguistic content is in the study of speech therapy at Levels 1 and 2?; How they would generally assess their current knowledge of linguistic content that is important in speech therapy?; Which linguistic content in speech therapy they considered to be the most important to know?; How important it is to know specific linguistic content in order to work successfully in speech therapy?; How much additional knowledge they need in their own assessment in the given fields within linguistics?; How satisfied they are with the representation of linguistic content in the curricula of the speech therapy study program?; How useful they find the linguistic content provided during the study of speech therapy for work in speech therapy?; How often they thought about their competence in linguistic content that occurs in speech therapy?; How important they feel revision and improvement of their knowledge which one is expected to have in the field of linguistics within speech therapy? and In which subjects in the field of linguistics would they like to see additional education?

Research Methods and Research Sample

We utilzed a descriptive and causal-non-experimental method of pedagogical research (Sagadin, 1993; Mužič, 1994). For this purpose, we used an online questionnaire (it was accessed at https: // www.1ka.si/a/184432, namely from 3. 10. 2018 to 3. 12. 2018), which, besides the basic data (gender, age, year of study), asked respondents to answer ten substantive questions (closed and open type) that are in accordance with the purpose

presented and aims of the research. The comprehensiveness of the online questionnaire was verified and confirmed by five randomly selected "potential" respondents. The sample included all active students who were enrolled in the first-level and second-level study program of speech therapy at the Faculty of Education of the University of Ljubljana in the academic year 2018/19. Since the Faculty of Education of the University of Ljubljana is the only institution that educates future speech therapists in the territory of the Republic of Slovenia, and since, in principle, during the 1st year, new students enrol every second year, we had no influence on the quantity of the sample; in the year studied, in the program, speech therapy is taught to students in the 1st, 3rd and 5th years. In total, we received 43 appropriately completed questionnaires (1st year: 17, 3rd year: 13, 5th year: 13). All participants were female. These were also included in the analyses presented below or by data processing. Their average age was 21.1 years. The share of students in the 1st year was 39.54%, 3rd year 30.23% and 5th year 30.23%.

Processing and Display of Data

The data obtained was then analysed which was carried out using SPSS 23.0 software. In addition to the basic descriptive statistics, processing of the collected data was also undertaken by: 1) factor analysis; 2) one-way analysis of variance and Tukey's HSD-test for individual comparisons; 3) the simple linear regression method. Factor analysis was performed using the ML method (Maximum Likelihood). When choosing a number of factors we used the combination of Kaiser's own vector and Screeplot criteria and the content interpretability of various factor solutions. Prior to the interpretation, the factors were rotated by oblique rotation, namely, Direct Oblimin, as it is reasonable to expect that the factors are correlated with each other. As a criterion for the preservation of an individual element, a minimum factor weight of 0.4 was applied to one factor and the absence of a weight of more than 0.4 to more than one factor. In comparing the various questions with respect to the study year, we used a one-way variance analysis (ANOVA), and for further individual comparisons (post-hoc) the Tukey HSD test. In the verification hypotheses, the characteristic level $\alpha = 0.05$ was used. The simple linear regression method was employed to check the correlation and dependence between different variables. In the verification hypotheses, the characteristic level $\alpha = 0.05$ was used. The results are presented both in text and in tabular form.

Results with Interpretation

Overview of the situation on the basis of the basic descriptive statistics

Most of the students covered by the survey (50%) consider the presence of linguistic content important in the study of speech therapy and 43% considered it very important; 7% regarded this area as of medium importance; no one considered this area as less important or irrelevant. Their current knowledge of linguistic content that is considered important in speech therapy was rated as good (using a 5-point scale) by the majority (50%) 27% rated it as very good and 22% as poor. Amongst the linguistic content they considered most important in speech therapy work, the most frequently mentioned were: phonetics and

phonology, communication and syntax. Respondents were given 14 linguistic areas, amongst which they had to assess how important they regarded them for successful work in speech therapy. The responses were classed as "important" or "very important" and were then added together as a percentage. The areas below are given in percentage terms ranking from the highest to the lowest: phonetics and orthoepy (98%), communication, speech (98%), neurolinguistics (95%), literacy, orthography (89%), psycholinguistics (88%), lexicology (87%), monolingualism, bilingualism, multilingualism (84%), word formation (80%), syntax (80%), sociolinguistics (73%), language varieties (71%), semantics (71%), morphology (68%), language development and history (43%). According to the above linguistic areas, the respondents assessed how much additional knowledge they would need in individual areas. The responses were classed as "more" or "much more" and were added together as a percentage, and we refer to those areas below where the total percentage of "more" and "much more" were deemed to be more than 50%: psycholinguistics (61%), neurolinguistics (58%). Asked how satisfied they were with the representation of linguistic content in the study program curricula of speech therapy, 49% answered that they were satisfied, 44% were moderately satisfied, 5% were very satisfied, and 2% were dissatisfied; No one said they were very dissatisfied. Asked how useful they considered the linguistic content in their speech therapy studies to be for work in speech therapy, 44% answered that it was useful, 40% answered that it was very useful and 16% that it was moderately useful; nobody deemed them to be unuseful or very unuseful. When asked how often they thought about their skills in respect of linguistic content present in speech therapy, 40% answered "often", 38% answered "sometimes", 14% "rarely", 5% replied with "very often" and 2% "never". Asked about the importance of revision and the improvement of knowledge of linguistics required in speech therapy, 47% answered that they considered it important, 44% considered it to be very important, 7 % moderately so and 2% less important; Nobody considered it unimportant. When asked which subjects in the field of linguistics they would want to study further, the most frequently mentioned were phonetics and phonology, communication and syntax, i.e. the same three areas that were mentioned as being amongst the most important for work in speech therapy.

Factor Analysis

In the factor analysis of the relevance of linguistic content, according to Kaiser's criterion, four factors would have to be eliminated; however on the basis of Screeplot we also verified the three-factor version. It turned out that it was precisely this that led to substantially more interpretive factors and we also eliminated only one element for this version because of the underweight. With three factors, we were able to explain 60.8% of the total variability of the importance of linguistic content. The final solution of the tri-factor version is shown in

Table 1 shows the factor weights of the individual elements on the corresponding factor. On the third factor, the largest weights are communication (communication, speech), phonetics and orthoepy. For the second factor, the greatest weights are word formation, lexicology, morphology and syntax. For the first factor, the greatest weights are language

development and history of language, psycholinguistics, neurolinguistics, sociolinguistics, literacy, orthography, monolingualism, bilingualism, multilingualism, bilinguism and semantics. Finally, we also checked the internal consistency of each individual factor against the Cronbach alpha, the values of which are shown in bold for each factor. All values exceed 0.7, so we can conclude that all factors show good internal consistency.

Table 1: Factor analysis of the importance of linguistic content

	Factor weight / Cronbach alpha
Factor 1	**0.784**
Language development and language history	0.804
Psycholinguistics	0.803
Neurolinguistics	0.748
Sociolinguistics	0.613
Literacy, orthography	0.560
Multilingualism, bilingualism, multilingualism, bilinguism	0.505
Semantics	0.493
Factor 2	**0.797**
Word formation	0.872
Lexicology	0.833
Morphology	0.814
Syntax	0.507
Factor 3	**0.785**
Communication - communication, speech	0.877
Phonetics and orthoepy	0.875

In the factorial analysis of the need for additional knowledge, three factors would have to be eliminated according to Kaiser's criterion, but on the basis of Screeplot we also verified the version using two factors. It turned out that it was precisely this that led to substantially more interpretive factors and we also only eliminated two elements for this version due to the underweight. With two factors, we explained 64.8% of the total variability of the need for additional knowledge of linguistic content. The final solution of the two-factor version is shown in Table 2 below and shows the weight factors of the individual elements on the corresponding factor. In the end, we also checked the internal consistency of each individual factor against the Cronbach alpha, the values of which are shown in bold for each factor. All values exceed 0.7, so we can conclude that both factors exhibit good internal consistency.

Table 2: **Factor analysis of the needs for additional knowledge of linguistic content**

	Factor weight / Cronbach alpha
Factor 1	**0.904**
Morphology	0.914
Word formation	0.866
Syntax	0.824
Lexicology	0.799
Variety of the Slovenian language	0.736
Semantics	0.667
Phonetics and orthoepy	0.663
Communication - communication, speech	0.630
Factor 2	**0.824**
Neurolinguistics	0.979
Psycholinguistics	0.931
Sociolinguistics	0.608
Literacy, orthography	0.567

Comparison of different questions according to year of study - one-way variance analysis, Tukey's HSD-test

Hypothesis 1:
Students of different years differ in their assessment of the importance of linguistic content present in the study of speech therapy at levels 1 and 2.

From Table 3 it is clear that students differ in their average assessment of the importance of linguistic content present in the study of speech therapy at level 1 according to their year of study, which was also confirmed by the typical ANOVE score ($p = 0.035$). Furthermore, individual comparisons have shown that the average grade of the 5th year is statistically significantly higher than the average grade for the 3rd year, while the average grade for the 1st year is statistically not significantly different from any of them. We confirm hypothesis 1.

Table 3: **The importance of the presence of linguistic content**

How important do you consider the presence of linguistic content in the study of speech therapy at Levels 1 and 2 is?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
Third	13	4.08[a]	0.641	
First	17	4.53[ab]	0.514	0.035
Fifth	13	4.62[b]	0.506	

* Statistically values differ significantly if they do not contain the same letter. Values containing the same letter do not differ significantly from each other statistically.
Note * applies to all tables containing *.

Hypothesis 2:
Students of different years differ in their assessment of their current knowledge of linguistic content that are important in speech therapy.

From Table 4 below, it is clear that students differ in their average assessment of their current knowledge of linguistic content which they regard as relevant to speech therapy according to their year of study, which was also confirmed by the typical ANOVE score (p = 0.008). Furthermore, individual comparisons have shown that the average grade of the 5th year is statistically significantly higher than the average grade for the 1st year, while the average grade for the 3rd year is statistically not significantly different from any of them. We confirm hypothesis 2.

Table 4: Assessment of current own knowledge of linguistic content

How would you generally assess your current knowledge of linguistic content being relevant to speech therapy?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
First	17	2.71^a	0.772	
Third	13	3.08^{ab}	0.494	0.008
Fifth	13	3.46^b	0.519	

Hypothesis 3:
Students of different years differ in their assessment of the importance of knowing neurolinguistics for successful work in speech therapy.

From Table 5 below, it is clear that students differ in the average estimate of the importance of knowing neurolinguistics for successful work in speech therapy according to their year of study, which was also confirmed by the typical ANOVE score (p = 0.027). Furthermore, individual comparisons have shown that the average grade of the 5th year is statistically significantly higher than the average grade for the 1st and 3rd year, while the average grades of the 1st and 3rd year are not significantly different from each other statistically. We confirm hypothesis 3.

Table 5: **The importance of knowing neurolinguistics**

How important do you feel neurolinguistics is for successful work in speech therapy?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
First	17	4.29^a	0.588	
Third	13	4.31^a	0.630	0.027
Fifth	13	4.83^b	0.389	

Hypothesis 4:
Students of different years differ in their assessment of the importance of knowledge of monolingualism, bilingualism, multilingualism and bilinguism for successful work in speech therapy.

From Table 6 below, it is clear that students differ in the average estimate of the importance of knowing monolingualism, bilingualism, multilingualism and bilinguism for successful work in speech therapy according to their year of study, which was also confirmed by the typical ANOVE score (p = 0.001). Furthermore, individual comparisons have shown that the average grade of the 1st year is statistically significantly lower than the average grade for the 3rd and 5th year, while the average grades of the 3rd and 5th year are not significantly different from each other statistically. We confirm hypothesis 4.

Table 6: Importance of knowledge of monolingualism, bilingualism, multilingualism and bilinguism

How important do you think knowledge of monolingualism, bilingualism, multilingualism and bilinguism is for successful speech therapy work?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
First	17	3.88^a	1.054	
Fifth	12	4.67^b	0.492	0.001
Third	13	4.92^b	0.277	

Hypothesis 5:
Students of different years differ in their assessment of the need for additional knowledge in the field of the variety of the Slovene language.

From Table 7 below it can be seen that students differ in the average assessment of the need for additional knowledge in the field of the variety of Slovenian language according to their year of study which was also confirmed by the typical ANOVE score (p = 0,013). Furthermore, individual comparisons have shown that the average grade of the 1st year is statistically significantly higher than the average grade for the 3rd year, while the average grade for the 5th year is not significantly different from either of them statistically. We confirm hypothesis 5.

Table 7: The need for additional knowledge in the field of language variety

How much additional knowledge do you think you need in the field of the variety of the Slovene language?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
Third	13	2.23^a	0.725	
Fifth	13	2.77^{ab}	0.832	0.013
First	17	3.18^b	0.883	

Hypothesis 6:
Students of different years differ in their assessment of the need for additional knowledge in the field of lexicology.

From Table 8 below it can be seen that students differ in the average assessment of the need for additional knowledge in the field of lexicology according to their year of study which was also confirmed by the typical ANOVE score (p = 0,015). Furthermore, individual comparisons have shown that the average grade of the 1st year is statistically significantly higher than the average grade for the 5th year, while the average grade for the 3rd year is not significantly different from either of them statistically. We confirm hypothesis 6.

Table 8: The need for additional knowledge in the field of lexicology

How much additional knowledge do you think you need in the field of lexicology?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
Fifth	13	2.31^a	0.751	
Third	13	2.92^{ab}	0.641	0.015
First	17	3.12^b	0.781	

Hypothesis 7:
Students of different years differ in their assessment of the need for additional knowledge in the field of communication (communication, speech).

From Table 9 below it can be seen that students differ in the average assessment of the need for additional knowledge in the field of lexicology according to their year of study which was also confirmed by the typical ANOVE score (p = 0,040). Furthermore, individual comparisons have shown that the average grade of the 1st year is statistically significantly higher than the average grade for the 5th year, while the average grade for the 3rd year is not significantly different from either of them statistically. We confirm hypothesis 7.

Table 9: The need for additional knowledge in the field of communication (communication, speech)

How much additional knowledge do you think you need in communication (communication, speech)?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
Fifth	13	2.77^a	0.927	
Third	13	2.92^{ab}	0.954	0.040
First	17	3.59^b	0.870	

Hypothesis 8:
Students of different years differ in their assessment of the need for additional knowledge in the field of sociolinguistics.

From Table 10 below it can be seen that students differ in the average assessment of the need for additional knowledge in the field of sociolinguistics according to their year of study, which was also confirmed by the typical ANOVE score (p = 0,019). Furthermore, individual comparisons have shown that the average grade of the 1st year is statistically significantly higher than the average grade for the 3rd year, while the average grade for the 5th year is not significantly different from either of them statistically. We confirm hypothesis 8.

Table 10: The need for additional knowledge in the field of sociolinguistics

How much additional knowledge do you think you need in the field of sociolinguistics?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
Third	13	2.85^a	0.801	
Fifth	13	3.15^{ab}	0.987	0.019
First	17	3.76^b	0.831	

Hypothesis 9:
Students of different years differ in their assessment of the need for additional knowledge in the field of psycholinguistics.

From Table 11 below it can be seen that students differ in the average assessment of the need for additional knowledge in the field of psycholinguistics according to their year of study, which was also confirmed by the typical ANOVE score (p = 0,003). Furthermore, individual comparisons have shown that the average grade of the 1st year is statistically significantly higher than the average grade for the 5th year, while the average grade for the 3rd year is not significantly different from either of them statistically. We confirm hypothesis 9.

Table 11: The need for additional knowledge in the field of psycholinguistics

How much additional knowledge do you think you need in the field of psycholinguistics?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
Fifth	13	3.08^a	0.954	
Third	13	3.38^{ab}	0.768	0.003
First	17	4.12^b	0.697	

Hypothesis 10:
Students of different years differ in their assessment of the need for additional knowledge in the field of neurolinguistics.

From Table 12 below it can be seen that students differ in the average assessment of the need for additional knowledge in the field of neurolinguistics according to their year of study, which was also confirmed by the typical ANOVE score (p = 0,000). Furthermore, individual comparisons have shown that the average grade of the 1st year is statistically significantly higher than the average grade for the 3rd and 5th year, while the average grades of the 3rd and 5th year are not significantly different from each other statistically. We confirm hypothesis 10.

Table 12: The need for additional knowledge in neurolinguistics

How much additional knowledge do you think you need in the field of neurolinguistics?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
Fifth	13	3.00^a	0.816	
Third	13	3.46^a	0.776	0.000
First	17	4.24^b	0.664	

Hypothesis 11:
Students of different years differ in their assessment of the need for additional knowledge in the field of semantics.

From Table 13 below it can be seen that students differ in the average assessment of the need for additional knowledge in the field of semantics according to their year of study, which was also confirmed by the typical ANOVE score (p = 0,030). Furthermore, individual comparisons have shown that the average grade of the 1st year is statistically significantly higher than the average grade for the 5th year, while the average grade for the 3rd year is not significantly different from either of them statistically. We confirm hypothesis 11.

Table 13: The need for additional knowledge in the field of semantics

How much additional knowledge do you think you need in the field of semantics?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
Fifth	13	2.54^a	0.877	
Third	13	$2,62^{ab}$	0.768	0.030
First	17	3.29^b	0.849	

Hypothesis 12:
Students of different years differ in their assessment of the need for additional knowledge in the field of language development and language history.

From Table 14 below it can be seen that students differ in the average assessment of the need for additional knowledge in the field of language development and language history according to their year of study, which was also confirmed by the typical ANOVE score (p = 0,002). Furthermore, individual comparisons have shown that the average grade of the 1st year is statistically significantly higher than the average grade for the 3rd and 5th year, while the average grades of the 3rd and 5th year are not significantly different from each other statistically. We confirm hypothesis 12.

Table 14: The need for additional knowledge in the field of language development and language history

How much additional knowledge do you think you need in the field of language development and language history?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
Third	13	2.46^a	0.776	
Fifth	13	2.54^a	1.050	0.002
First	17	3.59^b	0.870	

Hypothesis 13:
Students of different years differ in their assessment of the usefulness of the linguistic content provided during their study of speech therapy for the purpose of working in the field of speech therapy.

From Table 15 below it is clear that students differ in the average evaluation of the usefulness of the linguistic content provided during the study of speech therapy for working in the field of speech therapy according to their year of study, which was also confirmed by the typical result of ANOVE (p = 0.007). Furthermore, individual comparisons have shown that the average grade of the 5th year is statistically significantly higher than the average grade for the 3rd year, while the average grade for the 1st year is not significantly different from either of them statistically. Hypothesis 13 is confirmed.

Table 15: Usefulness of linguistic content for working in the field of speech therapy

How useful do you consider the linguistic content provided during the study of speech therapy for working in the field of speech therapy?				
Year of study:	N	Average*	Standard deviation	ANOVA (p-value)
Third	13	3.77^a	0.832	
First	17	4.29^{ab}	0.470	0.007
Fifth	13	4.62^b	0.650	

Checking the connection and dependence between different variables - regression analysis

Hypothesis 14:
The importance of the presence of linguistic content in the study of speech therapy at levels 1 and 2 has a positive influence on the usefulness of the linguistic content provided during the study of speech therapy for the working in the field of speech therapy.

From Table 16 below, it is evident that the regression coefficient is statistically significant, so the following equation of the regression line can be written:

*Usefulness = 0.929 + 0.748 * Presence*

If the assessment of the importance of the presence of linguistic content in the study of speech therapy at levels 1 and 2 increases by 1 unit, then the assessment of the usefulness of the linguistic content provided during the study of speech therapy for working in speech therapy will increase, on average, by 0,748 units. In addition, the determination coefficient (R^2) shows that 37.3% of the variability in the assessment of the usefulness of linguistic content can be explained by the influence of the assessment of the importance of the presence of linguistic content. Hypothesis 14 is confirmed.

Table 16: Value of the regression coefficient, dependent variable usefulness

	Coefficient	t	p	R	R^2
(constant)	0.929	1.377	0.176	0.611	0.373
Presence	0.748	4.939	<0.001		

Hypothesis 15:
The importance of the presence of linguistic content in the study of speech therapy at levels 1 and 2 has a positive impact on the satisfaction regarding the representation of linguistic content in the curricula of the speech therapy study program.

From Table 17 below, it is evident that the regression coefficient is statistically significant, so the following equation of the regression line can be written:

*Representation = 4.794 - 0.280 * Presence*

If the assessment of the importance of the presence of linguistic content in the study of speech therapy at levels 1 and 2 is increased by 1 unit, the assessment of satisfaction regarding the representation of linguistic content in the curricula of the speech therapy study program will be, on average, reduced by 0.280 units. In addition, the determination coefficient (R^2) shows that 6.8% of the variability in the assessment of the representation of linguistic content can be explained by the influence of the assessment of the importance regarding the presence of linguistic content. We confirm hypothesis 15.

Table 17: Value of the regression coefficient, dependent variable Representation

	Coefficient	t	p	R	R^2
(constant)	4.794	6.660	0.000	0.261	0.068
Presence	-0.280	-1.732	0.046		

Hypothesis 16:
The importance of the presence of linguistic content in the study of speech therapy at Levels 1 and 2 has a positive impact on the importance of revision and improvement of knowledge in the field of linguistics to be acquired in speech therapy.

From Table 18 below, it is evident that the regression coefficient is statistically significant, so the following equation of the regression line can be written:

*Revision = 1.228 + 0.701 * Presence*

If the assessment of the importance of the presence of linguistic content in the study of speech therapy at levels 1 and 2 increases by 1 unit, the assessment of the importance of the revision and improvement of knowledge to be gained in speech therapy in the field of linguistics, will increase, on average, by 0.701 units. In addition, the determination coefficient (R^2) shows that 33.1% of the variability in the assessment of the importance of revision and improvement of knowledge can be explained by the influence of the assessment of the importance of the presence of linguistic content. We confirm hypothesis 16.

Table 18: Value of regression coefficient, dependent variable Revision

	Coefficient	t	p	R	R^2
(constant)	1.228	1.773	0.084	0.576	0.331
Presence	0.701	4.509	<0.001		

Hypothesis 17:
The importance of the presence of linguistic content in the study of speech therapy at Levels 1 and 2 has a positive impact on the frequency of thinking about their competence in linguistic content which is present in speech therapy.

From Table 19 below, it is evident that the regression coefficient is statistically significant, so the following equation of the regression line can be written:

*Reflection = 0.272 + 0.690 * Presence*
If the assessment of the importance of the presence of linguistic content in the study of speech therapy at levels 1 and 2 increases by 1 unit, then the assessment of the frequency

of thinking about one's competence in linguistic content present in speech therapy will increase, on average, by 0.690 units. In addition, the determination coefficient (R^2) shows that 21.7% of the variability in the assessment of the frequency of thinking about their qualifications can be explained by the influence of the assessment of the importance of the presence of linguistic content. We confirm hypothesis 17.

Table 19: Value of regression coefficient, dependent variable Reflection

	Coefficient	t	p	R	R^2
(constant)	0.272	0.295	0.770	0.466	0.217
Presence	0.690	3.328	0.001		

Hypothesis 18:
The usefulness of linguistic content provided during the study of speech therapy for working in the field of speech therapy has a negative impact on satisfaction regarding the representation of linguistic content in the curricula of the speech therapy study program.

From Table 20 below it is evident that the regression coefficient is not significant statistically, so the equation of the regression line cannot be written.

It cannot therefore be argued that the evaluation of the usefulness of linguistic content, provided during the study of speech therapy for working in speech therapy, has a statistically significant effect on the assessment of satisfaction regarding the representation of linguistic content in the curricula of the speech therapy study program. We reject the hypothesis 18.

Table 20: Value of the regression coefficient, dependent variable Representation

	Coefficient	t	p	R	R^2
(constant)	4.062	6.989	<0.001	0.136	0.019
Usefulness	-0.119	-0,879	0.192		

Hypothesis 19:
The usefulness of linguistic content envisaged during the study of speech therapy, to work in the field of speech therapy, has a positive impact on the importance of revising and perfecting the knowledge that must be acquired in order to work in speech therapy.

From Table 21 below, it is evident that the regression coefficient is statistically significant, so the following equation of the regression line can be written:

*Revision = 2.813 + 0.357 * Usefulness*

If the assessment of the usefulness of linguistic content provided during the study of speech therapy increases by 1 unit for working in speech therapy, the assessment of the importance of revising and perfecting the knowledge to be acquired in speech therapy will, on average, increase by 0.357 units in the field of linguistics. In addition, the determination coefficient (R^2) shows that 12.9% of the variability in the assessment of the importance of the revision and improvement of knowledge can be explained by the influence of the assessment of the importance of the presence of linguistic content. We confirm hypothesis 19.

Table 21: Value of regression coefficient, dependent variable Revision

	Coefficient	t	p	R	R^2
(constant)	2.813	4.522	<0.001	0.359	0.129
Usefulness	0.357	2.465	0.009		

Hypothesis 20:
Currently, the knowledge of linguistic content regarded as important in speech therapy has a negative impact on the frequency of thinking about one's competence in linguistic content which is present in speech therapy work.

From Table 22 below it is evident that the regression coefficient is statistically not significant, so the regression line equation cannot be written.
It cannot therefore be argued that the assessment of the current knowledge of linguistic content, relevant to speech therapy, has a statistically significant effect on the assessment of the frequency of thinking about one's competence regarding linguistic content which is present in speech therapy work. We reject hypothesis 20.

Table 22: Value of regression coefficient, dependent variable Reflection

	Coefficient	t	p	R	R^2
(constant)	3.952	6.276	<0.001	0.163	0.027
Knowledge	-0.209	-1.044	0.152		

Hypothesis 21:
Currently, the knowledge of linguistic content which is important in speech therapy has a negative impact on the importance of revising and perfecting the knowledge to be acquired in speech therapy in the field of linguistics.

From Table 23 below it is evident that the regression coefficient is statistically not significant, so the regression line equation cannot be written.
It cannot therefore be argued that the assessment of the current knowledge of linguistic content, which is important in speech therapy, has a statistically significant effect on the

assessment of the importance of revising and perfecting the knowledge to be acquired in speech therapy in the field of linguistics. We reject hypothesis 21.

Table 23: Value of regression coefficient, dependent variable Revision

	Coefficient	t	p	R	R^2
(constant)	4.884	9.808	<0.001	0.177	0.031
Knowledge	-0.183	-1.150	0.129		

Hypothesis 22:
The importance of restoring and perfecting the knowledge to be acquired in speech therapy in the field of linguistics has a positive impact on the frequency of thinking about one's skills in linguistic content which is present in speech therapy.

From Table 24 below, it is evident that the regression coefficient is statistically significant, so the following regression line equation can be written:

*Reflection = 0.644 + 0.619 * Revision*

If the assessment of the importance of updating and improving the knowledge to be acquired in speech therapy increases by 1 unit in the field of linguistics, the assessment of the frequency of thinking about one's competence in linguistic content which is present in speech therapy will increase, on average, by 0.619 units. In addition, the determination coefficient (R^2) shows that 25.9% of the variability in the assessment of the frequency of thinking about one's qualifications can be explained by the influence of the assessment of the importance of the presence of linguistic content. We confirm hypothesis 22.

Table 24: Value of regression coefficient, dependent variable Reflection

	Coefficient	t	p	R	R^2
(constant)	0.664	0.891	0.378	0.509	0.259
Revision	0.619	3.741	<0.001		

Conclusion

Different world associations, commissions and associations in the field of speech therapy (e.g. The International Clinical Phonetics and Linguistic Association - ICPLA; European Expert Commission for Socrates / Erasmus; European professional logopedic association - CPLOL) consider knowledge and the empowerment of speech therapists in the field of linguistics as one of its most important aspects. Linguistics and speech therapy are two directly related areas whereby the first one, with appropriate development, should follow the latter as a support in a theoretical and practical sense. In the Republic of Slovenia, the study of speech therapy can only be undertaken at one educational institution, namely the

Faculty of Education at the University of Ljubljana. In the academic year 2018/19, students of the 1st, 3rd and 5th years are enrolled in the 1st and 2nd stage of the speech therapy program, because enrolment in this particular study program is usually only offered every two years. The questionnaire was used to examine how important the presence of linguistic content in the study of speech therapy is for students and their views on their own knowledge of this content; the importance of knowledge regarding individual linguistic content to work successfully in speech therapy; which additional linguistic knowledge would still be needed; satisfaction regarding the representation of linguistic content in the curricula of the speech therapy study program; the usefulness of linguistic content for working in speech therapy; the frequency of thinking about their own competence with regard to the content present in speech therapy; the importance of revising and improving the knowledge to be acquired in the linguistic area of speech therapy and which subjects in the field of linguistics they would like to see additional education in. Most of the students surveyed (93%) - viewed comprehensively - consider the presence of linguistic content in the study of speech therapy as important or very important. 77% of students believe that their current knowledge of linguistic content is good or very good. Amongst the linguistic content that they consider most important in the work of speech therapy, the most frequently mentioned are: phonetics (phonetics and phonology), communication and syntax. Respondents were given 14 linguistic areas, among which they had to assess, how important they regard them for working successfully in speech therapy. The areas below are given in percentage terms ranging from the highest to the lowest: phonetics and orthoepy (98%), communication, speech (98%), neurolinguistics (95%), literacy, orthography (89%), psycholinguistics (88%), lexicology (87%), monolingualism, bilingualism, multilingualism, bilinguism (84%), word formation (80%), syntax (80%), sociolinguistics (73%), language varieties (71%), semantics (71%), morphology (68%), language development and history (43%). Almost half (49%) are satisfied with the representation of linguistic content in the curricula of the speech therapy study program; 44% of them answered that this content was useful. 40% of them often think about their qualifications in linguistic content, and 47% think it is important to revise and perfect linguistic skills in speech therapy. They also want to be further educated in the fields of phonetics and phonology, communication and syntax.

In the current study program, students directly or indirectly study linguistics with the following subjects: phonetics and phonology, linguistic sciences, the phonological development of children and delayed phonological development, neurolinguistics and neuropsychology, and working with multilingual people. To provide even more linguistic content, major changes in the study program would be required and best implemented when the speech therapy study program is next reviewed.

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