Forward

Dr Marg Csapo – A Citizen of the World

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I am grateful for the opportunity to pay tribute to the memory of my dear friend Prof Marg Csapo, by presenting not only her remarkable contribution in vision, teaching, research and guidance, but also in trying to illustrate her unique humanistic and democratic approach to life. Marg was one of the most courageous, optimistic and generous person I have ever known. She did not belong to one place, but she considered herself as the citizen of the world, and she felt that it is her responsibility to care for all children wherever they are. As the prominent pioneer and a natural leader in international special education, she had a gift for inspiring and exciting special educators through her innovative ideas, the ability to translate the results of academic research into practice, and adapting it to empower individuals with special needs in different cultures. Her contribution supported the development of special education in many countries around the world. Thus, I was happy to recommend her to be the recipient of the 2005 J. E.Wallace Wallin Special Education Lifetime Achievement Award in CEC.

I met Dr. Csapo for the first time in 1988 in a stormy night during a conference in England. At that time, only few scholars appreciated the importance of international perspectives for special education. In fact, most countries treated special education as reflecting national (local) philosophies. The reputation of Prof Csapo was well appreciated already at that time, because of her book on Autistic children and many scientific publications. During our first meeting, Marg described her wish and vision – to develop a bridge for promoting communication and collaboration between different cultures and countries, emphasizing equal opportunities for students with special needs through benefiting the power of education for them. She considered the vision of an international association as an effective way for promoting collaboration and partnership between countries, creating opportunities for sharing and discussing special education philosophy and practices. She was a true pioneer in her conceptualization, and very powerful in her leadership abilities and vast databased knowledge. At that time, it seemed like an idealistic dream. Yet, I became excited when I realized her plans to develop bridges for exchanging knowledge and effective practices among different countries through conferences, professional training and a scientific journal. I was proud to become among the first members of the International Association of Special Education. She continues to be my friend and colleague for many years, and I always admired her warm, energetic and generous attitude, combined with

her friendly open relationship. Several years ago, she visited Israel and planted a tree in the Jerusalem Forest as a symbol of her trust in life, and the power of growth and hope.

Marg has been appreciated by colleagues and admired by her students for her wide in-depth knowledge. Her influence encourage us to respect our strengths, to promote equality, democracy and to stay hopeful. She was capable of looking at a subject upon all sides. This implied that he was free from prejudice, and from bias, and her perspectives were of great value to us.

Marg was excited to learn about my new research on loneliness and hope theory for individuals with special needs and their families. She immediately recognized the interventional implications of developing hopeful communities that will support the struggling children with special needs and their families. Even after retiring and becoming an emerita professor from UBC, she remained very active in promoting and advancing new and innovative ideas, providing consultation to developing countries, running workshops at the far ends of the globe, presenting thought provoking keynote presentations regarding future directions of special education, and staying involved in lecturing, teaching, training and writing to continue promoting the vision of special education contribution to the educational system and to the quality of life of students with special needs.

In her life she was a living advertisement for her belief in the human strength and the equal rights of all, as demonstrated by her involvement in special education projects around the world, as an individual and together with UNESCO and USAID. We all love Marg, and she truly enriched our life. The international community of special education professionals and researchers will miss her and feel a tremendous loss.

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The Quality of Single-Case Evaluation Studies of Curricular Programs for Students with Disabilities

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Abstract: *Educational researchers conduct studies to gather critical empirical evidence in the determination of what are "evidence-based" curricular programs, which in turn, directly inform adoption efforts. The predominate method of validating these programs is through the use of group experimental designs, although single-case designs have also been advocated. This article posits the current standards set forth when validating curricular programs using single-case designs are significantly lacking. We propose an expansion of the existing standards to ensure a rigorous, accurate examination of curricular programs when determining their use as an evidence-based practice. We apply these standards to a subset of studies reviewed by McKenna, Kim, Shin, and Pfannenstiel (2017) in a recent evaluation of single-case reading intervention investigations including students with and at risk for emotional and behavioral disorders. Using our expanded standards, we found none of the 14 studies met quality standards for curricular program validation. Recommendations are discussed.*

Keywords: Curricular programs, single-case designs, reading interventions, standard

Educators are increasingly required to implement evidence-based practices in our schools. Current legislation such as the Every Student Succeeds Act (ESSA) of 2015 (P. L. 114-95) requires the use of evidence-based activities, strategies, and interventions (U.S. Department of Education, 2016). The term *evidence-based* is defined by the U.S. Department of Education (2016) as demonstrating statistically significant effects in the improvement of student outcomes (or other relevant outcomes); evidence is considered "strong" (with at least one well-designed and well-implemented study), "moderate" (with at least one well-designed and well-implemented quasi-experimental study), or "promising" (with at least one well-designed and well-implemented correlational study controlling for selection bias). Evidenced-based practices should include a well-articulated rationale (i.e., logic model) as well.

The emphasis on the use of evidence-based practices is important to ensure efficient use of available resources and to maximize student outcomes. According to Horner et al. (2005), "Appropriate concern exists that investment in practices that lack adequate empirical support may drain limited educational resources and, in some cases, may result in the use of practices that are not in the best interests of children" (p. 175). Further, these authors noted "to support the investment in evidence-based practices, it is appropriate for any research method to define objective criteria that local, state or federal decision makers may use to determine if a practice is evidence based" (p. 175). Unfortunately, educational researchers have not discussed what research methods (i.e., group experimental, single-case) are more appropriate for validating educational practices (e.g., increasing opportunities to respond) versus curricular programs. Curricular programs include a scope and sequence of instructional skills and strategies taught through a series of lessons/exercises/tasks, typically with published materials.

Further discussion surrounding the appropriateness of particular research methods for scientifically validating curricular programs is warranted given their importance in our schools. Consider the following from the National Research Council (2004):

> Curricula play a vital role in educational practice. They provide a crucial link between standards and accountability measures. They shape and are shaped by the professionals who teach with them. Typically, they also determine the content of the subjects being taught. Furthermore, because decisions about curricula are typically made at the local level in the United States, a wide variety of curricula are available for any given subject area. Clearly, knowing how effective a particular curriculum is, and for whom and under what conditions it is effective, represents a valuable and irreplaceable source of information to decision makers, whether they are classroom teachers, parents, district curriculum specialists, school boards, state adoption boards, curriculum writers and evaluators, or national policy makers. Evaluation studies can provide that information but only if those evaluations meet standards of quality. (p. 1)

Our assumption is group experimental and single-case research methods may not be equally appropriate for validation of curricular programs.

Essentially, researchers have used two types of research methods for scientifically validating curricular programs in a quantitative manner—group experimental and single-case designs. Briefly, group experimental designs (e.g., randomized control trials [RCTs]) involve a comparison of two more equivalent groups based on differences in the independent variable. The differences *between* the groups are compared to the differences *within* the groups statistically. If the differences between the groups are greater than would be expected based on the differences within the groups, we may conclude the obtained differences were unlikely due to chance alone. The obtained mean of each group represents the average of scores and attributes of the participants in the group and, thus, allows for the evaluation of the effects of a curricular program for all group members as a whole (Lane & Gast, 2014). Two primary advantages of using group experimental designs are that cause-and-effect relationships can be determined, and it may be possible to generalize to the target population if the participants are a representative sample (Martella, Nelson, Morgan, & Marchand-Martella, 2013). However, there are also distinct disadvantages of group experimental designs. One disadvantage is the mean of a group is not representative of any one member of the group. Also, assessments are typically provided before and after the implementation of the independent variable making any adjustments to an ineffective intervention all but impossible (in other words, one may not know if the intervention is ineffective until the end of the study) (Martella et al., 2013).

Like group experimental designs, single-case designs are used to establish functional relationships. Strengths of single-case designs include (a) being useful in fields where a particular student is of concern, (b) allowing interventions to be actively monitored, and (c) being helpful in specific settings such as schools (Horner et al., 2005). Single-case designs have advantages over group experimental designs in fields focused on individuals. First, individual variability can be determined and assessed because individual participant performance is determined on a session-by-session basis via on-going data collection (Lane & Gast, 2014). Second, on-going adjustments can be made based on the obtained data if participant behavior is not changing in the desired direction (Byiers, Reichle, & Symons, 2012). Finally, there is no need for large numbers of participants to determine functional relationships (Martella et al., 2013).

Single-case studies do have a number of suggested weaknesses. For example, the ability to generalize findings beyond the few participants in the study may be limited (Maggin & Chafouleas, 2013), although single-case researchers point out external validity concerns are handled through replications (Martella et al., 2013). Another perceived weakness is that non-directly observable behaviors are considered inappropriate for applied behavior analysis (ABA) research (Critchfield & Reed, 2017). Finally, the single-case data collection must be frequent and ongoing which does not allow for larger-scale, standardized assessments to be used.

The predominant method of validating curricular programs has been group experimental designs such as RCTs (considered the "gold standard" by What Works Clearinghouse [WWC]; see Ginsburg & Smith, 2016). Although single-case designs are less utilized in the validation of such curricular programs, single-case researchers do advocate their use. For example, Horner et al. (2005) stated the following: "We provide here a context for using single-subject research to document evidence-based practices in special education…A practice refers to a curriculum, behavioral intervention, systems change, or educational approach…" (p. 175). Unfortunately,

single-case researchers have not appeared to critically analyze the use of single-case designs in curriculum validation efforts.

An obfuscating factor in the validation of curriculum programs is the lack of guidelines for such validation. Although it is obvious we should validate curricular programs, it is less obvious what is actually needed to attain this validation. We did find a study of the usefulness of RCTs in the What Works Clearinghouse (WWC) by Ginsburg and Smith (2016). They noted the following are needed when validating curricular materials when RCTs are used: (a) strong theory of why the curriculum works; (b) study is done independent of association with curriculum developer; (c) curriculum is implemented as designed; (d) comparison is identified; (e) unbiased sample has appropriate grade coverage; (f) outcomes are objectively measured, correctly analyzed, and full reported; (g) curriculum is not out of date; and (h) there is replication. The work of Ginsburg and Smith extended the report by the National Research Council (2004) on how to establish curricular effectiveness.

Similar criteria or recommendations for the use of single-case designs to validate curricular programs could not be located. While there have been several review studies assessing the effects of reading programs with various student populations with single-case designs, no studies were located that considered curricula validation issues. Studies that did consider the effects of curricular programs used accepted standards for determining the adequacy of the single-case design but not standards for validating curricular programs. For example, McKenna, Kim, Shin, and Pfannenstiel (2017) stated that research syntheses of reading practices for students with emotional and behavioral disorders (EBD) did not employ rigorous standards for single-case designs such as those outlined by the WWC: (a) independent variable is systematically manipulated, (b) dependent variable is measured by more than one assessor, (c) interobserver agreement is collected during at least 20% of data points across conditions, (d) interobserver agreement meets minimum thresholds (i.e., 80% or kappa of 6), (e) sufficient number of phases (conditions) to demonstrate an intervention effect based on design (at three different points in time or during three different phase repetitions) exist, and (f) sufficient number of data points per condition or phase (i.e., three or more) is provided. Thus, McKenna et al. (2017) reviewed reading studies using these criteria. Plavnick, Marchand-Martella, Martella, Thompson, and Wood (2015) conducted a similar investigation on reading programs with students with autism. Instead of the WWC criteria, these researchers used the criteria established by Horner et al. (2005). Both the McKenna et al. (2017) and Plavnick et al. (2015) studies came to a similar conclusion regarding the review of reading programs or practices—they hold promise for their respective populations of students. However, neither investigation considered criteria needed to validate curricular programs.

Therefore, based on what we know about curriculum development and validation coupled with the aforementioned recommendations by Ginsburg and Smith (2016), we developed a checklist of standards that are needed to establish if a curriculum has been validated above and beyond the type of research design used. (Note: the following items were not included from Ginsburg and Smith [2016]: [item a] a "strong theory of why the curriculum works" given its lack of alignment with a behavior-analytic perspective; [item d] "comparison is identified" which is not required in a single-case design; [item e] "unbiased sample" given the target population is not sampled in single-case studies although we did include appropriate grade coverage for the

amount of the program completed; [item g] "curriculum is not out of date" since this is an external validity issue; and [item h] "there is replication" as we are conducting the review on a study-by-study basis).

We did include criteria or an extension/modification of the six criteria from Ginsburg and Smith (2016). First, the authors of the study were independent of the curriculum developer(s) (item b) and/or conflict of interest procedures were followed/noted by the study authors to ensure impartiality. Second, the characteristics of the target population for which the curriculum program is designed should be specified (item c.1). The inclusion and exclusion criteria used to select the participants for evaluation studies of a curricular program should align with the characteristics of the target population for which the program was designed. Third, the level of professional development required to implement the curricular program should be documented (item c.2). Many curricular programs have focused training needs (including coaching) that should be adhered to so teachers and other curricular implementers have the level of skills needed to implement the curriculum with fidelity. At a minimum, the level of professional development received by teachers to implement the program should be documented.

Fourth, it seems clear specific lesson implementation information should be provided (cf: item c.3). For example, the duration of each lesson should be documented and compared to the lesson duration specified in the curricular program. Similarly, the activities completed in each lesson should be documented. All activities in a lesson as designed in the curricular program should be present during the investigation such as following the script (if there is one), the form of error corrections provided, and any reteaching/remediation procedures used. Horner et al. (2005) noted the need for fidelity of the intervention; however, fidelity as used by Horner et al. and others typically refers to how an intervention is provided, which does not include whether or not the intervention was applied as designed by curriculum developers. Documentation that the curricular program was implemented *as designed* is critical in the demonstration of the effects of such programs. Large deviations from the stated lesson duration are problematic. If only a few targeted activities are provided in a lesson, it is not possible to conclude what the effects of the curricular program are.

Fifth, there should be guidelines on the proportion of lessons needed to show the program works (item e). For example, is 10% of the total lessons adequate? Should we set the standard at 25%? Or, should we set the standard based on the number and range of skills covered in the program? Given that many skills covered in a program are folded into other more complex skills, it seems as if ample time should be provided to allow these skills to be developed. We propose, at a minimum, the entire program be completed if it is designed to be done within an academic year. If it is a multi-year program, we still propose assessment at the end of each academic year with a further assessment of the cumulative effects of the program over grades.

Finally, multiple measures must be included covering the range of skills taught in the program (item f). This requirement is essential given the complexity of skills needed to meet grade-level standards. It is unclear to us how multiple measures, or at least global measures representing a multitude of skills (e.g., comprehension), can be measured in a frequent enough manner in a single-case study. Further complicating this issue is the timing of the measure. In reading programs, several skills are taught at the same time, skills are folded into other more

complex skills, and many skills serve as prerequisite skills for future skills as previously described.

The purpose of this investigation was to replicate the McKenna et al. (2017) investigation using a different set of standards outlined above that we believe are critical to the validation of curricular programs. An analysis of the same studies reviewed by McKenna et al. assessing curricular programs may serve as an initial test of a proposed new set of standards we believe are needed for an effort to further validation standards.

Method

Thirty studies reviewed by McKenna et al. (2017) were analyzed based on our proposed standards for validating curricular programs. Studies involving an assessment of the effects of a curricular program were included. Of the 30 studies, 14 assessed the effects of a curricular program.

The following items were used to analyze these studies: (a) study author(s) was independent of curriculum developer(s) and/or conflict of interest procedures were followed/ noted (item b); (b) study participant(s) were consistent with the target population for which the curricular program was designed (if not, a justification for inclusion of the participant[s] was provided) (item c.1); (c) level of professional development required to implement the program was described and consistent with publisher/author guidelines (item c.2); (d) complete lessons were implemented as specified in the curricular program (item c.3); (e) 1 year of the curricular program (or complete program if less than an academic year) was completed or a multi-year program was assessed over a period of 1 year with a further assessment of the cumulative effects of the program over grades/academic years (item e); and (f) multiple measures were included that covered the range of skills taught in the program (item f).

Results

Approximately 18 programs were included in the 14 investigations. However, this finding may or may not be accurate given that the level of *PALS* used was not specified in three investigations (i.e., Barton-Arwood et al., 2005; Sutherland & Snyder, 2007; Wehby, Falk, Barton-Arwood, Lane, & Cooley, 2003) and the level (*A*, *B1*, *B2*, and *C*) and strand (*Decoding* or *Comprehension*) of *Corrective Reading* was not specified in one study (Lingo et al., 2006). The most researched program was some form of *PALS*; however, of the five investigations including *PALS*, the program was used by itself in three of these (i.e., Falk & Wehby, 2001; Lane, O'Shaughnessy, Lambros, Gresham, & Beebe-Frankenberger, 2007; Sutherland & Snyder, 2007). The most frequent measures were oral reading and nonsense word fluency. All investigations used a multiple-baseline design (MBD) in some form. Two investigations used an MBD across students, six investigations used an MBD across student pairs, and six investigations used an MBD across groups of 3-5 students. All investigations except for one (i.e., Lingo et al., 2006) used weekly probes. The authors in all investigations indicated the interventions had positive effects.

However, these conclusions may not be warranted. Using the design standards from McKenna et al. (2017), only one investigation (i.e., Barton-Arwood et al., 2005) fully met the

standards; one investigation (i.e., Cullen, Alber-Morgan, Schnell, & Wheaton, 2014) met the standards with reservations on the Ohio Achievement Assessment (OAA) and met the standards for Maze (a cloze procedure for comprehension assessment); one study (i.e., Strong, Wehby, Falk, & Lane, 2014) met the standards for fluency but not for comprehension; and 11 investigations did not meet the standards. Additionally, of the three studies that at least partially met the design standards, two did not meet the standards for overall evidence and one (i.e., Cullen et al., 2014) moderately met the standards for OAA but did not meet the standards for Maze.

Using the standards proposed in this paper, we found the following results for the 14 reviewed studies (see Table 1). None of the authors in the investigations had conflicts of interest with regard to program authorship. All but one investigation (i.e., Sutherland & Snyder, 2007) provided information justifying the inclusion of the participants in a reading program (e.g., level of reading performance). Professional development was adequately described in five investigations, partially described in one investigation, and not described in five investigations. In three investigations, professional development was described for one program but not another (when multiple programs were used).

Table 1. ***Curriculum Validation Standards Correlated to Ginsburg and Smith (2016).***

Study	item b	item c.1	item c.2	item c.3	item e	item f	Met/ Not Met Proposed Curricular Program Validation Standards	Met/ Not Met WWC Standards as assessed by McKenna et al. (2017)
Barton-Arwood et al. (2005).	Yes	Yes	Yes	No Removed seat work for *Horizons* and *PALS* modified to expand adult's role in modeling the skill and supervision (Fidelity data taken); combined both programs	No 4 days per week of *Horizons* and 3 days per week of *PALS* Note: *Horizons Fast Track AB* has 150 lessons *estimated 10-17 weeks of intervention (number of lessons completed unspecified)	Yes Note: Benchmark not assessed; standardized pre-test/posttest scores reported	No	*Design Standards*: Yes *Overall Evidence:* No for all measures
Cullen et al. (2014).	Yes	Yes	No	Yes (fidelity data taken)	No Completed 8-15 of 50 lessons *estimated 8-15 sessions	Yes Note: Benchmark not assessed	No	*Design Standards*: With Reservations for OAA Yes for Maze *Overall:* Moderate for OAA No for Maze
Falk & Wehby (2001).	Yes	Yes	No	Yes (fidelity data taken)	No *K-PALS* total for 11 weeks *estimated 3-10 weeks of peer tutoring component, 9-30 lessons (number of lessons completed unspecified)	Yes Note: Benchmark not assessed	No	*Design Standards*: No *Overall Evidence:* N/A

Study	item b	item c.1	item c.2	item c.3	item e	item f	Met/ Not Met Proposed Curricular Program Validation Standards	Met/ Not Met WWC Standards as assessed by McKenna et al. (2017)
Harris, Oakes, Lane, & Rutherford (2009).	Yes	Yes	Yes for Sonday No for Great Leaps	Yes for *Sonday Reading Program* (fidelity data taken); No on *Great Leaps*	No 27 to 47 sessions of instruction; took 2 to 3 sessions to complete a lesson (number of lessons completed unspecified)	Yes Note: Results compared to benchmark level	No	*Design Standards*: No *Overall Evidence:* N/A
Lane, Little, Redding-Rhodes, Phillips, & Welsh (2007).	Yes	Yes	Yes	Yes (fidelity data taken)	No 9 weeks of lessons (number of lessons completed unspecified)	No, did not assess all skills taught in program such as comprehension Note: Benchmark not assessed; reported slopes	No	*Design Standards*: No *Overall Evidence:* N/A
Lane et al. (2001).	Yes	Yes	Yes	Yes (fidelity data taken)	No 10 weeks, 30 lessons; *PATR* program takes 12-14 weeks 3-4 times per week	No, did not directly assess phonological awareness Note: Normative/ ambitious growth levels compared	No	*Design Standards*: No *Overall Evidence:* N/A

Table Continues

Study	item b	item c.1	item c.2	item c.3	item e	item f	Met/ Not Met Proposed Curricular Program Validation Standards	Met/ Not Met WWC Standards as assessed by McKenna et al. (2017)
Lane et al. (2002).	Yes	Yes	No	Yes (fidelity data taken)	No 9 weeks, 30 lessons (number of books completed out of six unspecified)	No, measures did not include all program components such as spelling Note: Benchmark not assessed; calculated individual effect sizes	No	*Design Standards*: No *Overall Evidence:* N/A
Lingo, Slaton, & Jolivette (2006).	Yes	Yes	No	Yes (fidelity data taken but not specified)	No Completed 5-19 lessons	Yes Note: Benchmark not assessed; reported standard scores and grade equivalents	No	*Design Standards*: No for both measures *Overall Evidence:* N/A
Oakes, Mathur, & Lane (2010).	Yes	Yes	Yes for *Foundations*, No for *Harcourt Trophies* and *Voyager's Blastoff to Reading* Program	Yes (fidelity data taken)	No Primary program: *Harcourt Trophies* for 6 weeks Secondary program (baseline): *Foundations* for 6-10 weeks) Secondary program with *Voyager's Blastoff* (experimental): 8 weeks) (number of lessons unspecified)	Yes, only for *Voyager's Blastoff* Note: Reported slopes and realistic and obtained growth compared to realistic and ambitious gains	No	*Design Standards*: No *Overall Evidence:* N/A

Table continues

Study	item b	item c.1	item c.2	item c.3	item e	item f	Met/ Not Met Proposed Curricular Program Validation Standards	Met/ Not Met WWC Standards as assessed by McKenna et al. (2017)
Scott & Shearer-Lingo (2002).	Yes	Yes	No	Yes (no fidelity data reported)	No *Teach Your Child to Read in 100 Easy Lessons* implemented for approx. 2 weeks *estimated: *Great Leaps* in effect up to 35 days (number of lessons completed unspecified)	No, only fluency measures Note: Benchmark not assessed	No	*Design Standards*: No *Overall Evidence:* N/A
Strong et al. (2004).	Yes	Yes	Yes	Yes (fidelity data taken)	No 7 –weeks of training, *estimated 28 lessons of *Corrective Reading* (number of lessons completed unspecified)	Yes Note: Benchmark not assessed; standardized pre-test/posttest scores reported	No	*Design Standards*: Yes for Fluency, No for comprehension *Overall Evidence:* No for both measures
Sutherland & Snyder (2007).	Yes	No	No—Unspecified type and length of training	Yes for *PALS* and self graphing added (fidelity data taken)	No *estimated 2 to 6 weeks of implementation (number of lessons completed unspecified)	No, only fluency Note: Reported slopes and compared obtained fluency scores to a goal increase of 1.39 wpm per week.	No	*Design Standards*: No *Overall Evidence:* N/A

Table Continues

Study	item b	item c.1	item c.2	item c.3	item e	item f	Met/ Not Met Proposed Curricular Program Validation Standards	Met/ Not Met WWC Standards as assessed by McKenna et al. (2017)
Wehby et al. (2003).	Yes	Yes	Yes	No (fidelity data taken)	No *estimated 6-9 weeks or 24-36 lessons (number of lessons completed unspecified)	No, only fluency Note: Benchmark not assessed; standardized pre-test/posttest scores reported	No	*Design Standards*: No *Overall Evidence:* N/A
Wehby, Lane, & Falk (2005).	Yes	Yes	No for *Scott Foresman* Yes for *PATR*	Yes (no fidelity data for *Scott Foresman*; fidelity data taken for *PATR*)	No *estimated 3-8 weeks (4 days per week) of *Scott Foresman* alone (baseline); 9 weeks (3-4 days per weeks, 32 lessons) of *Scott Foresman* and *PATR* combined (intervention)	No, only fluency Note: Benchmark not assessed; reported slopes	No	*Design Standards*: No *Overall Evidence:* N/A

Note: item b = Study independence/ conflict of interest procedures were followed/noted; item c.1 = Justification for inclusion of participant(s) provided; item c.2 = Professional development described; item c.3 = Complete lessons implemented as specified; item e = 1 year of academic program completed/multi-year program assessed over 1 year with assessment of cumulative effects over grades; item f = Multiple measures included covered range of skills taught

Information on how complete lessons were implemented as specified was found in 12 investigations with fidelity data taken in all but one (i.e., Scott & Shearer-Lingo, 2002). Of the 11 investigations including fidelity data, partial fidelity data (one program implementation was evaluated but not the another in a multiple program implementation) were taken in two investigations (i.e., Harris et al., 2009; Wehby et al., 2005) and one investigation (i.e., Lingo et al., 2006) had fidelity data but the data were not reported. Programs were not implemented as specified but fidelity data were taken in two investigations (i.e., Barton-Arwood et al., 2005; Wehby et al., 2003).

Programs were not implemented for at least a 1-year period nor were any programs completed in their entirety as far as we could determine. Programs were implemented over several weeks (we estimated the longest implementation was up to 17 weeks—Barton-Arwood et al., 2005). The number of lessons completed were as few as 5 (Lingo et al., 2006) to as many as 32 (Wehby et al., 2005). However, these numbers may not be accurate given that when the

authors reported the number of lessons they may have meant the number of instructional sessions; lessons may take more than one session to complete.

Complicating matters further, the number of lessons completed from a program was not specified in 10 investigations. Only Cullen et al. (2014) (8-15 of 50 *Headsprout* lessons completed), Lane et al. (2001) (30 of an estimated 40 plus lessons of *Phonological Awareness Training for Reading* [*PATR*] completed), Lingo et al. (2006) (completed 5-19 lessons of 60 to 140 lessons of *Corrective Reading*—depending on the level and strand of the program), and Wehby et al. (2005) (completed 32 lessons of combined programs that had 40 plus lessons for *PATR* to full year/multi-grade lessons for *Scott Foresman*) explicitly stated the number of program lessons completed.

Seven investigations did not include measures assessing skills taught—typically these investigations included fluency measures such as oral reading and nonsense word fluency even though other skills were taught in the program(s) such as spelling and comprehension. Six of the investigations included multiple measures covering the skills taught, and one investigation (i.e., Oakes et al., 2010) included measures for only the *Voyager Blastoff to Reading* program but not for the other programs. However, there is a caveat here. Even though these seven investigations used measures that assessed skills taught, benchmark analyses were not conducted. Benchmark assessments provide a minimum threshold for grade level performance. Only four investigations reported or mentioned benchmark or expected fluency growth per week (i.e., Harris et al., 2009; Lane et al., 2001; Oakes et al., 2010; Sutherland & Snyder, 2007). Thus, although technically, the investigation may get a "Yes" in this category, progress monitoring of skills taught in a program does not necessarily indicate if educationally and socially significant progress has been achieved. Of the 10 investigations that did not report or compare results to benchmarks in reading, three reported standard score data, two reported slope data, one reported effect sizes, and one reported standard scores and grade equivalents. Based on the standards proposed in this paper, we concluded none of the investigations met standards required to validate a curriculum program in reading.

Discussion

Our analysis of 14 of the 30 articles analyzed by McKenna et al. (2017) revealed none of the investigations were able to establish a curriculum as effective based on our proposed standards. Interestingly, none of the investigations we reviewed provided evidence of effectiveness in the McKenna et al. review either. McKenna et al. found only two reading interventions were found to be potentially promising—cognitive mapping and listening while reading—neither of which are programs and were not reviewed here. According to McKenna et al., "findings from this review suggest there continues to be a lack of evidence-based reading practices for students with and at risk for EBD, limiting the ability of research to inform professional development and training" (p. 898). This issue is not only true of investigations including students with emotional and behavioral disorders. Perhaps the reason for a lack of such research was the methodology was not suited for such an endeavor.

There was a general theme we found in the 14 articles included in this paper, some of which were due to experimenter error/oversight and some due to the constraints of single-case designs. First, there was a general failure to complete a full program or at least to provide

detailed information on program fidelity related to number of lessons completed, sessions needed to complete lessons, and number of instructional sessions per day. It is simply not possible to replicate most of these investigations given the lack of information provided.

Second, the number of lessons included in a program was rarely stated in an investigation. There is simply no way to evaluate study results and conclusions regarding the effectiveness of a program without knowing the extent of the program completed. Similarly, specifics of a program such as level (e.g., *Corrective Reading Decoding B1*) or strand (e.g., *Decoding* or *Comprehension*) were not always stated. To indicate *Corrective Reading* was implemented without specifying which level and strand was used prevents us from making any conclusions on program effectiveness.

Third, many investigations included the use of multiple programs implemented at the same time. The only conclusion about effectiveness that can be made is with regard to the combined effects of the programs; no conclusions can be made regarding individual program effects. This problem is also seen when programs and/or additional instructional time are added. For example, Strong et al. (2004) began with 25 min of instruction in baseline (10 min of writing in journals and 15 min of taking turns reading a story aloud; note: other activities such as spelling were provided but the amount of time was not specified) then implemented 30-40 min of *Corrective Reading Decoding Level B1*. Following this, *Great Leaps Reading Stories* was implemented adding another 20-30 min of instruction. Therefore, it is not possible to conclude either program had an effect given the amount of reading instruction greatly increased as well.

Fourth, given that single-case designs require frequent repeated measures, it is not surprising reading fluency measures were used in all but one investigation (i.e., Cullen et al., 2014). However, many of the programs found in these investigations taught more than just reading fluency. Measures of reading comprehension often were not used. In fact, reading comprehension was measured in only three investigations (i.e., Barton-Arwood et al., 2005; Cullen et al., 2014; Strong et al., 2004). There was also a lack of reporting of benchmark scores—scores that are valuable to educators and show how instruction closes the gap in reading skills achieved by grade-level peers.

Based on our analysis and experience with the development and validation of curricular materials, we have come to the conclusion that single-case research methodology by itself may not be adequate to validate curricular programs, or at least has not been shown to be adequate at this point. We, as behaviorally-oriented researchers, should look outside our own methodology to answer and address issues we have neglected for far too long. We agree with Horner et al. (2005) that:

> The selection of any research methodology should be guided, in part, by the research question(s) under consideration. No research approach is appropriate for all research questions, and it is important to clarify the types of research questions that any research method is organized to address. (p. 172)

In his treatment of the recommendations by Bear, Wolf, and Risley (*BWR*) in 1968, Axelrod (2017) stated the following: “If one of the research designs recommended by [*BWR*] is not

feasible, and a group–comparison design is possible, researchers should use it without hesitation" (p. 169).

Perhaps because of the adherence by behavior analysts to the Essential Characteristics of ABA as outlined by *BWR*, there is a noticeable lack of research in the technology of teaching, specifically, curriculum development. As argued by Critchfield and Reed (2017), these seven characteristics (i.e., applied, behavioral, analytical, conceptually systematic, effective, and generality) may have served to hold back ABA research in important areas. The framework developed by *BWR* "fueled the growth of ABA. Ironically, however, in contemporary use, the framework serves as a bottleneck that prevents many socially important problems from receiving adequate attention in applied behavior analysis research" (p. 123) or require researchers to use research methods ill fitted to the question to be answered. We believe development and validation of curricular programs is one such example. Unfortunately, it seems as if cognitive scientists have the corner on the learning sciences, which is ironic given that Skinner described an explicit and systematic method of teaching described in his book, *The Technology of Teaching* (1968). Those in ABA appear to have turned over this technology to cognitive scientists who are generally seen as the "experts" in instruction, rather than modifying how they conduct their own research. Critchfield and Reed (2017) listed several areas of research adversely affected by strict adherence to the seven characteristics including, for example, (a) research on voucher systems to reduce workplace attendance and drug usage by drug abusers and (b) Positive Behavior Interventions and Supports. We would add curriculum validation to this list and advocate behavior analysts use research methods that can determine the effects of curriculum programs, if done so appropriately. We believe Axelrod (2017) sums up our position when referring to adherence of the seven ABA characteristics.

> My recommendation to ABA researchers on this issue is *not* to consider the measurement procedure or the research design as the most critical parts of a study; instead, they should regard the research *question* as the most important aspect of any study. Next, researchers should use the most scientific measurement procedures and the best research designs that are feasible (p. 168).

This recommendation is the same one we advocated for in our research methods textbook (Martella et al., 2013). We fear that a reason why ABA researchers have fallen behind other researchers in the learning sciences is because they do not consider research questions and/or do not use adequate research designs to answer them. In conclusion, we agree with Axelrod's (2017) answer to whether ABA researchers should abandon questions not in strict adherence to the requirements set by *BWR* is "Absolutely not!... If one of the research designs recommended by *BWR* is not feasible, and a group–comparison design is possible, researchers should use it without hesitation" (p. 169).

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Results of a Year-Long Professional Learning Program for Special Educators and Related Service Providers

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Abstract: The purpose of this study was to determine if certain variables predicted whether educators dropped out of a year-long, voluntary, professional learning program and whether participant characteristics predicted their attitudes and behaviors at the end of the program. Special educators volunteered to participate in the year-long program with their educational teams. A total of 206 educators and related service providers enrolled and completed at least one assignment. Of these participants, those who attended the single face-to-face meeting and those who took the program for college credit were statistically significantly more likely to complete the program than their peers. None of the other participant characteristics (e.g., age, years of experience, setting, role, knowledge and skill level, initial attitudes) predicted completion. These findings along with the additional study results suggest there are many unanswered questions in regard to what keeps individual school professionals inspired and motivated to change their practice.

Across the globe, educators engage in professional development with the primary aim to increase their ability to positively impact students (Brown-Easton, 2013). However, not all professional development activities have been shown to be effective in improving student outcomes. For example, the oft-occurring single-day training without follow-up or evaluation does not lead to teacher behavior change or increases in student achievement (Graner, Ault, Mellard, & Gingerich, 2012). Fortunately, standards for professional learning based on empirical evidence do exist. For example, Learning Forward, formerly named the National Staff Development Council (NSDC) has developed standards for high-quality professional learning (see https://learningforward.org/standards-for-professional-learning) that are evidence-based (Bergquist, 2006; Slabine, 2011; Wei, Darling-Hammond, & Adamson, 2010).

Special education teachers, para-educators and related service providers such as speech-language pathologists also have a need to engage in high-quality professional learning to meet the diverse needs of students in their classrooms and therapy rooms. These school professionals are called upon to implement scientifically based practices to support learning for students who struggle, including those with language impairments and autism spectrum disorder (ASD) (e.g., Individuals with Disabilities Education Act [IDEA], 2004). A critical focus for this work, especially for children with autism spectrum disorder (ASD), is increasing social communication and engagement as social communication and social interaction deficits are diagnostic criteria for identifying ASD (American Psychiatric Association, 2013). Currently, there is strong evidence to support the use of naturalistic developmental behavioral interventions (NDBIs) to target social communication and engagement in children with ASD (see Schreibman et al., 2015). These interventions share several characteristics. They all:

1. Occur in natural environments
2. Target naturally-occurring social activities
3. Are more child-directed that traditional Applied Behavior Analysis (ABA) approaches
4. Use strategies to promote spontaneity, initiative, and generalization
5. Focus on developmental targets such as joint attention and imitation
6. Incorporate collaboration with family members

The purpose of this study was to investigate the preliminary efficacy of the Social Communication and Engagement Triad (SCET; authors) professional learning program. The content of the SCET program was designed using the characteristics of NDBIs listed above and the process of delivery of the program incorporated principles of high-quality professional learning. Participants in the year-long SCET Program were special educators, para-educators and related service providers across the state of Colorado.

Background

High-Quality Professional Learning

There is a body of research to support which aspects need to be included for the professional learning program to be considered a "high-quality" adult learning experience. For example, Dunst, Trivette, and Hamby (2010) completed a rigorous systematic review and meta-analysis of the effectiveness of adult learning methods and strategies. Their analysis included 58

randomized controlled trials representing 2,095 treatment participants and 2,213 control participants. They looked specifically at the effect of four adult learning methods and found positive and moderate-large effect sizes for three of the four methods: coaching (d = .91; CI = .78 to 1.04), just-in-time training (d = .52; CI = .37 to .68), and guided design (d = .49; CI = .39 to .58

In addition, Graner and colleagues (2012) suggest there are several guiding principles for developing successful professional learning experiences for educators, "The professional development experience must balance the need for and impact of the intervention while recognizing the knowledge of the participants" (p. 7). In order to achieve this, they suggest attending to three principles: the need for orientation and motivation, the need for human sense making, and the need to balance content and coherence.

These three principles align well with what we know about adult learning. For example, in Dunst and colleagues' (2010) meta-analysis, several factors were determined to positively impact the success of professional learning activities. These included active engagement and experiential learning, instructor support/facilitation and feedback, learner reflection and critical thinking, real world relevance and immediate applicability, and self-assessment of progress. All of these principles of effective professional learning align with Desimone's (2009) conceptual framework for studying the effects of professional development on teachers and students. Desimone's framework includes these five core features of professional development: content focus, active learning, coherence, duration, and collective participation.

Mode of Delivery

Rapid advances in technology have allowed professional learning opportunities to reach educators that may not have been able to access programs due to location or lack of resources (O'Dwyer, Carey, & Kleiman, 2007). However, there remains concern about what might be lost in online delivery of professional learning (Fishman et al., 2013). For example, can online learning provide the same type of support for educators or does the format prevent participants from building trust and collegiality? Many online learning platforms provide collaborative tools (e.g., discussion boards, group video conferencing) but it remains unclear whether these platforms are equally effective in promoting active learning for educators (Garet, Porter, Desimone, Birman, & Yoon, 2001).

More recently, researchers have explored the efficacy of online professional learning in changing educators' knowledge and practice. Several studies have demonstrated that online professional learning programs are efficacious in improving both knowledge and practices of educators (e.g., Masters et al., 2010). Although the research comparing online formats to face-to-face delivery is limited, results from three studies support the notion that educators' learning and practice are positively impacted no matter the delivery mode (Fishman et al., 2013; Shaha, Glassett, & Copas, 2015).

Evaluating Professional Learning

When educators participate in a professional learning program, they are asked to engage in a variety of activities to learn new practices and procedures. A significant issue is the cost benefit

of these activities—that is, whether the educators' personal investment of time and effort and the school system's investment of financial resources yield sufficient results. Although the intent of professional learning in schools is ultimately to improve student outcomes, research suggests that participant satisfaction is largely the only form of evaluation being conducted. For example, Muijs and Lindsay (2008) conducted a survey of 223 professional learning facilitators and 416 teachers from a randomly selected sample of 1,000 schools. More than 75% of professional learning coordinators reported that participant satisfaction was evaluated "usually" or "always," whereas participants' use of the innovation and student outcomes was consistently evaluated ("usually" or "always") less than 40% of the time.

Guskey (2005) has argued there are five critical stages of professional learning that build on one another across the learning process. These stages, based on Kirkpatrick's model (1959), increase in complexity and include the following:

1. Participants' reactions
2. Participants' learning
3. Organizational support and change
4. Participants' use of new knowledge and skills
5. Student learning outcomes

Researchers have shown that professionals who are asked to adopt an innovation when they participate in professional learning programs do so in predictable ways (Guskey, 2005; Hall & Hord, 1987). Hall and Hord (1987) suggest it behooves professional developers to understand and evaluate this change process so that they may facilitate change in school professionals. The Concerns-Based Adoption Model (CBAM) is a system Hall and Hord originally published in 1987 that includes specific tools to evaluate the adoption process. Tools from the CBAM were used in the evaluation of the SCET Program and will be discussed in the methods section of this paper.

The Social Communication and Engagement Triad Design

Although the design, delivery, and evaluation of professional learning is critical to its success, the content has to also be worthy of educators' time and effort. As the incidence of autism spectrum disorder (ASD) continues to rise (Atladottir et al., 2007; Centers for Disease Control and Prevention, 2012, 2014; Nassar et al., 2009) with the CDC estimating a prevalence rate of 1 in 68 individuals diagnosed with an ASD (2014), educators find themselves serving more children with ASD often without adequate pre-service preparation (Myles, Simpson, & deBoer, 2008). To address the growing needs of educators, the National Research Council was charged by the U.S. Department of Education with creating a framework for educating children with ASD based on available research. They recommended that intervention programs address the core deficits in ASD (e.g., social communication and engagement) with goals that focus on initiation of spontaneous communication during functional activities and the generalization of goals across, activities, communication partners and environments (National Research Council, 2001).

Using these recommendations and the previously mentioned principles of naturalistic developmental behavioral interventions (NDBIs) (see Schreibman et al., 2015) as a framework,

the researchers developed the Social Communication and Engagement Triad (SCET). The SCET teaches educators how to complete authentic assessments while considering (a) the students' communication and engagement, (b) the communication partner and the strategies he/she uses that lead to success, and (c) the environmental strategies that support communication and engagement. Professional development activities were designed to teach educational teams how to use their assessment data to support all opportunities for communicative interactions for students at all language levels including students with ASD.

The purpose of this study was twofold. First, the researchers were interested in whether certain variables predicted whether educators dropped out of the SCET Professional Learning Program. The program was unique compared to many professional learning programs because participation was completely voluntary at every stage and the program was much more intense than typical single "sit and get" types of professional learning programs (i.e., 75 hours of work over an academic school year). Interested participants registered to participate and were able to earn university credit or Colorado Department of Education continuing education credits for activities they completed. It was made clear that they had the option to end their participation at any point but were encouraged by the instructors to continue. The second purpose of this research was to determine whether characteristics of participants' including their baseline attitudes and behaviors related to the SCET Professional Learning Program predicted their attitudes and behaviors at the completion of the program. The following research questions were posed:

1. To what extent do baseline Stages of Concern and Levels of Use, as well as participant characteristics, predict program completion?
2. To what extent do baseline Stages of Concern and Levels of Use, as well as participant characteristics, predict post-training Stages of Concern?
3. To what extent do baseline Stages of Concern and Levels of Use, as well as participant characteristics, predict post-training Levels of Use?

Methods

Professional Development Context

The Social Communication and Engagement Triad (SCET) professional learning program was designed to provide a year-long experience to educators, para-educators, and related service providers across the state of Colorado. In May of 2016, an announcement was emailed to educators across the state announcing the program and previewing additional information to be sent out after the summer break. In August 2016 a flyer was emailed to educators across the state explaining the program components and requirements and information about registration.

Participants were also informed they had an opportunity to earn either Colorado Department of Education (CDE) contact hours or university credit for completion of course components. If they completed at least 80% of the Module 1-4 activities, they earned contact hours with CDE or 1 credit hour with the university. If they completed at least 80% of Modules 5-6, they earned contact hours with CDE or 1 credit hour with the university. Interested educators were asked to apply to register for the course. Applicants registering in teams were given priority. SCET Program Content and Requirements are provided in Table 1 below.

Table 1: **Social Communication and Engagement Triad Program Content and Requirements**

Program description

The Social Communication and Engagement Triad Program is designed for school teams supporting individualized education programs for students with communication disorders. Participants will work collaboratively to support communicative engagement for students at all language levels, using all means of communication.

Participant Learning Objectives

1. Identify how communicative engagement is impacted by: theory of mind, joint attention, and emotional regulation.
2. Identify naturally occurring opportunities to support communicative engagement for each part of the school day with different communication partners using a variety of communicative functions.
3. Recognize and use communication partner strategies to promote full engagement.
4. Create communication goals that align with standards, link to assessment information, and promote opportunities for engagement.
5. Collaboratively collect and analyse meaningful data that increase communication and engagement.

Module	Participant Learning Outcomes	Activities/Assignments	Total Time
Module 1: Introduction to the course	1. Define the course purpose. 2. Successfully navigate the online learning platform.	Student Goal and Lesson Plan Scavenger Hunt Introduction	4 hours
Module 2: Big Ideas of Engagement	1. Identify how communicative engagement is impacted by theory of mind, joint attention, and emotional regulation	Module 2 Discussion Board Module 2 Reflection Question Module 2 Knowledge Check	9 hours
Module 3: Communication Partner and Environment	1. Recognize and use communication partner strategies. 2. Modify and adapt communicative environment.	Module 3 Discussion Board Module 3 Reflection Question Module 3 Knowledge Check Assessment of Communication Partner Strategies	12 hours
Module 4: The Child and Communicative Assessment	1. Apply knowledge of communication, language, and engagement to determine under which circumstances a child is communicatively engaged. 2. Evaluate what kinds and levels of support are needed to facilitate communicative engagement across contexts.	Module 4 Discussion Board Module 4 Reflection Question Module 4 Knowledge Check Assessment of Communicative Functions Social Communication Engagement Tool	18 hours
Face-to-Face Workshop: Bringing it all Together	1. Collaboratively create a diagnostic teaching session plan based on assessment data.	Diagnostic teaching assessment plan	8 hours
Module 5: Goals and Progress Monitoring	1. Design progress monitoring goals that align with standards, link to assessment information, and promote opportunities for communicative engagement. 2. Collaboratively collect and analyze meaningful data that informs instruction to increase communicative engagement.	Module 5 Discussion Board Module 5 Reflection Question Module 5 Knowledge Check Diagnostic Teaching Session (Social Communication Goal and Intervention Plan #2	12 hours
Module 6: Collaboration and Coaching	1. Design and carryout a professional learning community plan with your team. 2. Support colleagues in their adoption of the social communication and engagement triad using the Appreciative Inquiry framework.	Module 6 Discussion Board Module 6 Reflection Question Module 6 Knowledge Check Professional Learning Community Plan	12 hours

Data Collection and Procedures

Quantitative data were collected using three instruments. A 28-question demographic survey was designed. This survey was then created in Qualtrics, an electronic survey development, distribution, and management system. An explanation of the research study was provided at the start of the survey according to university IRB approval. SCET participants answered the question, "Do you wish to take part in this research study" before moving on to the remaining survey questions. This served as their informed consent documentation. Only those participants who indicated "yes" were included in the results of this study.

The remaining two assessment measures were the Stages of Concern (SoC) Questionnaire (Hall & Loucks, 1979) and the Levels of Use Branching Interview (Loucks, Newlove, & Hall, 1975) both part of the Concerns Based Adoption Model (CBAM; Hall & Hord, 1987). The SoC Questionnaire allows thoughts, feeling, and perceptions to be measured as educators are engaged in professional learning. This 35-item research validated (Bailey & Palsha, 1992) instrument allows participants to be categorized into one of seven stages of concern according to their responses to the questions. These stages of concern reflect the predictable pattern of adoption seen in individuals who engage in learning a new innovation. Participants typically move from an unconcerned stage (stage 0) to stages focusing on the impact of their implementation (stages 4-6). Research participants were asked to take an online SoC Questionnaire at two time-points; the fall of 2016 before they began any learning modules and, in the spring of 2017, after they completed the program.

The Levels of Use (LoU) Branching Interview was also used as a pre- and post-assessment measure. This component of CBAM examines the actual implementation of participants. Similar to the SoC, individuals who are asked to adopt an innovation follow a predictable pattern of adoption (Loucks et al., 1975). Participants start as non-users (levels 0-II) and move up to advanced users (levels IVB-VI) given high-quality professional learning opportunities. To gather these data, Loucks et al. (1975) developed a framework for interviews to determine adopters' use called the LoU Branching interview.

Participants signed up online to complete interviews with graduate research assistants. After undergoing training, four graduate research assistants completed all pre- and post-assessment interviews based on their availability and the availability of the participants. Each interview was conducted over the phone and recorded. Two additional graduate research assistants completed training until they reached 100% inter-rater reliability with the first author using interviews from a separate study. These research assistants then completed ratings of all of the recordings independently and were blinded to whether the recordings were gathered at pre- or post-test. Initial inter-rater reliability was calculated at 83%. The research assistants then met to discuss disagreements and were able to reach consensus on ratings for 100% of the interviews.

Missing Data

Missing data were imputed using the expectation-maximization (EM) algorithm. The EM algorithm for missing data replacement is an iterative process that produces maximum likelihood estimates were missing values are estimated in an iterative fashion via a regression-based process

with predictors being all other variables in the model (Graham, 2009). Simulation research suggests that the EM algorithm yields standard errors with little to no bias and does so with large proportions of missing data (Puma, Olsen, Bell, & Price, 2009).

Results

Sample

There were 327 individuals who consented to participate. Of those, 121 enrolled but never began the course. These individuals were similar to individuals who completed at least one assignment in regards to the number of children with ASD served (Wald = .620, *df* = 1, *p* = .431), the number of years in the field (Wald = 2.094, *df* = 1, *p* = .148), being a teacher (compared to all other positions) (χ^2 = .190, *df* = 1, *p* = .663), holding a graduate degree (relative to bachelor's degree or less) (χ^2 = .057, *df* = 1, *p* = .812), age (χ^2 = 1.227, *df* = 5, *p* = .942), working in only one school (relative to working in more than 1 school) (χ^2 = 2.617, *df* = 1, *p* = .106), enrolling for college credit (relative to not taking the course for credit) (χ^2 = 1.489, *df* = 1, *p* = .222), being White or Asian (relative to all other races) (χ^2 = 2.192, *df* = 1, *p* = .139), being novice (as compared to intermediate or advanced) in knowledge in social communication engagement (χ^2 = .569, *df* = 1, *p* = .451), and being novice (as compared to intermediate or advanced) in terms of supporting social communication engagement (χ^2 = .029, *df* = 1, *p* = .864). Individuals who enrolled but never began the course were statistically significantly less likely to work with preschool and/or elementary children (compared to working with children of other ages) (χ^2 = 9.240, *df* = 1, *p* = .002).

The remaining analyses are based on individuals who completed at least one assignment (*n* = 206). Of these 206 individuals in the analytic sample, participants completed an average of 71% of modules 1-4 (*SD* = 37.93, range 1%-100%) and 52% of modules 5-8 (*SD* = 43.15, range 0%-100%), and on average, completed 68% (*SD* = 33.59) of the course. There was a relatively strong positive correlation between the percentage of modules completed in the fall (i.e., modules 1-4) and the percentage of modules completed in the spring (i.e., modules 5-8), *r* = .610, *p* < .001. These participants (*n* = 206), in large part, had attended face-to-face (*n* = 174, 85%) and were not enrolled for credit (*n* = 138, 67%). Additionally, the majority of participants were more likely to work in only one school (*n* = 114, 55%), hold a master's degree (*n* = 159, 77%), be female (*n* = 194, 94%), be White or Asian (*n* = 182, 88%), be a teacher (*n* = 171, 83%), and work in a preschool and/or elementary school (*n* = 125, 61%). Most participants were 40-49 years of age (*n* =67, 33%), followed by 30-39 (*n* = 57, 28%), 50-59 (*n* = 37, 18%), or under 30 (*n* = 33, 16%). The average number of years working in the field was 12 (*SD* = 8.7) and ranged from 1 to 41. The average number of children with ASD with whom the participant directly worked was 7 (*SD* = 8.1) and ranged from 0 to 70.

Research Question 1

RQ1 data analytic approach. The first research question asked: To what extent do baseline Stages of Concern (SoC) and Levels of Use (LoU), as well as participant characteristics, predict program completion? Hierarchical generalized linear modelling (HGLM) was used to examine this question. The outcome was binary. It was anticipated that there may be variation in responses based on the district of employment (*n* = 39). Thus, multilevel analyses was

appropriate where respondents (level 1) were nested within district (i.e., level 2). Given the binary nature of the outcome, coupled with the nested nature of the data, HGLM was the data analytic approach taken to examine these questions. HGLM is the multilevel equivalent of logistic regression, a statistical procedure that allows the examination of outcomes with two or more categories. HGLM is therefore a regression-based procedure where the outcome can be predicted by categorical or continuous variables. Because the outcome is binary, the results are interpreted as odds, i.e., the probability of one category of the outcome occurring. Binary variables were uncentered, and continuous variables were group mean centered. Continuous variables included: age, number of years working in the field, number of children with ASD with whom they worked, baseline SoC, and baseline LoU. All other variables were binary. Full maximum likelihood via adaptive Gaussian quadrature was the estimation method for the HGLM.

An unconditional model was estimated first, which allowed the examination of the extent of variation between districts. Model 2 examined the extent that baseline Stages of Concern and Levels of Use, as well as being a novice in knowledge of and skill in social communication and engagement (as compared to intermediate or advanced) predicted program completion. Model 3 examined the extent these variables were related to the outcome, after controlling for personal characteristics.

RQ1 results. Based on the null model (i.e., no predictors included), the intraclass correlation coefficient indicated that a teacher in a typical district has a predicted probability of completion of about 42%. Model 2 was a random intercept fixed slope model which included current level of knowledge in social communication engagement, current level of skill in supporting social communication engagement, pre-SOC, and pre-LOU. Model 3 included the same covariates while controlling for teacher characteristics.

Model 2 (see Table 2) suggests that the log odds of completing the course were similar regardless of a participant's current level of knowledge in social communication engagement (novice versus intermediate or advanced), current level of skill in supporting social communication engagement (novice versus intermediate or advanced), baseline SoC, and baseline LoU.

Based on Model 3 (see Table 2), the log odds of completing the course were statistically significantly greater for participants who were enrolled for credit (relative to not taking the course for credit) (coefficient = 2.15, $p < .001$) and who attended the face-to-face meeting (relative to not attending face-to-face) (coefficient = 4.05, $p < .001$). Comparing two participants who are similar in other ways but differ only by whether they are enrolled for credit, the odds of completion for a participant enrolled for credit are over 8-1/2 times greater than for a participant not enrolled for credit and about 57 times greater for a participant who attends the face-to-face meeting. The log odds of completion were similar for participants regardless of degree (holding graduate versus all other degree types), being White or Asian (as compared to all other races), being a teacher (as compared to all other positions), working with preschool or elementary children (as compared to other grade levels), age, number of years working in the field, number of children with ASD with whom they worked, current level of knowledge in social communication engagement (novice versus intermediate or advanced), current level of skill in

supporting social communication engagement (novice versus intermediate or advanced), baseline SOC, and baseline LOU.

Table 2. ***Fixed Effects (Top) and Variance-Covariance Estimates (Bottom) for Models of the Predictors of Program Completion***

	Model 1	Model 2	Model 3
Fixed Effect Parameters	Coefficient (*SE, p*) *(OR; CI OR)*	Coefficient (*SE, p*) *(OR; CI OR)*	Coefficient (*SE, p*) *(OR; CI OR)*
Program completion (β_0) Intercept (γ_{00})	-.31 (.24, .21) (.73; .45, 1.20)	-.27 (.29, .36)	**-5.76 (1.44, <.001) (.003; .000, .058)**
Model for baseline Stages of Concern slope (β_1) Intercept (γ_{10})		.26 (.21, .22) (1.30; .86, 1.96)	.28 (.26, .29) (1.32; .79, 2.22)
Model for baseline Level of Use slope (β_2) Intercept (γ_{20})		-.30 (.41, .47) (.74; .33, 1.68)	-.61 (.54, .25) (.54; .19, 1.56)
[a]Model for knowledge of social communication engagement is novice slope (β_3) Intercept (γ_{30})		-.07 (.63) (.93; .27, 3.23)	.34 (.69, .62) (1.41; .36, 5.55)
[b]Model for skill in social communication engagement is novice slope (β_4) Intercept (γ_{40})		-.02 (.63, .97) (.98; .28, 3.41)	-.24 (.68, .73) (.79; .21, 3.02)
[c]Model for taking course for credit slope (β_5) Intercept (γ_{50})			**2.11 (.48, <.001) (8.27; 3.18, 21.51)**
[d]Model for graduate degree slope (β_6) Intercept (γ_{60})			-.26 (.55, .63) (.77; .26, 2.28)
[e]Model for White or Asian slope (β_7) Intercept (γ_{70})			1.08 (.63, .09) (2.95; .85, 10.32)
[f]Model for teacher (β_8) Intercept (γ_{80})			-.19 (.63, .77) (.83; .24, 2.88)
[g]Model for preschool or elementary (β_9) Intercept (γ_{90})			.71 (.46, .13) (2.03; .81, 5.09)
Model for age slope (β_{10}) Intercept (γ_{100})			.17 (.25, .49) (1.19; .72, 1.96)
Model for number of years working in field slope (β_{11}) Intercept (γ_{110})			-.03 (.04, .36) (.97; .90, 1.04)
Model for number of children with ASD slope (β_{12}) Intercept (γ_{120})			.02 (.03, .43) (1.02; .97, 1.08)

[h]Model for attend face-to-face slope (β_{13}) Intercept (γ_{130})		**4.18 (1.19, <.001)** **(65.17; 6.15, 690.28)**
Random Effect Parameters (Variance Components)		
Variance between districts intercepts $(\tau_{00})(u_0)$	.96	1.26

[a]Reference category = intermediate or advanced; [b]Reference category = intermediate or advanced; [c]Reference category = not taking course for credit; [d]Reference category = bachelors degree or less; [e]Reference category = all other races; [f]Reference category = all other positions; [g]Reference category = all other grade levels; [h]Reference category = did not attend face-to-face

Research Question 2 and 3 Results

RQ2 and RQ3 data analytic approach. Hierarchical linear modelling (HLM) was used to examine questions two and three. The outcome in each was continuous. As with question one, it was anticipated that there may be variation in responses based on the district of employment (n = 39). Thus, multilevel analyses was appropriate where respondents (level 1) were nested within district (i.e., level 2). Binary variables were uncentered, and continuous variables were group mean centered. Restricted maximum likelihood was the estimation method. For each question, an unconditional model was estimated first, which allowed the examination of the extent of variation between districts. Model 2 examined the extent that baseline Stages of Concern and Levels of Use, as well as being a novice in knowledge of and skill in social communication engagement (as compared to intermediate or advanced) predicted the outcome. Model 3 examined the extent these variables were related to the outcome, after controlling for personal characteristics.

For both analyses, the data, based on the final model (model 3), were screened to determine the extent to which the assumptions associated with multilevel modelling were met. These assumptions included: 1) linearity; 2) residuals (i.e., random effects) at level 1 are normally distributed and have equal variances; and 3) residuals at level 2 are multivariate normal. Linearity and homogeneity of variance at level 1 was reviewed by plotting the level 1 residuals to fitted values. A random display of points suggested this assumption was met. The hypothesis test for homogeneity of variances at level 1 suggested that equal variances between districts were plausible (p > .500). The assumption of normality of level 1 residuals was met for both analyses based on skew and kurtosis within the range of normal. Multivariate normality was assessed by a scatterplot of Mahalanobis distance (MDIST) and the expected values of the order statistics (CHIPCT). Points generally adhered to a diagonal line, suggesting evidence of multivariate normally distributed data.

RQ2 results. Research question 2 asked: To what extent do baseline Stages of Concern and Levels of Use, as well as participant characteristics, predict post-training Stages of Concern? Based on the null model (i.e., no predictors included), the intraclass correlation coefficient indicated that the proportion of variation in post-training SoC that is between districts is about 11%, warranting multilevel modelling. Model 2 was a random intercept fixed slope model which included current level of knowledge in social communication engagement, current level of

skill in supporting social communication engagement, pre-SoC, and pre-LoU. Model 3 included the same covariates while controlling for teacher characteristics.

Model 2 (see Table 3) suggests that post-training Stages of Concern were similar regardless of a participant's current level of knowledge in social communication and engagement (novice versus intermediate or advanced), current level of skill in supporting social communication and engagement (novice versus intermediate or advanced), and baseline SOC. However, baseline LoU was positive and statistically significantly related to post-training SoC. More specifically, the average effect across districts for baseline LoU is represented as an increase of 1.25 points in post-training SoC.

Based on Model 3 (see Table 2), on average and across districts, being a teacher (relative to all other positions), baseline SoC, and baseline LoU were positive and statistically significantly related to post-training Stages of Concern. The average effect (i.e., slope) across districts for being a teacher (relative to all other positions) is represented as an increase of .75 ($p < .04$). The average effect across districts for baseline SoC is represented as an increase of .12 points in post-training SoC, and baseline LoU is represented as an increase of 1.27 points in post-training SoC. Post-training SoC were similar for participants regardless of degree (holding graduate versus all other degree types), being White or Asian (as compared to all other races), working with preschool or elementary children (as compared to other grade levels), age, number of years working in the field, number of children with ASD with whom they worked, current level of knowledge in social communication engagement (novice versus intermediate or advanced), current level of skill in supporting social communication engagement (novice versus intermediate or advanced), completing at least 70% of modules 1-4 (relative to completing less than 70%), and completing at least 70% of modules 5-8 (relative to completing less than 70%). Statistically significant variation in the district means still exists ($u_0 = .49$, $p < .001$). This suggests that differences between the districts in post-training SoC still exist. The proportion reduction of within-district variation, relative to model 2, was less than 1%. The variation between districts, relative to model 2, has decreased about 17%. In terms of model fit, all model fit indices suggest better model fit when reviewing Model 2 to Model 1. However, the model fit indices suggest Model 3 is not a better fitting model, relative to Model 2, as AIC, BIC, and SBIC have slightly increased in Model 3 and the deviance test is not statistically significant. For purposes of examination of the contextual model, however, interpretations of Model 3 have been made.

Table 3. Fixed Effects (Top) and Variance-Covariance Estimates (Bottom) for Models of the Predictors of Stages of Concern

	Model 1	Model 2	Model 3
Fixed Effect Parameters	Coefficient (*SE*, *p*)	Coefficient (*SE*, *p*)	Coefficient (*SE*, *p*)
Mean post-Stages of Concern (β_0) Intercept (γ_{00})	**1.15 (.08, <.001)**	**1.55 (.22, <.001)**	-.01 (.60, .99)
Model for baseline Stages of Concern slope (β_1) Intercept (γ_{10})		.13 (.15, .40)	**.12 (.31, <.001)**

Model for baseline Level of Use slope (β_2) Intercept (γ_{20})	**1.25 (.30, <.001)**	**1.27 (.31, <.001)**
[a]Model for knowledge of social communication engagement is novice slope (β_3) Intercept (γ_{30})	.28 (.43, .51)	.41 (.44, .36)
[b]Model for skill in social communication engagement is novice slope (β_4) Intercept (γ_{40})	.18 (.43, .68)	.13 (.44, .76)
[c]Model for taking course for credit slope (β_5) Intercept (γ_{50})		.19 (.29, .52)
[d]Model for graduate degree slope (β_6) Intercept (γ_{60})		-.14 (.31, .66)
[e]Model for White or Asian slope (β_7) Intercept (γ_{70})		.67 (.36, .07)
[f]Model for teacher (β_8) Intercept (γ_{80})		**.75 (.36, .04)**
[g]Model for preschool or elementary (β_9) Intercept (γ_{90})		-.24 (.28, .39)
Model for age slope (β_{10}) Intercept (γ_{100})		-.07 (.15, .64)
Model for number of years working in field slope (β_{11}) Intercept (γ_{110})		-.01 (.02, .48)
Model for number of ASD children slope (β_{12}) Intercept (γ_{120})		.02 (.02, .22)
[h]Model for attend face-to-face slope (β_{13}) Intercept (γ_{130})		.64 (.40, .12)
[i]Model for completed 70% or more modules 1-4 slope (β_{14}) Intercept (γ_{140})		-.36 (.31, .25)
[j]Model for completed 70% or more modules 5-8 slope (β_{14}) Intercept (γ_{150})		.41 (.30, .17)

Random Effect Parameters (Variance Components)			
Variance between districts intercepts (τ_{00}) (u_0)	.14 (p = .01)	.62 (p < .001)	.49 (p < .001)
Variance within districts $(\sigma^2)(r_{ij})$	1.08	249	2.44
Model Fit			
-2LL (Deviance Test)	--	795.77, χ^2= 31.59, p < .001	776.20, χ^2= 19.57, p = .05
AIC	833.36	809.77	812.20
BIC	836.90	818.04	833.48
SBIC	828.75	799.02	784.57

[a]Reference category = intermediate or advanced; [b]Reference category = intermediate or advanced; [c]Reference category = not taking course for credit; [d]Reference category = bachelors degree or less; [e]Reference category = all other races; [f]Reference category = all other positions; [g]Reference category = all other grade levels; [h]Reference category = did not attend face-to-face; [i]Reference category = completed less than 70%; [j]Reference category = completed less than 70%

RQ3 results. Research question 3 asked: To what extent do baseline Stages of Concern and Levels of Use, as well as participant characteristics, predict post-training Levels of Use? Based on the null model (i.e., no predictors included), the intraclass correlation coefficient indicated that the proportion of variation in post-training LoU that is between districts is about 23%, warranting multilevel modelling. Model 2 was a random intercept fixed slope model which included current level of knowledge in social communication and engagement, current level of skill in supporting social communication and engagement, pre-SoC, and pre-LoU. Model 3 included the same covariates while controlling for teacher characteristics.

Model 2 (see Table 4) suggests that post-training Levels of Use were similar regardless of a participant's current level of knowledge in social communication and engagement (novice versus intermediate or advanced), current level of skill in supporting social communication and engagement (novice versus intermediate or advanced), baseline SoC, and baseline LoU.

Based on Model 3 (see Table 4), on average and across districts, holding a graduate degree (as compared to less than a graduate degree), being White or Asian (relative to all other races), being a teacher (relative to all other positions), and having more students with ASD were positive and statistically significantly related to post-training Levels of Use. Attending face-to-face (relative to not attending face-to-face) and completing at least 70% of modules 1-4 (relative to completing less than 70%) were negatively related to post-training Levels of Use.

The average effect (i.e., slope) across districts for holding a graduate degree (as compared to less than a graduate degree) is represented as an increase of .53 points (p = .01), being White or Asian (relative to all other races) is an increase of .81 points (p = .001), and being a teacher

(relative to all other positions) is an increase of .65 (p = .01). Additionally, for each additional child with ASD served, there is a .03-point increase in LoU. The average effects across districts for attending the face-to-face meeting (relative to not attending the face-to-face meeting) and completing at least 70% of modules 1-4 is represented as decreases of .55 and .79 points, respectively, in post-training LoU.

Post-training LoU were similar for participants regardless of taking the course for credit (relative to not taking the course for credit), working with preschool or elementary children (as compared to other grade levels), age, number of years working in the field, current level of knowledge in social communication and engagement (novice versus intermediate or advanced), current level of skill in supporting social communication and engagement (novice versus intermediate or advanced), completing at least 70% of modules 5-8 (relative to completing less than 70%), baseline SoC, and baseline LoU.

Statistically significant variation in the district means still exists (u_0 = .32, p < .001). This suggests that differences between the districts in post-training LoU still exist. The proportion reduction of within-district variation, relative to model 2, was about 24%. The variation between districts, relative to model 2, has decreased about 22%. In terms of model fit, all model fit indices suggest better model fit when reviewing Model 2 to Model 1 and when reviewing Model 3 to Model 2, suggesting Model 3 is the best fitting model.

Table 4. **Fixed Effects (Top) and Variance-Covariance Estimates (Bottom) for Models of the Predictors of Levels of Use**

	Model 1	Model 2	Model 3
Fixed Effect Parameters	Coefficient (*SE*, *p*)	Coefficient (*SE*, *p*)	Coefficient (*SE*, *p*)
Mean post-Levels of Use (β_0)	**3.35 (.15, <.001)**	**3.38 (.17, <.001)**	**2.69 (.42, <.001)**
Intercept (γ_{00})			
Model for baseline Stages of Concern slope (β_1)		.08 (.12, .51)	.06 (.11, .59)
Intercept (γ_{10})			
Model for baseline Level of Use slope (β_2)		.15 (.23, .52)	.25 (.21, .24)
Intercept (γ_{20})			
[a]Model for knowledge of social communication engagement is novice slope (β_3)		-.29 (.33, .39)	.04 (.30, .90)
Intercept (γ_{30})			
[b]Model for skill in social communication engagement is novice slope (β_4)		.17 (.33, .61)	-.11 (.30, .72)
Intercept (γ_{40})			
[c]Model for taking course for credit slope (β_5)			.31 (.20, .13)
Intercept (γ_{50})			

[d]Model for graduate degree slope (β_6) Intercept (γ_{60})			**.53 (.21, .01)**
[e]Model for White or Asian slope (β_7) Intercept (γ_{70})			**.81 (.25, .001)**
[f]Model for teacher (β_8) Intercept (γ_{80})			**.65 (.25, .009)**
[g]Model for preschool or elementary (β_9) Intercept (γ_{90})			-.03 (.19, .88)
Model for age slope (β_{10}) Intercept (γ_{100})			-.10 (.10, .31)
Model for number of years working in field slope (β_{11}) Intercept (γ_{110})			.0003 (.01, .98)
Model for number of ASD children slope (β_{12}) Intercept (γ_{120})			**.03 (.01, .03)**
[h]Model for attend face-to-face slope (β_{13}) Intercept (γ_{130})			**-.66 (.28, .02)**
[i]Model for completed 70% or more modules 1-4 slope (β_{14}) Intercept (γ_{140})			**-.80 (.21, <.001)**
[j]Model for completed 70% or more modules 5-8 slope (β_{14}) Intercept (γ_{150})			-.08 (.20, .69)
Random Effect Parameters (Variance Components)			
Variance between districts intercepts (τ_{00}) (u_0)	.44 (p < .001)	.41 (p < .001)	.32 (p < .001)
Variance within districts $(\sigma^2)(r_{ij})$	1.46	1.48	1.12
Model Fit			
-2LL (Deviance Test)	--	690.22, χ^2= 2.83, p > .500	622.39, χ^2= 67.83, p < .001
AIC		704.22	658.39
BIC		712.49	679.67

SBIC	693.48	630.76

[a]Reference category = intermediate or advanced; [b]Reference category = intermediate or advanced; [c]Reference category = not taking course for credit; [d]Reference category = bachelors degree or less; [e]Reference category = all other races; [f]Reference category = all other positions; [g]Reference category = all other grade levels; [h]Reference category = did not attend face-to-face; [i]Reference category = completed less than 70%; [j]Reference category = completed less than 70%

Discussion

The Social Communication and Engagement Triad (SCET) professional learning program was unique when compared to what most professionals receive in that: (a) it was completely voluntary at every stage, (b) participation in school teams was prioritized, (c) a significant time commitment (75 hours) was required, and (d) there was both an online and face-to-face component. Due to the voluntary nature of the program and the time commitment required, attrition was expected but the number of individuals who initially enrolled in the program but never began the course (n=121) was higher than anticipated.

There are several potential explanations for this. First, because team participation was prioritized, there may have been some "peer pressure" to participate by team members who were initially most interested in the program. Once enrolled, team members who were less interested may not have felt it necessary to continue since their team members were not prevented in continuing in the program by their own lack of participation. Another possible explanation for the level of initial attrition may be that participants did not become completely aware of the requirements or content of the SCET program until they received the syllabus via email. Although the program was designed to support students from preschool through high school, it may have been perceived as more appropriate for younger children given the topic. This may explain the fact that those who enrolled but didn't begin the course were significantly less likely to work with preschool and/or elementary children compared to working with children of other ages. Interestingly, no other participant characteristics significantly differed between those individuals who initially enrolled but didn't begin and those individuals who began the course. The remaining participants (n=206) were used in the subsequent analyses to answer the research questions that are discussed below.

Research Question 1

The first research question asked: To what extent do baseline Stages of Concern (SoC) and Levels of Use (LoU), as well as participant characteristics, predict program completion. Findings suggested there were only two characteristics that predicted whether a participant would likely complete the program. The first was whether the participant was enrolled in college credit. The odds of completion for a participant enrolled for credit were over 8-1/2 times greater than for a participant who enrolled for Colorado continuing education units. Similar to many states, Colorado's education system is locally controlled. The reality is that some districts allow educators to move up the pay scale after earning a certain number of college credits. Other districts do not provide this incentive. Although it is unclear whether this may explain these results, it is true that the adopting a new practice is difficult and even the most motivated educator may need incentives to start and persist through the change process.

The other characteristic that proved to be significant was whether a participant attended the face-to-face meeting. As previously mentioned, a single full-day face-to-face meeting was held in locations across the state. Participants who attended this single face-to-face meeting were about 57 times more likely to complete the program than those participants who did not attend the face-to-face meeting. There could be several explanations for this finding. First, individuals who were motivated to attend the face-to-face may have been more motivated to actively participate in the SCET program than those who decided not to participate. It is also possible that attending the face-to-face allowed educators the time they did not otherwise have to work within their school team and/or the opportunity to build trust and collegiality.

Perhaps more interesting was the fact that no other participant characteristic or baseline score on SoC or LoU predicted course completion. This is encouraging for those that work in the professional learning arena because it suggests that there is not a certain "type" of educator that should be targeted for participation. Participants who completed the program were not significantly different from those who did not on any participant characteristic. Results suggest that degree of participation was not related to experience level, role, education level, attitude or initial level of use.

Research Question 2

Research question 2 asked: To what extent do baseline Stages of Concern and Levels of Use, as well as participant characteristics, predict post-training Stages of Concern? Model 3 suggests that baseline SoC and baseline LoU were positive and statistically significantly related to post-training SoC. Participants with higher initial SoC and LoU scores also had higher post-training SoC and LoU scores. Considering the fact that adopters typically move up the SoC levels of concern from unrelated and self-types of concern to task and ultimately impact levels of concern supports these findings. For instance, a participant who was initially unconcerned about their involvement with the SCET program may have been less motivated to participate and thus their attitude may be harder to change than individuals who were interested in learning more about how adopting the SCET program would directly impact their work or the logistics of adoption. Similarly, participants who identified at higher levels of use could focus their efforts on skill building rather than only on information gathering and preparation for use. Because the SCET program moved quickly from foundational knowledge to activities that promoted using the principles of the SCET program in practice, it may have been easier for individuals at higher initial levels of use to try than those participants who were still focused on gathering information about the program which could explain the more positive attitudes of those participants who came in with some knowledge and skill.

Additionally, participants who were teachers had a higher post-training SoC than those participants who held other roles (e.g., speech-language pathologists, para-educators, speech-language pathology assistants, and administrators). Since those participating teachers were special educators, these results could be explained by the simple fact that they are with children with social communication and engagement deficits all school day whereas related service providers work with these children among many other children with other disabilities. This does not explain the results when considering para-educators, however. Instead, it could be that para-

educators had a greater learning curve when it came to the content than educators and may not have grasped the importance of the content as the special educators did.

Research Question 3

Similar to question 2, research question 3 focused on whether participant characteristics and baseline SoC and LoU scores predicted post-training LoU. Using the best fit model, Model 3, to discuss the findings suggests that there were several characteristics that adequately predicted post-training LoU. Interestingly, a higher degree of education was positively and significantly related to post-training LoU along with being a teacher, being White or Asian, and having more students with ASD. A possible explanation for these findings might be that those individuals with higher levels of education and more experience working with students with ASD were able to better grasp some of the foundational concepts of the SCET program and more easily change their practice behaviors. Similarly, those with higher levels of education including teachers, may have been introduced to concepts of SCET (e.g., joint attention, emotional regulation, communicative functions) in their previous education. Perhaps because it was already in their wheelhouse, they simply needed a refresher course to actually implement previous learning in their classrooms whereas participants who did not have the background had a much steeper learning curve.

However, attending the face-to-face training and completing at least 70% of the modules 1-4 were negatively related to post-training LoU. Although participants who were interviewed at baseline LoU were asked to confirm that they watched the innovation configuration map video, their understanding of the program based on only that video was not assessed. It is possible that some participants initially thought they were using the SCET program but after learning more about it through the modules and face-to-face meeting, realized they were not actually using it but were doing something else which is similar to previous research findings (e.g., author, 2015). In other words, participants who completed at least 70% of the modules were more knowledgeable of SCET and, therefore, LoU and thus were more practical in their assessment of LoU at post-test as compared to participants who completed less of the training. And this realization may have been heightened for participants who attended the face-to-face training.

Conclusion

What makes a professional learning experience "high-quality" is not a new idea (e.g., Bergquist 2006; Slabine 2011; Wei et al. 2010). However, single-session professional learning experiences are what most educators experience (Graner et al., 2012). Although, we as professional learning facilitators, understand what is required, it remains difficult to support educators over the long-term with the goal of changing student outcomes. The results of this investigation support this notion. Specifically, findings suggest that face-to-face connection with colleagues and facilitators is important as well as an incentive for participating system. Perhaps most interesting is the finding that there is not a "type" of educator who is more inclined to commit to a year-long professional learning endeavour. Educators, speech-language pathologists, para-educators, and administrators all successfully completed the SCET program and all dropped out. The fact remains there are many unanswered questions in regard to what keeps individual school professionals inspired and motivated to change their practice. Future research should consider

whether voluntary or required professional learning experiences yield greater outcomes and whether delivery mode also impacts outcomes. Future research should also expand our efforts to determine whether participant characteristics determine whether individual adopters are encouraged through certain supports.

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New Initiative in Special Education in Macao: A Curriculum Reform Project

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Abstract: The education system in Macao now implements the principle of equal opportunities for learning for all children, including those with special educational needs. This principle gives rise to the notion of 'one curriculum framework for all'—meaning that all children in mainstream and special schools follow a common curriculum, but with necessary adjustments and accommodations made for those with learning difficulties. This paper reports on a consultancy project initiated by The Education and Youth Affairs Bureau of Macao SAR to guide special schools on curriculum reforms and help teachers prepare students with special educational needs to learn through the mainstream curriculum. Workshops and symposia were conducted for special education teachers to familiarize them with the new paradigm shift. Over a period of 3 years, 33 teachers from mainstream and special schools were involved in writing Supplementary Guides to the mainstream curriculum, and a Learning Ability Progress Framework. By using the Learning Ability Progress Framework, teachers were able to adopt a more student-centered learning approach to conduct lessons that are inclusive of all learners. This reform represents a milestone in progress for special education in Macao as it moves towards a more inclusive subject-based curriculum.

Keywords: Inclusive curriculum, Learning Ability Progress Framework, Macao SAR, Special education, Supplementary Guides to Mainstream Curriculum, One curriculum framework for all

Introduction

In recent years, most developed countries have experienced the advent of an inclusive education movement that is gradually replacing traditional forms of segregated education (Forlin, 2010; Hegarty & Alur, 2002). This has resulted in many more students with special educational needs (SEN) now attending mainstream schools. This trend toward inclusion embraces far more than students with disabilities by seeking also to provide equal education opportunities for all students regardless of ability, race, religion, and socio-economic background.

Traditionally, students with special educational needs and disabilities have attended special schools, where their curriculum is often very different from that followed by students in mainstream schools. Special school curricula, particularly for those with moderate to severe intellectual disability or autism, tend to focus on functional everyday living skills and preparation for work, rather than studying academic subjects (Ayers, Douglas, Lowery & Sievers, 2011; Westwood, 2018). Currently, the principle of equal opportunity for all has caused educators to argue that SEN students have an equal right to experience mainstream curriculum, rather than having a totally different education (Curriculum Group Dorchester, 2002; Humphreys, 2009; Li, Tse & Lian, 2008). The major challenge to implementing mainstream curriculum in special schools is that the contents, activities, standards, and assessment objectives are designed for the ability level of mainstream students. The learning characteristics of students with special educational needs are not addressed in a mainstream subject-based curriculum (Van der Veen, Smeets & Derriks, 2010; Cheung & Kwok, 2019). This applies regardless of whether these students are in special schools or mainstream schools.

In Macao, the aim of special education, as stated in Fundamental Law of Non-Tertiary Education System, Law No. 9/2006, is:

> *... to provide appropriate education opportunity for the development of body and mind to students with special educational needs, to assist them to integrate in the society, to develop their potential* (Macao SAR, 2006, Chapter 3, Sub-section 1, Article 12).

According to data provided by the Education and Youth Affairs Bureau, there are nine schools offering special education curriculum to students with special educational needs. These nine schools have 142 teachers to serve 821 SEN students in the academic year 2018/2019. These schools generally adopt a separate curriculum for their students, not closely aligned with mainstream content. Seeing the need to keep up with development of inclusive education, and with SEN students' rights to equal educational opportunity, the Education and Youth Affairs Bureau of Macao invited the Centre for Advancement in Inclusive and Special Education (CAISE) at the University of Hong Kong to carry out a project to review the existing curriculum practice in schools providing special education and make recommendation on the long-term direction in curriculum reform.

The Project

A Project team was formed at CAISE comprising 4 retired school principals and 7 expert subject teachers from Hong Kong SAME Network schools (schools that join the SAME - **S**ystematic **A**pproach to **M**ainstream **E**ducation Network) (Li, Tse & Lian, 2009), to take up the request from Macao. The SAME Network schools have over eight years of experience applying the "One curriculum" approach to teaching and learning. The guiding principle that the CAISE Project team followed in reforming the special education curriculum was that all students have the right to an equal opportunity to access education, and that the curriculum should be accessible to students of all abilities (Li, Tse & Lian, 2009; Wearmouth, 2013).

Feasibility Study

Before launching the project, the Project Team conducted a Feasibility Study to confirm the need for reform. They spent three months visiting schools, meeting principals, government officials and teachers. It was found that the schools had traditionally developed their own curriculum according to the abilities of their students. The programmes were different from teacher to teacher and from school to school. Moreover, the curricula in operation were not cross-referenced to mainstream curriculum in any way, and were entirely separate. Interviews were conducted with teachers, and they voiced that they desired to have access to a unified cross-school curriculum and an indication of standards by which to assess the learning of their SEN students. However, the inadequacy in teacher training and the lacking of professionals in particular fields hinder their progress (So, 2005).

The CAISE Project team recommended that a long-term approach to inclusive curriculum should be developed for special education in Macao. This could be done by producing "*Supplementary Guides to Mainstream Curriculum"* (also referred to as '*The Supplement*'), to indicate where and how modifications could be made for SEN students. In addition, a series of learning progression levels based on the mainstream curriculum structure would be developed to help teachers identify students' levels of ability at any stage in their education. This tool was later termed the "*Learning Ability Progress Framework*" (also referred to as '*The Ladder'*). The aim of the project then became to provide professional development for linking these resources to classroom teaching.

The Objectives

The objectives of the Project were:

(a) to promote the concept of "One Curriculum Framework for All" (Li, Tse & Lian, 2009) (a new teaching paradigm to cater for learning diversity) and to translate this into practice;

(b) to establish a clear direction for development of Macao's special education curriculum;
(c) to develop "*Supplementary Guides to Mainstream Curriculum"*, so that SEN students at all key educational stages can access, to the best of their ability, the same curriculum as their counterparts in mainstream education;
(d) to develop a systematic approach for monitoring the progress of SEN students, using the *"Learning Ability Progress Framework"*;
(e) to provide professional training for special education teachers, including curriculum adaptation, differentiation, and student-centered learning;
(f) to establish a professional sharing network between special education teachers in Macao and Hong Kong.

The Process

The Project was launched in September 2016 and was conducted in six phases to end in June 2019. In Phase 1 the main objective was to introduce to special school principals and teachers in Macao the approach needed to develop an inclusive curriculum based upon mainstream content. It was emphasized that the curriculum should also embody the cultural attributes of Macao.

In order to establish a consensus among the principals and teachers, professional development workshops were held. It was agreed that the Project would focus on development and adaptation of six subject areas i.e. Chinese, Mathematics, General Knowledge, Science and Humanity, Physical Education and Health, Art, Information Technology. A total of 33 Macao teachers were recruited from special schools to engage in the writing of "*Supplementary Guides to Mainstream Curriculum*" and the "*Learning Ability Progress Framework*" for these selected subjects.

The role of consultants was to monitor the progress, provide professional training and recommendations, and prepare necessary documents. Subject teachers from the SAME Network led the Macao teachers in the writing and editing work of respective subjects.

In Phases 2 and 3, the Project work focused on the writing *the Supplement* and preparing *the Ladder* for the subject Chinese and Mathematics. In Phases 4 and 5, the Project focused on the writing of *th*e *Supplement* and *the Ladder* for the subjects: a) General Studies, Science and Humanity, b) Physical Education and Health, c) Information Technology, and d) Arts, for Macao special education.

In Phase 6, the consultants paid visits to individual schools to provide on-site advice on curriculum management. Schools were asked to prepare a 3-year curriculum development plan based on the application of *the Ladder*. Professional development workshops on student-centered learning were conducted for teachers, and they were asked to try out schemes of work in support

of student-centered learning. A total of 25 teacher workshops and 6 seminars were held to acquaint principals and teachers with the new paradigm.

The Over-Riding Principle: One Curriculum Framework for All

"One Curriculum Framework for All" (Li, Tse & Lian, 2009) means all students, regardless of their physical or mental abilities, should learn through a common curriculum. This is the principle of equal opportunities and the basis for inclusive education. "One Curriculum Framework for All" was the driving force for this Project. The challenge for Macao professionals in special schools is that these schools are separated from the mainstream and do not follow mainstream curriculum. In order for school staff to understand what is possible in changing to a common curriculum across all types of schools, they need exemplars of successful practices. Macao teachers were asked first to study existing mainstream curriculum guides and textbooks. The intention was to make special school teachers fully aware of the importance of the broad and balanced nature of the central curriculum, and to recognize the right of their SEN students to access the mainstream curriculum.

The first task was to determine a subject structure to be adopted and to identify the names of subjects and the curriculum strands to which they belong. It was emphasized that clear reference should be made to different key stages (i.e., expected standards of attainment at different ages) in the mainstream curriculum in Macao. It was soon discovered however that the existing descriptions of subjects and strands did not carry adequately fine-grained detail of these key stages to allow assessment of the slower rate of learning and development found in special school students. The teachers had to consider how each subject could be analyzed into more basic levels of attainment or performance, and then present these as a sequence that can be used to monitor progress of individual students. A "*Learning Ability Progress Framework"* was proposed for each of the six subjects and their strands for identifying the attainment levels. The concepts of using attainment levels with level descriptors was quoted from Performance Scale of United Kingdom (Department for Education, 2017).

The Products

Supplementary Guides to Mainstream Curriculum. A major product from the project was a series of "Supplementary Guides" for Macao Mainstream Curriculum. *The Supplements* as compiled by the teachers covered each of the 6 subjects in the central curriculum and included adaptations, modifications and accommodations that could be made for SEN students. It was emphasized that *the Supplements* would provide local professionals with practical strategies for adapting subject matter, and give examples suitable for the culture in Macao.

In the completed *Supplements,* there are also chapters explaining the concept of the project, the worldwide trend in reforming special education, the importance of subject teaching for SEN students, the relationship between "*Requirements of Basic Academic Attainments"* (The Requirements of Basic Academic Attainments are official documents for curriculum framework for formal education of Macao Education System (The Curriculum Development Website, 2016)) and the *"Learning Ability Progress Framework*". *The Supplements* are to become the reference point for professionals in special schools to understand the rationale of the approach. Hard copies of *the Supplements,* kept in a boxset, were later distributed to all special school teachers in Macao.

Learning Ability Progress Framework. Another major product of the project was the *"Learning Ability Progress Framework"* (Appendix 1). This is a series of attainment levels, with level descriptors to show the sequence of learning progression within each strand of the six mainstream curriculum subjects.

The "*Learning Ability Progression Framework*" is organized into 18 levels, with Level 1 (L1) to Level 3 (L3) covering the early sensorimotor stages of development, Level 4 (L4) to Level 9 (L9) describing the range of abilities of students in preschool stages, and Level 10 (L10) to Level 18 (L18) describing progressive learning abilities of a mainstream student from primary One to Junior Secondary Three. It is important to stress that all these levels are Key-Stage free—in other words, a student at any Key Stage may perform at any level. For example, a Key Stage Three (Junior Secondary) student with a moderate to severe disability may still be operating at L2. The teaching for this student should be pitched at L2, not L10 as one would expect for a Junior Secondary student. The design of this instrument therefore enables a teacher to identify the diversity of abilities in a class so that different objectives will be set for different students.

The *"Learning Ability Progress Framework" (ladder)* prompts teachers to focus on what SEN students can do, rather than on what they cannot learn. The ability levels provide information on students' real ability in various subject areas and their cross-year learning performance. Equally important, assessment of students' real learning indicates the effectiveness of subject teaching and can provide powerful data for school improvement. School effectiveness should not be measured by how much the teachers have taught, but by how much the students have learned.

In drafting the descriptors of *the Ladder*, teachers consulted another important Macao document, the *Requirements of Basic Academic Attainment*s. It was decided that *the Ladder* was more appropriate for assessment purposes and for planning lessons that can address diversity. An important feature of the level descriptors in *the Ladder* is that "Macao-ese" (澳門化) has been used in the wording, drawing on the local experiences and language of the subject teachers from the nine schools.

Follow-up strategies

School-Based Curriculum Reform

It is NOT the intention of the Project to produce a unified curriculum for special schools. Both *the Supplements* and *the Ladder* are important references for schools when they are producing curricular materials, such as schemes of work and lesson plans based on the learning needs of their students. *The Supplements* and *the Ladder* provide information that can assist in translating into practice the aims, objectives, structure, units and learning outcomes of the curriculum.

Student-Centered Learning

Learning should be student-centered not teacher-centered. The ultimate goal of this project is to bring about more effective learning and teaching. This can be achieved if teachers follow the subject guidelines and use the level descriptors in planning teaching activities. The learning objectives and the expected outcomes should be matched with the ability level of individual students. Towards the end of the Project, around 130 special education teachers in Macao assembled to write schemes of work based on student-centered teaching strategies. From this exercise, 20 sample schemes of work were later distributed to all teachers for reference. It was recommended to the nine schools that they should follow up with the writing of more schemes of work using the student-centered approach.

Building Professional Network

Whenever significant reforms are attempted in education, it is always extremely important to establish an ongoing supportive professional network among schools and teachers. This is important for sharing information and for trouble-shooting. Experience tells us that teachers gain positive professional growth through cross-school collaboration. During the three years of the Project, 25 teacher workshops and 6 seminars were held. The 33 teachers from different schools who participated in the workshops had built up friendships with each other and with expert teachers from Hong Kong. By keeping in regular contact, they can act as promoters of curriculum reform in their own schools. Links with five supportive Special Schools (the SAME Network schools) in Hong Kong have also been established.

Feedback on the Project

Towards the end of the Project and during the on-site visits to the schools, the Project Team collected the following feedback from principals and teachers about the curriculum reform:

"The *Learning Ability Progress Framework* helps to assess students' learning abilities. Teachers have a better grounding in preparation of teaching materials and can teach their students in accordance with their assessed aptitude." (Teacher 1)

The Project opens a new page in special education. The *Learning Ability Progress Framework* provides a *unified tool* to describe the learning abilities of SEN students. It changes society's views on special education, and lets society understand that students with special education needs can be educated. They will be more ready to accept SEN students. (Teacher 2)

"The Ladder allows teachers to clearly identify students' learning abilities and help them to achieve their teaching goals by analyzing their performance data." (Principal 1)

"Schools should focus on student learning." (Principal 2)

"When designing teaching activities, the learning experience of students should be taken into account and should not be limited by the abilities of students through impression." (Teacher 3)

"When class structure and teaching materials are in line with those in mainstream education, the self-image of SEN students can be enhanced and their parents will find it easier to accept them being in special schools."(Principal 3)

"Uniform assessment criteria for all students in public and private special schools can improve the teaching standard."(Teacher 4)

"The framework has changed the description style of the student's current situation in the IEPs which is more concrete. Teachers can more fully examine the students' learning abilities and give feedback to teaching."(Teacher 5)

"The workshops encourage teachers to think positively about students' learning abilities, encourage teachers to set broad and balance teaching objectives, enrich teaching content and provide students with different learning experiences."(Principal 4)

Conclusion

Curriculum development, especially when it involves reforming an existing curriculum, is a long-term process and commitment. The process needs to be driven by a mission to improve education, and must be guided by a clearly defined direction. In the case of developing a

common curriculum that can be implemented with students of quite different levels of ability, there needs to be some form of learning progression framework that enables teachers to monitor each student's progress and evaluate learning effectiveness. Content in the curriculum needs to be carefully sequenced into units that allow for differentiation and adaptation according to students' ability. It is up to individual schools to build their school-based curriculum using the common core learning units and contents, but adapting them to match the different learning levels of individuals.

This Project has provided strong evidence to show that with a learning progression framework that extends down to the early stage of sensorimotor development, all SEN students can access the mainstream curriculum. All schools, mainstream and special, under the same administration district can develop their lessons and learning activities by using the same curriculum framework but adjusting content and teaching approach to match individual students' levels and abilities. This approach enables students with special educational needs to make progress because the curriculum units are adapted to their level of operation in respective subjects.

This concept of a common curriculum for all students represents a major breakthrough in curriculum design for students with special educational needs. The beauty of the approach is that it can easily be applied in any education system with a central curriculum.

The Macao Project comes at the most appropriate time, when the central curriculum is being formulated and enacted into law. *The Ladder* and the *Supplements* provide the tools for special schools to implement the new law in the context of educating students with special needs and disabilities.

Conflicts of Interest: The authors declare no conflict of interest.

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Appendix

Concept framework of the Learning Ability Progress Framework (*The Ladder*)

<table>
<tr><td>Senior Secondary Education</td><td>Junior Secondary Education</td><td>Primary Education</td><td>Infant Education</td><td colspan="3"></td></tr>
<tr><td colspan="4">Distribution of learning ability of SEN students</td><td>The Ladder</td><td>Learning ability of correspond-ing peers</td><td>Special Education stages</td></tr>
<tr><td rowspan="3">Few</td><td></td><td rowspan="4"></td><td rowspan="13"></td><td>L18</td><td rowspan="3">Junior Secondary</td><td rowspan="3">Senior Secondary</td></tr>
<tr><td>L17</td></tr>
<tr><td>L16</td></tr>
<tr><td rowspan="3">Some</td><td rowspan="3">Few</td><td>L15</td><td rowspan="3">Senior Primary</td><td rowspan="3">Junior Secondary</td></tr>
<tr><td>L14</td></tr>
<tr><td>L13</td></tr>
<tr><td rowspan="4">Most</td><td rowspan="3">Some</td><td rowspan="3">Few</td><td>L12</td><td rowspan="3">Junior Primary</td><td rowspan="6">Primary</td></tr>
<tr><td>L11</td></tr>
<tr><td>L10</td></tr>
<tr><td rowspan="4">Most</td><td rowspan="3">Some</td><td>L9</td><td rowspan="6">Preschool</td></tr>
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<tr><td rowspan="5">All</td><td rowspan="5">All</td><td rowspan="4">Most</td><td>Few</td><td>L6</td><td rowspan="8">Infant</td></tr>
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<tr><td>Some</td><td>L4</td></tr>
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L3-1</td><td rowspan="4">Sensory-motor</td></tr>
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Educating Pre-service Teachers on Fathers' Involvement in Raising Children with Disabilities

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Abstract: Research suggests that pre-service teachers need better preparation to collaborate successfully with families. In much of the available literature regarding parent perspectives on children with disabilities, participants are predominantly mothers. There are few studies that focus on fathers' perspectives. Therefore, this study involved 36 pre-service teachers conducting one-on-one interviews of a father who has one or more children with disabilities. Through pre- and post-reflection journals as well as focus groups at the conclusion of the interviews, this study examined how conducting interviews of fathers changed pre-service teachers' perceptions of the father's role in raising children with disabilities. Themes emerged in the areas of attitudes about father involvement, how fathers want their children to be treated and viewed, and the responsibility of teachers. The majority of pre-service teachers indicated their perception of the father's role changed as a result of the interview.

Keywords: family-school collaboration, fathers' role, special education, pre-service candidates, teacher preparation programs, reflection, focus groups

There is concern expressed in the literature that, because special education teacher preparation programs minimally address the skill of home-school collaboration (Latunde & Louque, 2012), pre-service teachers are not being prepared to collaborate successfully with parents (Baum & McMurray-Schwarz, 2004; Caspe, Lopez, Chu, & Weiss, 2011; Council for Exceptional Children, 2015; Collier, Keefe, & Hirrel, 2015; Greenwood & Hickman, 1991; Hiatt-Michael, 2004, 2006; Patte, 2011; Smith & Sheridan, 2019; Symeou, Roussounidou, & Michaelides, 2012). According to Latunde & Louque (2012), establishing rapport is one of the most cited strategies for effective home-school partnerships, yet little direct instruction is offered by teacher preparation programs for building trust and rapport with families. In a survey completed by 200 pre-service teachers in their junior and senior years of undergraduate training, over 40% reported learning no specific content or teaching strategies related to developing successful family-school partnerships (Patte, 2011). Patte (2011) suggests that lacking training in family-school collaboration, pre-service teachers will draw on their own personal experiences and background knowledge, which may or may not include collaborating with family members who are raising children with disabilities.

Pre-service teachers studying both elementary and special education have reported a lack of confidence and perceived competence, as well as negative perceptions of parents (Bingham & Abernathy, 2007; Evans, 2013; Hansuvadha, 2009; Marshall, Ralph, & Palmer, 2002; Murray, Curran, & Zellers, 2008). As Evans (2013) notes, it is difficult for pre-service teachers who have not had the experience of being parents to relate to the experiences of students' parents and families. Without teacher preparation and transformative field experiences, pre-service teachers' knowledge of collaboration strategies is limited to collaboration strategies that are vague or traditional in nature (e.g., parent-teacher conferences, open houses, allowing parents to volunteer at the school) (Patte, 2011). They tend to express a self-centered view of collaboration (i.e., how family collaboration will benefit me as the teacher), rather than a view that expresses the mutual benefits of collaboration and recognizes the importance of the family as being the experts on their child (Patte, 2011). They also tend to "talk at families, not with them" (Amatea, Mixon, & McCarthy, 2012), particularly if they ascribe to a separation paradigm, viewing themselves as the experts who are responsible for the child's education (Amatea, Cholewa, & Mixon, 2012). According to Hansuvadha (2009), negative teacher attitudes toward families create significant barriers to successful home-school collaboration. When 11 first-year special education teachers were interviewed, 73% expressed negative or self-centered attitudes when asked to identify perceived challenges to implementing family-centered service delivery (Hansuvadha, 2009). It is imperative that personnel preparation programs engage pre-service teachers in activities that result in the transformation of teacher candidates into "a reflective, respectful partner in the educational experiences of children" (Bingham & Abernathy, 2007, p. 40).

Researchers have examined ways to develop these competencies and dispositions in pre-service teachers, including concept maps, videos, guest speakers, home visits, parents as teachers, interviews, and focus groups (Bingham & Abernathy, 2007; Kim & Vail, 2011; Murray, Handyside, Straka, & Arton-Titus, 2013; Novak, Murray, Scheuermann, & Curran, 2009; Prosser, 2009; Sauer & Kasa, 2012). Murray et al. (2013) conducted a study in which pre-service teachers and parents of children with disabilities jointly participated in a special education course. Embedded parents served as both participants and co-teachers in the course. Participants in this course completed a software module (i.e., *Virtual Family*) that was modeled

after the child of the parent assigned to their group (Curran & Murray, 2008; Murray & Curran, 2008; Novak et al., 2009). Participants also spent time with the families of the embedded parents, either in their homes or in the community (Murray & Curran, 2008; Murray et al., 2013). These researchers found that while parents were empowered through this model of reciprocal partnership training, mutual respect between parents and pre-service teachers was also gained. Pre-service teachers expressed increased professional efficacy as well as empathy toward parents (Novak et al., 2009). Rather than referring to parents as "uncaring" (Novak et al., 2009, p. 38), they recognized that parents face barriers to home-school partnerships and gained a new appreciation for the knowledge and insights that parents provide (Murray, Curran, & Zellers, 2008). Collier et al. (2015) included parents of children with disabilities as teachers in a graduate teacher preparation course, along with requiring a home visit that included a dialogue between the graduate student and host family members. Following the home visit, graduate students wrote reflection papers about the narratives that parents shared with them. Collier et al. (2015) found that students' understanding and appreciation of home-school collaboration increased as a result of the collaboration activities they participated in; in addition, teacher candidates reported an increased sense of trust between themselves and the parents following the opportunity to listen to a parent's narrative about raising children with disabilities. In an attempt to develop more reflective, analytical teachers, Sauer & Kasa (2012) had pre-service teacher's interview families. Pre-service teachers reported that they gained confidence in their ability to work successfully with students with disabilities and their families. This study also found that the pre-service teachers emerged as more critical thinkers (Sauer & Kasa, 2012).

If pre-service teachers are to acquire collaboration skills and develop positive dispositions and transformed attitudes toward family collaboration, personnel preparation programs must offer opportunities for pre-service teachers to partner and interact with parents (Curran & Murray, 2008; Hiatt-Michael, 2006; Kim & Vail; 2011; Latunde & Louque, 2012; Murray et al., 2008). Hansuvadha (2009) recommends that personnel preparation programs "create specific and meaningful opportunities for students to observe and interact with real families" (p. 357). The knowledge, skills, and values necessary for successful home-school collaboration require personnel preparation programs to explicitly incorporate activities that foster family and community involvement (Morris & Taylor, 1998; Redding, 2005). Following these family and community-based field activities, reflection on the fieldwork is recommended to create attitudinal change in pre-service teachers (Campbell, Gilmore, & Cuskelly, 2003). In addition, more research is needed to examine the impact of teacher preparation in parental involvement on the knowledge and practice of pre-service and beginning teachers (Hiatt-Michael, 2006; Kim & Vail, 2011).

In much of the available literature regarding parent perspectives on children with disabilities, participants are predominantly mothers (Collier et al., 2015). In a systematic literature review (Shurr & Hollingshead, 2017), examining research published between 2002 and 2015 and focused on programming for individuals with severe disabilities, 62% of the articles included solely mothers as participants (38%, n = 13) or more mothers than fathers (24%, n = 8). In the Murray et al. (2013) study in which parents of children with disabilities were embedded in a special education course with pre-service teachers, 94 parent participants were mothers (i.e., 94.3%), and 4 parent participants were fathers (i.e., 5.6%). There are few studies available involving fathers' perspectives, and more research in this area is recommended (Cheuk &

Lashewicz, 2015; MacDonald & Hastings, 2010a). And this is a universal issue, as researchers in the United Kingdom (Carpenter & Towers, 2008; MacDonald & Hastings, 2010a; 2010b), Canada (Cheuk & Lashewicz, 2015), and New Zealand (Ballard, Bray, Shelton, & Clarkson, 1997), as well as the United States of America (USA) (Collier et al., 2015; Murray et al., 2013; Parette, Meadan, & Doubet, 2010; Shurr & Hollingshead, 2017), are emphasizing the need for pre-service teachers to understand a father's perspective. Carpenter & Towers (2008) acknowledge the growing interest in understanding the needs of fathers of children with disabilities. Rather than treating fathers as an "afterthought," (Parette et al., 2010, p. 382), educators should make an effort to understand the fathers' roles and responsibilities, as well as their needs and life circumstances. Because fewer studies focus exclusively on the perspectives of fathers (Ballard et al., 1997; MacDonald & Hastings, 2010a; 2010b), and it is important for educators to understand the father's role in raising a child with a disability, this study involved pre-service teachers conducting 1:1 interviews of a father who has one or more children with disabilities. In addition to offering pre-service teachers this opportunity to interact with fathers, this study required the students to reflect on their perceptions pre- and post-interview (Campbell et al., 2003). The following research questions were addressed is this study:

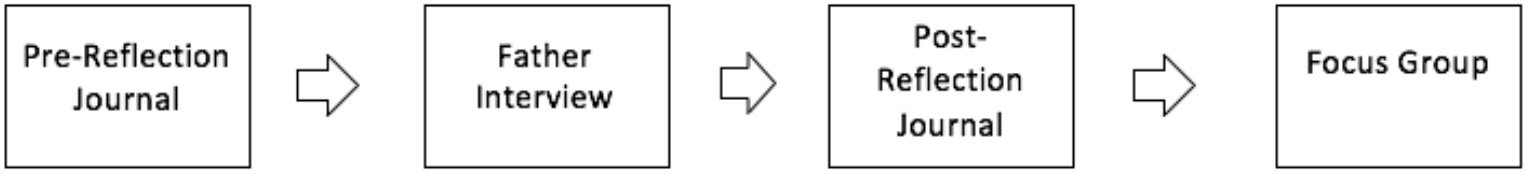
1. What are the perceptions of early childhood and special education pre-service teachers regarding the fathers' role in raising children with disabilities?
2. How do pre-service early childhood and special education teachers perceive fathers of children with disabilities after conducting a semi-structured interview with a father of children with disabilities?
3. How does interviewing fathers of children with disabilities prepare pre-service teachers for their careers in education?

Method

This qualitative case study was conducted as part of a required one-semester, junior level, undergraduate course in an early childhood and special education degree program at a small rural liberal arts college in a northeast state in the USA. All students in this course were dual majoring in early childhood education (PK-4) and special education (PK-8). The course focused on the topics of collaboration, communication, and advocacy, including collaboration with parents and families.

Prior to interviewing a father who has one or more children with disabilities, students completed a pre-reflection response journal on their perspective of fathers' roles in raising children with disabilities. Then, they interviewed a father in either a face-to-face format or via telephone. Each father interview involved 9 semi-structured questions (see Appendix A), which were representative of Sauer and Kasa (2012) and Hansuvadha (2009) interview questions and also included self-developed questions by the co-investigators. Following the father interview, students completed a post-reflection journal. Finally, students were asked to participate in a focus group during class time to further explore their perspectives of fathers' roles in raising children with disabilities (See Figure 1).

Figure 1.



Participants

The participants of this study included 36 (i.e., 33 females, 3 males), undergraduate (i.e., ages 19-21 years), early childhood and special education dual major pre-service teachers enrolled in a course entitled *Collaboration and Communication – Advocacy, Leadership, and Ethical Practice*. None of these pre-service teachers were married or had yet had the experience of being a parent, which can make it difficult for them to relate to their students' families and their experiences (Evans, 2013). In this study, 92% of the participants identified as female, and 100% were White. These percentages are slightly higher than recent trends reported by the National Center for Education Statistics (NCES), which reports that 77% of teachers in the USA identify as female, and 80% are White (NCES, 2019).

Students were told at the beginning of the semester that their grade would not be impacted by participation in the research study. An alternate project was provided for students electing not to participate (n = 3). All students that participated signed a consent form that indicated their willingness to participate. All 36 pre-service teachers who conducted a father interview also participated in the focus groups, as well as answered the pre- and post-reflection journal questions. All fathers signed consent to participate in the study, and 33 of the 36 fathers provided some demographic information (see Table 1). The study had IRB approval.

Table 1. Father Characteristics (n=33*)

Marital Status	Percentage (*n*=33)
Married	94% (31/33)
Divorced	3% (1/33)
Single, never married	3% (1/33)
Primary Caregiver	
Both father and mother	67% (22/33)
Mother	18% (6/33)
Father	15% (5/33)

*Denotes demographic information for 33/36 fathers interviewed.

Data Collection

Two types of data were collected as a part of this qualitative case study. They included pre-service teachers' perceptions of the fathers' involvement in raising children with disabilities garnered through journal questions posed before and after father interviews, and focus group datum.

Pre-reflection journal. A pre-reflection journal consisting of two questions was completed by all participants prior to completing an individual interview of a father of one or more children with disabilities. The pre-reflection journal questions were as follows:

1. Describe your perception of the father's role in raising children with disabilities.

2. What past experiences have shaped your perception of the father's role?

Post-reflection journals. After completing the father interviews, students responded to the process through a post-reflection journal. The post-reflection journal contained the following four questions:

1. After interviewing a father of one or more children with disabilities, describe your present perception of the father's role in raising children with disabilities.
2. Did the interview you conducted change your perception of the father's role in any way? If so, how?
3. What did you learn about the father's perspective on disability from conducting this interview?
4. How can you apply this knowledge in your career as a special educator?

Focus Groups. Students also participated in a focus group. Students were put into four groups, which aligned with the course section they attended as part of the class. These four focus groups allowed investigators to gain further insight on the students' perceptions of fathers of children with disabilities. Patton (2014) explained focus groups as a format for participants to provide responses in a social environment where they can also consider their thoughts and feedback in context with participants' views. The guiding questions used within the focus group were self-created by the co-investigators and included the following:

1. Describe something that impacted you while interviewing the father.
2. Describe something you might change in the interview process.
3. Describe how the interview process will make you a better special educator in the future.
4. What did you learn from the research project?
5. Are there any additional thoughts you would like to share?

Data Analysis

Data were recorded and transcribed verbatim using thematic analysis, and transcriptions were checked against the tapes for accuracy (Braun & Clarke, 2013; Liamputtong, 2013). The co-investigators and a graduate assistant independently read the transcriptions several times and coded the data line-by-line. While reading, the co-investigators and graduate assistant all independently assigned codes in the form of a descriptive word or phrase to significant ideas in the participants'comments (e.g., the impact of the father interview on the students' perspectives). These codes were derived from data and were not preconceived.

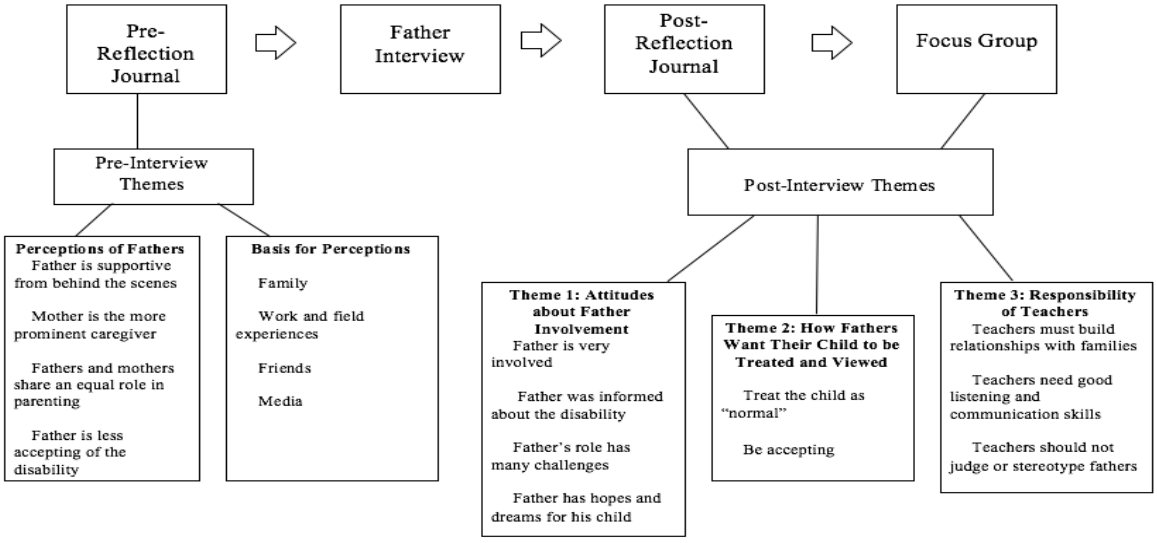
The codes were not restricted, and eventually formed the themes and sub-themes identified in the Results section below. Pre-reflection journal data was analyzed separately in order to determine participants' initial perceptions. Then, a qualitative analysis of the post-reflection journal data and focus groups data was conducted. After individually developing codes, the co-investigators and graduate assistant collectively compared the codes to establish subthemes, and these were merged to form themes. When a discrepancy occurred, the co-investigators and graduate student re-read the specific entries in order to re-code and gain consistency. During these discussions, the researchers took into account if themes and subthemes represented the views of all participant groups, and rich descriptions were used to illustrate sources. The final themes were checked against each other and back to the original data set to ensure that no relevant aspect of

these themes was overlooked (Braun & Clarke, 2013). Trustworthiness of the data was enhanced by having three researchers independently code and interpret the data, prior to any discussion (Liamputtong, 2013). In addition, corroboration was achieved when codes and subthemes occurred across data sources (e.g., post-reflection journal data and data from the four focus groups) (Angell, Stoner, & Shelden, 2009; Creswell, 2002).

Results

When analyzing the pre-reflection journal questions related to the participants' perceptions of the father's role in raising children with disabilities, as well as what had shaped their perception, several themes developed (see Figure 2). When analyzing the post-reflection journals and focus group datum, three primary themes developed related to the impact of interviewing a father of children with disabilities. These themes included the following: (a) attitudes about father involvement, (b) how fathers want their children to be treated and viewed, and (c) the responsibility of teachers (see Figure 2).

Figure 2. ***Themes and Subthemes Which Developed from the Journal Questions and Focus Groups***



Pre-Interview Perceptions of Fathers of Children with Disabilities

The first question in the pre-reflection journal asked students to provide their initial perception of a father's role in raising children with disabilities. The largest theme to emerge from this prompt was the idea that students felt the fathers' roles was not direct. Many students explained their view of fathers included support that was passive or "behind the scenes" and included such acts

as being a financial provider and less involved with things like educational support. Along the same lines, students perceived mothers to have a more active or prominent role in caring for the children and more involved in school matters. One student described the mother as "more aware of what is happening" and perceived that "they go to the IEP meetings." However, not all students perceived that fathers were the financial providers while mothers were the primary caretakers. Some students perceived that parents had an equal co-parenting role and shared responsibility in raising the children.

One theme that was not expected was the pre-interview perception that fathers tend to be less accepting that their child has a disability. One quote that illustrates this perception is as follows:

> The dad's (sic) I know try to just shrug off that their child has a disability. Or the dad knows their child has a problem, but will not have them tested because they do not want them labeled.

Past Experiences that Shaped Father Perception

The second question in the pre-reflection journal addressed the past experiences students had that shaped their perceptions of a fathers' role. The responses to this question in the pre-reflection journal were open-ended. Some students listed more than one influence on their perception of the role a father played in raising children with disabilities. Most often, the students' individual families had the biggest influence on their perception. Many subscribed to a more tradition perception that the mother stays home and takes care of the children, and the father works outside the home during the day. Other students said that their perceptions of the father's role in childrearing was influenced by their observations working at summer camps and day cares, and the field experiences they had participated in for their college course work. If the participant had a friend who was disabled, or who had a sibling that was disabled, their pre-perceptions were influenced by observing their friend's family dynamics. Finally, some students reflected that books and movies had influenced their perceptions of how involved the father is in raising children with disabilities.

Post-Interview Perceptions of Fathers of Children with Disabilities

When analyzing the post-reflection journals and focus group datum, three primary themes emerged related to the impact of interviewing a father of children with disabilities: (a) attitudes about father involvement, (b) how fathers want their children to be treated and viewed, and (c) the responsibility of teachers.

Attitudes about father involvement. When students were asked for their perception of the father's role in raising children with disabilities, after completing the one-on-one interview of the father, the majority of students stated their perception of the father's role was that he is very involved and an equal in the parenting process. Prior to this interview, they were not aware of how involved the father may be in child raising. Two quotes that illustrate this change in attitude are:

> My father was also very involved. I mean, I think that he's retired and the mom still works, so he's more involved in the stuff that my mom was involved with, so like

> running him to school, you know getting his breakfast, and taking him to afterschool activities, helping him with his homework. But I think the mom is also very involved as well, but I was very surprised by that.
>
> I always thought the father would be involved, but more of an assistant or helper to the mother. Instead, I saw an extremely hands-on father. It sounds like they are more like a team in raising their child.

A student interviewed a father who is unable to attend many of his child's school events and IEP meetings due to his work schedule. This student originally presumed that fathers are "pretty uninvolved in their child's school-life," yet after interviewing a father, this student realized that "fathers still do a lot for their child." This student went on to say,

> Even though they may not be directly involved in the special education process, fathers still care a great deal for their child and want them to succeed in school.

Several students acknowledged a perspective shaped by stereotypes that changed as a result of the father interview. One student shared the following:

> Unfortunately, my perception was based on stereotypes. Thankfully, this interview opened my eyes and broadened my perspective in a positive way. It was clear that this father was just as involved as the mother, even at times when he was away for work.

Not only did students learn that fathers are more involved than they realized, they also learned that fathers are more informed about their child's disability than they realized. One student shared their father

> …really invests himself into the disability that his daughter has by gathering and learning as much information about it as he could. He even gave me a website to go to for me to be able to learn more information about her disability.

Students further explained that they learned that the father's role is not easy and comes along with many challenges. One student stated,

> I think a father goes through just as much hardship as the mother when raising a child with disabilities. Sometimes I think the father will take on more of a silent role, but not necessarily be passive. Their desire to help their child in any way possible is just as strong as the mother's.

Despite the challenges that fathers expressed, students also heard about many of the fathers' hopes and dreams for their children. One student conveyed how exciting it was when a father "spoke passionately about his dreams for his son, his son's strengths, and the challenges they have overcome." Another student was touched and thought "it was such a good thing to say" when the father said that "he really wishes and hopes that his son finds love other than his family."

How fathers want their child or children with disabilities to be treated and viewed. Students were asked what they learned about a father's perspective on disability from conducting a father interview. The largest subthemes indicated fathers shared that they wanted to treat their children with disabilities as "normal" and be accepting of them. They also want others to treat their children as "normal" and to be accepting. The following three quotes illustrate the recurring theme related to fathers wanting their children with disabilities to be treated and viewed just like anyone else:

> I learned that he does not view his child as having a disability. He views her like any other child and treats her just the same as his other children. Throughout the interview he states that he has the same expectations for her as he does his other children.

> "…she's just no different. And I wish people would understand. I want her to be treated normal. I want her to get all the same opportunities as everyone else"…it really stood out in my mind because he kept repeating it to me and reminding me of it.

> I think the biggest thing with going through and talking to my father was that he just really wanted people to know, and I guess it just seems so basic because we kind of have a background in special education, but he just wanted people to know that his daughter is not any different than anyone else.

Responsibility of teachers. When students were asked to reflect upon the question, "What is something that impacted you while interviewing the father?" many students mentioned they were impacted by fathers' statements regarding the struggles they had related to their child's school. For example, one student shared their father participant said, "…he sees special educators talk to the parents in a clinical way, as if their child is a case study or a challenge to be solved, and that frustrates him." One student learned through the interview how important it is for educators to take the parents' perspective "into all of your decisions" and elaborated "…So you have to see things from their point of view and through the interview like this, it definitely gives you more of a perspective of what they're going through." Another student shared how important it is to really listen to the father:

> My father emphasized that the fact that as an educator you need to listen to the parent which we've been taught but to actually follow through with that because he said so many times that teachers like have trials and errors and they could've figured it out by just like talking to the parents.

Students were asked to provide perspectives on how participating in a father interview project prepared them for future work in the field of education and will make them a better special educator in the future. Students indicated they could apply their learned knowledge as a future special educator to build effective relationships with families in order to learn about the whole child. One student stated, "I will look at the whole child and truly try to understand each child to ensure their needs are met." Another observed that teachers should "…refrain from passing judgments without taking the time to consider multiple perspectives and factors." Similarly, a student stated, "I will also not judge family situations. Each family is different and the parents will have different roles in the child's life."

Also, a few students emphasized how important it is to have good communication with the parents and really listen to them. A student was given this advice from the father she interviewed, "…listen, understand, and appreciate." Another student stated,

> And so, a teacher should always make sure to regularly ask for the input of *both* parents, and allow for plenty of time for questioning, and should never assume that if the parents are quiet, that implies that they fully understand.

Another said, "Many fathers are fully involved in their child's life. Knowing this, it is important to communicate with the *families* of your students, not just the mother."

Two communication strategies that emerged from the focus groups related to reducing the use of educational jargon and planning for on-going communication with parents and families. Two quotes that illustrate this follow:

> The father mentioned there was a lot of educational jargon being used so he never understands what the school is telling him. I realized that as the teacher I must explain things to parents so they understand what is occurring in the classroom with their child.

> In IEP meetings, I will direct questions and comments to both of the parents, not solely the mother. The father should be treated as a valued member of the IEP team, even if the mother has special education knowledge or previous experience.

Another concrete suggestion for effective communication with parents was expressed in this way:

> Instead of simply talking to these parents at meetings, I will also invite them into the classroom and talk to them throughout the year. This will help me to create a professional relationship so that I can better serve them and their child.

Overall, the students shared it is important to focus on the family. Many students learned from conducting a father interview that teachers should listen to the advice given by parents because "they know the child best." Many students (n=15) shared that the process will help them better see the parents' perspective and will assist them in supporting and communicating with families. Simple stated, one student said, "It is important to include the whole family…I learned that fathers want to be included too." One student shared:

> I think another is to not only get to know the child, but to also get to know the family, because everything that the child has gone through has affected the family in some way, and how the family reacts to that also affects the child so I think that's really important to know and my father really stressed that he really wants people to know like how the family, what the family goes through and everything they try to do to help their son.

Impact of the father interview on the students' perspectives. The majority of students' responses indicated their perceptions of the father's role in raising children with disabilities did change or somewhat changed following the father interview. All of the students

that indicated their perception changed also stated they felt fathers were more involved than they once considered. Some students also stated that the father they interviewed was very knowledgeable about special education and wanted to be more involved than they were. The students who indicated that their perceptions of the father's role had not changed, followed this by saying that they assumed the father was involved in child raising prior to the father interview, and that the father interview strengthened that perception.

In the final opportunity for students to share their thoughts within the focus groups, students indicated the interview process was a positive experience that changed their perspective on fathers and family. One student stated that "I think interviewing any dad with a child with any kind of disability is very eye-opening for the rest of us." Another concluded,

> I'm so happy that you did have this for us because I didn't really have a good perspective of the father, I thought, before this, and afterward, like it completely changed the way I thought about the father. And I think that they were, well my father at least, was excited to talk about this and he's probably like happy that we did this so that's a good thing.

Discussion

The pre-service teachers involved in this study held generally positive views about fathers of children with disabilities, unlike the negative attitudes about families expressed by some beginning special education teachers (Hansuvadha, 2009). They viewed the mother as having a more active role in child raising, and fathers having a less direct role (e.g., supporting the family financially). While the pre-service teachers involved in this study generally held a favorable view of the involvement of fathers in raising their children with disabilities, their perceptions did improve as a result of interviewing a father. In the post-interview reflections and focus groups, the majority of the students said that they now viewed fathers as more involved in raising their children with disabilities than they had realized. Some stated that their pre-interview perception was based on stereotypes, and that they now viewed fathers as equally involved as mothers in child rearing. Similar to the pre-service teachers in previous studies (Collier et al., 2015; Murray et al., 2008; Novak, 2009), the pre-service teachers in this research project were able to articulate the barriers that fathers face in participating in school meetings and activities, yet stated that many are knowledgeable about special education and their children's disabilities. They also expressed an appreciation for the father and his role (Collier et al., 2015; Murray et al., 2008), and learned how important the father is to his children.

In the post-reflection journals as well as the focus groups, the majority of the pre-service teachers stated that they could apply what they learned from the father interview in their careers as future educators by working to establish effective relationships with both fathers and mothers, in an effort to learn about their children and better meet the children's needs. Consistent with the post-course communications of pre-service teachers in earlier studies (Amatea et al., 2012; Bingham & Abernathy, 2007; Collier et al., 2015; Morris & Taylor, 1998; Murray et al., 2008), the post-reflection journals recognized the need for a more reciprocal, collaborative interaction with families and indicated a respectful tone when describing their new insights into the father's role in child raising.

Post-interview reflection papers as well as focus groups indicate that the father interview assignment did increase the understanding for students of the active role of the father in raising children with disabilities, his knowledge of his children's disabilities, and his desire for his children to be treated "normally," or like other children. It also emphasized for pre-service teachers that, in order for them to adequately understand the whole child, home-school collaboration and communication is essential. Yet, developing the skill of communicating effectively with families is difficult to cultivate in traditional teacher preparation programs (Evans, 2013; Smith & Sheridan, 2019).

Therefore, having pre-service teachers conduct an interview of a father who has one or more children with disabilities during their teacher preparation programs offers a feasible and valuable strategy for professors aiming to develop their students' competency in family-school collaboration and communication.

Recommendations for Future Research

It is recommended that future research on strategies for preparing pre-service teachers for working effectively with families include home visits as a teacher preparation course requirement (Collier et al., 2015). In addition, longitudinal studies (Collier et al., 2015; Murray et al., 2008) are recommended to assess the long-term benefits that interviewing a parent has on pre-service teachers' confidence and competence in home-school communication.

Although this study did not have a longitudinal component or incorporate home visits, having pre-service teachers interview fathers as a part of their teacher preparation programs contributed to their ability to view parents (i.e., both fathers and mothers) as essential to the educational process. Patte (2011) states that "a formidable challenge facing university faculty is shifting pre-service teacher candidates' self-centered views of family-school partnerships to a more collaborative view of families as their child's first and most prominent teacher" (p. 155). Conducting father interviews is one strategy teacher preparation programs can utilize to shape this view.

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Appendix A

Father Interview Questions

1. Tell me about your child.

2. Can you describe what has gone well in school?

3. Can you tell me about any struggles you have had?

4. What do you wish everyone would know about your child and your family?

5. What are your hopes and dreams for your child in the future?

6. What do early childhood and special education teachers need to know and be able to do to work with families of children with disabilities?

7. Describe a typical day of interactions with your child.

8. Describe and explain any transitions you and your child have gone through (i.e., school, moving, routines, etc.)

9. Do you utilize any supports within the community for yourself and/or your child (i.e., support groups, counseling, etc.)?

Inclusion for Pupils with Special Educational Needs in Individualistic and Collaborative School Cultures

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Abstract: The main issue of this article is inclusive education for pupils with special educational needs (SEN). Inclusion in our study focuses on three core areas: the role of the school leaders, the role of teachers and the practice of curriculum planning. The results are based on interviews with school leaders and teachers in Norwegian primary and lower secondary schools.
We find that most of the teachers are working and planning on their own and seldom collaborate with or support each other. At one of the schools, however, we see a clear tendency for roles and practices that are based on collaboration and joint efforts. The same pattern is also found in the school leaders' focus on strategies in their efforts to realise inclusive education for pupils with SEN. Consequently, the analysis shows a clear and systematic correlation between the results in the three core areas. The roles of school leaders and teachers and the curriculum planning practices differs widely between schools, and seem to be part of school cultures characterized by predominantly individualistic or collaborative approaches in their work on inclusion.

Keywords: Inclusion, Special Educational Needs, School Culture, Role of school leaders, Role of teachers, Curriculum planning, Collaborative School Culture

Introduction and Background

This study investigates inclusive education for pupils with special educational needs (SEN) in Norwegian primary and lower secondary schools based on school leaders` and teachers' experiences. The focus of the article research is threefold: (1) the school leaders` role, (2) the role of the teachers and (3) the practise of curriculum planning, and how each contributes to inclusive education for pupils with SEN. The study sought to determine how these roles and practices can be seen as indicators of whether the schools are characterised by a predominantly individualistic or a collaborative culture, and whether the work on inclusion varies with such cultural differences.

Education policy in Norway has very long traditions in developing a school system that can foster equitable and inclusive education. This entails the forming of "a school for all" that can facilitate good learning conditions for all children, regardless of their background and aptitudes (Nilsen, 2010). The ideal is that pupils attend their local school in heterogeneous classes. The fact that all pupils should be together despite the differences between them may create tensions between communality and adaptation in everyday school life. Recent educational reforms characteristerized by inclusive education are not only about physical placement, but also about developing a social, academic and cultural community for all pupils (Report No. 30 to the Storting 2003–2004). This should primarily be done through general education. However, if a pupil does not have a satisfactory learning outcome from general education, he/she also has the right to receive special education services. Most pupils who receive special education services spend most of their time in general education without special support. Their overall learning outcome is therefore highly dependent on the relationship between general and special education teachers.

The development in Norway from integration to inclusion can be viewed as part of an international trend (Vislie, 2003). The formulation of inclusion as a core principle of education in Norway was explicitly expressed in Report No. 29 to the Storting (1994-1995), at the same time that the Salamanca Statement was being drafted (UNESCO, 1994). The right of pupils with SEN to be educated in their local school is becoming more and more accepted in most countries, and many reforms are being put in place to achieve this goal (OECD, 2003). However, the gap between the ideal of inclusive education and the current provision for children with SEN is still too wide in many countries (Kiuppis & Hausstätter, 2014). Therefore, one needs to know more about what factors seem to hinder or promote inclusive education for pupils with SEN. Research indicates that a school's culture is important in this context (Zollers et al, 1999 Ainscow & SanDilla, 2010), but more research is needed to shed light on what kind of cultural factors are most decisive.

Some underlying characteristics of the school's culture which seem to be related to the success of inclusion comprises: an inclusive leader, a broad vision of school community, and shared values (Carrington, 1999). As is the case for organisational cultures in general, the school culture can also be said to encompass both cultural content and cultural expression (Schein, 2010; Bang, 2013). The cultural content – or the values and perceptions of reality – is reflected in the expression of the culture, or the way we act. Conversely, cultural expression conveys the values and perceptions of reality that prevail within the organisation.

The school culture influences its members by providing models for attitudes and actions. This particularly applies in the field of inclusive education. Hargreaves (2001) distinguished between two different school cultures: (1) fragmented individualism and (2) collaborative cultures. Fragmented individualism is characterised by private-practising teachers, who work on their own and are keen to protect themselves from external interference. Collaborative cultures, on the other hand, are characterised by teachers who recognise the value of collaborating and find that it contributes to communality and provides a form of support among them.

In order to improve inclusive practises, forms of content and expression need to be developed that support collective and coordinated efforts. In a collaborative school culture, teachers will assume shared responsibility for the education of all pupils. Teacher collaboration can be viewed as a process where teachers regularly meet to share experiences, learn from each other and refine and assess the impacts of the approaches they are using in their classrooms (Moolenaar et al., 2012). Collaboration and joint reflection among teachers seem crucial to ensure that everyone shares and benefits from their shared experiences and continues to develop as professional participants in the school (Bjørnsrud & Nilsen, 2018). When teacher collaboration is absent, school cultures tend to be individualistic and non-innovative (Lortie, 1975).

Research indicates that changes that improve teacher practice and pupil outcomes may be achieved through comprehensive school reform (Mattatall & Power, 2014). This relates to the ability to meet the educational needs of all pupils, including those with SEN. Key aspects of this reform include the development of a collaborative culture, the use of high-quality professional competence to improve teacher practices, and leadership where school leaders carry out school improvement activities (Waldron & McLeskey, 2010). Research also suggests that collaboration between general and special education teachers is pivotal to improving educational practices with a view to meeting the needs of the diversity of pupils (Mattatall & Power, 2014, Nilsen 2017). Collaboration is also vital for pupils being able to achieve learning outcomes and for pupils with SEN when they are included in regular education classes (Cook & Friend, 2010; Goddard, Goddard, & Tschannen-Moran, 2007; Gruenert 2005).

The School Leader's Role

This study will focus first on the school leaders' role in developing a culture and common practice that fosters inclusion. In most areas, we find attempts to operationalise the concept of quality. One of the most current and widespread approaches to constructing theory based on existing research is Total Quality Management or TQM (Shiba & Walden, 2001). This understanding of quality is based on four cornerstones (Skogen, 2004). The first variable focuses on the user, or the pupil. The second is the continuous improvement of practice. The third is total participation, both holistically and cohesively, and the fourth is competence development.

Another framework by Mattatall and Power (2014) is based on a review of a number of studies and is more recent in terms of quality criteria. Their six-point summarising theory includes the following:
(1) a shared vision whereby a school's culture is based on mutual support, joint work, and broad agreement of educational values;
(2) a focus on clear and common goals;

(3) attention to results;
(4) structured and on-going inquiry;
(5) deprivatisation of teaching practices; and
(6) time for reflective dialogue about learning and teaching.

Throughout the literature, the role of organisational cultures and leadership seem crucial to develop inclusive education systems (Ainscow & Sandill, 2010; Riehl, 2017). Using the two theoretical approaches above, we have based our data analyses on three areas with regard to the relevant school leaders' approaches to influencing the culture of their schools. The first area is the degree to which the school leaders have contributed to *a shared vision* to develop an increasingly more adapted education for their pupils. The second is how effectively the school leaders have helped ensure that teachers work together to maintain a *focus on the individual pupil's* learning and mastery. The third considers how well the school leaders have helped ensure that the teaching staffs have a focus on their own *competence development* through, for example, learning from their own experiences in their daily work. These three aspects are central approaches of the school leaders' development of inclusive school culture.

The Teacher's Role

The second core area is the teacher's role in implementing inclusive practice for pupils with SEN. The focus in the literature is on the importance of collaboration, as well as on developing teacher competence supporting through sharing knowledge and experiences in collaborative networks.

Teacher collaboration supports the teachers' developments of skills to implement inclusive practice (Clandinin & Connelly, 1996). The translation of policy into practice is shaped by the way teachers understand inclusive education and how they develop a common understanding with the collaborating teachers (Lawson, Parker, & Sikes, 2006). The challenge teachers' face in inclusive education is to get support from other professionals to enable them to adapt their teaching to the diverse aptitudes and needs of all pupils (Davis & Watson, 2001). A lack of collaboration and expertise among general and special educational teachers, insufficient resources, inadequate joint planning time, and the absence of administrative support are the primary barriers to inclusive efforts (Wayne & Youngs, 2003). Teacher collaboration has proven to be successful in several studies but it requires a large degree of faith between participating teachers and a flexible approach to lesson planning and the implementation of instructional strategies (Lederer, 2000). This collaboration needs to be well planned within a structure in which the teachers' roles and responsibilities are specified and carried out along with daily management and instructional decisions and classroom interactions (Friend & Bursuck, 2006).

Building teachers' competence through collaboration is a significant prerequisite for successfully implementing reforms in schools and improving practice, and therefore a crucial factor in implementing inclusive education in school (Darling-Hammond, 2001). Competence development that is based on teachers sharing their experiences with others is shown to be beneficial, and it enables teachers to reflect on their own practices as a basis for improvements (Buli-Holmberg & Malini, 2016; Bjørnsrud & Nilsen, 2018). Collaborative networks are key factors in competence development of teachers. Teachers' reflections on their practice together

with other colleagues, seems to improve their skills and change their practice (Senge, 2006; Schön, 1983). These reflections may pave the way for developing competence and a new and improved practice.

Curriculum Planning

The third core area, which is considered to be a key factor in achieving inclusive education is curriculum planning. International perspectives regard the education of pupils with SEN as an issue for the whole school and for the educational team, and not just for individual teachers (OECD, 2003). The Salamanca Statement (UNESCO, 1994) emphasised that inclusion is dependent on the teachers' shared responsibility for and collaboration in serving pupils with SEN. A key aspect of such collaboration is curriculum planning. Collaborative curriculum planning seems important for ensuring that the education is adapted to the individual pupil's needs (McLaughlin, 2002; Nilsen, 2017).

The Norwegian Education Act requires an individual education plan (IEP) to be drawn up for all pupils who receive special educational services. Furthermore, in the planning of general education, it has become common practice to devise work plans for the class in different subjects for a period of one or two weeks (Dalland & Klette, 2014). Such plans set goals and tasks for the pupils' work during the period, both at school and at home, and give pupils the freedom and responsibility to spread and perform the tasks over the course of the plan period. An important prerequisite for collaborative curriculum planning seems to be that teachers develop a common understanding of their responsibility for facilitating the education of pupils with SEN (Carter et al., 2009). In this way, school culture can influence how teachers take responsibility for, plan and work with IEPs and special education (Pearson, 2000).

Collaboration and a shared responsibility for curriculum planning between general education and special education teachers seems vital to being able to meet the learning needs of diverse learners through a holistic approach (Walther-Thomas, Bryant, & Land, 1996). Guidelines from central education authorities emphasise that IEPs must be coordinated with the curriculum for the general education as far as possible, while also being adapted to the individual pupil's aptitudes. At the same time, the planning of the general education must facilitate the work on adapted education and accommodate pupils receiving special education (Norwegian Directorate for Education and Training, 2014). Such practice seems to be essential for ensuring a close coordination between both forms of education for pupils receiving special education. However, research suggests that, in practice, there may be major challenges in relation to collaboration and coordination in curriculum planning in special and general education (Nilsen, 2017). Thus, the main focus of the analysis of our data in this area is whether curriculum planning has an individual or collaborative approach and whether the planning seems coordinated or fragmented.

Method

Qualitative interviewing was selected as the methodology for addressing the research goals. The sample was based on a purposeful selection of informants in order to ensure that they have a large base of experiences in the field of research and was therefore considered most able to answer the research questions (Creswell, 2013). The sample include school leaders and general and special education teachers at two primary schools and two lower secondary schools in two municipalities in Norway. A total of 20 interviews were conducted in the four schools. One school leader and four teachers (two general education teachers and two special education teachers) at each school were interviewed. General and special education teachers were selected from the same classes in order to shed light on both general and special education for these pupils. Teachers were selected from classes with at least one pupil receiving special education who has reading and writing difficulties and/or mathematical difficulties. These are among the most common reasons for providing special education in Norwegian schools. These pupils receive special education for some of the lessons in the problematic subjects (Norwegian or mathematics) and the rest of the time is spent taking part in general education. The interview study was based on voluntary participation, and great emphasis was placed on anonymizing the informants' background in the presentation of the results.

The aim was to ascertain the perceptions and experiences of both the school leaders and the general and special educators concerning the realisation of inclusive education for pupils with SEN. The interviews enabled the informants to explain and reflect on how the education was organised, planned and carried out. The interview guide was semi-structured and contained questions on pre-selected themes and a flexible and open form of conversation. It made it easier to maintain a focus on the themes, and also provided opportunities for follow-up questions, allowing the informants to give supplementary information. The resulting interview data provided us with comprehensive descriptions of how the informants perceived the school practice (Brinkmann & Kvale, 2014).

We chose a thematic approach for our data analyses (Braun & Clarke, 2006). The main themes were derived from our research focus on the role of the school leaders, the role of the teachers, and the practice of curriculum planning. The sub-themes under each of these three main themes largely emanated from information that emerged during the interviews. As such, the themes are formed based on the interaction between a deductive and inductive approach. The chosen themes helped to illuminate different aspects of the data material that were relevant to the research focus, and enabled us to see indications of the content and expression of the predominant school cultures.

Results

The presentation of results derived from the analysis of the interviews covers three main themes: (1) the role of the school leaders, (2) the role of the teachers, and (3) the practice of curriculum planning. The focus is on illuminating whether roles and practices in these three areas are characterised by a primarily individualistic or collaborative perspective and how the roles and practices contribute to the realisation of inclusive education with a main focus on pupils with SEN.

The School Leaders' Role

Based on our theoretical anchoring of the school leaders' role in the introduction, this presentation will focus on three approaches that seem crucial to influencing the culture of their schools and to develop inclusive education for all pupils. The three approaches represent the school leaders' contribution to (1) a shared vision and strategy, (2) a focus on the individual pupil's learning and (3) teachers' competence development.
Our study identified major disparities between the schools in terms of the leadership's prioritisation in individualistic or collaborative direction. The individualistic direction is evidenced by the fact that most of the school leaders' do not emphasize any common vision or strategy among teachers to foster inclusive education, but seem to regard their school as a conglomerate of competence where teachers are responsible for working independently to realize inclusive education. They neither have any personal involvement in the follow-up of special education, but instead they delegate the management of this to others, without monitoring or quality assuring practices.

However, a collaborative direction appears at one of the school leaders who emphasize more on a common vision and a strategy based on a collective responsibility among teachers. This leader considers a common understanding of the school's primary and secondary goals, as well as of the path to the goal, as essential prerequisites for good learning for all pupils. Furthermore, the continuous assessment of strategies and working methods is also seen as important. However, this seems to work best within a collaborative culture with collective responsibility, where everyone can safely reflect on their assessments and express their opinions without fear of being punished.

Our data indicates that most school leaders underline that a clear focus on individual pupils' learning and mastery is a prerequisite for creating good learning conditions. In order to foster inclusion, the school leaders acknowledge that the pupils will need help and support from teachers based on their individual abilities and aptitudes.

However, an important difference exists between school leaders who consider this as teachers' individual responsibility and those who emphasizes that teachers must have a common strategy and a coordinated approach in order to achieve this. Consequently, school leadership may promote individualistic or collaborative values and practises that could have consequences for whether pupils with SEN will meet fragmented or coordinated strategies from the teachers. It may also affect if different aspects of the pupil that impact on his/her learning is familiar to all teachers that the pupil meets. When the teachers have an inconsistent and fragmentary understanding this can obviously be confusing for both teachers and pupils. A collaborative culture with an information flow will in this context be a prerequisite for creating good teaching and learning processes at a school and school leaders have a particularly important challenge in this regard.

Furthermore, some school leaders seem rather hesitant about developing such a focus on pupils' diverse abilities and aptitudes for fear of accusations of stigmatisation. At the same time leaders are referring to limited resources. An important factor relates to insufficient financial

resources, including a low teacher-pupil ratio and not enough money for equipment and aids. A more favourable teacher-pupil ratio is regarded of primary importance where a stronger focus on pupils and individual adaptation are desired. A lack of recruitment of teachers with special education competence was often mentioned as an important factor in this regard.

In addition to a focus on pupils, teachers' professional competence was also considered important to develop inclusive education for all pupils. School leaders characterized by individualistic attitudes emphasize the individual teacher's competence, while leaders characterized as having collaborative attitudes strive for team building and teacher complementary competence. One of the school leaders underlines that in order to develop inclusive education practises, it is crucial for the school leaders not only to recruit and constructive make use of special education competence, but also to help create a culture of collaboration with reciprocal competence development and support among teachers.

In our study, school leaders underscore the need for special needs education competence and consider this from three angles. First, they express that there is a need for special needs education knowledge to be integrated with the regular education. This requires a combination of a subject component, a pedagogic-didactic component and a special needs education component. Second, they consider that it is necessary to have specialisation competence in the different areas of learning disabilities. Thirdly, the school leaders prefer that the teachers' context-adapted and pupil-adapted competence must partly be further developed through practice, with an emphasis on learning from their own experiences and the experiences of colleagues. Such competence enhancement through daily practice benefits in a number of areas from a collaborative climate where teachers can make each other good.

The Teachers´ Role

The teacher's role is the second focus area that shed light of the work on inclusion for pupils with SEN. Through the interviews, we have studied the teachers` role related to collaboration and also competence development through participating in collaborative networks. It can be seen as an indication of an *individualistic school culture* when most of the general education teachers feel that they are left alone with the responsibility for pupils with SEN in the classroom. They express the need for collaboration with and support from other teachers in order to adapt their teaching to pupils with and without SEN. They also say that they wish to discuss pupils' learning challenges and difficulties with other teachers, concerning how this manifest themselves and what kind of provision pupils with SEN can benefit from. The teachers find it difficult to set aside time to collaborate, and the collaboration mainly relates to short-term planning as opposed to evaluating the implementation of plans. They express their need to establish appropriate forms of collaboration with pupils and parents as well as with teachers, and to exchange information about how the different parties can interact to support the pupil in his/her learning process.

Indication of *collaborative school culture* is in evidence when teachers expressed the belief that sharing of knowledge and experiences with professionals is an important part of further developing the quality of the education provision for pupils with SEN. When several teachers work together in the classroom, they noted that they complement each other's competence. They talk a lot about how they can solve problems, achieve goals, and share ideas

with each other. Collaboration seems to help teachers to learn to know each other, find solutions together and complement each other's competence.

The teachers report that they do not have sufficient knowledge of specific learning difficulties, and teaching aids that can be adapted to pupils' special educational needs. They also say they lack knowledge about assessment and teaching methods to improve inclusive education in practice. The teachers expressed their need for someone with relevant experiences to share their challenges and their belief that collaboration will strengthen their competence and their practice toward inclusive education.

Other teachers express a more collaborative approach through sharing knowledge and experiences in collaborative network. They stated that they have learned a lot through network collaboration, and that collaboration is the best way for them to gain new knowledge. Some of the teachers express that participating in networks helps them to competence development. The results indicate that teachers they feel a need for and that sharing experiences and collaborating in networks serves as a useful tool to reflect and discuss with other professionals how pupils can receive satisfactory learning outcomes from the educational provisions.

Curriculum Planning

Curriculum planning is the third focus area that can illuminate the implementation of inclusion for pupils with SEN, and which can provide indications of different school cultures. Through the interviews, we studied the planning of both special educators through IEPs and general educators through work plans. In both cases, we investigated the collaboration between special and general education teachers, and as well as the harmonisation of the planning of special and general education for pupils with SEN.

With regard to the *planning of special education through IEPs*, the main finding from the interview study is that special education teachers do not only play a leading role, but that they are also more or less left with sole responsibility. This is the case for most of the schools. Consequently, not much collaboration takes place in the planning, making it more of an individual undertaking. The special education teachers say that they sometimes feel this is a lonely role and that they would like more collaboration with the class teachers in this planning process, including the exchange of ideas and experiences.

At the same time, some teachers report to the contrary that the planning of special education services is to a large extent characterised by collaboration. The special education teachers feel that class teachers have important knowledge about the pupil and his/her role in general education that should be incorporated into the planning. This applies both to how the pupil works in the subjects and behaves in the class towards fellow pupils and teachers. Shared knowledge of the pupil's IEP and the exchange of advice and experiences are considered crucial to being able to follow up with the pupil even when he/she participates in general education in the classroom.

The second form of curriculum planning relates to *work plans with a view to adapting the general education* services. The main pattern in our study is that subject teachers take individual

responsibility for planning their subjects using one-week or two-week work plans for the class. This often takes place with limited involvement of special education teachers in devising work plans for pupils with SEN. Consequently, collaboration between the teachers also seems to be rather limited in such cases. One of the dangers that the teachers find with this is that the work plan is devised without sufficient knowledge of the pupil and follow-up of the IEP. As a consequence, work plans for these pupils are rarely adapted. This also means that instruction for all pupils has limited flexibilities.

However, there were a few cases of collaboration between the teachers when drawing up work plans. This is because general education teachers find that special education teachers have important knowledge about the pupil and can provide valuable advice that also applies to the adaptation of the subjects in the general education. Special education teachers are thus drawn into the process of creating adapted work plans for pupils with SEN. This is a form of collaboration generally organised through class teams, where special education teachers also participate.

The question is also what repercussions individualistic vs. collaborative curriculum planning have for the design of the overall education provision for pupils with SEN, both for the curriculum content and the teaching strategies. A practice where teachers largely do their planning on their own contributes to a limited coordination between general education and special education. Teachers acknowledge that this leads to the overall education provision for pupils with SEN which is fragmented rather than being mutually supportive, and that this may have a negative impact on learning processes and learning outcomes. One of the consequences may be that there is no agreed coordination or delimitation for either the overall workload for the pupils or for the degree of difficulty of learning tasks.

When a planning practice is predominantly characterised by collaboration, the teachers find that it fosters coordination between the educators, leading to a holistic and mutually supportive education for the pupils. Here it is evident that special education teachers devise IEPs and carry out special education in cooperation with general education teachers. General education teachers likewise devise and adapt work plans based on a degree of cooperation with special education teachers, with a view to ensuring that pupils with SEN are able to participate in general education according to their aptitudes. These educators believe that participation by all teachers in the planning is important for sharing knowledge about the pupils' needs and strengths, and for ensuring a coordinated follow-up of the strategies employed.
The interviews indicate that the collaborative planning practice is characterised by special education teachers and class teachers taking shared responsibility for the education and inclusion of pupils with SEN. On the other hand, the individualistic practice is characterised by fragmentation of responsibility, where both teacher groups tend to ignore their responsibility to harmonise the education through shared responsibility.

Conclusions and Ddiscussion

In order to provide an overview of the findings from this study, we have chosen to summarise the main tendencies in the table below. The results are presented in three core areas: the role of the school leaders, the role of the teachers and the practise of curriculum planning.

The results are discussed in relation to whether they indicate individualistic or a collaborative roles and practices in order to illustrate how this characterises differences between two different school cultures. The table (1) below shows the main results related to the three core areas and the main impression of an individualistic or collaborative school culture.

Table 1. The role of the school leaders, teachers and the practise of curriculum planning

Characteristics of different school cultures	Individualistic school culture	Collaborative school culture
The role of the school leaders	The school leader regard their school as a conglomerate of competence where teachers work independently to realise inclusive education	The school leader regard teachers as a team that works together towards a shared understanding of the goals of inclusive education
The role of the teachers	The teachers themselves have to find out how to implement inclusive education adapting to pupils with SEN	The teachers work in teams to solve the challenges of meeting the diverse needs of the pupils, and have complementary competence for pupils with SEN
Curriculum planning	General education teachers plan education within the class, and special education teachers plan special education for individual pupils – individually and without coordination	General and special education teachers collaborate on and coordinate the planning of education in the class and special education for individual pupils
Main impression	The work in inclusive education aimed at meeting the diversity of pupils is an individual project for every single teacher	The work in inclusive education aimed at meeting the diversity of pupils is a joint project for the school staff

Based on the findings from this study most of the participating schools seem to be predominantly characterised by a culture of fragmented individualism (Hargreaves, 2001), where teachers mostly work on their own with little degree of communality and mutual support. At one school, however, we saw a clear tendency towards a culture where teachers recognise the value of collaboration in the efforts to realise inclusive education for pupils with SEN. Given that research shows that teacher collaboration has a positive impact on pupils' learning outcomes including those with SEN (Goddard, et al, 2007; Gruenert, 2005), Mattatall & Power, 2014), this finding is a thought-provoking trend that raises serious concerns about the access of all students to a quality education.

Most of the *school leaders* in our study seem to regard their school as a conglomerate of competence where teachers work independently to realise inclusive education. Consequently, the school leader in the individualistic school culture seem to underestimate the need for active involvement in building a culture of inclusion based on a clear and visible policy.

In one of the schools, however the school leader considers teachers as a team with shared understandings and who work together towards practices of inclusive education. The school leader seems to play a key role in fostering inclusive values and to create an organisational culture and conditions as promote inclusive practices (Ainscow & Sandill, 2010, Riehl 2017). However, the forming of inclusive values and practices is not a hierarchical one-way chain of influence (Eide & Søreide, 2014**),** but will involve social learning processes with school staff, including dialogues, discussions, and exchanges of ideas and experiences that influence the thinking and actions of all the teachers. The school leadership seems crucial for at such processes to occur. This means again that the leadership style has great significance for how the teacher role and the practice of curriculum planning in a school develop whether in individualistic or collaborative direction.

When it comes to *the role of the teachers*, a main tendency is the lack of collaboration whereby teachers share knowledge, experiences and reflections in order to find appropriate educational provisions for pupils with SEN and develop further competence in inclusive education (Senge, 2006; Schön, 1983). The teachers in the individualistic culture feel that they are left alone to provide an inclusive education to pupils with SEN. In addition, they do not participate in collaborative networks within the school. However, in the collaborative school culture the teachers report that they work together and participate in networks with colleagues who have diverse experience and competence. They consider the sharing of knowledge and experiences to be an important part of further developing the education provision for all pupils, including for pupils with SEN (Bjørnsrud & Nilsen, 2017).

It seems that most of the schools in our study have not enabled systems or time a location for collaboration among teachers, and that this is a barrier to the coordination of the overall inclusive educational provision for pupils with SEN (Wayne & Youngs, 2003). A good structure, in which teachers' roles and responsibilities are clear, seems to be an important prerequisite for collaboration (Friend & Bursuck, 2006). True collaborative work capitalises on the talents and skills of the participating teachers and is one of several ways to develop teacher competence (Boudah, Schumacher & Deschler, 1997).

Another main tendency from our study is that *curriculum planning* for pupils with SEN is predominantly characterised by an individualistic practise. There is little collaboration and coordination between general education and special education teachers. Instead, the teachers work individually to plan their own part of the teaching. The individualistic curriculum planning risks fragmenting teachers' practices and pupils' learning and experiences, and suggests a tendency for relinquishing responsibility, thus making it more difficult to plan in a way that facilitates an inclusive education for pupils with SEN (Nilsen, 2017). In contrast, in one of the schools general and special education teachers collaborate on and harmonise the planning of education in the class and special education for individual pupils.

In these four schools, what emerges as an important implication is a clear need for greater emphasis on collaborative curriculum planning, so that teachers are enabled to develop a common understanding of how the education system can accommodate pupils with SEN (Carter et al., 2009; Pearson, 2000), which may lead to a positive impact on pupil achievement (Gruenert, 2005; Goddard, Goddard & Tschannen-Moran, 2007). In order to improve the

learning processes and outcomes for pupils with SEN, there appears to be an important potential in a greater degree of joint involvement and consistent collaborations between special and general education teachers in terms of both the planning and the implementation of the education (Bjørnsrud & Nilsen, 2017). This can be an important element in whole-class planning and responsibility. Collaborative curriculum planning is therefore essential to ensuring better coordination of special and regular education with a view to a holistic education provision for the pupils (Carter et al., 2009; Nilsen, 2017).

When one sees the three core areas in context, this analysis shows a systematic correlation, indicating that the role of school leaders, the role of teachers, and the practice of curriculum planning are all part of school cultures, characterized predominantly as individualistic or collaborative practices. The same pattern is found in the three core areas, and it affects how schools relate to provision of inclusive education for pupils with SEN.

An important implication of this study is that making school values and practices more inclusive is foremost a matter of developing the whole school culture in a more collaborative direction (Waldron & McLeskey, 2010). It requires leadership that seeks to develop shared values and a common understanding based on a respect for pupils' diversity. Such leadership must also encourage a collaborative teacher role and consequently collaborative curriculum planning and implementation. It also requires the establishment of organizational systems and routines that support collaboration processes, aiming at developing practices grounded on a common responsibility and a commitment to offering adequate learning conditions for all pupils, irrespective of their abilities and aptitudes.

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Outcomes of Special Education Programs for Students with Intellectual Disabilities: Family Members' Perspectives

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Abstract: It is important to understand family members' observations and opinions in regards to the programs offered to their children with intellectual disabilities. This study aimed to examine the outcomes of special education programs for students with intellectual disabilities (SWID) from the families' perspectives. The study sample comprised 150 family members of SWID. The results showed that the progress in both academic and life skills was less than expected. Satisfaction was higher in public schools in comparison with private schools. Participants with children enrolled for a longer time in special education programs expressed significantly less dissatisfaction than those with children enrolled for shorter lengths of time in such programs. The findings suggest the need for more involvement of family members in their children's educational future, and for more focus to improve students' life skills. Implications and recommendations to increase the families' satisfaction in regards the special education programs are discussed.

Keywords: Saudi Arabia, intellectual disability, special education, outcomes, academic skills, life skills.

Special Education in Saudi Arabia

Special education services in Saudi Arabia have developed significantly in the recent decades (Alnahdi, 2013; Alnahdi, 2014). In 1990, the Ministry of Education began to mainstream students with disabilities (SWD) by designing classes for them at mainstream schools, which was a turning point in the history of special education in the country. Since then, the number of schools offering classes for SWD has increased noticeably. For example, there were over 53 times as many special education services for male students in 2004–2005 (2,047 programs and institutes) than there had been 11 years before in 1994–1995 (38 programs and institutes) (Al-Mousa, 2007). Similarly, there were over 29 times more special education programs and institutes for female students in 2004–2005 (530 programs and institutes) than there had been 11 years before in 1994–1995 (18 programs and institutes) (Al-Mousa, 2007).

By 2006, about 80% of SWD in Saudi Arabia were mainstreamed (Al-Hano, 2006). The Saudi Arabian General Directorate of Special Education (GDSE) reported that there were 2,477 classes for 13,047 SWID in Saudi Arabia in 2007 (GDSE, 2007). Al-Mousa (2007) demonstrates that Saudi Arabia leads Arab countries in including SWD, mainstreaming more than 90% of male and 65% of female SWD. Today, according to Aldabas (2015), about 746 public schools offer special education classes for those with mild and moderate disabilities and 47 programs for students with mild and moderate autism disorder.

Special Education Programs for SWID

There are two kinds of educational placements for SWD in Saudi Arabia: institutes and inclusion. Al-Mousa (2010) states that institutes separate those with moderate and severe disabilities from typically developing students, focusing on categories of disabilities like visual impairment, hearing impairment and intellectual disability. Inclusion programs place students with mild disabilities into mainstream schools, providing services such as resource rooms, self-contained classrooms, itinerant teachers, and follow-up programs (Al-Mousa, 2010). However, some studies reported that only resource rooms, and self-contained classrooms are available on the ground (Alnahdi, 2014). Students with mild and moderate intellectual disabilities are separated from typically developing students in mainstream schools but may interact with them during activities like lunch or recess. The curriculum for these students differs from the general curriculum. They can continue their studies at mainstream schools until age 18, but they do not have opportunities to continue their education further outside of a few vocational training centers (Al-Ajmi, 2006).

The development of special education services in general have been positively reflected in the services offered to SWID. The first institute for SWID in Saudi Arabia opened in 1970. It provided services such as housing and training for children with severe intellectual disabilities. In 1970, about 100 SWID were enrolled in special education institutes. In 1980, the number of SWID enrolled in these institutes was 827 (Althabet, 2002). By the end of 2007, there were 11 institutes and 718 programs for SWID, with 1,244 students in 170 classes in various institutes; however, 11,805 SWID took 2,307 classes in mainstream schools simultaneously, and 2,272 teachers encountered SWID in various programs and institutes (GDSE, 2007).

Statistics from the Ministry of Education (MOE, 2011) showed that 18,000 SWID benefited from the special education services of nearly 4,500 special education teachers across Saudi Arabia. Sixty-two percent of SWID access special education programs in mainstream schools. Institutes for SWID represent 58% of the programs for all other disabilities (MOE, 2011). With this increasing development in the amount of special education services available to SWID, the question arises as to the quality of these services and student's family members' perspectives on their outcomes. It is important for MOE officials to monitor the views of beneficiaries of special education services to improve the quality and efficiency of these services.

Parental Satisfaction with Special Education in Saudi Arabia and Other Arab Countries

There are a few studies that focus on parents' perspectives regarding special education programs for SWID in Saudi Arabia. Masood (2013) conducted a study that aimed at identifying the level of satisfaction of families of children with disabilities with the services and programs provided to their children in Al-Jouf region. The results showed that the level of satisfaction was medium regarding improvement in academic skills but high when it came to other services provided to their children. One of the main parental recommendations was to increase coordination between the schools and families.

Hussein (2013) carried out a study aimed at identifying the level of satisfaction with the services for the families of SWID in Saudi Arabia. The study revealed a gap in the perceptions of the coverage of a wide range of skills due to a predominant focus among family members on academic skills over other skills. This study came out with a set of recommendations, such as the need to work with SWID on the sensory, language and daily life skills that suit their abilities and needs. Abdullah (2003) examined the contents of individualized education plans (IEP) and programs for SWID and their teaching methods in SWID institutes and classes within mainstream schools in the southern regions of Saudi Arabia. The results showed that special education teachers applied IEPs with their various components but did not include plans to modify behavior or behavior assessment methods. Nor did they include methods used in the assessment of language abilities. Regarding the implementation of the IEP, participation of the family in carrying out the programs was weak. In addition, Alnahdi (2014) analyzed the time allocated for academic and other skills in special education programs for SWID. It was found that students in special education programs spend a great deal of the day, about 64% of the time, working on academic skills at the elementary school level.

Problem of the Study

During frequent visits to special education programs for SWID, as part of their pre-service teacher training, the researchers of the present study closely observed these programs. It was determined that much effort and time was allocated to teaching students academic skills and that life skills and adaptive practices were treated as matters of secondary importance, which is confirmed by Alnahdi's (2014) findings about the amount of time allocated to academic skills in special education programs.

Study Goals

This study aimed to help educators examine the success of special education programs for SWID in terms of improving students' skills and knowledge, which in turn would help address any issues preventing schools from performing their expected roles. Therefore, this study sought to answer two main questions:

1. To what extent do SWID improve academically in special education programs from the point of view of their family members?
2. To what extent do SWID improve their life skills in special education programs from point of view of their family members?

Materials and Methods

Sample

The sample consisted of 150 families of SWID enrolled in special education programs within public schools or private schools for SWID only. The scale was distributed to SWID in elementary and middle schools delivered to their parents. Scales were distributed in two cities in Saudi Arabia: Al-Kharj and Wadi Al Dwasser. Four mediators were responsible for distributing the scales to 16 special education programs for SWID and 5 private schools for SWID. One hundred and fifty family members responded to the scale.

Table 1 demonstrated that 30% (N = 45) of the participants held a bachelor's degree and 10% (N = 15) held higher degrees, while the remaining 60% (N = 90) had lower educational qualifications. The percentage of public school students in the study was 64.7% (N = 97), while private school students made up 35.3% (N = 53) of total students. Fathers accounted for 35.3% (N = 53) of the participants, while 29.3% (N = 44) of the participants were mothers. Brothers represented 18.7% (N = 28) of the sample, sisters represented the smallest percentage at 5.3% (N = 8), and another relative represented the remaining 11.3%. The majority of students in this study, 48% (N = 72), spent between 2 and 5 years in the special education program, while 21.3% (N= 32) of them did not complete their second year. The rest, 30.7% (N = 46), had spent more than 5 years in the program.

Table 1. Demographic Information of the Sample

Independent Variable		Frequency	Percent %
Type of school	Public	97	64.7
	Private	53	35.3
Relative level of education	Graduate degree	15	10
	Bachelor degree	45	30
	Less than bachelor degree	90	60
Relationship to the SWID	Father	53	35.3
	Mother	44	29.3
	Brother	28	18.7
	Sister	8	5.3
	Other	17	11.3

Years at school	Two years or less	32	21.3
	More than 2 years and less than 5 years	72	48
	More than 5 years	46	30.7

Instrument

A scale of 19 items was developed for this study. The goal of developing the scale was to measure the extent to which the participants' believed that the school contributed to the development of their children in academic and life skills. The scales were built to include two main subscales: an academic skills subscale that focused on progress in learning math, reading, writing and science and an adaptive and life skills subscale based on the American Association on Intellectual and Developmental Disabilities' list of adaptive skills as included within its definition of intellectual disability (AAIDD, 2018). The 19 items were divided into 13 items focusing on life skills and 6 items focusing on academic skills. Participants were giving six answers to choose from in response to one general question: *What is your assessment of the level of your son / brother in the following skills since joining the school*? Their choices were the following: there is no improvement at all (0), much less than I expected (1), less than I expected (2), as I expected (3), more than I expected (4) and much more than I expected (5).

To ascertain the psychometric properties of the scale used in this study, three methods were employed: Cronbach's alpha, construct validity, and content validity. Cronbach's alpha was computed to examine the scale's reliability. The results showed a very good level of reliability for the overall scale (.907) and for the two subdomains, academic skills and life skills (.938 and .933, respectively; see Table 2).

Table 2. Reliability Statistics (Cronbach's Alpha)

	items	alpha
Overall	19	.907
AC	6	.938
LS	13	.933

AC = academic skills, LS = life skills

The validity of the scale was examined in two ways. First, the content validity of the scale was tested. The scale was sent to ten specialists in special education and psychology to ascertain the clarity of the statements and their relationship to the two dimensions in this study. The observations of the specialists were taken into consideration during the final draft of the scale. Second, the construct validity was tested by conducting confirmatory factor analysis to examine the proposed two-factor model. The chi-square was significant, indicating that the data did not fit the model. However, this test indicates to be very sensitive to sample size (Byrne 2010). Other fit indices indicated a reasonable fit (see Table 3). For instance, the comparative fit

index (CFI) was .97, indicating acceptable fit (Schermelleh-Engel *et al*., 2003); and the standardized root-mean-square residual (SRMR) was .054, also an indicator of good fit (Hu & Bentler 1998; Schermelleh-Engel *et al*. 2003). In addition, the Tucker-Lewis coefficient (TLI) was .97, which is within the range of an acceptable fit (Bentler & Bonett, 1980).

Table 3. Confirmatory Factor Analysis Statistics

Models	SBS- $\chi 2$	p	df	RMSEA	CFI	SRMR	GFI	AGFI	TLI	IFI
M1	191.613	.005	144	.047	.97	.054	.89	.85	.97	.97

Note. SBS-$\chi 2$ = Satorra–Bentler scaled Chi-square; df = degrees of freedom; RMSEA = root-mean-square error of approximation; CFI = comparative fit index; SRMR = standardized root-mean-square residual; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; and TLI = Tucker-Lewis coefficient

Results

Descriptive Statistics

Table 4 demonstrates participants' responses to the 19 items. It is noticeable that about 19% of participants, on average, on all items, chose the first option that their student did not improve. The percentage of participants who chose the first option (*no improvement at all*) on all items ranged from 11% to 25%. More details about the response rates of all items are shown in Table 4. The mean for academic skills was 1.86 (SD = 1.12) and 2.07 (SD = .99) for life skills. The overall mean was 2.00 (SD = 1.07), which suggests that participants, in general, felt that their children improved less than expected.

Table 4. Response Distribution and Means by Items and Subscale

Subscale	Items	* 0	1	2	3	4	5	M
AC1	Development in his reading skills	23	22	24	24	7	1	1.72
AC2	Development in his skills in mathematics	15	27	22	30	5	1	1.86
AC3	Development in his knowledge in science	17	21	27	27	5	2	1.89
AC4	Development in his ability to solve some simple mathematical issues	18	19	30	23	9	2	1.91
AC5	Read some simple words	17	23	27	18	11	3	1.93
AC6	Write some simple words alone	21	23	24	20	7	5	1.83
LS1	Improvement in the level of following instructions at home	20	17	22	26	13	2	2.01
LS2	Development in his skills in preparing some simple food for himself	22	23	20	23	8	5	1.86
LS3	Development in his skills to make friends with other children outside the school	18	21	17	27	11	5	2.09

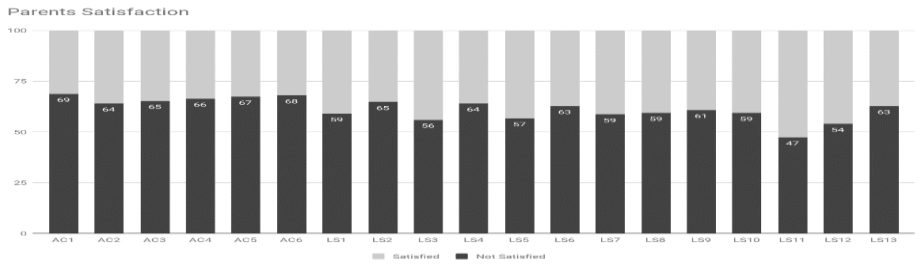
LS4	Development in his skills with clothes and appearance	19	19	26	16	13	7	2.06
LS5	Development in his self-confidence level	18	22	17	28	8	7	2.08
LS6	Improvements in his ability to use money correctly	26	23	14	23	9	5	1.81
LS7	Development in his skills to be independent	22	21	15	20	11	10	2.07
LS8	Improvement in his level of maintaining safety and avoiding danger	23	21	16	16	17	8	2.07
LS9	Improvement in his ability to care for his own general health	19	21	21	21	14	5	2.03
LS10	Improvement in his level of commitment to a schedule of play times and study at home	20	19	20	21	14	5	2.06
LS11	Development in his skills to use the phone	11	21	15	19	22	12	2.55
LS12	Development in his skills during social events	17	17	20	22	19	5	2.25
LS13	Development in his skills in a particular profession (e.g., he was trained to arrange products in a shop, etc.)	25	19	19	17	15	5	1.94
	Average for each option	19	21	21	22	12	5	-
	Academic skills subscale		M= 1.86, SD= 1.07					
	Life skills subscale		M= 2.07, SD= 1.12					
	Overall mean		M= 2.00, SD= 0.99					

AC = Academic skills subscale, LS = Life skills subscale

* 0 = there is no improvement at all, 1= much less than I expected, 2 = less than I expected, 3 = as I expected, 4 = more than I expected, 5 = much more than I expected, M = mean, SD = standard deviation

To facilitate the understanding of participants' responses, the three responses 'there is no improvement at all', 'much less than I expected', and 'less than I expected' were combined to represent the percentage of parents' dissatisfaction with the students' skill development. Also, the three other responses 'as I expected', 'more than I expected', and 'much more than I expected' are combined in Figure 1 to represent parental satisfaction with the students' skill development. Figure 1 demonstrates participants' responses in percentages based on two categories—satisfied or dissatisfied—on all items. Notably, Figure 1 demonstrates at least 60% dissatisfaction in most of the items. The only item that had less than 50% dissatisfaction was item 11 (47%), '*development in use of the phone*' in the life skills subscale.

Figure 1. **Participants responses on all items (combined responses)**



Type of school

The sample in this study consisted of parents of SWID enrolled in two types of schools: public schools with special education programs for SWID and private schools for SWID. Although parents in general showed dissatisfaction with their children's improvement in academic and life skills, dissatisfaction was even greater with regard to children enrolled in private schools. Results of the t-test in Table 5 demonstrate that there were statistically significant mean differences based on the type of school [t (148) = 3.42, p = .001; public M = 2.07, SD = 1.11; and private M = 1.46, SD = .88].

Table 5. Parents' Responses (Means) by Type of School

Sample	N	Mean	SD	*t*	*df*	*p*	*d*
Public School	97	2.07	1.11	3.42	148	.001*	0.61
Private School	53	1.46	.88				

* p value is significant at .01

Years at school

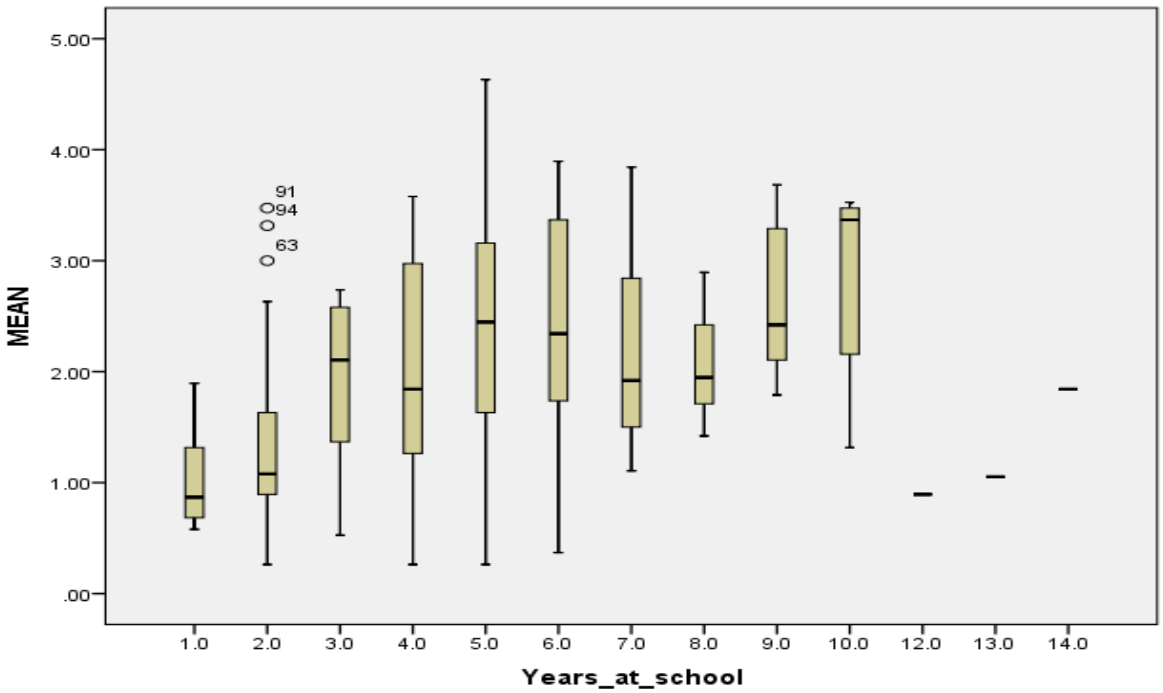
Results showed that students' length of enrollment had a significant influence on parents' perspectives on school outcomes (see Table 6). Regression analysis statistics indicate that the duration of enrollment in school was a significant predictor of family member perspectives [F (131) = 16.366, p < .001, R = .333]. This also demonstrated see Figure 2, which shows that the highest level of dissatisfaction came from families of students who had recently begun to attend their schools.

Table 6. ANOVA Statistics by Number of Years at the School

R	Sig.	F	Mean Square	df	Sum of Squares
.333	.000 [b]	16.366	13.732	1	13.732
			.839	131	109.911
				132	123.643

[a]Dependent Variable: MEAN, [b]Predictors: (Constant), Years at school

Figure 2. ***Participants responses by number of years at school***



Parental Recommendations

In addition to responding to the 19 items on the scale, parents were asked for their suggestions about whether schools should focus more on life skills or academic skills in their work with SWID or whether they should only work on one or the other. The results, listed in Table 7, show that 61% of participants preferred that their child's school focus more on life skills than academic skills. Approximately 21% of participants preferred that their child's school work only on life skills and not spend any time on academic skills.

Table 7. Participants Recommendations to Improve School Outcomes (whether the school should focus more on life skills or academic skills)

	Academic skills only	Mostly on Academic skills + Life skills	Mostly on Life skills + Academic skills	Life skills only	Total
Number of Participants	10	46	59	30	145
Percentage	6.90%	31.72%	40.69%	20.69%	100.00%

Discussion

This study aimed to examine family members' opinions regarding their children's development in academic or life skills. In general, family members reported that school outcomes for their children were below their expectations for both academic and life skills. Parents generally were not satisfied with the extent of improvement in their children's academic and life skills, but parents of students in private schools showed more dissatisfaction with school outcomes than did parents of students in public schools. The greater dissatisfaction among parents of private school students might be related to the high expectations families typically maintain regarding paid services in general, whether for students with disabilities or for typically developing students.

Families of students who had only recently begun to attend schools showed higher levels of dissatisfaction in comparison with families of students who had attended their schools for a longer amount of time. This might be related to families' high expectations when they first send their children to school. In this case, families with children who have been enrolled in a school for many years might tend to lower their expectations over time to mitigate their dissatisfaction with certain services.

The majority of parents suggested that schools focus on daily life skills, which shows the important role schools play in meeting those needs. This suggestion may be attributed to assumptions about the potential of SWID for significant improvement in life skills compared with academic skills. It also shows the importance of the child's adaptation to their society from their parents' perspectives, which can only increase through the development of the students' life skills. These findings are consistent with those of other studies regarding the importance of lessening the focus on academic skills during most of the school day for SWID (Alnahdi, 2014; Almuaqel, 2008).

Conclusion and implications

There was a clear sense among family members that there was little improvement in their children's skills because of attending special education programs. Although daily life skills are essential in educational programs for SWID, most of the day is actually devoted to teaching academic skills. Participants recommended that schools increase the focus on life skills for SWID.

The implications of this study suggest that there are ways to increase the satisfaction of families of SWID in special education programs. First, families should play a role in developing their children's future educational plans. This involvement ensures that they will be engaged in their children's progress and that they will do their best to help the children reach their highest potential. Such engagement will also be reflected in their satisfaction, which will be based on expectations that are more realistic. In addition to parental involvement, the teachers first will bear the responsibility for working with the parents to help their children achieve the goals set out in their development plans.

Second, students' different abilities and needs should constitute the milestones around which any curriculum is built. One fixed curriculum for all students should be outdated. School officials need to authorize and empower teachers to choose goals and skills that can be reached

and acquired by students and that will have the greatest impact on their independence and their social lives. In other words, schools should not require teachers to spend most of their time on academic skills regardless of their students' needs.

Third, findings from this study can help officials in the Ministry of Education evaluate the efficiency of special education programs for SWID. Therefore, special education programs should start to focus on students' life skills as their main goal. To ensure the success of this change, it will be necessary for MOE officials to work to provide the facilities and the resources necessary to train students and occasionally take them outside of school for training purposes. For example, they might take them shopping at a supermarket or to a restaurant close to home to order a meal. These small but crucial skills would make SWID more independent and improve their lives in a way that their families would be able to appreciate and value.

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Implementation, Evaluation and Maintenance of a Social-Emotional Skills Training Program for Children with an Autism Spectrum Disorder in a Specialist School Setting

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Implementation, Evaluation and Maintenance of a Social-Emotional Skills Training Program for Children with an Autism Spectrum Disorder in a Specialist School Setting

Abstract: Socialization difficulties in children with an Autism Spectrum Disorder (ASD) are often associated with peer rejection and impaired academic achievement. Schools might appear to offer an ideal setting for social-emotional skills (SES) instruction. However, common challenges to successful implementation of school-based programs include inadequate staffing and resourcing, and a lack of ASD-specific staff training. This paper describes how barriers to program implementation were overcome in a project evaluating the Secret Agent Society (SAS) SES training intervention within Autism Spectrum Australia (Aspect) specialist classes. Questionnaire data was collected from school staff over a one-year period. Findings supported the effectiveness of the adoption process used, and suggest that SAS was feasible and acceptable to school staff.

Keywords: social skills training, Autism Spectrum Disorder, specialist school, program implementation

Social-communication impairments are a core diagnostic feature of Autism Spectrum Disorder (ASD – American Psychiatric Association, 2013; World Health Organisation, 2018) and have a profound impact on children's ability to benefit fully from regular educational provision. Social deficits in ASD affect many areas of functioning, including verbal and non-verbal communication; social reciprocity; difficulties in recognising, understanding or responding appropriately to others' behaviour, feelings or emotions; impaired social relationships, and difficulties in engaging in social interactions or interactive play with peers. In school settings, impairments in social communication in children with ASD are typically associated with low levels of peer acceptance, bullying, compromised academic achievement, attention and behavioural difficulties and secondary mental health problems (see for example, Deckers, Muris & Roelofs, 2017; Dovgan & Mazurek, 2018; Estes, Rivera, Bryan, Cali & Dawson, 2010; Hebron, Oldfield & Humphrey, 2017; Lieb & Bohnert, 2017; Miller et al., 2017). However, although the school environment can exacerbate many of the difficulties experienced by children with ASD, potentially it also offers an ideal setting for social-emotional skills training because it provides optimal opportunities for skills teaching, modelling, practice and generalisation.

Over the last two decades there has been a steady growth in the number of group-based interventions designed to improve social functioning and social understanding in children with ASD. Several meta-analyses and systematic reviews suggest that these interventions are moderately effective, although limitations include lack of generalization to other settings or to a wider range of social skills; concerns about fidelity of intervention delivery, and failure to maintain acquired skills post intervention (cf Bellini, Peters, Benner & Hopf, 2007; Flynn & Healy, 2012; Gates, Kang & Lerner, 2017; Kasari & Patterson, 2012; Whalon, Conroy, Martinez & Werch, 2015). Moreover, few of these programs have been conducted in school (cf Kasari & Smith; 2013; Locke et al., 2015; Ostmeyer & Scarpa, 2012). Those school-based studies that do exist (with the exception of two trials by Kasari and colleagues (Kasari et al., 2016; n=137; Kasari, Rotheram-Fuller, Locke & Gulsrud, 2012; n=60), mostly involve relatively small samples (e.g. Kretzman, Shih & Kasari, 2015; n=24; Locke et al., 2018b; n=31; Lopata et al., 2012; n=12; Radley et al., 2017; n=5) and/or do not incorporate a randomized research design. Indeed, it has been suggested that although very large numbers of pupils with ASD are exposed to some form of social-emotional skills training in schools, almost none of these programs are evidence based (Bellini et al., 2007; Hess, Morrier, Helfin & Ivey, 2008).

The challenges of conducting school-based social skills interventions for children with ASD have been described by a number of authors (e.g. Kasari & Smith, 2013; Lopata et al., 2012; Locke et al., 2015; Morgan et al., 2018; Ostmeyer & Scarpa, 2012). Barriers to successful implementation include insufficient resources within schools (in terms of time; staffing or finances); frequent cancellation of sessions due to competing school activities; the perception within some schools that social-emotional skills training is outside the 'core business' of academic instruction; staff shortages; lack of ASD-specific staff training and/or a lack of specialist staff to deliver evidence-based interventions; poor control over program fidelity; researchers omitting to engage staff fully in the planning and implementation of the program, and a failure to design programs that can be continued once the research trial terminates. To address these challenges, various adaptations have been recommended (Kasari & Smith, 2013; Locke et al., 2015; Ostmeyer & Scarpa, 2012). These include a flexible approach to treatment implementation and data collection (while still maintaining fidelity to the core components of

treatment); the provision of high-quality training and booster sessions for program implementation staff; the involvement of school leadership personnel (e.g. the principal) in all aspects of program implementation and the involvement of non-teaching staff, such as parents to assist in the implementation of the programs and enhance generalization. Finally, as highlighted by Fixsen et al. (2010), few research projects culminate in full program implementation by an organization. Typically, once a research project is complete, program delivery is either discontinued, or only continues for those staff who were original research participants. Planned collection of follow-up data and monitoring of continuation of therapy post-trial are needed to assess not only the maintenance of treatment effects, but also the longer-term acceptability and adoption of the intervention by the institutions involved.

The current paper describes how several of these recommendations were implemented in a community-partnership evaluation of a social-emotional skills training program (The Secret Agent Society -SAS) within Autism Spectrum Australia (Aspect) specialist classes throughout New South Wales (NSW), Australia. The SAS Program (Beaumont, 2010) is a multimedia social skills intervention that aims to teach children with ASD to recognise, understand and express emotions in appropriate ways; to socialise and play with their peers, and to cope with everyday social challenges, such as asking for help and coping with teasing or bullying. Training methods include discussion, role play and practice using a wide range of different games and materials. Children are also encouraged to complete weekly 'home missions' that involve playing a specially designed computer game and practising learnt skills in everyday contexts. SAS is designed for elementary school children (age 8-12 years) whose cognitive abilities are in the low average range or above. Delivery is in group settings by trained facilitators and the program also requires the active participation of school staff and parents.

Initial trials of the SAS Program (formerly called the Junior Detective Training Program) were conducted in a university setting (Beaumont & Sofronoff, 2008) and later with parents as the main therapists (Sofronoff, Silva & Beaumont, 2015). The intervention was found to result in significant gains in parent and teacher ratings of children's social skills and emotional understanding, and on child-completed analogue tasks involving anxiety and anger management strategies in school. Treatment gains were maintained up to five months post-intervention. SAS was subsequently implemented in the school environment (Einfeld et al., 2018; see Method section for details). Treatment fidelity (percentage of program activities completed by facilitators) was good and initial results demonstrated that children receiving the intervention made significant gains on parent-rated measures of social skills, emotion regulation and social problem solving. These gains were maintained at 12-month follow-up. Teachers ratings did not show a significant improvement post-intervention, but were significant at 12-month follow-up (see Einfeld et al., 2018 for details).

The specific aims of the present paper were to assess:

(1) The views of school staff concerning the adequacy of training
(2) Facilitator ratings of competence and confidence in delivering the program
(3) Facilitator ratings of satisfaction with the program
(4) Maintenance and generalization of the program following the cessation of the trial

Method

Participants

Child participants. Students from 15 Aspect ASD-specialist satellite classes attached to mainstream primary and secondary schools throughout NSW were recruited for this study. Satellite classes typically consisted of a teacher and teacher-aide supporting a class of six to 12 students with ASD. All child participants were required to have a clinically confirmed diagnosis of an Autism Spectrum Disorder according to DSM-IV criteria (i.e., Autistic Disorder, Asperger's Disorder or Pervasive Developmental Disorder – Not Otherwise Specified) from a specialist medical practitioner or clinical psychologist within the past 12 months.

Sixty-eight children (61 male) and their families completed the SAS Program. Children's mean age was 10.5 years (SD = 1.5, range = 8.2 to 14.0 years); mean receptive language age equivalent was 9.3 years (SD = 2.5, range = 4.8 to 20.3 years); mean Full Scale IQ was 90.0 (SD = 19.4, range = 48 to 136); mean Verbal IQ was 90.2 (SD = 17.6, range = 55 to 133) and mean Performance IQ was 95.0 (SD = 19.9, range = 57 to 144). The average socioeconomic status rating for participants, determined from Australian Bureau of Statistics socio-economic decile ratings for postcodes, was 6.5, similar to the average of 6.0 for NSW and Australia as a whole.

School staff. A total of 31 school staff (30 females) was trained to deliver the SAS intervention over a 13-week period. Twenty-seven (87%) had a background in education, two (6%) in psychology and two in speech pathology; 24 (77%) had a university Bachelor-level qualification and, six (19%) a Masters qualification; one provided no information on qualifications. Staff reported having worked with children with ASD for an average of 8.9 years (SD = 7.2, range = 0.25 to 25 years). Nineteen of the staff who were trained went on to directly deliver the intervention (program facilitators). The remainder included school principals, teacher-coordinators and classroom teachers who played a pivotal role in supporting program delivery.

Program Description and Staff Training

SAS features a multi-level computer game and other spy-themed games and activities to teach children how to recognise emotions in themselves and others, express their feelings in appropriate ways, talk and play with others, cope with mistakes and avoid and manage bullying and teasing. The intervention comprised nine weekly 90-minute child sessions delivered to groups of three to six students by one or two trained facilitators. These were interspersed with four two-hour parent group information sessions in weeks 1, 5, 8 and 13 of the program. Three- and six-month student group booster sessions and individual follow-up parent phone calls were conducted to support students and parents to continue using skills from the program after formal weekly sessions ended.

Skill generalisation was facilitated in a number of different ways. These included: pocket-sized 'Code Cards' and classroom posters featuring skill steps that children referred to when needed; weekly teacher tip sheets that provided satellite class staff with recommendations on how to support students in applying their social-emotional skills in the classroom and playground; a home-school monitoring and reward system, and between-session 'missions' that involved children practising targeted social-emotional skills and documenting their progress in a Secret Agent Journal (see www.sst-institute.net for additional information). Further details

regarding the program content and delivery, together with the improvements made by study participants on quantitative child, parent and teacher program outcome measures are described elsewhere (see Einfeld et al., 2018).

School staff attended a two-day practitioner training course to upskill them in delivery of the SAS intervention. This training course involved a mix of didactic presentations, small and large group discussion activities, video clips demonstrating program delivery with children and staff role plays of core competencies (e.g. teaching a social skill, facilitating the Secret Agent Society role-play board game with students).

Measures

Staff Ratings of Competence and Confidence and Satisfaction with Training

Consultation Skills Checklist. School staff completed the Consultation Skills Checklist (CSC) at the beginning and end of the SAS Practitioner Training Course. The 28 item CSC is an adaptation of a measure used to evaluate Triple P-Positive Parenting Program^{R} practitioner training courses (see Sanders, Tully, Turner, Maher & McAuliffe, 2003, for details) and was shown to have excellent internal consistency in the current study (Cronbach $\alpha = .96$). Each item is rated on a 1-7 Likert scale, with higher scores reflecting higher levels of confidence, competence or adequacy of training. The first six questions ask practitioners to rate the overall adequacy of training and their confidence in the domains of group social skills instruction for children with ASD and in providing guidance to parents and teachers on how to support the social-emotional development of these children. The final 22 questions involve practitioners rating their level of competence in more specific skill areas that are taught within the SAS curriculum and Practitioner Training Course. These include: assessing the social-emotional functioning of children with ASD; dealing with parent and teacher resistance; teaching children with ASD how to recognise emotions in themselves and others; the use of relaxation strategies; how to apply steps for talking and playing with others, how to reduce the risk of and/or manage bullying and teasing and how to provide consultative support to other school staff and parents. An average per item score is computed across the 22 skill sub-domains to provide an index of competence in teaching program-specific social-emotional skills.

Workshop Evaluation Survey (Sanders et al., 2003). This survey was completed by school-staff at the end of the two-day SAS Practitioner Training Course. It involved them rating whether they felt they had the skills and knowledge to implement the SAS Program and their overall satisfaction with the SAS Practitioner Training Course. Item ratings could range from 1 to 7, with higher scores indicating more positive evaluations. Two items from the questionnaire were of particular interest – "Do you feel you now have the skills to implement the Secret Agent Society Program in your work with families?" and "In an overall sense, how satisfied were you with the training course?"

Teacher Confidence Ratings. At the beginning and end of the SAS Program and at 12-month follow-up, all classroom teachers were asked to rate how confident they were in their ability (i) to manage the behaviour and (ii) to support the future social and emotional development of each student who participated in the research project. Ratings were based on two

0 to 5 Likert scales, with higher ratings reflecting greater confidence**.** Of the 31 teachers who completed these ratings, 19 were trained program facilitators.

Facilitator Ratings

Satisfaction Questionnaire. After delivering the intervention to students and parents, program facilitators completed a qualitative feedback questionnaire, where they were asked to provide feedback on the strengths and weaknesses of the SAS Program and make recommendations for improvement. Program facilitators were also asked to rate how helpful they found weekly phone supervision sessions and how supported they felt by Aspect in delivering the program (e.g. provision of release time to prepare for sessions, teacher coordinator support) on two 0 to 5 Likert scales, with higher ratings reflecting greater levels of helpfulness and support respectively.

Thematic analysis of facilitators' responses followed the six steps identified by Braun and Clarke (2006). Written responses to the questionnaire items were thematically coded by hand by a rater according to the overarching research questions. Initial codes were generated for the whole data set and then grouped together in themes. Initial codes were brought together and recoded to draw out thematic sub-codes. Single instances of codes were removed and those with close similarity to other codes were merged. All facilitator survey responses were independently coded by a second rater using the same thematic analysis protocol. One hundred percent inter-rater agreement obtained.

Statistical Analysis

A series of repeated measures t-tests was conducted to evaluate change from pre- to post-training. Staff rated their perceived adequacy of training, confidence and competence to conduct child, parent and teacher ASD social skills instruction and consultation using the Consultation Skills Checklist. Due to the multiple statistical analyses performed, the alpha level for analyses was adjusted to .001. Case-wise deletion was used to manage missing data and staff numbers for each analysis are indicated in the relevant text or tables.

Results

Adequacy of Training

As shown in Table 1, there was a significant improvement from pre- to post-training in staff perceptions of adequacy of training, confidence and competence to conduct ASD social-emotional skills consultations with children, parents and teachers (*ps* <.001), with large effect sizes for all seven statistical analyses performed (*ds* = 1.00-1.41).

Table 1. Aspect staff Responses to Consultation Skills Checklist Items at Pre- and Post-Training

		Pre training			Post training					
Outcome	N	Mean	SD	Range	Mean	SD	Range	***t***	***p***	***d***
Do you feel adequately trained to conduct consultations around the social and emotional skill development of children with Autism Spectrum Conditions?										
Child Consultation*	31	4.45	1.23	2-7	5.70	0.66	4-7	6.48	<.001	1.16
Parent Consultation*	31	4.12	1.28	2-7	5.48	0.76	4-7	6.29	<.001	1.13
Teacher Support*	31	4.16	1.31	2-7	5.58	0.71	4-7	6.15	<.001	1.10
How confident are you in conducting these consultations?										
Child Consultation*	31	4.55	1.15	1-7	5.58	0.92	4-7	6.15	<.001	1.10
Parent Consultation*	31	3.87	1.31	1-7	5.10	0.97	4-7	5.67	<.001	1.02
Teacher Support*	30	4.33	1.15	1-6	5.5	0.90	4-7	5.43	<.001	0.99
How competent do you feel in your consultation skills? *(average of responses to 22 questions about specific skill domains)*										
Child, Parent and Teacher Consultation*	30	4.31	0.81	2.82 - 6.18	5.68	0.71	4.18 - 6.86	9.54	<.001	1.74

**Likert scale responses range from 1 to 7, with higher scores indicating greater levels of reported adequacy of training, confidence or competence.*

Results from the Workshop Evaluation Survey (completed by 31/32 staff) suggested that at the completion of the two-day practitioner training course, practitioners were reasonably confident that they had the skills necessary to deliver the SAS Program (M = 5.77/7, SD = 0.67, range = 5-7) and were very satisfied with the training course (M = 6.41/7, SD = 0.67, range = 5-7).

Program Facilitator Satisfaction Questionnaire Results

Fourteen of the 19 (74%) Aspect staff who delivered the SAS Program completed the satisfaction questionnaire. Table 2 summarises the strengths, challenges and areas for improvement reflected in program facilitators' responses to the questionnaire items. Key program strengths highlighted by facilitators included the relevance of SAS content to the student population, the engaging resources included in the curriculum, and the program's

comprehensive and structured teaching approach. Key challenges highlighted included tailoring the content to the needs of students with intellectual disabilities or delays in receptive or expressive language skills and lack of caregiver support for skill learning and generalisation in the case of some students.

Table 2. Strengths, Challenges and Areas for Improvement identified by staff in the Program Facilitator Satisfaction

Area of Feedback	Theme	Number of Facilitators who Commented on Theme (Total N=14)	Example Quotation Illustrating Theme
Program Strengths	Appropriateness of the program for matching the specific needs of students	9	"The content of the program is very relevant and necessary for our students to learn. The resources were very motivating and provoked interest. Incorporated a variety of teaching strategies. SAS is very structured and explicit."
	Effective structure of the program	6	"Structured systematic approach to teaching a wide range of social skills. Fun, motivating and engaging. So comprehensive! Everything has been thought of."
	Usefulness of the program tools	5	"The completeness of the program – workbooks, scripts, manuals, computer program, board game – all add to a well thought out program. Addresses social and emotional development. Quality of materials…."
Program Challenges/ Recommendations for Improvement Program Challenges/ Recommendations for Improvement	Matching the content to the cognitive needs of all students	11	"It was a lot of content to cover with students requiring considerable support with their receptive/expressive language skills and lower IQ."
	Family environment (e.g. new baby at home, difficult family circumstances).	11	"Many different carers (at) home, e.g. different sets of grandparents, due to parents working long hours."
	Lack of time for facilitators to	7	"A set session (time slot, aide support, uninterrupted) to prepare

Area of Feedback	Theme	Number of Facilitators who Commented on Theme (Total N=14)	Example Quotation Illustrating Theme
	prepare for and run the program in addition to their existing workload.		for session i.e. photocopying, laminating, writing on diary forms, organising resources/telephone calls etc. We were allocated an extra aide to give us time to do this but due to behaviour difficulties in class we didn't get this time."
	Problems with students not completing between session skills practice tasks due to limited parental support.	6	"Parent support in following through with content, and assisting with home missions. I felt that, due to my workload being on class, I couldn't put as much time and effort into assisting more with follow-through on this."
	More time needed to deliver program content.	5	"I understand the need to cover content in 9 weeks but I found some sessions needed weeks to adequately cover content and allow for skill acquisition…Deliver in the school setting over 6 months or at a pace determined by the students' needs/understanding."

Facilitators' responses to the question, "Rate how helpful you found the weekly phone supervision sessions." (0-5 Likert scale rating, with higher ratings indicating greater levels of helpfulness), indicated that they found the phone supervision sessions with the program developer helpful (M = 3.62/5, SD = 1.19). However, their response to the question, "Rate how supported you felt by Aspect in delivering the program (e.g. provision of release time to prepare for sessions, teacher coordination support, etc. "– 0-5 Likert scale rating) suggested that they may have benefited from more release time for program preparation and delivery (M = 2.17/5, SD=1.03), consistent with their qualitative feedback on this issue shown in Table 2.

Teachers' Confidence Ratings

Mean scores and standard deviations for each assessment occasion (pre-, post intervention and 12-month follow-up) increased over time (see Table 3). Random effects regression indicated significant improvements in classroom teachers' self-rated confidence in their ability to support students' social-emotional development and manage their behaviour (see Table 3).

Table 3. Teacher Confidence Ratings at each Assessment Occasion and Random Effects Regression Results

		Supporting students' social and emotional development		Managing students' behaviour	
	N	Mean	*SD*	Mean	*SD*
Pre-intervention	65	3.5	0.8	4.0	0.9
Post-intervention	55	3.9	0.9	4.1	0.7
12-month follow-up	44	4.1	0.8	4.3	0.7
	N	Coefficient			Coefficient
Years since pre-intervention	154/65[Δ]	0.34**			0.16*
Intercept	154/65[Δ]	3.61**			3.99**

Likert scale responses are on 0 to 5 scales, with higher scores indicating greater confidence.

[Δ] Observations/participants *p<.05 **p<.001

Maintenance of the Program Post Trial

The SAS program continues to be successfully delivered across most Aspect Schools through satellite classes. Teacher feedback suggests that the high quality, engaging program materials that SAS provides help to optimise students' social-emotional learning outcomes, in addition to building teachers' skills and confidence in social-emotional skill instruction and support. Parents across schools describe SAS as having a positive impact on their children, and ongoing data collection shows students who participate in the program continue to improve in their emotion regulation and social skills. Persistent challenges for schools included covering the cost of program materials and offsetting staff turnover by training new Aspect school staff to deliver the intervention.

Discussion

A number of recent intervention studies for children with ASD has highlighted the difficulties of conducting treatment research in school settings. In the present study, we attempted to overcome some of these barriers and to demonstrate that it is possible to fully engage school staff in program delivery. Overall, the results from this project support the effectiveness of the implementation process used and suggest that SAS was feasible and acceptable to the Aspect school staff who delivered and supported the program. Program facilitators' confidence and competence ratings in conducting social-emotional skills training with students with ASD, and in providing related consultative support to other school staff and parents improved from pre- to post-intervention. These improvements in self-ratings of competence were achieved despite the program facilitators already having tertiary level qualifications in education or allied health and several years' experience working with students with ASD prior to attending the SAS Practitioner Training Course.

There was also an improvement in classroom teachers' confidence in supporting students' social-emotional development and managing their behaviour over the course of the study. However, it is unclear whether these changes were related to teachers' increased experience of working with students with ASD over the 15-18 months of the study, or to specific elements of the program (e.g. initial facilitator training, program delivery manual, Teacher Tip Sheets). Program staff also highlighted important challenges associated with program delivery in a specialist class context, including tailoring program content to students' learning needs, engaging caregivers to support students' social-emotional skill learning, and the need for additional program planning and delivery time.

Despite these challenges, this project demonstrated that the exclusive use of school staff (as opposed to research team members) as program delivery agents resulted in a successful outcome, and appeared to result in gains in students' social-emotional functioning similar to those achieved in programs involving parents or clinical/university trained staff. The study implemented several of Locke et al.'s (2014) program implementation recommendations, including the provision of high-quality training and follow-up supervisory support to program delivery staff, actively involving the school leadership team in program planning and implementation from the outset of the project and applying for grant funding to cover program resource costs. In contrast to almost every study of this kind, we were able to demonstrate that, once the trial was completed, the program continued to be successfully implemented and expanded across Aspect satellite classes over the course of the following years. Since the study ended, Aspect has integrated SAS into its Comprehensive Approach for Education, has extended the reach of the program through its network of satellite classes and holds a licence to train other professionals in the community in SAS program delivery.

Changes to Practice

In response to the recommendations for improvement made by Aspect staff, changes have been made to how schools adopt the SAS Program. For example, several school staff indicated that they had insufficient release time to adequately prepare for program delivery. This has been addressed by collaborative review and completion of the SAS Training Guide and Program Readiness Questionnaire by key decision makers and staff who are to deliver SAS at each school prior to program training or delivery. Previously, only school district decision-makers were required to complete and return these documents, with individual school leaders and front-line staff often only becoming fully aware of program delivery time and resource requirements post-training during the initial implementation phase. This change enables challenges to program delivery at an individual school level (e.g. lack of funding to buy program materials) to be identified and addressed from the outset.

In response to feedback from Aspect staff, several adaptations have also been made to the SAS Program itself. These include guidelines to tailor the program to the needs of children with intellectual disabilities or language and learning difficulties, and the development of a program variant involving shorter sessions (weekly 45-minute rather than 90-minute lessons over two school terms), allowing more time for skill learning and consolidation by students and families.

Several factors need to be considered when drawing conclusions from this study. Firstly, the study was conducted in a highly specialised setting (small ASD specialist classes with staff who were highly trained and experienced in working with students on the Autism Spectrum). It is therefore important for future research to evaluate the generalisability of these results to other school settings with less specialised staff. Furthermore, data on program fit and incentives and barriers to program implementation were collected from classroom teachers and program facilitators. It would have been valuable to gather data on these factors from teacher coordinators, school principals and the National Director of Aspect Education, as they may have identified different dimensions of significance, such as cost.

Nonetheless, the current study provides preliminary data demonstrating how an evidence-based social-emotional skills training program for children with ASD can be successfully implemented in a sustainable manner in a school setting. Future research will evaluate how this implementation model can be extended to mainstream schools and across larger school districts, involving a cost-benefit analysis of student outcomes. This process will help school leaders to make evidence-informed decisions about whether the social-emotional and academic gains for students with ASD that may result from participation in appropriately tailored, evidence-based social skills interventions outweigh the challenges and barriers within a school setting.

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Conflict of Interest: Dr Renae Beaumont is the author of the Secret Agent Society Program and receives royalties on all program materials and practitioner training courses sold.

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Self-Advocates with Intellectual Disabilities Talk about Love and Relationships: A Focus-Group Research Report

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Abstract: The paper focuses on the view and experiences of self-advocates with intellectual disabilities towards love and intimate relationships. Although sexuality is considered to be a significant aspect of human life, people with intellectual disabilities are rarely given opportunities to explore and develop it as well as to express their opinions about it. The paper presents research results conducted with self-advocates with intellectual disabilities using a qualitative study based on interpretative paradigm and focus group technique. The authors made an attempt to answer two main research questions: 1) How do self-advocates' with intellectual disabilities perceive love? 2) What contributes to their sphere of intimate relationships and sexuality? 31 self-advocates with moderate and mild intellectual disabilities took part in six focus group interviews. In the interviews several themes emerged: perceptions of love, personal experiences in the sphere of intimate relationships and sexual behaviors undertaken by the participants, their needs and environmental constraints on the way to fulfill the needs. Through the voices of 31 adults, it is shown what they consider to be important in areas such as love and intimate relationships with others. Implications for practice are discussed, including the need for sexual education and professional support for adults with intellectual disabilities.

Keywords: intellectual disability, self-advocates, love, relationships, sexuality

Introduction

Sexuality is considered to be a significant aspect of human life (Kijak, 2013). Nonetheless, people with intellectual disabilities experience discrimination in this sphere (Wingles-Yanez, 2014) and are rarely given opportunities to explore and develop it as well as to express their opinions about it (Azzopardi-Lane & Callus, 2015). For a long time, they have been labeled as 'eternal children', asexual, perpetrators or victims of sexual abuse (Fornalik, 2002; McDaniels & Fleming, 2016; Kramers-Olen, 2016; Ditchman, Easton, Batchos, Rafajko,& Shah, 2017). The last several years seem to bring some changes. In Poland, as in most parts of the western world, the process of deinstitutionalisation and ideas of normalization have significantly influenced the lives of people with intellectual disabilities (Krause, Żyta, & Nosarzewska; 2010, Löfren-Mårtenson, 2004). Most of them are not separated from families and local communities in large institutions but live with their parents, other family members, in small group homes with external support or assistance (supported living), independently or with a partner.

People with intellectual disabilities often have adverse socialization experiences of frustration and deprivation, including the area of sexual life and emotional relationships. This population, as in the case of non-disabled people, is characterized by the differentiation of sexual preferences, ways of their implementation, as well as the occurrence of disorders and difficulties in this area. The peculiar character of sexuality of people with disabilities is not usually connected with life choices of these people, but it results from limited life opportunities. Research confirms that love and friendship are of great value for individuals with intellectual disabilities (Rushbrooke, Murray, & Townsend, 2014). They usually associate love with emotional well-being, want to have an intimate relationship and need an understanding of their sexuality (Bogenschutz, Novak, & Amado, 2016). These people however – if compared to the non-disabled – have fewer opportunities to choose a partner, maintain relationships or resign from them in a situation where they do not meet their expectations. In addition, they have fewer opportunities to formalize relationships and fulfill the role of a spouse or a parent (Walker-Hirsch, 2002; Parchomiuk, 2016).

Although the access to normalized life experiences (Nirje, 1972) of persons with intellectual disabilities seems to be continually increasing, sexuality tends to remain a neglected sphere (Gilmore & Chambers, 2010). To date, views and experiences of this group of people related to intimate relationships are under-represented in the literature of the subject (Rushbrooke, et al., 2014). This study aims to put some contribution to fulfilling this gap,

Method

The aim of the present study was to gain insight into self-advocates' with intellectual disabilities perception and experiences associated with love and intimate relationships. Two research questions were formed:

1. How do self-advocates' with intellectual disabilities perceive love?
2. What contributes to their sphere of intimate relationships and sexuality?

In order to answer the questions, qualitative research based in interpretivist paradigm (Husserl, 1989) was designed. The authors' objective was to show the complexity and variability of the subject of the study.

The method of data collection involved focus groups interviews (Morgan, 1997), a method that allows gaining a deeper understanding of the research subject (Barbour, 2011). Three focus groups were established and each of them participated in two focus group meetings during which interviews were conducted. This led to six focus group interviews. In each group there were from seven to twelve participants. The meetings took place in occupation therapy workshops (day centres) for adults with intellectual disabilities between March 2017 and March 2018.

As far as the participants are concerned, in the current project purposeful sampling, which is widely used in qualitative studies for the identification of information-rich cases related to the research subject (Palinkas et al., 2015), was applied. The sample was chosen following three main criteria:

1. Being a member of a self-advocacy group in one of three centres located in one of three towns of north-eastern Poland,
2. Being an adult with an intellectual disability (mild or moderate degree), and
3. Giving a consent (written – in case of literate participants or oral) – based Rapley's (2010) proposal – to take part in the research, record and transcribe the interviews and use them for scientific purposes.

Overall, 31 self-advocates (13 females and 18 males) with moderate and mild intellectual disabilities took part in focus group interviews. It needs to be emphasized that in Poland, as opposed to some other countries, e.g. Croatia, self-advocacy groups of people with intellectual disability are not usually run independently, but within bigger organizations. In case of the participants of the current study, all of them attend day support centres called occupational therapy workshops which are run by the Polish Association on Persons with Intellectual Disability. Their age varies from 20 to 59 (mean age: 34) and most of them (16 participants) were below 30. Majority of them (24 people) do not live independently – they live with their parents, siblings or other family members who usually take care of them and/or control them in some spheres (e.g. economic) of their lives. Others live in their apartments or houses on their own, with partners or some family members (e.g. an adult nephew or a child). The vast majority of the participants receive disability payments from the state and three work part-time. All self-advocates involved in the research had a legal capacity.

In the process of analysis of the present research coding and categorization proposed by Flick (2010), Kvale (2010) and Gibbs (2011) were used. The process involved five steps: 1) coding of words generated from verbatim data of transcripts of six focus group interviews, 2) categorization of the codes generated into broader categories, 3) comparison of categories and examination of their relations to the research questions, 4) categorization of the data according to the research questions, and 5) presentation of the results in a text (Kvale & 2010; Bartnikowska, Ćwirynkało, & Borowska-Beszta, 2017).

Findings

The process of the analysis of the verbatim data started with generating the codes and grouping them into broader categories. They included: (1) perceptions of love, (2) personal experiences in the sphere of intimate relationships and sexual behaviors undertaken by the participants, as well as (3) their needs and environmental constraints on the way to fulfill the needs.

Category 1: Perception of Love. The findings illustrate how people with intellectual disabilities describe love. Describing the notion, they almost solely associated it with an intimate relationship between a woman and a man. For the participants of the study love is perceived as something desirable, something which makes them feel special, and something they want to experience:

> *"Love is… Well, to tell the truth, it means that you're number one!"* (Daniel)
> *"I want to find my love. I could talk to somebody…"* (Jan)

Love is also referred to certain activities (e.g. supporting each other), attitudes and other feelings (e.g. respect):

> *"Love is helping each other, supporting. When you love someone, you do everything for this person. I'd like to have such a person who would do anything for me. And I would, too…"* (Mike)

> *"It means that we're faithful, respect each other and support each other in difficult moments. Like I supported Adam when his Mum died…"* (Joanna)

In their statements about love some self-advocates associated it with the sexual embrace. Love was perceived as an introduction or a necessary condition before sexual intercourse:

> *"You know… When you want to have a drink or some wine, then it's like… When there's a girl you love, you touch her legs, and… […] And if you can kiss the girl, you kiss her. And that's love."* (Damian)

There were also interviewees who, while describing love, gave examples of couples from their close environment:

> *"For example in my home… Because I've got a sister who's much older than me and she's got a very good relationship with her husband. They've been together for fifteen years now. And they created a great love together because they've got two children."* (Emil)

The findings also indicate that for some participants love and intimate relationships seem to be restricted only to personal ties between a man and a woman:

> *"I saw two men kissing each other once, in the street. It's wrong cause they can't have children."* (Anna)

Others, however, disagree:

"I don't mind. There are different couples." (Eric)
"Times are different now. It's the 21st century [laughing]." (Michael)

Several self-advocates referred to maternal love for a child and their own feeling towards close family members:

You have to love your mother. She gave birth to you, right? She's the most important and you can't hurt her. (Mark)

Category 2: Personal Experiences in the Sphere of Intimate Relationship *and sexual behaviors.* Another theme that emerged during the meetings was connected to personal experiences in the sphere of intimate relationships and sexual behaviors undertaken by the participants. This was, as they convinced, a sphere of vital importance for them, although, only hardly a half of them admitted that they were (or had been in the past) in such a relationship:

I'm in a relationship here [at the Workshops]. Yes, I've got a girlfriend. When I came here, we started talking to each other. […] I've been here for six years now and we're still going out together. We give presents to each other. We like cleaning together. We hang out around. There's a feeling between us… (Paul)

I had a fiancé once. I met him at the Workshops in B. He also was disabled. I was young, 22-23 years old. And stupid… […] At first it was all fine, but then it all messed up. He didn't help with the child and I had to do everything on my own. He was just yelling and beating, right? So I left… (Maria)

Category 3: The needs and environmental constraints. Although the stories described by some self-advocates showed that the experiences might be negative, the desire to have someone close with who they could be in an intimate relationship was common.

"Maybe in some time in the future…Maybe I'll also be lucky? I would like to. He [ex-boyfriend] has a girlfriend now… And maybe I'll also find someone cool for me…"(Julia)

When they talked about their dreams and plans for the future, they often expressed their needs to have a partner (husband or wife), an apartment in which they would live independently, work and – not that often though – children:

"I'd like to have a wife and a house. I'd just want to support my family."
"Work." (Adam)

How will I live in ten years' time? Interesting… I'd love to live in my own home, have my own work, be with my own partner and my own family… You know, parents won't live forever… Everyone has to get by somehow. […] I must become self-reliant. Maybe at first it would be difficult, but we would learn. With an assistant maybe… (Martha, moving on a wheelchair)

"Yeah, you can learn a lot when you really want. Once I was alone at home so I took some washing powder, poured some water into the sink and washed the sock all by myselfs. So you can do it!" (Jonas, a blind person)

Some interviewees seemed to be skeptical about their dreams. On the one hand, they expressed what they would like their future to be like, on the other, paid attention that the dreams might not come true:

> *I don't know… I mean I thought about it but I don't know… I thought about a girlfriend but I'll probably live with my parents cause where else? I'd also like to work but I don't know… I would have to remember at this work… and my memory is… Hard to say.* (David)

In their desire to be involved in an intimate relationship, however, most participants reported being constrained. There were several reasons why they felt this way, e.g. overprotective or restrictive attitudes of parents, lack of privacy (at home and/or at workshops), lack of or limited finances, lack of a place to live independently, dependence on others (especially in case of participants moving on wheelchairs but also when partners did not have legal capacity). The sphere in which they felt restricted in the predominant way was their sexuality. One of the participants complained about it but, at the same time, tried to excuse his parent:

> *We sometimes meet at my home, but very rarely, cause Mum couldn't stand it when we were alone in the room, so now we meet here [at the workshops]. We couldn't do it there because of Mummy was stressed and she gave birth to me and raised me so I need to respect her. I don't want her to be stressed because of me. […] I wanted to see Eve but I saw how difficult it was for Mum and didn't want her to watch it and get depressed.* (Paul)

Another place where some self-advocates also see restrictions is their workplace at workshops:

> *"You can't kiss each other here."* (Cathrine)

> *Yeah, there are some rules what you can and can't do here. […] But when no one sees, I can touch my partner and stand next to her. And you can sit next to each other!But you can't catch her from behind… Just like I said, such things only secretly.* (Paul)

It is worth noting, however, that the interviewees were aware that their sexual behaviours – just like in case of everyone else – are supposed to be controlled by some social mores and regulations:

> *"There are policies at the Workshops but it's good."* (Mark)
> *"Yeah, so that no one hurt anyone. Some things are forbidden. The manager told us so."* (Paul)

> *I mean that we come here to work. We can't do things like that [kissing] here. Because we're at work. Later on, when we're in town, that's a different thing. The same when there are parents around – you have to think about it.* (Peter)

It is also evident that the self-advocates are cognizant of their rights and freedom of choice in the sphere of sexuality. As Joanna and Paul asserted:

> *There was such a situation once. I'll not say the name but he tried to touch me at Music classes. I told him, 'Don't do that or I'll tell the manager'. […] And it was ok then.* (Joanna)

"We are self-advocates and we need to protect our rights and the rights of every person with a disability! This is what we learnt here." (Paul)
"If someone can't protect himself or herself, they'll attack him or her." (Martha)

As far as the sources of knowledge about sexuality are concerned, the participants reported the following: friends, family members (parents, siblings, cousins, and aunts), Internet, television and professionals (e.g. gynecologists). Some of them also mentioned trainings organized at workshops and – depending on the focus group, which was organized in different towns – they were more or less satisfied with them:

We had such trainings here. They told us what is wrong and when to say 'no'.(Joanna)
Yeah, there was something like that. But they only showed us some cartoons, you know… Not real actors. (Daniel)

In any case, however, the self-advocates seemed to be interested in this sort of trainings.

Research Question 1: How do self-advocates' with intellectual disabilities perceive love?

The next step in data analysis was to formulate answers to the research questions. As far as the first one is concerned (*How do self-advocates' with intellectual disabilities perceive love?*), the findings indicate that both love is considered by self-advocates with intellectual disabilities as a very significant sphere. The participants talked about it in a vivid way and described as something desirable. Most of the interviewees admitted that they dreamt of having a partner/husband/wife in the future and it was obvious to them that people with intellectual disabilities have the right to be involved intimate relationships and to express their sexuality. Nonetheless, they also seemed to be aware of various environmental constraints in the sphere.

Research Question 2: What contributes to the sphere of intimate relationships and sexuality of self-advocates' with intellectual disabilities?

The analysis of the research material also allowed answering the second research question: *What contributes to their sphere of intimate relationships and sexuality?* Four categories of contributors to the sphere of love and intimate relationships of adults with intellectual disabilities were distinguished: (1) the participants' personal characteristics and activities, (2) participation in social life, (3) environmental facilitators and (4) environmental barriers. They are characterized below.

Personal characteristics and activities of the participants (1) were usually perceived as facilitators, not barriers in the sphere of intimate relationships. Talking about this subject, the participants focused on their positive personal characteristics, e.g. self-confidence, abilities to learn to live independently and protect their own rights. Also, gaining knowledge on sexual behaviour (e.g. during trainings organized in occupational therapy workshops) and preparing for vocational activities can be treated as facilitators in forming and maintaining relationships. There were only a few participants who emphasized their personal characteristics as barriers in this sphere. These characteristics, however, did not refer to their intellectual abilities but to their state of health. This was illustrated by David, who admitted that he would not have children due to his

epilepsy and Martha who was aware that moving on a wheelchair can make it difficult for her and her future partner to live independently.

It is also clear that the interviewees' active participation in social life (2) (e.g. social events, being a member of a theatre group or a self-advocacy group) plays a vital role in enabling this group to form and maintain an intimate relationship as well. When the self-advocates talked about their current or previous experiences in the sphere of sexuality and intimate relationships, they usually mentioned that they had met their (ex-) partners at occupational therapy workshops which they regularly attended. It is certain that for all the participants day centres are important (sometimes the most important) places for having social life (making friends, meeting peers, finding a partner). Being a consumer of the workshops also gives opportunities to take part in various social events organized for people with intellectual disabilities, e.g. trips, sports competitions or dances. For some consumers this is the only chance to actually be involved in social life as otherwise they would stay at home. Furthermore, all the participants were members of self-advocacy groups. Except for giving an opportunity for social contacts, it is plausible that participation in self-advocacy meetings had an impact on their way of thinking on their rights, also in the sphere of sexuality. A few interviewees were also involved in art groups (a theatre group, a band), which enabled them not only to keep in touch with group members, but also with the public (during performances) and other people they met on tours. Thanks to recreation and leisure activities as well as thanks to contacts with different people, especially peers, adults with intellectual disabilities can observe various social situations, observe couples, develop social skills and sometimes experience their own infatuations, relationships, love.

Environmental facilitators (3) refer to trainings, positive attitudes of professionals and other people from the participants' close environment. Thanks to trainings, the participants can acquire new skills (e.g. social skills) and gain knowledge (e.g. on their rights and obligations, on sexuality). Positive attitudes of other people were usually connected with certain activities which enabled the participants to be engaged in an intimate relationship (for example parents allowing couples to meet at home).

Environmental barriers (4) were associated with negative (overprotective or restrictive) attitudes of parents (in the sphere of sexuality and intimate relationships) and material (including financial) factors (having no apartment, limited finances based on disability payments). Both of these barriers often led to lack of privacy (having no place and/or no money to spend time with a partner) and reliance on others, usually parents or other family members.

Discussion

The analysis of the content of verbatim material gathered in the interviews shows that love and intimate relationships constitute a sphere of vital importance to adults with intellectual disabilities. In the study the participants showed awareness of their sexuality and their desires to be loved. The findings are in line with the results of studies by Löfren-Mårtenson (2004), Grütz (2007), Arias, Ovejero and Morentin (2009), Rushbrooke, Murray and Townsend, (2014) and Mattila et al. (2017). The first one suggests that the majority of people with intellectual disabilities express their need for love and sexual expression, the second indicates that intimate relationships are desired and important to these persons and the third shows that individuals with

mild intellectual disabilities describe love as emotions and concrete acts and consider it crucial for everyone's well-being. Also, in the current study four main contributors to their sphere of sexuality and intimate relationships were recognized: (1) personal characteristics and activities, (2) participation, (3) environmental facilitators and (4) environmental barriers. The analysis of the research material indicates that adults with intellectual disabilities rarely see the barriers in themselves. Much more common – from their perspective – are barriers located in the environment, especially in their close family members who restrict their privacy. The findings align with the research results obtained by other authors (Healy et al., 2009; Kelly, Crowley and Hamilton, 2009; Abbott 2013), which indicate that, although adults with intellectual disabilities are aware of their sexual rights, they perceive a number of social and cultural barriers in fulfilling these rights. Similar results were obtained by Ćwirynkało, Byra and Żyta (2017), whose study suggests that also therapists perceive overprotective or controlling behaviors and attitudes of parents of people with intellectual disabilities as one of the main barriers in developing their sexuality.

Conclusions and Recommendations

In this paper an attempt has been made to present how self-advocates with intellectual disabilities perceive love and sexuality. In order to gain an in-depth view on the subject an inclusive project was designed in which self-advocates during focus groups meetings were asked to express their opinions and share their experiences. The analysis of the content of verbatim material gathered in the interviews shows that love and intimate relationships constitute a sphere of vital importance to adults with intellectual disabilities. In the study the participants showed awareness of their sexuality and their desires to be loved. The findings are in line with the results of studies by Löfren-Mårtenson (2004), Rushbrooke et al. (2014) and Mattila et al. (2017). The first one suggests that the majority of people with intellectual disabilities express their need for love and sexual expression, the second indicates that intimate relationships are desired and important to these persons and the third shows that individuals with mild intellectual disabilities describe love as emotions and concrete acts and consider it crucial for everyone's well-being. Also, in the current study four main contributors to their sphere of sexuality and intimate relationships were recognized: (1) personal characteristics and activities, (2) participation, (3) environmental facilitators and (4) environmental barriers. The analysis of the research material indicates that adults with intellectual disabilities rarely see the barriers in themselves. Much more common – from their perspective – are barriers located in the environment, especially in their close family members who restrict their privacy. Similar results were obtained by Ćwirynkało, Byra & Żyta (2017), whose study suggests that also therapists perceive overprotective or controlling behaviors and attitudes of parents of people with intellectual disabilities as one of the main barriers in developing their sexuality.

The research has several implications both in the field of possible future research and practice. In the field of research, we suggest conducting further studies with adults with intellectual disabilities. Focus group interviews turned out to be a useful technique of gathering research material from these participants so other research subjects can also be explored this way. However, we believe that using additional aids (like pictures, films) that would facilitate expressing opinions could be of value, especially in a group of participants who have difficulties with communication. Furthermore, the selection of participants of focus groups can be discussed.

Perhaps, results would differ if the meetings were restricted to single-sex groups, especially in case of such sensitive subjects like sexuality.

In the field of practice we recommend providing support for adults with intellectual disabilities in the sphere of intimate relationships. The support could be provided by different stakeholders out of which two groups seem to play a crucial role: parents (or sometimes other family members) and professionals, e.g. doctors, teachers, therapists, also working at occupational therapy workshops). They should be responsible for developing social skills and self-determination of adults with intellectual disabilities as well as facilitating their contacts with other people on a social basis. The research findings also suggest that trainings on sexuality for adults with intellectual disabilities and establishing policies related to sexual behaviour in institutions for these people are essential. It is worth noting that similar needs are also expressed by therapists who work in such institutions (Ćwirynkało, et al., 2017). The present study indicates that also the consumers of these institutions want to participate in such trainings and are in favour of having regulations concerning sexual behaviour there. Another recommendation is to organize trainings or meetings for parents of adults with intellectual disabilities during which their children's needs in the sphere of intimate relationships could be discussed.

Clearly, although the findings of the current study are of value, there are also some limitations. First, the qualitative character of the study does not allow any generalizations. The group of participants was relatively small (31 participants) and they all came from the same north-eastern region of Poland. Perhaps, results gathered from a bigger sample living in different places would be different in some ways. Second, it is possible that the interviewees in the study tried to report socially correct responses and had a tendency to hide their actual opinions and experiences which – according to them – could not be appreciated by others.

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A Personalized Case: Methods of Lecturing Sighted Students by Late-Blind Teacher

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Abstract: Late-blind people, who adventitiously became blind in their adulthood, are a special group of the blind. Each of them has his/her own characteristics when returning to work. In this paper, methods on how late-blind teachers can effectively lecture sighted students are presented based on experience of authors with blindness. For late-blind teachers, only having the basic teaching skills as the sighted teachers is insufficient to lecture sighted students. They shall fully explore the knowledge and skills they acquired before their blindness. Much to be important, they have to take advantage of their physiological advantages (e.g., good sense of hearing and touching) and modern teaching tools (e.g., PowerPoint slides with voice navigation and screen reading software). With the accessible technology, the paper provides a specific case to describe the personalized teaching process in the rear of it. Through introducing an instance of micro-course about braille teaching (digit and part of English letter), the case takes a true reproduction that basically covers the entire teaching procedure. In fact, only in this way can the teaching tasks like lecturing and Q&A be accomplished smoothly.

Keywords: Late-blind teacher; sighted students; Teaching procedures; Personalization

Introduction

With the rapid development of science and technology and the improvement of the education level, nowadays blind people can work in more and broader occupations, no longer limited to those traditional few ones such as massage therapy and music (in China). In terms of teaching, a blind teacher cannot only teach by dictation, but also can lecture sighted students by utilizing innovative and advanced teaching methods.

Late-blind people, who adventitiously became blind in their adulthood, are a special group of the blind (Jun, 2005). They typically have established roles in their lives before their blindness, which make it more challenging for them to re-integrating into society (Chunhui, 2011; Mingmei, 2001). The (first) author of the paper is one of them. He lost his sights completely when he was 30 years old. Before that, he was a university faculty, teaching undergraduate-level classes in engineering and computer graphics. After his blindness, through continued learning and efforts, he succeeded in finding a position in university to teach again (Yu, 2015). This paper presents the insightful teaching methods on how he has lectured sighted students.

Interaction Between Blind Teachers and Sighted Students

As a special group of the blind, late-blind people have both the common characteristics of the blind, and their own unique ones. In the following, unless otherwise specified, for "the blind", we refer to the common characteristics; for "the late-blind", we refer to the uniqueness; for "students", we refer to the sighted students. Sighted readers may think that some technical details that were presented in the following are simple, but please keep in mind that there are significant physiological differences between sighted and blind people. For example, walking is a simple task for sighted people, but not so simple for the blind (Guanming, 2012; Xiuli, 2014). On the other hand, when walking in a complete darkness, the blind may have an advantage.

From the perspective of blind teachers, the teaching methods shall be in line with the typical learning habits of students, such as the proper use of chalkboard writing. It is well known that, no matter how advanced the modern teaching methods are, chalkboard writing cannot be completely replaced in classroom teaching (Zhiping, 2011). For early-blind people, it would be difficult for them to write on chalkboard as they may not ever have a good understanding on the written language, especially for ideograms like Chinese characters (Yu, 2019). Late-blind people could do a better job, yet their chalkboard writing needs to be absolute concise to better control the board layout. So practicing chalkboard writing is an essential task for late-blind teachers, just like directional walking (Jianhui, 2001). In addition, the proper use of multimedia technologies (e.g., PowerPoint slides) is one of the major teaching methods nowadays, and this demand shall

be fulfilled by blind teachers as well, if possible. Indeed, late-blind teachers can manage to use PowerPoint slides to achieve the same teaching effectiveness. The contents presented to students are the same, despite different methods used in making and using the slides.

From the perspective of students, effective teacher-student interaction via oral language is an important issue. Unlike sighted teachers who can use eye contact and gestures, blind teachers mainly rely on oral language to interact with students. In the next section, lesson plans are discussed in more details.

Differences Between Blind and Sighted Teachers' Lesson Plans

Just like sighted teachers, blind teachers can have both paper (in Braille) and electronic versions of lesson plans. Designing and using the paper lesson plans is somewhat different in that the amount of required Braille paper is about 5 times more than the ordinary paper to store the same amount of Chinese characters. Furthermore, the Braille is designed for touching, so its reading speed is far lower than the visual reading (Yu, 2018; Yu, 2016). As lesson plans only serve as reminders for teachers, Braille plans need to be even more concise than ordinary ones. As a result, less important contents (e.g., teaching objectives and methods) shall not be included in lesson plans, and teaching contents shall keep as concise as possible. This, however, would require blind teachers to record more contents in their brains and get more familiar with those contents. Transiting from reading to touching is a painful yet must-do learning process for late-blind teachers. The author's own experience is that, during that learning process, the skin of index fingers would get damaged and patched several times before gaining a fair high sensitivity on the Braille. Only after going through this tough process, a late-blind person can master the Braille.

As for the electronic teaching plans, there is no much difference, as blind people can use screen-reading software (Kristina, 2012; Yoshihiro, 2017) on some other software (e.g., Microsoft Office) (Xiuyun, 2019) to read and write the texts. With the development of information accessibility technology, it is not uncommon for blind teachers to develop well-designed electronic teaching plans. Checking homework is not a difficult task either. As long as the format of electronic homework is well defined, blind teachers can interact with students effectively on homework through instant messengers or emails. Arguably, late-blind teacher can be fully qualified for teaching in Chinese, but early-blind teacher may not. Due to the fundamental difference between Chinese characters and other Latin Languages (e.g., English), it is not very likely for early-blind people to master Chinese completely and accurately. Late-blind teachers could do a better job on using Chinese characters to interact with students.
From the above descriptions, it is not difficult to imagine that blind teachers can also use electronic textbooks with the same contents. The general practice is to scan hardcopy textbooks into a computer, and then they can be easily read with the help of a kind of text-to-voice software.

Differences on Designing and Using Slides between Blind and Sighted teachers

As an indispensable means of modern educational technology, slideshow is widely used in teaching (Shaohong, 2017). Blind teachers' slides are of the same contents, but are very different in the way to make and use them. Blind teachers heavily rely on ears to locate a slide, while

others use eyes. Therefore, appropriate voice prompts and voice navigation need to be added in the slides. Sighted teachers use hands, eyes, mouth and ears in their slideshow: hands for operating, eyes for monitoring what is shown on slides, mouth for talking, and ears for monitoring what is said.

Without help from eyes, blind teachers use ears for monitoring both what they say and what is shown on slides, which put more burdens on the brain and ears. Thus, they need to remember more and be more familiar with the contents of slides. Voice navigation needs to be concise and catchy, and appears only at appropriate places to ease the ears' burden. With the development of blind aids, more work can be independently completed by the blind, while some work still needs other's assistance. Making slides is such an example.

With slides, screen-reading software and wireless Bluetooth headsets, blind teachers can independently operate the slideshow to teach. It should be noted that, interestingly early-blind people may do a better job on the slideshow, as they have a sharper hearing (Lili, 2018）. Late-blind people would typically have a slower response to voice. Thus, late-blind teachers shall try to reshape their hearing system, which is again a long and tough training process.

Some tips of using slides. Here are some tips for blind teachers to use slides to teach.
1. Use consistent voice prompts and slide contents. Voice prompts carry much less information than actual slide contents. Blind teachers shall maintain a high degree of sensitivity between the content and voice prompts. It is a process that requires repeated practicing.
2. Never forget the voice prompts. When students ask questions, teachers may temporarily shift their attention to the questions themselves. After returning to lecturing, it is possible that what is shown on slides does not match what the teacher says. In this case, the teacher needs to use the remote control to quickly move up and down to locate the correct slide. This also requires persistent practicing.
3. Be well prepared. Blind teachers can only rely on limited voice prompts. To overcome this disadvantage, they need to spend more time to prepare and getting familiar with the contents.

A Case Study

To further show the process of lecturing sighted students by blind teachers, the following micro-course is selected for a case study. It is short and concise, yet well demonstrates the teaching process. Lecture Topic: Write Arabic numerals and English letters in Braille. Course: The Braille in China. Discipline: Education. Major: Special education. Targeted Students: Undergraduate students in the field of special education.

Background. This micro-course is one of the lectures relevant to Mathematics, Science, and English Braille for the regular course "The Braille in China". The course "The Braille in China" includes four parts: Chinese Braille, English Braille, Mathematics and Science Braille, and Music Braille. It is a core and required course for undergraduate students majoring in special education.

Highlights. This micro-course focuses on writing Arabic numerals and some English letters (a-j, A-J) in Braille. Though belonging to different chapters, those two parts are closely linked. This arrangement encourages students to learn through comparisons. Moreover, we strive for combining teacher-lecturing with student-practicing to make the learning an enjoyable

experience. Teaching Objectives: From the micro-course, students shall learn to read (by touching) and write: 1) Arabic numerals (0-9) in Braille, 2) Some of the lower-case English letters (a-j) in Braille and 3) Some of the upper-case English letters (A-J) in Braille

Teaching Methods. Learning the Braille can be a boring experience. When lecturing sighted students majoring in special education, blind teachers shall take advantage of modern education technologies based on their own experiences and flexibly use heuristic or comparative teaching method, to better stimulate students' interests in learning and using the Braille.

Making PowerPoint Slides. First, make a Microsoft Word document. As far as we know, existing screen-reading software cannot yet fully support Microsoft PowerPoint. Then, insert a brief voice prompt at the beginning of each page of the Word document to describe the page number of the basic content of that page. Also add voice prompts for important contents on each page. Next, ask for someone's assistance to convert the Microsoft Word document to a PowerPoint one. Finally, make a Braille lesson plan which briefly summarizes the contents on each PowerPoint slide. With the help of multimedia slides with voice navigation and a Braille lesson plan, blind teachers can overcome their physical inconvenience smoothly lecture sighted students smoothly, and achieve the same teaching effectiveness as sighted teachers.

Summary

It is important to convert hard-copy textbooks to electronic ones by a scanner with optical character recognition (OCR). It is essential to make electronic lesson plans with the help of online resources and screen-reading software. During lecturing, in addition to reading (touching) Braille lesson plans, listen to three things: voice navigation on slides, his/her own voice, and students' feedback. For question and answer sessions, use the skill of directional walking to walk freely in the classroom. There are many email clients, online listening tools and instant messenger software suitable for the blind, which can be used for after-class question and answer sessions and homework checking.

Implications and Limitations

As blind people adapt to the dark world, they could obtain a better sense of hearing and touching than sighted people. They may also have linguistic competence as language is the main way for communication (eye-contact is unusable). These are the physiological advantages of the blind. The inconvenience due to the blindness can be greatly overcome if blind people improve their educational levels and utilize high-technology blind aids as well as the physiological advantages. However, the proposed methods is mainly a case based on the author's experience in spite of referring to a lot of teaching practice of teachers with total blindness or visual impairment. It is just a reference of value on a specific teaching flow.

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Students with Emotional and Behavioral Disorders and Special Education Due Process in the United States

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Abstract: This manuscript presents findings from a study of the contributing factors and details of special education due process hearings in the United States that involved students with emotional and behavioral disorders. The study examined 101 due process hearings conducted over a three-year period in a five-state sample: California, Illinois, Massachusetts, Pennsylvania, and Washington. Findings indicated that students with emotional and behavioral disorders are frequently involved in due process hearings. These students often have multi-layered, complex support needs and a history of suspension/expulsion. The most common issues addressed in the due process hearings related to the development/implementation of individualized education programs, evaluation and assessment practices, procedural safeguards, and program placement decisions. The implications of these findings for teachers, administrators, and parents of students with emotional and behavioral disorders are discussed.

Collaborative planning between school districts and parents in educational decision making is a key component of the primary special education law in the United States, the Individuals with Disabilities Education Act (IDEA, 2004). Although school districts and parents have a variety of strategies for engaging in collaborative planning processes, disagreements arise regarding the planning and provision of special education services that sometimes cannot be settled between school personnel and parents without formal conflict resolution procedures (Mueller, 2009). For these instances, United States special education law describes a multi-tiered process for dispute resolution that consists of progressively more involved options for formally resolving disagreements (IDEA, 2004).

One option provided by the special education law is the complaint resolution process (IDEA Regulations, §§ 300.151 - 300.153). Through this process, parents submit a complaint to the state education agency. The state education agency investigates the alleged issues, communicates with both the parents and the school district, and issues a written decision. During the course of the complaint investigation, the two parties have the option to participate in voluntary mediation (§ 300.506). After the state education agency issues the final written decision, the parties have the option to appeal the decision based on law and processes established by their state.

Besides participating in the complaint resolution process, parents and school districts have additional options for engaging in dispute resolution. As noted above, mediation is one available option. In this process, an impartial mediator typically assigned by the state education agency leads the two parties through a collaborative process of examining their differences and developing a compromise (Wright & Wright, 2014). Although a final written agreement is established, it is non-binding and can be revisited by the parties at a later time.

If mediation is unsuccessful or if the two parties did not agree to participate in this process, IDEA provides the option of filing for a special education due process hearing (§ 300.507). After filing for a hearing, the two sides must participate in a resolution meeting (§ 300.510). In this meeting, a due process hearing officer designated by either the local or state education agency attempts to guide the conflicting parties to a formal compromise based on the evidence presented in the initial filing (Mueller, 2009). If it is not possible to resolve all disagreements at the resolution meeting, then school district personnel and parents participate in a due process hearing (§ 300.512). These hearings are similar to court cases, commonly involving attorney representation, a formal process of evidential discovery, written and oral testimony, cross-examination of witnesses, and a final, legally binding written decision issued by the hearing officer (Wright & Wright, 2014). The results of a due process hearing decision are binding and enforceable by law (§ 300.514).

Dispute resolution in England and Canada is somewhat similar to the process used in the United States (Fritz, 2008). In these countries, parents and teachers are encouraged to resolve disputes at the local level before moving into procedures that are more complex. In England, parent partnership services are a primary means of navigating disagreements related to educational planning and services at the local level (Harris & Smith, 2009). When issues cannot be resolved at this level, parents and school personnel have the option of engaging in mediation

and eventually presenting the case to a designated tribunal. In Canada, emphasis is placed on pro-active conflict resolution strategies, including holding facilitated educational planning meetings and encouraging parents to act as self-advocates (OME, 2007). When conflicts are unable to be resolved through these methods, parents and teachers have the option of presenting issues to local school boards and to the regional office of the Ministry of Education.

Research on Special Education due Process Hearings in the United States

Due process hearings in the United States are burdensome for both school districts and parents in terms of financial costs, time spent preparing for and participating in the hearings, and the further deterioration of relationships between the two sides (Cope-Kasten, 2013). From the perspectives of parents and parent advocates, due process hearings can present significant burdens in terms of financial resources and emotional impact (Wright & Wright, 2014). From the perspective of school administrators, survey results from 200 school superintendents indicated that due process hearings are costly in terms of both financial resources and the stress on school personnel (Pudelski, 2013). Almost 25% of superintendents responding to the survey identified involvement in a due process hearing as a contributing factor for special educators to leave their jobs. Although more recent estimates are not available, Daggett (2004) and Mueller (2009) estimated that due process hearing costs can exceed $50,000 per hearing, with an average cost around $10,000.

The potentially negative effects of the significant costs associated with due process hearings are magnified when considered with the volume of due process hearings held annually. In an examination of data from the United States Office of Special Education Programs, Zirkel (2014) found that the annual average number of due process hearings conducted over a five year period in each state ranged from 0 (Montana, Nebraska, North Dakota) to 93 (California), with the exception of one outlier state. New York held an average of 569 due process hearings annually, due in large part to dynamics within the New York City public school system. Removing New York, this resulted in a national average of 481 due process hearings per year. If a cost estimate of $10,000/hearing is used, the total costs of special education due process hearings across 49 states (excluding New York) exceed $4.8 million annually.

Multiple studies within the previous 10 years examined various features of due process hearings. These studies have explored the issues in dispute, prevailing parties, legal representation, and the disability categories of students involved in the hearings. Regarding the issues in dispute, a national study of 41 states (Mueller & Carrazana, 2011) as well as studies in Tennessee (Shuran & Roblyer, 2012), Massachusetts (Blackwell & Blackwell, 2015), Texas (Schanding, Cheramie, Hyatt, Praytor, & Yellen, 2017), and Minnesota and Wisconsin (Cope-Kasten, 2013) all identified the development and implementation of individualized education programs (IEPs), program placement, and evaluation as the most frequently occurring issues addressed in due process hearings. School districts were typically the prevailing party in the majority of hearings, prevailing in 59% of hearings in a national sample (Mueller & Carranza, 2011), 90% in Minnesota and Wisconsin (Cope-Kasten, 2013), 55% in Massachusetts (Blackwell & Blackwell, 2015), and 72% in Texas (Schanding et al., 2017). However, a longitudinal analysis of hearing officer decisions conducted by Zirkel and Skidmore (2014) found a 52% - 48% split favoring school districts. Regarding legal representation, parents had attorney

representation in 40% of hearings in Massachusetts (Blackwell & Blackwell, 2015) and 71% in Texas (Schanding et al., 2017). Having attorney representation proved important to parents in both states, as they prevailed in hearings at much higher rates with attorney representation (30% in Massachusetts and 34% in Texas) than without attorney representation (11% in Massachusetts and 13% in Texas).

The disability categories of students involved in due process hearings have also been examined in multiple studies. In the national study of 41 states, (Mueller & Carranza, 2011) identified specific learning disability (26%), autism (20%), other health impairment (15%), and emotional and behavioral disorder (13%) as the most frequently occurring disability categories. Findings from Massachusetts (Blackwell & Blackwell, 2015) were similar: specific learning disability (24%), autism (14%), and emotional and behavioral disorders (14%) were the three most common disability categories. Students with specific learning disabilities (8%) were involved in due process hearings at a lower rate in Texas, with autism (26%), emotional and behavioral disorders (20%), and other health impairment (19%) occurring at the highest rates in due process hearings (Schanding et al., 2017).

Students with Emotional and Behavioral Disorders Involved in Due Process Hearings

There is a gap in the research related to special education due process hearings involving students with emotional and behavioral disorders (EBD). Students with EBD are among the disability groups most frequently involved in due process hearings, ranging from 13% (Mueller & Carranza, 2011) to 20% (Schanding et al., 2017). However, the existing studies provide limited information regarding the issues at dispute in due process hearings specifically for students with EBD. Only one study (Mueller & Carranza, 2011) examined the issues addressed in due process hearings specifically for students with EBD, and this study reviewed data from one year, 2005-2006. The previous research on due process hearings has not directly examined the characteristics of students with EBD involved in these disputes or details related to the outcomes of the hearings. To further emphasize the need for research on due process hearings involving students with EBD, the overall percentage of due process hearings involving this student population is notably higher than the percentage of students with EBD that are found in the overall population of students receiving special education services in the United States, 5.7% (USDOE, 2017).

Purpose and Research Questions

Considering the above factors along with the documented history of difficulties with academic achievement throughout their school career, high rates of suspension and expulsion, and low rates school completion that have negatively affected this student group (Cannon, Gregory, & Waterstone, 2013), there is a demonstrated need to know more about the contributing factors and details of special education due process hearings that involve students with EBD. By examining the dimensions of these disputes, it is hoped that information can be gleaned that could be used by school district personnel and parents to resolve disputes earlier in the process in less adversarial and less expensive ways. The findings may also identify common areas of difficulties for providing appropriate services for students with EBD, thereby providing information that school personnel can use to better address the challenges faced by students with EBD in school

settings. The information gained from this study may be applicable to countries with special education systems similar to the United States, such as England and Canada. These countries have special education dispute resolution systems that emphasize the importance of resolving disagreements at the local level through facilitation strategies and mediation (Harris & Smith, 2009; OME, 2007). Researchers in these countries have also noted similar concerns with the educational outcomes of students with EBD (Heath, Petrakos, Finn, Karagiannakis, McLean-Heywood, & Rousseau, 2004; Norwich & Eaton, 2014).

The research questions formulated to guide this study were:

1. What were the number and percentage of due process hearings involving students with EBD in the sample states?
2. What were the characteristics of students with EBD involved in due process hearings in the sample states, including grade levels, history of suspension/expulsion, specifics on the type of EBD, and concomitant disability diagnoses?
3. What were the issues addressed in due process hearings involving students with EBD in the sample states? Was there a relationship between the issues addressed in the hearings and the student characteristics?
4. Who were the prevailing parties in due process hearings involving students with EBD in the sample states? Was there a relationship between the issues addressed in the hearings and the prevailing parties?
5. Did participating parties use legal representation in the hearings? Was there a relationship between the use of legal representation and the prevailing parties?

Method

The data set for this study was comprised of all special education due process hearings involving students with emotional and behavioral disorders (EBD) conducted over a three year period (July 1, 2014 - June 30, 2017) in a five state sample in the United States: California, Illinois, Massachusetts, Pennsylvania, and Washington. In identifying the sample, the researchers wanted to include states that a) had large populations of eligible students receiving special education services (USDOE, 2017) and large numbers of due process hearings held annually (Zirkel, 2014), b) published comprehensive due process hearing decisions that were not redacted to such an extent that usable information could not be gathered, and c) provided a level of geographic representation across the United States. For the selected states, the population of students receiving special education services over the specified time period ranged from the largest (California) to the 15th largest (Washington) in the United States (USDOE, n.d.). Regarding the number of due process hearings held annually, the selected states ranged from the 3rd most due process hearings (Pennsylvania) to the 11th most due process hearings (Washington) (Zirkel, 2014).

For the sample states, all due process hearing decisions published over the three year period were downloaded and reviewed by two researchers. All cases that included a student identified for special education services under the IDEA disability category of *emotional disturbance* were included in the study. Cases that involved students with multiple IDEA disability labels were included if one of the categories was *emotional disturbance*. It is important to note that the IDEA regulations (§ 300.8(c)(9)(i)) includes students with attention deficit hyperactivity disorder (ADHD) under the disability category *other health impairment*. For this

study, cases that involved students with ADHD were only included if the students had also been identified under the IDEA category of *emotional disturbance*. In total, 101 special education due process hearings were identified that involved students with EBD in the sample states: California (38), Pennsylvania (31), Massachusetts (13), Washington (12), and Illinois (7).

Coding and Analysis

There were two researchers responsible for reading, coding, and recording the results of the 101 due process hearings in an Excel database. The initial code set was based on previous published studies on special education due process hearings (Blackwell & Blackwell, 2017; Cope-Kasten, 2013; Mueller & Carranza, 2011; Rickey, 2003; Schanding et al., 2017). Following the recommendations of Zirkel and Skidmore (2014) on ways to improve the quality of research on due process hearings, two steps were explicitly taken for this study. First, based on the coding frameworks used by Blackwell & Blackwell (2017) and Schanding et al. (2017), the topics of dispute addressed in the due process hearings were recorded at the issue level as opposed to having the coders only record an overall result for each due process hearing. Special education due process hearings typically address multiple primary questions that are directly related to the issues in dispute. By recording information on the specific issues addressed in the hearings, a more refined level of detail on the issues in dispute was able to be gained from the study. Second, when coding the prevailing parties for each issue, the researchers used a multi-point scale that allowed the outcome data to be differentiated between the prevailing parties: district prevailed, parent prevailed, or the decision for the issue-level question was split between the district and parent.

The first round of coding consisted of 21 randomly selected cases (20.8% of the sample). The two researchers coded each case separately, then met to discuss the results, resolve any disagreements, and refine the codebook. During this initial stage of coding, intercoder reliability was calculated at 91.2% using a straightforward formula consisting of the percentage of agreed-upon codes (Patton, 2002). After refining the definitions, the researchers re-coded the initial 21 cases for an intercoder reliability rate of 98.6%. The researchers then both coded the remaining 80 cases, resulting in an overall intercoder reliability rate of 96.4%. At two points in the coding process, preliminary results were presented to small group audiences consisting of special education teachers, special education administrators, parents of children with emotional and behavioral disorders, and special education attorneys. These presentations served as an opportunity to gauge the extent to which the findings reflected the experiences of individuals directly involved in special education services for students with emotional and behavioral disorders, as well as those involved in special education dispute resolution. After each presentation, codes were refined and additional levels of analysis were undertaken.

The final code book consisted of the following:

1. *Fiscal year*: The fiscal year in which the hearing was held based on a July 1 - June 30 fiscal calendar.
2. *Legal representation*: The attorney representation used by each party, coded as yes or no. Although some parents used advocacy support, these data were not recorded because it was not possible to determine the level of involvement and expertise of the advocates listed in the hearing decisions.

3. *Grade level*: The grade level of the student at the time of the dispute, coded as preK-2, 3-5, 6-8, and 9-12+.
4. *History of suspension/expulsion*: Whether the hearing decision indicated the student had been suspended or expelled at any time in her/his educational history. Cases were coded as yes if the hearing referenced prior suspension/expulsion. All other cases were coded as having no mention of suspension/expulsion.
5. *IDEA disability diagnosis(es):* All hearings included a student identified for special education services under the IDEA disability category of emotional disturbance. Cases that involved students with multiple IDEA disability labels were included if one of the categories was emotional disturbance. In these cases, the concomitant IDEA disabilities(ies) were recorded.
6. *Type or category of EBD*: The EBD diagnosis(es) assigned to the student as detailed in the hearing decision. Overall, a total of 11 different EBD categories of diagnosis were identified across the 101 due process hearings: attention deficit hyperactivity disorder, anxiety disorders, bipolar disorders, depression/mood disorders, disruptive/oppositional/conduct disorders, eating disorders, obsessive-compulsive disorders, schizophrenia or other psychotic disorders, sleep-wake disorders, substance-related/addictive disorders, and trauma related disorders.
7. *Issues*: The identified issue(s) in dispute as listed by the hearing officer in the questions to be addressed in each case. The issue codes were based on previous research from Blackwell and Blackwell (2015) and Schanding et al. (2017), and attempted to record detailed information as recommended by Zirkel and Skidmore (2014). The issues were defined as the following:
    a. *IEP development/ implementation*: The extent to which the individualized education program was developed to provide a free and appropriate public education. The sub-categories identified were content and implementation of the IEP, extended school day/ year services, and transition planning.
    b. *Evaluation/ assessment*: Adequacy or the evaluation processes and procedures for determining areas of need and services. The sub-categories identified were eligibility determination and/or independent educational evaluation, and functional behavior assessment.
    c. *Placement/ least restrictive environment*: Location of special education, including services provided in general education and specialized settings that would provide the student access to the general education environment to the appropriate extent. These issues were coded in terms of the level of restrictiveness. For purposes of reporting, the sub-categories were described from the standpoint of the school district: district sought less restrictive setting, district sought more restrictive setting, or other placement issue.
    d. *Suspension/ expulsion:* Issue-related questions that concerned the removal of a student from the previously agreed-upon placement as a result of disciplinary actions, including both in-school and out-of-school suspensions. The sub-categories identified were manifestation determination, interim alternative education setting, functional

behavior assessment/ behavior intervention plan, and other suspension/ expulsion issue.

e. *Procedural safeguards*: The procedural protections provided to students, parents, and schools through federal and state special education laws and regulations, including parental consent, timelines, and written notices.

8. *Prevailing party*: The prevailing party for each issue in dispute. Based on the recommendations of Zirkel and Skidmore (2014), a multi-point scale was used that allowed the outcome data to be differentiated between the prevailing parties: district prevailed, parent prevailed, or the decision for the issue was split between the district and parent.

The data set was recorded in an Excel database and later imported into SPSS for analysis. The researchers used descriptive statistics as the primary means of analyses along with chi-square tests for examining relationships among variables. This approach was deemed appropriate for use with a data set consisting of categorical variables (Vogt, 2007) and been previously used in similar studies on special education due process hearings (Blackwell & Blackwell, 2013; Mueller & Carranza, 2011; Schanding et al., 2017).

Results

Due Process Hearings Involving Students with EBD

What were the number and percentage of due process hearings involving students with EBD in the sample states? As presented in Table 1, a total of 793 special education due process hearings were held in the sample states from July 1, 2014 - June 30, 2017. The sample consisted of two states with comparatively smaller numbers of hearings (Illinois = 48 hearings; Washington = 49 hearings), one state in the middle of the distribution (Massachusetts = 91 hearings), and two states with a larger number of hearings (Pennsylvania = 300 hearings; California = 305 hearings). Of the total number of hearings held during this time period, 101 (12.7%) involved students with EBD. The percentage of hearings involving students with EBD was consistent across four of the states: Pennsylvania (10.3%), California (12.5%), Massachusetts (14.3%), and Illinois (14.6%). One state, Washington, had a higher percentage of hearings involving students with EBD (24.5%).

Table 1. Special education due process hearings involving students with EBD in sample states from 7/1/2014 - 6/30/2017.

	# hearings involving students with EBD	Total # of hearings	% of hearings involving students with EBD
California	38	305	12.5%
Illinois	7	48	14.6%
Massachusetts	13	91	14.3%
Pennsylvania	31	300	10.3%
Washington	12	49	24.5%

Total	101	793	12.7%

Characteristics of Students with EBD Involved in Due Process Hearings

What were the characteristics of students with EBD involved in due process hearings in the sample states, including grade levels, history of suspension/expulsion, specifics on the type of EBD, and concomitant disability diagnoses? The results for students' grade levels and their suspension/expulsion histories are presented in Table 2. Across the sample, there was a higher percentage of students with EBD in grades 9-12 (39.6%) involved in due process hearings than in grades PreK-2 (10.9%), grades 3-5 (26.7%), and grades 6-8 (22.8%). California (47.4%), Massachusetts (53.8%), and Washington (41.7%) had the largest percentage of students in grades 9-12 involved in due process hearings. For Illinois, the highest percentage was in grades 6-8 (42.9%) and the highest percentage for Pennsylvania was in grades 3-5 (32.3%). Based on the information provided in the written hearing decisions, 46.5% of the students with EBD involved in due process hearings had been suspended or expelled at some point in their educational history. The percentages of students that had been suspended or expelled ranged from 30.8% (Massachusetts) to 58.3% (Washington).

Table 2.Grade levels and suspension/ expulsion history of students with EBD involved in special education due process hearings in sample states from 7/1/2014 - 6/30/2017.

	CA	IL	MA	PA	WA	Total
Grade levels	# *(%)*	# *(%)*	# *(%)*	# *(%)*	# *(%)*	# *(%)*
PreK-2	1 *(2.6%)*	2 *(28.6%)*	0 *(0.0%)*	31 *(19.4%)*	2 *(16.7%)*	11 *(10.9%)*
3-5	10 *(26.3%)*	1 *(14.3%)*	3 *(23.1%)*	10 *(32.3%)*	3 *(25.0%)*	27 *(26.7%)*
6-8	9 *(23.7%)*	3 *(42.9%)*	3 *(23.1%)*	6 *(19.4%)*	2 *(16.7%)*	23 *(22.8%)*
9-12	18 *(47.4%)*	1 *(14.3%)*	7 *(53.8%)*	9 *(29.0%)*	5 *(41.7%)*	40 *(39.6%)*
Suspension/ expulsion history	# *(%)*	# *(%)*	# *(%)*	# *(%)*	# *(%)*	# *(%)*
Yes - Suspended or expelled at some point	22 *(57.9%)*	4 *(57.1%)*	4 *(30.8%)*	10 *(32.3%)*	7 *(58.3%)*	47 *(46.5%)*
No – No mention of suspension or expulsion	16 *(42.1%)*	3 *(42.9%)*	9 *(69.2%)*	21 *(67.7%)*	5 *(41.7%)*	54 *(53.5%)*

As described in the *Method* section, all cases that included a student identified for special education services under the IDEA disability category of *emotional disturbance* were included in the study. Additional information from each case was recorded that identified the type or category of the EBD(s) exhibited by the student. Overall, a total of 11 different EBD categories of diagnosis were identified across the 101 due process hearings:

- attention deficit hyperactivity disorder,
- anxiety disorders,
- bipolar disorders,
- depression/mood disorders,
- disruptive/oppositional/conduct disorders,
- eating disorders,
- obsessive-compulsive disorders,
- schizophrenia or other psychotic disorders,
- sleep-wake disorders,
- substance-related/addictive disorders, and
- trauma related disorders.

Of the 101 special education due process hearings, there were 17 students (16.8%) identified as having one EBD diagnosis, 50 students (49.5%) with two identified EBD diagnoses, and 34 students (33.7%) with three or more identified EBD diagnoses. The most commonly identified EBD diagnoses were attention deficit hyperactivity disorder (48.5%), disruptive/oppositional/conduct disorders (45.5%), depression/mood disorders (42.6%), and anxiety disorders (40.6%). Table 3 presents the complete results for each state.

Table 3.Specific EBD diagnoses assigned to students involved in special education due process hearings in sample states from 7/1/2014 - 6/30/2017.*

	CA	IL	MA	PA	WA	Total
	# *(%)*	# *(%)*	# *(%)*	# *(%)*	# *(%)*	# *(%)*
Attention deficit hyperactivity disorder	17 *(44.7%)*	4 *(57.1%)*	8 *(61.5%)*	13 *(41.9%)*	7 *(58.3%)*	49 *(48.5%)*
Anxiety disorders	14 *(36.8%)*	3 *(42.9%)*	6 *(46.2%)*	14 *(45.2%)*	4 *(33.3%)*	41 *(40.6%)*
Bipolar disorder	8 *(21.1%)*	0 *(0.0%)*	1 *(7.7%)*	1 *(3.2%)*	0 *(0.0%)*	10 *(9.9%)*
Depression / mood disorders	14 *(36.8%)*	5 *(71.4%)*	5 *(38.5%)*	15 *(48.4%)*	4 *(33.3%)*	43 *(42.6%)*
Disruptive / oppositional / conduct disorders	20 *(52.6%)*	1 *(14.3%)*	0 *(0.0%)*	17 *(54.8%)*	8 *(66.7%)*	46 *(45.5%)*
Eating disorders	0 *(0.0%)*	0 *(0.0%)*	1 *(7.7%)*	1 *(3.2%)*	0 *(0.0%)*	2 *(2.0%)*

Obsessive-compulsive disorders	0 *(0.0%)*	0 *(0.0%)*	1 *(7.7%)*	2 *(6.5%)*	1 *(8.3%)*	4 *(4.0%)*
Schizophrenia or psychotic disorders	4 *(10.5%)*	0 *(0.0%)*	1 *(7.7%)*	0 *(0.0%)*	1 *(8.3%)*	6 *(5.9%)*
Sleep-wake disorders	1 *(2.6%)*	0 *(0.0%)*	0 *(0.0%)*	0 *(0.0%)*	0 *(0.0%)*	1 *(1.0%)*
Substance-related / addictive disorders	1 *(2.6%)*	0 *(0.0%)*	0 *(0.0%)*	0 *(0.0%)*	0 *(0.0%)*	1 *(1.0%)*
Trauma related disorders	5 *(13.2%)*	0 *(0.0%)*	4 *(30.8%)*	6 *(19.4%)*	1 *(8.3%)*	16 *(15.8%)*

*Note: This table totals more than n = 101 and the percentages total more than 100% due to the fact some students had multiple EBD diagnoses assigned to them. Percentages were calculated based on the number of due process hearings for each sample state (CA = 38; IL = 7; MA = 13; PA = 31; WA = 12; Total = 101).

Data were collected on any other identified IDEA disability category(ies) co-existing with the identified EBD(s) for students involved in due process hearings. A total of 41 students (40.6%) had *emotional disturbance* as the only identified IDEA disability category. Another 51 students (50.5%) had one additional IDEA disability category identified along with *emotional disturbance*, and 9 students (8.9%) had two additional IDEA disability categories identified. These results were consistent across all five states. There were 34 students (33.7%) identified with the concomitant IDEA disability category of other health impairment, 18 students (17.8%) with specific learning disability, eight students (7.9%) with autism spectrum disorder, seven students (6.9%) with speech/language impairment, two students (2.0%) with intellectual disability, and one student (1.0%) with a hearing impairment.

Issues Addressed in Due Process Hearings Involving Students with EBD

What were the issues addressed in due process hearings involving students with EBD in the sample states? Was there a relationship between the issues addressed in the hearings and the student characteristics? There were five major categories of issues that were addressed in the due process hearings: IEP development/ implementation, evaluation/ assessment, placement/ least restrictive environment, suspension/ expulsion, and procedural safeguards. With the exception of procedural safeguards, the other four categories included a number of sub-categories. The IEP development/ implementation category included subcategories addressing the content and implementation of the IEP, extended school day/year services, and transition planning. The evaluation/ assessment category included subcategories addressing eligibility determination and/or independent educational evaluations and functional behavior assessment. The placement/ least restrictive environment category included subcategories for hearings in which the district sought either a less restrictive setting or a more restrictive setting or the placement issue was categorized as "other." The suspension/expulsion category had subcategories addressing manifestation determinations, interim alternative education settings

(IAES), functional behavior assessment and/or behavior intervention plan, or was categorized as "other" issues related to suspension/expulsion.

Across the sample, a total of 231 issues were identified within the 101 due process hearings. The five issues identified within the most hearings were:

- IEP development/ implementation: Content and implementation of IEP (27.3%),
- Evaluation/ assessment: Eligibility determination and/or independent educational evaluation (19.5%),
- Procedural safeguards (14.3%),
- Placement / least restrictive environment: District sought a less restrictive setting (13%), and
- Placement / least restrictive environment: District sought a more restrictive setting (9.5%).

Remaining categories were all less than 5%. Complete results for issues addressed in due process hearings are presented in Table 4.

Chi square analyses between the issues addressed and student characteristics were conducted. The relationship between *issues addressed* and *grade levels* were not significant. In addition, neither the relationship between *issues addressed* and *EBD diagnoses* nor the relationship between *issues addressed* and *other IDEA disabilities* were significant. The relationship between *issues addressed* and *suspension/expulsion history* was significant ($\chi 2(12) = 22.1$, $p < .05$).

Table 4. Issues addressed in special education due process hearings involving students with EBD in sample states from 7/1/2014 - 6/30/2017.*

	CA	IL	MA	PA	WA	Total
	# *(%)*	# *(%)*	# *(%)*	# *(%)*	# *(%)*	# *(%)*
IEP development/ implementation						
Content and implementation of IEP	23 *(27.4%)*	4 *(17.4%)*	10 *(37.0%)*	18 *(29.5%)*	8 *(22.2%)*	63 *(27.3%)*
Extended school day/year services	0 *(0.0%)*	0 *(0.0%)*	1 *(3.7%)*	0 *(0.0%)*	0 *(0.0%)*	1 *(0.4%)*
Transition planning	1 *(1.2%)*	0 *(0.0%)*	0 *(0.0%)*	0 *(0.0%)*	0 *(0.0%)*	1 *(0.4%)*
Evaluation/ assessment						
Eligibility determination and/or independent educational evaluation	14 *(16.7%)*	5 *(21.7%)*	1 *(3.7%)*	15 *(24.6%)*	10 *(27.8%)*	45 *(19.5%)*

Functional behavior assessment	5 *(6.0%)*	1 *(4.3%)*	0 *(0.0%)*	1 *(1.6%)*	2 *(5.6%)*	9 *(3.9%)*
Placement / least restrictive environment						
District sought less restrictive setting	13 *(15.5%)*	2 *(8.7%)*	4 *(14.8%)*	8 *(13.1%)*	3 *(8.3%)*	30 *(13.0%)*
District sought more restrictive setting	7 *(8.3%)*	4 *(17.4%)*	4 *(14.8%)*	5 *(8.2%)*	2 *(5.6%)*	22 *(9.5%)*
Other placement issue	4 *(4.8%)*	0 *(0.0%)*	1 *(3.7%)*	6 *(9.8%)*	0 *(0.0%)*	11 *(4.8%)*
Suspension/ expulsion						
Manifestation determination	3 *(3.6%)*	1 *(4.3%)*	2 *(7.4%)*	1 *(1.6%)*	2 *(5.6%)*	9 *(3.9%)*
Interim alternative education setting	0 *(0.0%)*	2 *(8.7%)*	0 *(0.0%)*	1 *(1.6%)*	1 *(2.8%)*	4 *(1.7%)*
Functional behavior assessment / Behavior intervention plan	1 *(1.2%)*	0 *(0.0%)*	0 *(3.7%)*	0 *(1.6%)*	0 *(0.0%)*	1 *(0.4%)*
Other suspension/expulsion issue	0 *(0.0%)*	0 *(0.0%)*	1 *(3.7%)*	1 *(1.6%)*	0 *(0.0%)*	2 *(0.9%)*
Procedural safeguards (e.g., timelines, notifications, consent)	13 *(15.5%)*	4 *(17.4%)*	3 *(11.1%)*	5 *(8.2%)*	8 *(22.2%)*	33 *(14.3%)*
Total	84 *(100%)*	23 *(100%)*	27 *(100%)*	61 *(100%)*	36 *(100%)*	231 *(100%)*

*Note: This table totals more than n = 101 due to the fact most due process hearings addressed more than one issue. Percentages were calculated based on the number of issues identified within the due process hearings for each sample state (CA = 84; IL = 23; MA = 27; PA = 61; WA = 36; Total = 231).

Prevailing Parties in Due Process Hearings Involving Students with EBD

Who were the prevailing parties in due process hearings involving students with EBD in the sample states? Was there a relationship between the issues addressed in the hearings and the prevailing parties? A descriptive analysis of prevailing parties across states and issues was conducted within three categories: district prevailed, parent prevailed, or the decision for the identified issue was split between both the district and parent as the prevailing party. The range of percentages for the district prevailing across states was between 39.3% in California to 60.9% in Illinois. The percentages for parents as the prevailing party ranged from 30.4% in Illinois to 50.8% in Pennsylvania. Percentages in the "mixed" category, which indicated that both the

parent and district prevailed on at least one aspect of the issue in dispute, ranged from 0.0% in Washington to 11.9% in California. Overall, parents prevailed at a slightly higher rate than districts (46.8% to 45.5%). Table 5 presents the results.

Table 5. Prevailing parties for the issues addressed in special education due process hearings involving students with EBD in sample states from 7/1/2014 - 6/30/2017.*

	Prevailing Party			
	District	Parent	Mixed	Total
	# *(%)*	# *(%)*	# *(%)*	# *(%)*
CA	33 *(39.3%)*	41 *(48.8%)*	10 *(11.9%)*	84 *(100%)*
IL	14 *(60.9%)*	7 *(30.4%)*	2 *(8.7%)*	23 *(100%)*
MA	13 *(48.1%)*	13 *(48.1%)*	1 *(3.7%)*	27 *(100%)*
PA	25 *(41.0%)*	31 *(50.8%)*	5 *(8.2%)*	61 *(100%)*
WA	20 *(55.6%)*	16 *(44.4%)*	0 *(0.0%)*	36 *(100%)*
Total	105 *(45.5%)*	108 *(46.8%)*	18 *(7.8%)*	231 *(100%)*

*Note: This table totals more than n = 101 due to the fact most due process hearings addressed more than one issue. Percentages were calculated based on the number of issues identified within the due process hearings for each sample state (CA = 84; IL = 23; MA = 27; PA = 61; WA = 36; Total = 231).

When examining issues that were addressed in at least five or more due process hearings, districts were more likely to prevail on issues related to evaluation/ assessment that involved eligibility determination and/or independent educational evaluations (60.0%) and placement / least restrictive environment where the district sought a more restrictive setting (72.7%), whereas parents were more likely to prevail when hearings involved placement / least restrictive environment where the district sought a less restrictive setting (66.7%), evaluation/ assessment that involved a functional behavior assessment (66.7%), and suspension/ expulsion involving a manifestation determination (77.8). The other eight categories were either closely divided between prevailing parties or were addressed in fewer than five hearings. The results are presented in Table 6. A chi square analysis of issues by prevailing party revealed that districts were more likely to prevail on issues involving placement / least restrictive environment where the district sought a more restrictive setting ($\chi 2(24) = 41.8$, $p < .01$).

Table 6.Prevailing parties by the issues addressed in special education due process hearings involving students with EBD in sample states from 7/1/2014 - 6/30/2017.*

	Prevailing Party			
	District	Mixed	Parent	Total
	# *(%)*	# *(%)*	# *(%)*	# *(%)*
IEP development/ implementation				
Content and implementation of IEP	26 *(41.3%)*	9 *(14.3%)*	28 *(44.4%)*	63 *(100%)*
Extended school day/year services	1 *(100%)*	0 *(0.0%)*	0 *(0.0%)*	1 *(100%)*
Transition planning	0 *(0.0%)*	0 *(0.0%)*	1 *(100%)*	1 *(100%)*
Evaluation/ assessment				
Eligibility determination and/or independent educational evaluation	27 *(60.0%)*	3 *(6.7%)*	15 *(33.3%)*	45 *(100%)*
Functional behavior assessment	3 *(33.3%)*	0 *(0.0%)*	6 *(66.7%)*	9 *(100%)*
Placement / least restrictive environment				
District sought less restrictive setting	8 *(26.7%)*	2 *(6.7%)*	20 *(66.7%)*	30 *(100%)*
District sought more restrictive setting	16 *(72.7%)*	0 *(0.0%)*	6 *(27.3%)*	22 *(100%)*
Other placement issue	5 *(45.5%)*	0 *(0.0%)*	6 *(54.5%)*	11 *(100%)*
Suspension/ expulsion				
Manifestation determination	2 *(22.2%)*	0 *(0.0%)*	7 *(77.8%)*	9 *(100%)*
Interim alternative education setting	1 *(25.0%)*	0 *(0.0%)*	3 *(75.0%)*	4 *(100%)*
Functional behavior assessment / Behavior intervention plan	0 *(0.0%)*	1 *(100%)*	0 *(0.0%)*	1 *(100%)*

Other suspension/expulsion issue	1 *(50.0%)*	0 *(0.0%)*	1 *(50.0%)*	2 100%
Procedural safeguards (e.g., timelines, notifications, consent)	15 *(45.5%)*	3 *(9.1%)*	15 *(45.5%)*	33 *(100%)*
Total	105 *(40.2%)*	18 *(10.5%)*	108 *(49.3%)*	231 *(100%)*

*Note: This table totals more than n = 101 due to the fact most due process hearings addressed more than one issue. Percentages were calculated based on the number of issues identified within the due process hearings for each sample state (CA = 84; IL = 23; MA = 27; PA = 61; WA = 36; Total = 231).

Legal Representation in Due Process Hearings Involving Students with EBD

Did participating parties use legal representation in the due process hearings? Was there a relationship between the use of legal representation and the prevailing parties on issues? The types of legal representation used by the parties in due process hearings are presented in Table 7. Districts used attorney representation in 100% of hearings in California, Illinois, Massachusetts, and Washington. In Pennsylvania, districts utilized attorney representation in 20 out of 31 hearings (64.5%). The districts in the 11 hearings in Pennsylvania without attorney representation were all charter school districts. Parents had attorney representation in 61 out of the 101 hearings (60.4%). Parents were represented by attorneys in over 50% of the hearings in all states except for Washington. In Washington, parents were represented by attorneys in three out of the nine hearings (25.0%). There were no statistically significant associations between the use of legal representation and the prevailing parties in the issues addressed in the hearings.

Table 7.Legal representation in special education due process hearings involving students with EBD in sample states from 7/1/2014 - 6/30/2017.

	Legal representation			
	District attorney		Parent attorney	
	No	Yes	No	Yes
	# *(%)*	# *(%)*	# *(%)*	# *(%)*
CA	0 *(0.0%)*	38 *(100%)*	11 *(28.9%)*	27 *(71.1%)*
IL	0 *(0.0%)*	7 *(100%)*	2 *(28.6%)*	5 *(71.4%)*
MA	0 *(0.0%)*	13 *(100%)*	6 *(46.2%)*	7 *(53.8%)*

PA	11 *(35.5%)*	20 *(64.5%)*	12 *(38.7%)*	19 *(61.3%)*
WA	0 *(0.0%)*	12 *(100%)*	9 *(75.0%)*	3 *(25.0%)*
Total	11 *(10.9%)*	90 *(89.1%)*	40 *(39.6%)*	61 *(60.4%)*

Discussion

The percentage of due process hearings that involved students with EBD in the sample states was consistent with findings from previous studies. In this study, the overall percentage was 12.7%, ranging from 10.3% in Pennsylvania to 24.5% in Washington. Mueller and Carranza (2011) reported that 13% of hearings involved students with EBD in a 41-state study of 575 due process hearings conducted in 2005-2006. In state-specific studies, Blackwell and Blackwell (2015) reported that 14% of 258 hearings in Massachusetts from 2006-2013 involved students with EBD and Schanding et al. (2017) reported that 20% of 139 due process hearings in Texas from 2011-2015 involved students with EBD.

One way of contextualizing these data is to compare the percentage of due process hearings involving students with EBD to the percentage of students with EBD in the overall special education population in the sample states. For all five states included in this sample, students with EBD were represented at much higher rates in due process hearings than in the overall special education population. For the sample states, the overall percentage of students with EBD in the special education population for the years included in the study was 5.3% (USDOE, n.d.), as compared to 12.7% of due process hearings that involved students with EBD. The two states with the largest discrepancy were California (3.3% in the overall population compared to 12.5% in due process hearings) and Washington (3.5% compared to 24.5%). These results point toward the difficulties experienced by students with EBD, their parents, and their teachers when engaged in educational planning and programming decisions. Viewed through the lens of special education dispute resolution, students with EBD in the sample states are much more likely to be involved in timely, expensive, and adversarial disagreements related to their educational programs than would otherwise be expected based on their overall representation in the special education population.

To better understand the factors that might contribute to the comparatively high rate of due process hearings that involved students with EBD, this study examined the characteristics of the students involved and the issues addressed in the hearings. Regarding the grade levels of students, the higher percentage of hearings in the sample states that involved students with EBD in grades 9-12 (39.6%) was not surprising. Special education due process hearings are often a culmination of disagreements that has taken place over a number of years between school personnel and parents (Wright & Wright, 2014). Pennsylvania was the one state that had a higher percentage in grades 3-5 (32.3%), but it also had a high percentage in grades 9-12 (29.0%).

These data provide useful information that could inform school-level practices. If earlier disagreements are not resolved effectively to the satisfaction of both sides, then later disputes may become more significant and result in the more adversarial mechanism of a fully adjudicated due process hearing. As Mueller (2009) has suggested, the use of alternative dispute resolution strategies during the early stages of disagreement can result in more collaborative problem-solving that allows the parties to avoid due process. These strategies may include the use of third-party consultation, structured approaches to facilitate educational planning meetings, parent-to-parent assistance, and the use of mediation at earlier stages in the dispute (Mueller, 2009). Similar approaches to special education conflict resolution are used in England, Canada, and other countries to positive effect (Fritz, 2008).

We believe that the analyses presented in this study on the history of suspension/ expulsion, specifics on the type of EBD, and the concomitant disability diagnoses make an important and useful contribution to the research literature on students with EBD and special education due process hearings. This information has not been previously examined, particularly for this study's target population of students with EBD. By better understanding the characteristics that are shared by many students with EBD who are involved in due process hearings in the sample states, stakeholders may be better able to identify factors that might contribute to more complex and difficult educational planning processes. These findings could be applicable to countries with similar special education dispute resolution systems to the United States, such as Canada and England.

Nearly half (46.5%) of the students with EBD involved in due process hearings in this study had been suspended or expelled at some point in their educational history. This finding aligns with previous research on predictors of school exclusion that have identified students with EBD as being at greater risk for disciplinary measures such as suspension and expulsion than other student populations (Achilles, Mclaughlin, & Croninger., 2007; Bowman-Perrot et al., 2013; Sullivan, Van Norman, & Klingbeil, 2014). Based on the results from this study, it appears that students with EBD who are suspended or expelled may be more likely to later be involved in disputes related to special education programming than other students. From a practice standpoint, this finding highlights the need for increased emphasis on collaborative planning processes following suspensions and expulsions for students with EBD.

The due process hearings reviewed for this study provided useful levels of detail related to the specifics of the students' EBD diagnoses beyond listing the IDEA disability category of emotional disturbance. The majority of students were described as having two identified EBD diagnoses (49.4%) or three or more identified EBD diagnoses (33.7%). This finding demonstrates that some students with complex layered EBD diagnoses may be more likely to be involved in educational planning processes that can become contentious and require outside assistance in resolving differences. In particular, students with diagnoses such as attention deficit hyperactivity disorder, disruptive/ oppositional/ conduct disorders, depression/ mood disorders, and/ or anxiety disorders were involved in these disputes. This finding is not only applicable to the United States. Regardless of the country, it is quite possible that students with similarly complex support needs related to EBD diagnoses may be involved in educational planning processes and services that result in conflict and disagreement.

The results on other identified IDEA disability categories that co-existed with the EBD(s) further emphasized the difficulties experienced by teachers and parents in engaging in successful collaborative planning. Over half of the students with EBD (50.5%) involved in due process hearings in this sample had one additional IDEA disability category that co-existed with the IDEA diagnosis of emotional disturbance, and an additional 8.9% had two additional IDEA disability categories identified. Based on these results, it appears that students with EBD who eventually become involved in special education due process hearings have a wide range of disability support needs that extend beyond just those characteristics presented by their EBD diagnoses. Parents and school personnel need to be sure to address the range of student needs and not only focus on the emotional and behavioral supports that are needed.

This point is further emphasized by the findings on the issues addressed in the due process hearings conducted in the sample states. Of the 231 issues in dispute that were addressed in the 101 due process hearings, approximately 10% of the issues were exclusively related to IDEA provisions that could be considered somewhat specific to emotional and behavioral disorders: 3.9% of the issues addressed evaluations focused on functional behavioral assessment, 3.9% addressed manifestation determination decisions, 1.7% addressed interim alternative educational settings, and 1.3% addressed other issues related to suspension/ expulsion. Almost 90% of the issues addressed in the hearings related to broader issues encountered in educational programming, including the content and implementation of the IEP (27.3%), placement / least restrictive environment (27.3%), and evaluation/assessment (19.5%). These findings were consistent with previous research that examined the issues addressed in due process hearings for a range of students with disabilities in multiple state contexts (Blackwell & Blackwell, 2015; Cope-Kasten, 2013; Mueller & Carrazana, 2011; Schading et al., 2017; Shuran & Roblyer, 2012).

To expand on previous research conducted on due process hearings, we attempted to code issues related to placement / least restrictive environment in terms of the level of restrictiveness. For purposes of reporting, we presented these data from the standpoint of the school district. Of the 52 issues that were coded as addressing either a more or less restrictive setting, school districts were seeking less restrictive placements in 58% of these issues and were proposing a more restrictive placement in 42% of these issues. Based on the authors' previous professional experiences working with students with EBD in school settings, we were somewhat surprised by this finding. Considering that students with EBD are often placed in more restrictive placements (Kauffman & Landrum, 2013), we expected to find that school districts were more frequently seeking to place students into restrictive settings. However, this was not the case in the due process hearings examined for this study. This would seem to indicate that special education disputes related to placement and least restrictive environment are more nuanced and complex than may be expected. In many instances, parents of students with EBD pursued placements that are more restrictive than school district personnel were proposing and school districts were willing to enter into the due process hearing process in order to resolve disagreements related to this issue. Considered within the context of the other issues most frequently addressed in due process hearings, the three components of IEP development/ implementation, placement/ least restrictive environment, and evaluation/ assessment are inter-related and must all be addressed in resolving complicated disputes related to special education programming for students with EBD.

The final areas addressed in this study were the prevailing parties in fully adjudicated due process hearings involving students with EBD and the use of legal representation by both school districts and parents. The outcomes of the issues addressed in due process hearings in the sample states were evenly split between parents and school districts. Parents prevailed on 46.8% of issues, school districts prevailed on 45.5% of issues, and the hearing officer split the decision between the two parties on 7.8% of the issues. These findings are slightly different than previous studies that addressed due process hearings for broader populations of students. In four studies previous studies, school districts prevailed more frequently than parents (Blackwell & Blackwell, 2015; Mueller & Carrazana, 2011; Schanding et al, 2017; Shuran & Roblyer, 2012). The only state in this study in which school districts prevailed notably more than parents was in Illinois (60.9% to 30.4%).

When the outcomes were examined by issue, the one statistically significant finding was that school districts prevailed on issues involving placement/ least restrictive environment where the district wanted a more restrictive setting. This connects back to the discussion in the preceding paragraphs that highlighted that school districts sought *less* restrictive placements in 58% of the issues that addressed placement/ least restrictive environment. Considered from the viewpoint of school districts, the findings presented an interesting juxtaposition. Although school districts were more likely to pursue *less* restrictive placements, they prevailed at much lower rates (26.7%) than parents (66.7%) in these cases. When school districts pursued *more* restrictive placements, they prevailed on 72.7% of these issue-level questions as compared to 27.3% for parents ($\chi 2(24) = 41.8$, $p < .01$). Additional research is needed on a broader population of due process hearings involving a wider range of students with various disability categories to better understand if this finding could be generalized to a larger number of due process hearings. If it is generalizable, it can help inform parents and school districts on their relative likelihood of success when choosing to use special education due process to resolve disagreements related to placement/ least restrictive environment.

Across the sample, parents used attorney representation in 60.4% of the hearings. This fell between results from Massachusetts in which parents used attorneys in 40% of hearings (Blackwell & Blackwell, 2015) and Texas in which parents used attorneys in 71% of hearings (Schanding et al., 2017). Washington was somewhat of an outlier in this study. Parents only used attorney representation in three hearings (25.0%). Additional research is warranted to better understand why parents in Washington used attorney representation at such comparatively lower rates. Overall, there were no statistically significant relationships between the use of attorney representation and the prevailing parties in the hearings. Although it stands to reason that using an attorney should improve the chances of prevailing in a due process hearing, the results from this particular study do not bear this out. However, two previous studies have indicated that having attorney representation increased the frequency of hearings in which parents prevailed (Blackwell & Blackwell, 2015; Schanding et al., 2017).

Limitations

There are several limitations to this study. First, the study is based solely in the United States. Although countries such as England and Canada have similar special education dispute resolution systems, the findings from this study are based in the United States. There is a need

for additional research in order to determine the extent to which these issues are common across countries. Second, whereas the results of special education due process hearings in the United States have a direct effect on the parties involved, these cases do not create legal precedent and do not carry the weight of influence on future hearing decisions as do cases decided in state and federal court. Next, the study is restricted to a five-state sample. Although we attempted to identify states that held a large number of due process hearings annually and provided a level of geographic representation across the United States, the fact remains that this study presented data from a limited number of states.

Another limitation relates to the level of detail provided in the written due process hearings. Although we were able to identify contributing factors such as disability diagnosis, suspension/ expulsion history, and the issues addressed, it was not possible to identify other factors that might potentially contribute to disputes moving into due process such as details on prior mediation attempts or the size and resource levels of the communities involved. In many instances, the names of participating school districts and schools were redacted in the published decision. Whereas the United States special education regulations require states to make the results of due process hearings available to the public (IDEA Regulations, § 300.514(c)(2)), the regulations are not explicit on what types of information can and cannot be redacted. A final limitation relates to the nature of the written due process hearings themselves. Published hearing decisions contain a high level of detail based on the information presented to the hearing officer. However, there are likely a number of details in every case that do not get included in the final written decision. Future studies that included follow-up conversations with school personnel and parents involved in these hearings would be one method for gathering this additional information.

Conclusion

Special education due process hearings in the United States present a no-win situation for all parties involved. This method of dispute resolution carries a high cost in terms of fiscal resources and relationships between school personnel and parents. This study attempted to examine issues addressed in due process hearings that involved students with EBD, with the hopes of identifying information that could be potentially helpful to teachers, administrators, and parents in more effectively developing educational programs for students with EBD and thereby avoiding time-consuming and costly disputes. The information gained from this study may be applicable to countries with special education dispute resolution systems similar to the United States, such as England and Canada. The students involved in these hearings often had complex, multi-layered disability support needs that were not readily addressed within the structures currently in place in their school communities. In order to better navigate the complexities of educational planning for students with EBD support needs, school personnel and parents can hopefully utilize the information presented in this study to identify potential barriers and engage in collaborative, pro-active dispute resolution practices that will result in fewer costly due process hearings and more positive programming outcomes for students with EBD.

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The Level of the Aggressive Behavior of Mentally Disabled Students at Ajloun Governorate from the Teachers' Point of View

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Abstract: The purpose of this study is to determine the level of aggressive behavior of the mentally disabled students at Ajloun Governorate from the teachers' point of views. The sample consisted of all (94) mentally disabled students of simple and intermediate level who were enrolled in the special education centers at the first semester of the academic year (2018-2019). Thirty paragraphs scale was constructed and developed as a study tool. The scale consisted of three dimensions of the aggressive behavior: self-directed aggression, aggression directed towards others and aggression directed towards property and objects. The results showed the level of the aggressive behavior of the mentally disabled students at Ajloun Governorate from the teachers' point of view was high. There were statistically significant differences at (α=0.05) due to the degree of disability in favor of the intermediate level. There were no statistically significant differences at (α=0.05) due to the gender.

Key words: aggressive behavior, mentally disabled.

The topic of mental disability is one of the oldest topics that are concerned by psychologists, education, sociology and mental health. It is a complex phenomenon which needs the effort of many people especially who is responsible for the mentally disabled. Hence, the care of these sectors is a humanitarian and civil principle that emphasizes the importance of the human rights of the disabled and their families (Dahan, 2014). Because of the limited capabilities of these mentally disabled children that do not allow them to take full advantage of the activities of other ordinary children, they need a special kind of treatment that will help them to maximize their limited capacity (Saleh & Albanna, 2008).

It is important to educate students with mental disabilities. Their education needs special programs in order to help these students to achieve the ultimate benefits and outcomes. But there are some of the behavioral problems that may face the students with mental disabilities. These problems consider obstacles for the educational process and for the students themselves, specialists from special education, psychologists and counselors need to stand with the students with a mental disability and help them to overcome these behavioral problems. This could happen through the therapeutic programs which are appropriate to their ages, the degree of disability and their physiological and psychological characteristics in order to help others to deal with them (Alharthy, 2015).

Children with mental disabilities are more likely to have behavioral problems than others; this is the result of their lack of adaptation to the requirements of the surrounding community, lack of mental or sensory perception of the stimuli around them in addition to the lack of understanding to the accepted social framework (Alsartawi, Almuhieri, Abdat, & Alzyoudi, 2012). The most dangerous behavior for the mentally disabled children is being violent, harming themselves and others, disturbing behavior and inability to establish acceptable social relations with peers. This is because they direct all their activity and energy towards destructive behavior which will make them more likely to avoid situations that have an impact on the positive interaction of peers, parents and brothers. This prevents them from participating and influencing their community, become more targeted for frustration and often show a lack of skills to interact with others (Badawi, 2011).

The aggressive behavior is considered the second most common problem among disabilities, especially those with mental disabilities. Therefore, the aggressive behavior of the mentally disabled has interested by large number of researchers (Alkhatib, 2014). Hence, the behavioral problems especially the aggressive behavior of mentally disabled children, are a heavy burden on their teachers. This behavior often has negative effects that affected the normal performance of the teacher's role, as well as ostracize them and make them undesirable individuals (Alrousan, 2000).

Numerous studies have found that various forms of aggressive behavior (physical violence against self, others, property, chaotic behavior, verbal and non-verbal threats, tantrums, and screaming and excessive negativity that are incompatible with the development and growth of adaptive behaviors) represents a threat to the aggressive individual, other individuals subject to aggression, and against the property, in addition to other problems and difficulties, which can be summarized in the following key points:

1. Aggressive behavior is a major obstacle to mentally disabled when considering the possibilities of integrating them into society.
2. Aggressive behavior and associated behavior problems are a major factor in poor compatibility.
3. Aggressive behavior leads to a loss of time that individuals spent on the care and rehabilitation of mentally disabled because of the time they spent in monitoring the aggressive behavior of them.
4. Aggressive behavior is undesirable, objectionable and socially unacceptable, such as sexual abuse, urine and fecal play.
5. The increasing of the likelihood that mentally disabled individuals will be victims of abuse and physical mistreatment by their caregivers.
6. It significantly increases the possibility to return the mentally disabled individuals to the Shelter institutions which represent the most restrictive environments for them.
7. Aggressive behavior is one of the most common problems that leads the mentally disabled individuals to psychiatric and other mental health services.
8. It Increases the risk of failure in competitive jobs, as mentally disabled individuals who exhibit aggressive behavior are less likely to get a job under competition.
9. Aggressive behavior makes mentally disabled individuals susceptible to avoidance and isolation by people around them, such as parents, brothers and peers thus affecting their social interaction and personal composition (Debbies, 1999).

Studies and research have been conducted on the subject of behaviors of mentally disabled students, with different variables, including (Ross & Cornish, 2002). This study aims to determine the prevalence and frequency of stereotyped behavior, self-harm and aggressive behavior in children and adolescents with Cri du Chat syndrome).Also it investigates the relationship between self-harm, aggressive and stereotypical behavior in these individuals. The results of this study showed that stereotypical behavior appeared in (82%) of the cases, where typical behavior appears in half of these cases daily. Through the prevalence of (15) forms of self-harm behavior, it was found that beating the head, biting and ruminations (stereotypes) are the most common behaviors. Aggressive behavior has been found to be prevalent (88%) with a negative correlation between age and behavior.

Totsika, Toogood, Hastings and Lewis (2008) found that the behavioral problems often occurs in children with mental disabilities early in life and continues through life. By following the behavioral problems of children over the age of eleven, the results show that the most common behavioral problems are extreme physical aggression, self-harm and recurrent stereotypes.

Hogue, Mooney, Morrissey, Steptoe, Johnston, Lindsay and Taylor (2007) conducted a study of 172 mentally handicapped males in correctional institutions with different levels of protection. After the application, it was found that those enrolled in the higher protection system obtained higher degrees in the field of physical aggression compared to those enrolled in the lower protection system, and did not show any differences in behavioral problems directed towards the outside such as verbal aggression and obedience and excessive movement. However, people enrolled in the higher protection system have obtained significant degrees in the area of behavioral problems, such as anxiety, depression and self-esteem.

Van Ingen, Moore, Zaja and Rojahn (2010) aimed to compare the prevalence of behavioral problems in the study population between simple and intermediate disability. The results showed that people with intermediate mental disabilities have behavioral problems more than those with simple disabilities with regard to hyperactivity, destructive behavior, aggression, as well as mental disorders, social behavior, and stereotypical behavior.

The study by Dave, Chauvan, and Dalvi (1993) aimed to identify behavioral disorders in mentally disabled children, on a sample of 40 mentally disabled children. The results of the study revealed the existence of a number of abnormal behaviors and behavioral disorders, including hyperactivity, in addition to the suffering of many stereotypical and socially unacceptable behaviors and their tendency towards aggression against self and others.

Problem and Purpose of the study

Aggressive behavior is a major problem for mentally disabled children in terms of the effects it has on them in terms of harming themselves and their inability to establish acceptable social relations with their colleagues. In addition to the negative impact of this abnormal behavior in the classroom environment that does not benefit the mentally disabled children from the educational programs and rehabilitation, not to mention the negative effects that that behavior in the social environment of the child.

The aggressive behavior is also a major problem for teachers and supervisors who are responsible for the education, care and rehabilitation of children with mental disabilities as a result of the many negative aspects of providing various services to them within the centers of special education. It is highly documented that aggressive behavior is the most influential factor in the decisions to determine the type the service can be offered to the mentally disabled individual.

The study attempts to answer the following questions:

1. What is the level of aggressive behavior for students with mental disabilities in Ajloun governorate from the teachers' point of view?
2. Are there any statistically significant differences in the level of aggressive behavior of students with mental disabilities due to the degree of disability?
3. Are there statistically significant differences in the level of aggressive behavior of mentally disabled students due to gender?

Significance of the Study

The significant of the study is as follows: (a) highlighting the level of aggressive behavior of students with mental disabilities in Ajloun Governorate, which in turn affects both teachers, students, educational programs, the family, institutions and society in general; (b) drawing attention to the differences in the level of aggressive behavior of mentally disabled students based on a number of variables; (c) encouraging people who are responsible about mental disabilities to allocate a budget to support various programs in order to reduce the undesirable behavior of mentally disabled students, especially the aggressive behaviors;(d) preparing a scale to measure the level of aggressive behavior of mentally disabled students; and (e) this study is a continuation of the previous research on the subject of the behavior of students with mentally

disabled students. It may be a start to study the subject from multiple aspects and variables, and will have an impact on the birth of other studies.

Method and Procedures

The sample of the study consisted of all (94) mentally disabled students of simple and intermediate level who were enrolled in the special education centers at the first semester of the academic year (2018-2019). Students were distributed as in Table (1) according to the variable of the degree of disability, and gender. There are no extreme mentally disabled students in these centers.

Table 1. The Percentage of the Distribution of Study Sample According to the Degree of Disability and Gender

No.			Numbers	Percentage
1	Degree of disability	Simple	44	46.8%
		Intermediate	50	53.2%
2	Gender	Male	48	51.1%
		female	46	49.9%
	Sum		94	100%

Instrument, Validity and Reliability

The researcher used a questionnaire which constructed by reviewing the theoretical framework on the aggressive behavior of mentally disabled students and by reviewing the questionnaires that were developed in the study of Ahmad (2017), Sharifi (2016), Dahan (2014), Badawi (2011), and Saleh and Albanna (2008). A thirty paragraph scale was constructed and developed as a study tool. The scale consisted of three dimensions of the aggressive behavior: self-directed aggression, aggression directed towards others and aggression directed towards property and objects. Ten paragraphs of self-directed aggression (1, 2, 3, 4, 5, 6, 7, 8, 9, 10), 10 Paragraphs of aggression directed towards others dimension; (11, 12, 13, 14, 15, 16, 17, 18, 19, 20) and 10 paragraphs of aggression against property and objects dimension (21, 22, 23, 24, 25, 26, 27, 28, 29, 30).

A Five-point Likert scale was employed (always = 5, often = 4, sometimes = 3, rarely = 2, never = 1). 5 indicate the highest level of aggressive behavior, while 1 indicates the lowest level of aggressive behavior. Thus, the level of each paragraph can be extracted, as is the extraction of the total level of the total number of the paragraph of each dimension of the aggressive behavior,

after knowing the estimated average of the responses to its paragraphs. The interpretation of the results of the responses has been based on the estimates as in Table (2):

Table 2. Estimated Average of Teachers' Responses and their Levels

Estimated Average	Levels
1 – 1.80	Very low
1.81 – 2.60	Low
2.61 – 3.40	Medium
3.41 – 4.20	High
4.21 – 5	Very high

Validation and Reliability of the Instrument

To ensure the validity of the content of the study instrument, the jury was asked to examine the validity of the paragraphs. The jury consisted of 12 scholars and specialized professors in the fields of special education, psychology and measurement and evaluation. The jury recommended making some modifications in terms of clarity, the integrity of the language and the representation of the paragraph of its dimension, to reach to 30 paragraphs at the end. The correlation coefficients of the subjects of the study instrument were extracted with the total score in a survey sample from outside the study sample, which consisted of (40) mentally disabled students. The scales were analyzed and the correlation coefficient of each paragraph calculated. Where the correlation coefficient there is a sign of validity for each paragraph in the form of correlation coefficient between each paragraph and the total score on one hand, and between each paragraph and its link to the dimension to which it belongs and between each dimension and the total score on the other hand. The correlation coefficients of the paragraphs with the instrument as a whole ranged from 0.41 to 0.72, and with the dimension 0.44-0.88, Table (3) shows this.

Table (3): Correlation Coefficients between Paragraphs, the Total Score and the Dimension to Which They Belong

Paragraph number	Correlation coefficient with dimension	Correlation coefficient with the instrument	Paragraph number	Correlation coefficient with dimension	Correlation coefficient with the instrument
1	0.62(**)	0.57(**)	16	0.88(**)	0.51(**)
2	0.72(**)	0.61(**)	17	0.61(**)	0.44(**)

Paragraph number	Correlation coefficient with dimension	Correlation coefficient with the instrument	Paragraph number	Correlation coefficient with dimension	Correlation coefficient with the instrument
3	0.76(**)	0.71(**)	18	0.60(**)	0.50(**)
4	0.66(**)	0.63(**)	19	0.55(**)	0.45(**)
5	0.51(**)	0.50(**)	20	0.66(**)	0.45(**)
6	0.68(**)	0.63(**)	21	0.85(**)	0.52(**)
7	0.79(**)	0.47(**)	22	0.62(**)	0.61(**)
8	0.75(**)	0.63(**)	23	0.73(**)	0.72(**)
9	0.62(**)	0.67(**)	24	0.78(**)	0.61(**)
10	0.44(**)	0.61(**)	25	0.46(**)	0.41(**)
11	0.51(**)	0.48(**)	26	0.45(**)	0.47(**)
12	0.67(**)	0.57(**)	27	0.61(**)	0.57(**)
13	0.85(**)	0.57(**)	28	0.69(**)	0.68(**)
14	0.82(**)	0.55(**)	29	0.73(**)	0.72(**)
15	0.77(**)	0.53(**)	30	0.64(**)	0.59(**)

* Significance (0.05).
** Significance (0.01).

It should be noted that all correlation coefficients were of acceptable score and statistical function, so none of these paragraphs were deleted, Table (4) shows this.

Table 4. The Correlation Coefficients Between the Dimensions and the Total Score

	self-directed aggression dimension	aggression directed towards others dimension	aggression directed towards property and objects dimension	Total score
self-directed aggression dimension	1			
aggression directed towards others dimension	0.561(**)	1		
aggression directed towards property and objects	0.558(**)	0.491(**)	1	

dimension				
Total score	0.632(**)	0.857(**)	0.648(**)	1

* Significance (0.05).
** Significance (0.01).

To ensure the reliability of the study instrument, the (test-retest) was applied,it was reapplied after two weeks to a group of outside the sample of the study consisting of (40) students and mentally disabled and then calculated Pearson correlation coefficient between their estimates at both times. The consistency coefficient was calculated in the internal consistency method according to the Cronbach's alpha formula. Table (5) shows the coefficient of internal consistency according to the Alpha Cronbach's formula and the regression coefficients. These values are considered appropriate for the purposes of this study.

Table 5. Cronbach's Internal Consistency Coefficient and Alpha Reliability

Dimension	retest consistency	internal consistency
self-directed aggression dimension	0.89	0.79
aggression directed towards others dimension	0.91	0.75
aggression directed towards property and objects dimension	0.93	0.77
Total score	0.91	0.84

Data Analysis

To answer the research questions, the researcher used: a) T-test and retest, b) Pearson correlation coefficient, c) Cronbach's Alpha Coherence Coefficient and reliability of retest, and d) means and standard deviations. The next section will discuss the findings of this research.

Findings and Discussion

Question 1: What is the level of aggressive behavior for students with mental disabilities in Ajloun governorate from the teachers' point of view?

To answer this question, means and standard deviations of the aggressive behavior level for mentally disabled students in Ajloun Governorate were calculated as shown in Table (6).Aggressive behavior came at a high level. The table shows that the means ranged between (3.45-3.86). Self-directed aggression dimension came first with the highest mean (3.86), then aggression against others dimension with an average of (3.59),while the aggression against property and objects dimension comes the last place with an average of 3.45 and the mean of the instrument as a whole was 3.63.

Table 6. Means and Standard Deviations of The Level of The Aggressive Behavior of The Mentally Disabled Students at Ajloun Governorate From The Teachers' Point of View.

Number	Dimension	means	standard deviations	Level
1	self-directed	3.86	0.486	High

Number	Dimension	means	standard deviations	Level
	aggression dimension			
2	aggression directed towards others dimension	3.59	0.696	High
3	aggression directed towards property and objects dimension	3.45	0.656	High
	Total score	3. 63	0.561	High

The results of the study of the aggressive behavior of students with mental disabilities at Ajloun from the teachers' point of view were at a high level. The researcher explains this result as an indicator of the frustration and failure of these students which makes their responses negative and resorting to aggressive behavior as a case of venting or compensation for their inability to participate, most parents demand their children to behave in proportion to their age rather than their mental age. Therefore, the child is exerting some of his/ her psychological and vital energy on resisting his/ her internal tension, and part of his/ her energy tends to win the satisfaction of parents and teachers, also, he/ she may find it difficult to do so, which leads to the feeling that it is inferior to other peers, resulting in the types of psychological and social pressures, leading to aggressive behavior.

This is confirmed by Alkhattib (2014) that the mentally disabled are the most people who suffer from behavioral problems because of their inability to identify aspects of socially acceptable behavior, in addition to the delay of their linguistic abilities, which makes them resort to aggression to express their emotions rather than verbal expression. Their exposure too many failures and frustrations as a result of surrounding social trends and their mental retardation often increases their inadequacy in identifying aspects of socially acceptable behavior.

Question 2: Are there any statistically significant differences in the level of aggressive behavior of students with mental disabilities due to the degree of disability?

To answer this question, the means and standard deviations of the level of aggressive behavior of students with mental disabilities were calculated according to the variable of the degree of disability. To illustrate the statistical differences between the means, the T-test was applied. Table 7 shows this.

Table 7. Means and Standard Deviations and T-Test for the Impact of Degree of Disability on the Level of Aggressive Behavior of Students with Mental Disabilities

	Degree of disability	Number	means	standard deviations	t	df	Statistical significance
self-directed aggression	Simple	44	3.74	.422	-2.225	92	.029
	Medium	50	3.96	.519			

dimension							
aggression directed towards others dimension	Simple	44	3.35	.701	-3.375	92	.001
	Medium	50	3.81	.622			
aggression directed towards property and objects dimension	Simple	44	3.25	.683	-2.849	92	.005
	Medium	50	3.62	.584			
Total score	Simple	44	3.44	.548	-3.169	92	.002
	Medium	50	3.80	.524			

Table (7) shows statistically significant differences ($\alpha = 0.05$) due to the degree of disability in all dimensions and in the total score. This result can be attributed to the strong and positive correlation between aggressive behavior and the extreme of disability, i.e. the higher the extreme of mental disability, the higher level of aggressive behavior, where biological and organic variables play a large role in this, through multiple imbalances and neurological problems more among students with intermediate mental disabilities compared to students with simple mental disabilities. This can also be largely due to the fact that students with intermediate disabilities do not have access to simple social, cognitive and emotional skills that can be applied sequentially and flexibly to the cultural context. This leads to inappropriate responses in different social situations due to their lack of these skills, which in turn leads to the emergence of aggressive behavior among students with intermediate mental disabilities at a higher level than that of students with simple mental disabilities.

Question 3: Are there statistically significant differences in the level of aggressive behavior of mentally disabled students due to gender?

To answer this question, means and standard deviations of the level of aggressive behavior of mentally disabled students according to gender variable were extracted. To illustrate the statistical differences between the means, the T test was employed. Table 8 shows this.

Table 8: Means, Standard Deviations and T-test of Gender Impact on The Level of The Aggressive Behavior of Mentally Disabled Students

	Gender	Number	means	standard deviations	t	df	Statistical significance
self-directed aggression dimension	Male	48	3.89	0.476	0.610	92	0.544
	Female	46	3.83	0.500			

aggression directed towards others dimension	Male	48	3.71	0.664	1.756	92	0.082
	Female	46	3.46	0.713			
aggression directed towards property and objects dimension	Male	48	3.54	0.609	1.392	92	0.167
	Female	46	3.35	0.696			
Total score	Male	48	3.71	0.544	1.444	92	0.152
	Female	46	3.55	0.571			

Table (8) shows that there are no statistically significant differences at the significance level ($\alpha = 0.05$) due to the effect of gender in all dimensions and in the total score. The researcher explains that the gender variable is not a factor among the factors that can lead to a difference in the level of aggressive behavior in students with mental disabilities. The problems they faced and the consequences of many aspects had an important role in influencing the level of aggressive behavior they have, whether males or females

Conclusion

The study concluded that the level of the aggressive behavior of the mentally disabled students at Ajloun governorate from the teachers' point of view was high. The study indicated that there were statistically significant differences ($\alpha = 0.05$) attributed to the effect of the degree of disability in all dimensions and in the total score in favor of intermediate mental disability. It is found that there were no statistically significant differences ($\alpha = 0.05$) attributed to the gender effect in all dimensions and in the total score. Therefore, the researcher suggests that all efforts should be made by parents, educators and officials to increase interest in this category, provide all the physical and moral means to reduce the extreme level of the aggressive behavior, modify them for the better, and direct them to the right destination .To finally reach a category that is not completely free of aggressive behavior but less extremely.

Recommendations

In light of the findings of the current study, the researcher recommends the following:

- Conducting studies on the aggressive behavior among mentally disabled students with different dimensions and variables.
- Conducting studies on the aggressive behavior of people with other disabilities.
- Finding the impact of therapeutic programs on the aggressive behavior of students with mental disabilities.
- Conducting studies on parental attitudes and their relationship to aggressive behavior problems of students with mental disabilities.
- Paying attention to the training courses for teachers of students with mental disabilities.

- Modifying a program for the aggressive behavior of mentally disabled students should be part of the individual educational plan.
- Holding training, counseling and educational sessions for the families of students with mental disabilities to reduce the aggressive behavior of their children.

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The Study Questionnaire

The researcher conducts a study entitled "The level of The Aggressive Behavior of The Mentally Disabled Students at Ajloun Governorate from Teachers' Point of View".
Therefore, please read the (30) paragraphs of this questionnaire carefully, and answer them honesty; put a (√) in front of the phrase that applies to the mentally disabled student, knowing that the answers will be treated with complete confidentiality for the purposes of scientific research only.

Thank you for your cooperation
Dr. Nayef Ali Wahsheh

1- Degree mentally disability: ☐ Simple ☐ Intermediate ☐ Extreme

2- The gender of the mentally disabled: ☐ Male ☐ Female

NO.	Paragraph	Always	often	sometimes	rarely	never
1	Cry deeply during anger.					
2	Bite fingers during the time of anger.					
3	Throw himself/herself on the ground when he/ she gets angry.					
4	Scratch his/her body with his fingernails.					
5	Hit his/ her face with hands when being angry.					
6	Pull his/ her hair strongly when gets angry.					
7	Hurt himself/ herself with sharp instruments.					
8	Scream for trivial reasons.					
9	Hits his/ her head in the wall when fights.					
10	Insults himself/ herself.					

11	Fights with others for no reason.					
12	Throw things on others.					
13	Bite when dealing with others.					
14	Take the others' things by force.					
15	Insult others.					
16	Stirs problems within the classroom.					
17	Pull the hair of others.					
18	Scream in others' face.					
19	Intentionally harm others.					
20	Assault others by body signs.					
21	Destroy teaching aids in the classroom.					
22	Damage the games of the center.					
23	Distorts the walls of the classroom.					
24	Destroy the classroom's seats.					
25	Close the door of the classroom sharply.					
26	Damage chalks.					
27	Break the windows of the classroom.					
28	Throw chairs on the ground.					
29	Ruin water taps.					
30	Tamper with electricity switches.					

Is the DSM-5 a Culturally Appropriate Assessment Tool for Identifying Learners with ADHD in Lebanese Schools?

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Abstract: This study explores counselors' current perceptions of ADHD, the techniques they implement with students who display ADHD and the extent to which they believe the DSM-5 is a culturally appropriated tool for diagnosing Lebanese students with ADHD. Data were collected using mixed methods: (a) interview questions from the Teacher Knowledge of Attention Deficit Hyperactivity Disorder (KADDS), which were derived and modified to explore counselors' perceptions of ADHD and the techniques they used when dealing with such students; and (b) questionnaires including the DSM-5 used as an assessment tool to indicate the extent to which counselors think that DSM-5 is culturally appropriate for the purpose of identifying ADHD students in Lebanon. The sample consisted of 20 Lebanese counselors from 20 schools (10 private and 10 public) in the area of Beirut. Counselors' answers to the KADDS interview questions revealed several misconceptions and lack of knowledge in relation to two subscales: general knowledge and implemented techniques. Findings were reported and discussed.

Keywords: ADHD, DSM-5, teacher knowledge, culture, counselors, perceptions, Lebanon.

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) has become the most frequently diagnosed childhood neurobehavioral disorder and affects 5 to 10 percent of all US school-age children (ASCA, 2008). ADHD, which is the most common disorder of childhood, has been the focus of research for nearly a century (Faraone, Sergeant, Gillberg, & Biederman, 2003). The concept of ADHD has grown progressively. Today, ADHD is regarded as a developmental, neurobiological condition defined by levels of inattention, hyperactivity, and impulsivity that hinder proper functioning and occur persistently in different and multiple situations (Portrie-Bethke, Hill, & Bethke, 2009).

Given the high incidence of ADHD in school populations, school counselors are expected to have acquired the knowledge and undertaken the training to support both students with ADHD and teachers by giving them tips and strategies to apply in their classrooms (Al-Hroub & Krayem; 2018; Shillingford-Butler & Theodore, 2013). The role of the school psychologist/counselor is essential since s/he provides "testing, diagnosis, and/or counseling in group or individual sessions, and advises on class placement, behavior management and appropriate academic accommodations" (Millichap, 2009, p.99). Therefore, counselors' perceptions of ADHD and the tools for its assessment are important when it comes to implementing the appropriate intervention techniques and identifying those individuals who have ADHD.

Interventions for ADHD are a must since it affects both mental health and academic achievement (Blanco & Ray, 2011). To diagnose a child with ADHD, counselors are expected to employ culturally appropriate assessment tools. The most commonly used assessment tool is the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) which is the main diagnostic system employed among professionals (Kress, Eriksen, Rayle, & Ford, 2005). Several researchers (e.g. Culbreth, Scarborough, Banks-Johnson, & Solomon, 2005; Lambie & Williamson, 2004; Schmidt, Weaver, & Aldredge, 2001) have highlighted the point that counselors are among the key players when it comes to promoting and achieving excellence in educational settings. This provides a rationale for investigating counselors' perceptions on ADHD, the intervention techniques they use when dealing with students who display ADHD, and whether or not they believe that the DSM-5 is culturally appropriate for the purpose of assessing students with ADHD.

Although the DSM is considered essential for professional practice, it has been criticized for its lack of cultural sensitivity (Kress et. al., 2005).The issue of cultural appropriateness is a pertinent one with respect to the extent of ADHD in the Arab World (Berri & Al-Hroub, 2016a, 2016c). Research should aim to accurately determine the frequency of ADHD among children as well as teenagers and to address the problems to which the disorder engenders, especially the fact it begets a wide range of mental comorbidities and exercises a striking impact on an individual's daily life. In addition, research should focus on the means of handling ADHD (Berri & Al-Hroub, 2016b; Farah et al., 2009). "The prevalence of ADHD symptoms among Arab students ranges from 5.1% to 14.9% in the school setting, whereas the rate of ADHD diagnosis using structured interviews in children and adolescents ranges from 0.5% in the school setting to 0.9% in the community" (Farah et al., 2009, p. 217). It is worth mentioning that the rates of ADHD at

a child psychiatry clinic in the Kingdom of Saudi Arabia, as well as those in primary care in the United Arab Emirates, are considerably below estimated ranges. In contrast, ADHD has come to be the most common disorder among outpatients in a child psychiatric clinic in Lebanon, "accounting for more than half of outpatient presentations" (Farah et al., 2009, p.219), which implies the need to raise awareness about ADHD.

School counselors play a major role in designing and implementing counseling programs to meet students' needs. American studies on ADHD have concluded that ADHD is largely an American disorder, especially because it may stem from social and cultural aspects that are very common in American society (Faraone et al., 2003). Therefore, counselors' diagnostic assessment must consider the cultural differences, which shape the experience and the behavior of an individual. It is claimed that vital aspects of culture related to diagnostic sorting and assessment were considered when developing the DSM-5 (APA, 2013). Döpfner et al. (2006) explained that several ADHD rating scales have generally been derived from the DSM manual. Thus school counselors in Lebanon generally rely heavily on the Western definitions of ADHD and on the DSM-5 as an assessment tool in particular (Kress et al., 2005). Since the educational reform agenda has been predominantly interested in accountability and student academic outcomes, school counseling research might not have provided enough support to gain attention (Dahir, Burnham, & Stone, 2009). School counselors should be updated with information on all aspects concerning ADHD diagnosis.

The results of the study will provide better opportunities for special education experts to develop assessment tools that are based on the Lebanese classification of ADHD. Moreover, it will assist in the production of comprehensive programs related to ADHD. In practical terms, identifying school counselors' perceptions of ADHD and the techniques they use to intervene with such cases will help in preparing education programs for future counselors to tackle issues related to ADHD. Another point is the need to help with the implementation of professional developmental in-service training, which can then properly use the correct information to rectify common misconceptions that counselors might have about ADHD. Therefore preparing education programs accompanied by developmental in-service training could improve the counseling sector in Lebanon.

Assessment of ADHD

ADHD is recognized worldwide and millions of children are diagnosed with this disorder annually (Millichap, 2009). The geographical location of a country plays a minor role in the prevalence of ADHD around the world (Polanczyk, De Lima, Horta, Biederman, & Rohde, 2007). However, cultural differences have a remarkable effect when it comes to diagnosing and treating ADHD symptoms and hence must be considered because the symptoms depend to a great extent on the background culture of the family and teachers' perceptions (AAP, 2011). Dissimilarities in the occurrence of ADHD go back to the diagnostic criteria used by each country (Ramos-Quiroga, Montoya, Kutzelnigg, Deberdt, & Sobanski, 2013). Different tools may be used in different cultures to diagnose ADHD children, which may lead to prevalence which varies according to country (Bauermeister, Canino, Polanczyk, Rohde, 2010). Assessment tools may include the Strengths and Difficulties Questionnaire (SDQ), the Parent Development and Wellbeing Assessment (DAWBA), and semi-structured interviews, such as the Schedule for Affective Disorders and Schizophrenia for School-Aged Children (K-SADS) (Posserud et al.,

2014). Structured interviews, impairment rating scales, and observations are other ADHD assessment methods that are used around the world (Pelham, Fabiano, & Massetti, 2005).

In the context of Lebanon, Berri and Al-Hroub (2016e) stated, "Regarding identification and assessment, there is no identification procedure because of the absence of an official definition, or a commonly accepted definition for ADHD (p. 60). The scope of special education in Lebanon is limited to students who show special needs only. ADHD is not mentioned in Lebanese ministerial policy documents, including the current revised national curriculum (Berri & Al-Hroub, 2016e). The diagnostic criteria worldwide determine the extent to which ADHD is relevant across cultures (Bauermeister et al., 2010). It is important to note that the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (APA, 2013) describes the disorders that can be identified across cultures, societies, and settings (Bauermeister et al., 2010). Therefore counselors may mainly adopt American and European scales or assessment tools despite the cultural differences.

Counselors' Perceptions of ADHD

Counselors' perceptions play a major role in improving the academic and social functioning of students with ADHD, thereby decreasing the drop-out rate of those students (Shillingford-Butler & Theodore, 2013). A study by Weyandt et al., (2009) showed that school counselors' level of knowledge of ADHD is significantly greater than that of special and general education teachers. The perception and knowledge that school counselors display about ADHD permits them to design and give workshops about the disorder to different members of the school and entitles them to work with ADHD students directly. The findings thus suggest that school counselors may be more qualified than teachers to detect students with ADHD as well as possessing the ability to help launch operative interventions for these students (Weyandt, Fulton, Schepman, Verdi, & Wilson, 2009). Counselors are in a unique position to promote the development of counseling services for students with ADHD including "(a) educating teachers, parents, administrators, school board members, and legislators about the long-term negative social and academic consequences of not providing counseling to children exhibiting disruptive behaviors, (b) educating administrators, teachers, and parents about approaches/techniques to be used; and (c) using research findings to collaborate with school district grant writers to secure state and federal funding to hire additional school professionals and provide specific training to counsel ADHD students" (Meany-Walen, Bratton, & Kottman, 2014, p. 53).

Factors Affecting Counselors' Perceptions

Training program. Culbreth et al (2005) emphasize the importance of training programs in relation to school counselors' knowledge. The study revealed the majority of counselors were women and identified themselves as European/White (90.7%). Although participants had an average of 7.5 years of experience, 67 percent of them believed that their training had not prepared them for their position as school counselors (Culbreth et al., 2005). The numbers presented stressed the importance of having specific and specialized in-service training sessions for beginning counselors before they applied for a school counseling position to assist them in tackling cases related to ADHD and other disorders.

Another study by Corkum, McKinnon and Mullane (2005) suggested that a great reduction in ADHD symptoms was noticed when parents and teachers collaborated and received the proper training and intervention. Hence, it remains essential to have special training sessions for both parents and teachers because they can make a remarkable difference in reducing the symptoms of ADHD.

Culture. Stereotypes are common across cultures and they affect the way ADHD is perceived. A study conducted by Gajaria, Yeung, Goodale and Charach (2011) revealed that people associate ADHD with negative connotations and perceive it as such. People in general label children with ADHD as being mentally ill or dangerous to themselves and others in the society, which affects such children and harms them psychologically. These negative stereotypes have led students to feel ashamed about their ADHD, and hence they have hesitated to ask for external help from the counselor or their parents. These students have expressed their frustration about the common negative stereotypes in terms of their desire to "reframe ADHD as part of who they are, rather than ADHD being considered only as a disease that made them appear as bad" (Gajaria et al., 2011, p.16). Different perceptions of ADHD around the world have affected the way in which parents implement methods with their children. Since counselors are part of society, they are therefore influenced by how society perceives ADHD and thus adopt that perception. Hence, it remains essential to understand how counselors perceive ADHD in different cultures.

Intervention Approaches and Treatments

Assessing and treating children with ADHD has been often a controversial issue. Many studies have called for a comprehensive diagnosis in cooperation with medications; other studies call out for appropriate combinations of remedial education with behavioral, modification, and support (Morisoli & McLaughlin, 2004). There are different intervention techniques for counselors to use with students who are diagnosed with ADHD. Medication was highly recommended by most teachers although it is important for educators to first begin focusing in implementing successful interventions in their classroom after referral to the school counselor/psychologist (Morisoli & McLaughlin, 2004) especially that the majority of individuals discontinue medication in less than one year (Rubia & Smith, 2001). Morisoli and McLaughlin (2004), Rubia and Smith (2001), and Shillinford-Butler and Theodore (2013) have argued that behavioral interventions and teaching strategies are effective in reducing ADHD symptoms. There are many behavioral interventions that can be applied in classrooms after the consultation of the school counselor (Shillinford-Butler & Theodore, 2013), such interventions include Token Economies and Response Cost Systems, Daily Report Card Systems, Cognitive Behavioral Training System, and Positive and Negative Reinforcement (Morisoli & McLaughlin, 2004). In summary, it is crucial to explore counselors' intervention plans for ADHD students since they are highly affected by counselors' perception of ADHD and the causes behind it.

Diagnosis and Assessment of ADHD

School counselors must be in a position that will allow them to identify ADHD themselves or at least provide an appropriate evaluation for the psychologist or the clinician for the purpose of diagnosis. Studies have shown that school-based assessment carried out by school counselors in the evaluation of ADHD has received the greatest empirical support in the literature (DuPaul &

Stoner, 2014). The school counselor is expected to be knowledgeable and to have attended training sessions on the diagnostic criteria either to help them conduct the assessment or refer a student for further diagnosis (DuPaul & Stoner, 2014; Shillingford-Butler & Theodore, 2013). It is thus essential to establish counseling in all schools because it will reduce most of the problems ADHD students face during learning as it will be easy to make referrals for adequate management (Abikwi, 2009). Studies have shown that in-class observation is not enough to identify ADHD; teachers' and parents' reporting forms or questionnaires should be completed before the counselor observes ADHD students in class. Counselors also need to have rating scales to complete when observing students in different settings and at different times (DuPaul & Stoner, 2014; Wasserstein, 2005).

Furthermore, school counselors need to be aware of the symptoms and subtypes of ADHD when referring students because diagnosis precedes treatment/intervention (Dahir et al., 2009). Extensive research has found that the primary symptoms displayed by ADHD children are inattention, impulsivity and hyperactivity (Barkley, 2013).

DSM Criticism

Coghill and Seth (2011) have criticized the DSM IV, specifically with respect to the ADHD criteria. They have been critical of the general structure and subtyping, stating that the subtypes are unstable over time. "The representation of hyperactivity, inattention, and impulsivity in the criterion set is uneven and, thus, differentially weights some features over others. Impulsivity is underrepresented, and inattention is overrepresented" (Coghill and Seth, 2011, p.4). In addition, the organization is not valid, for even when ten criteria are present (five relating to inattention and five to hyperactivity), the child may not be eligible for an ADHD diagnosis. Moreover, criteria are not defined in detail, and this increases criterion variance, which is a major problem in everyday use.

Misdiagnosis occurs when working with people from culturally diverse backgrounds (Kress et al., 2005). The changes that have been included in the latest version of the DSM present a number of features designed to develop its cross-cultural applicability (Berri & Al-Hroub, 2016e; Thakker & Ward, 1998). However, the DSM is based on Western-defined syndromes and has restricted cross-cultural applicability. Those involved in creating the DSM did not take cultural differences and heterogeneity into consideration (Thakker & Ward, 1998). Hence, the latest DSM version may not be universally applicable and thus might not apply to Lebanese students with ADHD. However, since the DSM tool is the clearest diagnostic system available, counselors are expected to know about it since it is a necessity for professional practice (Kress et al., 2005). However, the latter does not indicate that the DSM is a culturally appropriate tool. Literature has exposed and criticized the DSM tool for being inaccurate when it comes to diagnosing groups from different cultures. Many studies have shown that culture affects counselors' perceptions as well as those of the clients, thus impacting the assessment, diagnosis, and intervention techniques applied by the counselors. Therefore counselors must be well aware of their culture and must be knowledgeable about the strengths and weaknesses of the DSM to decide whether or not it is culturally appropriate (Kress et al., 2005). Based on that, it remains important to explore whether or not Lebanese counselors view the DSM-5 as a culturally appropriate tool, and if not, how they would modify it to make it culturally appropriate to dealing with ADHD students.

The Current Study

The purpose of this study was to identify what Lebanese counselors' perceptions are regarding ADHD, to determine to what extent counselors think the DSM-5 can be culturally appropriate for the purpose of detecting ADHD students in Lebanon, and to explore the intervention techniques that counselors use when intervening with students with ADHD. Three questions guided the current research study:

1) To what extent do the counselors think that the DSM-5 is culturally appropriate for the purpose of identifying ADHD students in Lebanon?
2) What are the intervention techniques used by Lebanese counselors to counsel students with ADHD?
3) What are Lebanese counselors' perceptions of ADHD and its symptoms?

An exploratory mixed-methods approach was used to answer the research questions. Given that, in Lebanon, no study has been done to extensively explore counselors' perceptions of ADHD, the intervention techniques they use to deal with individuals with ADHD, and the extent to which they believe the DSM-5 is culturally appropriate when it comes to identifying ADHD an exploratory mixed-methods approach was necessary in order firstly to collect different forms of qualitative data and then to analyze these data quantitatively in order to organize and interpret it. The researcher collects the qualitative data and explores the participants' views. Then the researcher starts with the quantitative phase. The researcher has themes that are pre-established and themes that emerge as the data is analyzed (Creswell & Clark, 2017). Exploratory studies are essential because they revolve around discovering ideas and perspectives and thus they allow more precise investigation to take place afterwards.

Mixed methods designs provide a more holistic understanding of the research problems presented by the study than either quantitative or qualitative research alone. It requires combining both methods; qualitative and quantitative and thus may involve philosophical assumptions and theoretical frameworks (Creswell, 2013). This method was adopted by the researchers because the study includes multiple forms of qualitative data that is later interpreted. The variables are then studied and analyzed by the researchers for emerging themes. The themes that emerged were based on counselors' responses to interview questions.

Method

Participants

Twenty counselors, 10 from private schools and 10 from public schools, were recruited in the area of Beirut. The recruited sample of 20 counselors consisted of 18 females and two males from both public and private sectors. The age of counselors ranged between 21 and 63 *(M = 34.5, SD = 11.97)*. The grade levels of students with whom the counselors worked extended from nursery through to grade 12. One counselor counseled students from nursery through to grade 5; three counselors counseled students in grades 1 to 3; four counselors counseled grades 1 to 5 students; 10 counselors counseled grades 1 to 6 students; and two counselors counseled K to grade 12 students. The years of experience that counselors had ranged between one year and 20

years *(M = 6.1, SD = 5.75)*. Five counselors held Bachelor's degrees and 15 counselors held Master's Degrees. One counselor had a Master's degree and a teaching diploma.

Procedures

The researcher visited each of the participating schools and met with the principal of the school, who was asked to sign a consent form explaining the purpose of the study. Then a meeting was arranged with the school counselor in order to likewise sign a consent form for participation in the study: s/he was also given the freedom to choose not to participate in the study if that was his/her wish. During the meeting, both the purpose and the procedure of the study were explained to the counselor, and the researcher assured the counselor that all personal information would remain confidential. At the end of the initial meeting, the researcher arranged another in order to collect data from the counselor. During this meeting, the researcher interviewed the counselor, asked him/her to complete the demographic information form, and left the questionnaire with him/her to complete and return 48 hours later. The researcher gave the counselor two days to go through the questionnaire in detail in order to add, delete, or annotate the items to better fit the Lebanese culture or s/he could leave the questionnaire if s/he believed that it did not need modification.

Instruments

Demographic information form. The demographic forms included gender, age, the grade level that counselors counsel, years of counseling experience, and the highest level of education that counselors had attained. This form was completed by each counselor before the interview. The researchers' stored demographic information forms a locked drawer.

Interview. The interview was composed of 14 open-ended questions about the counselors' perceptions of ADHD and the various approaches/techniques that they use to deal with children with ADHD and counselors were given the chance to explain or elaborate on their answers. The questions were derived from the Knowledge of Attention Deficit Hyperactivity Disorder (KADDS) questionnaire developed by Sciutto, Terjesen, and Frank (2000) and were modified in order to examine counselors' perceptions of, instead of teachers' knowledge about ADHD. The internal consistency of the KADDS is high when tested on different samples of teachers (.80 to 0.90) (Sciutto et al., 2000). The instrument has also shown evidence of external and internal validity (Soroa, Gorostiaga, & Balluerka, 2013). The KADDS questionnaire is composed of closed questions used to test teachers' knowledge about ADHD. "The KADDS is a 39-item rating scale designed to measure teachers' knowledge about ADHD as it is related to symptoms/diagnosis of ADHD, general knowledge about the nature of ADHD, and the causes and treatment of ADHD using a series of true-false-do not know items" (Sciutto et al., 2000, p.117).

While conducting the interview, the researcher asked the counselor probing questions for further clarification or elaboration. The counselor was given the freedom to discuss anything related to the questions; and the responses were then analyzed.

Each interview took between 30 and 40 minutes. The interviews were tape-recorded with the consent of the interviewees. The recordings were stored on the researchers' personal computer, which is protected by a secure password.

Questionnaire. After completing the interview and the demographic information form, the researchers gave the counselor a questionnaire and asked him/her to complete and return it to the school main office within 48 hours of the meeting time. Counselors had the option to select

the Arabic or the English language version of the questionnaire according to their preference. The questionnaire revolved around the DSM-5. It asked counselors to add, delete, or annotate the DSM-5 to better fit the Lebanese culture. The questionnaire was the actual DSM-5 (specifically the ADHD section). It was divided into three parts: inattention, hyperactivity, and impulsivity. Counselors were given the freedom to add, delete, or annotate all three parts.

It is important to mention that the researchers purposely conducted the interview with each counselor before s/he was asked to complete the questionnaire in order to avoid the interview responses being skewed by the content of the questionnaire, which was based on the DSM-5.

Data Analysis

The researchers transcribed all 20 interviews. Then the transcripts of the responses to each of the 14 interview questions per interview were analyzed using open coding. For each interview question, the second researcher conducted open-coding on two responses for the purposes of reliability. The major concepts and statements marked by both researchers were compared. Next the researchers counted the frequency of occurrence of similar concepts or statements in the responses to a certain interview question. These emerging concepts and statements were later categorized into themes. Both the frequency of occurrence of similar concepts or statements in the responses to each interview question and the identified themes allowed the researchers to answer the first and second research questions.

Results

The interview was semi-structured and was composed of 14 items. The counselors' responses to each of these items were analyzed using the "open-coding" strategy which was described in the methods section. Based on the analysis of the interview questions, the majority of the counselors believed that hyperactivity is one of the characteristics of ADHD and only one individual referred back to the characteristics listed in the DSM-5 assessment tool. A sample of the data from the interviews is provided in Table 1 below. **.** The analysis of the counselors' responses showed 12 different descriptions of an ADHD student that were mentioned by the counselors as characteristics of an ADHD student. These descriptions are shown in Table 1 with their corresponding frequencies and percentage.

Table 1.Characteristics of an ADHD Student as Mentioned by the Counselors

Characteristic	Frequency	Percentage %
Hyperactivity	19	34
Impulsivity	8	14
Cannot focus	7	13
Attention deficit	6	11
Has behavioral problems	3	5
Fidgety	3	5
Aggressive	3	5
Do not follow rules	2	3
Has problems with memory	2	3
Cannot control himself	1	2
Dangerous	1	2
Show DSM characteristics	1	2
Total	56	100

N =20 counselors

Several counselors provided descriptive characteristics of an ADHD student. A counselor from a private school, for example, stated, "An ADHD kid is hyperactive and cannot focus at all". Another counselor from a public school reported, "I think an ADHD student is a student who is so hyperactive and cannot sit still in places such as classrooms or playgrounds." Most counselors observed students in different settings when considering referring them to a specialist since most schools do not provide an in-school assessor or tools to diagnose a student with ADHD. After the diagnosis, counselors provided students with different support strategies; the most common one that counselors mentioned was providing teachers with guidelines to help them deal with ADHD students in class, although they did admit that their implemented techniques and plans did not always work. The counselors assigned some tasks to the teachers, like giving students with ADHD tasks to complete, giving parents some guidelines on how to cope with their children at home, and preparing a behavioral plan for the student to follow.

Counselors stressed the importance of working with parents and teachers as a team because most of them believed that parental and teacher training in how to manage an ADHD student is effective and thus parents should be involved in all the planning that takes place at school. In order to keep teachers and parents updated, counselors believed that greater awareness should be raised to reduce the typical stereotypes and misconceptions that people hold with regard to students with ADHD. One of the stereotypes that counselors agreed is common is hyperactivity, a feature that has indeed been established as a characteristic of ADHD. The majority of counselors had not received any training sessions on how to deal with ADHD students and so they mostly agreed about the importance of receiving training to be able to better address children with ADHD and provide training workshops for parents and teachers on that subject. Some of the counselors believed that they should be able to have more one-on-one sessions with the students and should also be able to diagnose children with ADHD because it would make life much easier for them and their parents, given that the most common reason counselors gave for the increase in number of ADHD cases was misdiagnosis and mislabeling. Counselors did not seem to agree on whether or not reducing the dietary intake of sugar and food additives was likely to reduce the symptoms of ADHD.

Analysis of the DSM-5 as an Assessment Tool Questionnaire

In order to explore whether or not Lebanese counselors believed that the DSM-5 is culturally appropriate when it comes to diagnosing Lebanese students, the same counselors who participated in the interview (10 from public schools and 10 from private schools) were given a questionnaire which displayed all the items from the DSM-5 that targeted ADHD. The questionnaire was kept by the counselors for two days allowing them to add, delete or annotate items in the DSM-5 to make it fit better with Lebanese culture. In the questionnaire, the DSM-5 items were divided into three parts: inattention, hyperactivity, and impulsivity.

Ten counselors did not add, delete or annotate any of the items in the three parts of the questionnaire. When asked about the reason, they said it covered everything about ADHD students and they did not believe anything should be changed in any way to make the assessment tool fit better with Lebanese culture. The remaining 10 counselors added, deleted and/or annotated one or more of the items in three parts of the questionnaire. A summary of what these 10 counselors did is presented in Table 2.

Table 2. ***The Number of Counselors Who Added, Deleted, or Annotated the DSM5 Parts***

	Additions	Deletions	Annotations
Part 1 (inattention)	7	1	6
Part 2 (hyperactivity)	4	2	4
Part 3 (impulsivity)	1	1	3

The three major themes that emerged from the questionnaire were language, culture and the unevenness of the DSM-5. Arabic is the mother tongue in Lebanon and students acquire an additional language or languages at school, namely English and/or French. Hence a child might not seem to listen when spoken to if s/he is spoken to in a language in which s/he is not fluent or does not comprehend. Language is an important aspect of one's identity and hence 5 percent of the counselors who made changes suggested changing the word 'sick' in the Arabic version of the DSM-5. The argument suggests that an ADHD student is not a sick individual but rather an individual with a disorder. It was suggested that the term 'butts' be crossed out because it did not make any sense to 10 percent out of the 10 counselors who made a change. It was commented that the term 'butts' is not a word commonly used in Lebanon and should be annotated to make more sense.

The definition of ADHD is also culturally specific, for culture affects an individual's growth and his/her biological and emotional development to a significant extent (Bauermeister et al., 2010). It has been stated that there are many stimuli in Lebanese schools: specifically there are classes which makes it difficult for a student with ADHD to focus, and hence s/he gets easily distracted by extraneous stimuli. The latter does not necessarily imply that the student has ADHD. 'Often talks excessively' was another item that was deleted. The explanation was culture related: excessive talking is a part of Lebanese culture so it is unfair to diagnose a student with ADHD when this is only a part of his/her culture. Three counselors out of the 10 who made changes to the DSM-5 stated that the impulsivity part in the DSM-5 is so general that the items could apply to any student in Lebanese culture, which is generally chaotic and does not value rules. Lebanese culture is known to be a very vibrant culture with many stimuli and hence it is unfair to diagnose a student with ADHD when almost all people raised in Lebanon could be diagnosed with the condition according to these criteria. Therefore counselors need to be well aware of their culture and should be knowledgeable about the strengths and weaknesses of the DSM in order to decide whether it is culturally appropriate or not (Kress et al., 2005).

Three counselors out of the 10 who made changes shed light the fact that there are more items concerned with the inattention and hyperactivity criteria than with the impulsivity criterion in the DSM-5, which is consistent with Coghill and Seth's (2011) assertion that "the representation of hyperactivity, inattention, and impulsivity in the criterion set is uneven and, thus, differentially weights some features over others. Impulsivity is underrepresented, and inattention is overrepresented" (p. 4).

Discussion and Conclusion

The interviewed counselors were knowledgeable about the general symptoms of ADHD; however, they mixed up the symptoms of other disorders with those of ADHD, for example, 'aggressive' and 'dangerous'. The term 'hyperactive' was frequently used by counselors to identify the whole concept and symptoms of ADHD. Some characteristics overlapped with stereotypes, which imply that counselors did not have a holistic understanding of the disorder. Almost all counselors believed that observation is the best way to recognize students with ADHD, but did not mention teachers' reports or referral forms as part of their plans. Half of the interviewed counselors perceived ADHD to be a biological disorder that can be mitigated by having a good and healthy diet with minimal sugar intake. However, more than half of the interviewed counselors did not have proper knowledge of the tools used to diagnose ADHD. They even mixed up techniques with diagnostic tools. This is related to the fact that almost all the interviewed counselors had not attended any training sessions before they applied for counseling positions. Hence the majority of the interviewed counselors recommended more training sessions to help them handle ADHD cases better.

The results of the study have indicated that the counselors did not use many support strategies with students who display symptoms of ADHD. They revealed possible misunderstanding of the techniques used to intervene with students displaying such symptoms. Counselors did not mention many educational interventions; the most commonly used ones were reinforcement, monitoring techniques, behavioral charts and reward systems. Counselors mostly cooperated with teachers to help them implement techniques to reduce the symptoms of ADHD. Some tasks mentioned however, did not make sense and did not fit within the criteria, which again indicated the need for training sessions.

Counselors ought to be more knowledgeable about the DSM-5 as a diagnostic tool and whether or not it is culturally appropriate for use in diagnosing students in Lebanon. Although counselors who had made the changes highlighted very important themes, namely language, culture, and the unevenness of the DSM-5 criteria, it was expected that more counselors would have made changes to DSM-5 to fit with Lebanese culture.

Recommendations

It is recommended that more studies be conducted on a bigger scale to identify and explore the extent to which counselors believe that the DSM-5 is culturally appropriate. The recommendation would be to use this criterion along with teachers' and parents' input and counselors' in-class observations at different times and in different settings. It is possible that students might feel bored or uninterested in a subject, which might suggest some symptoms of ADHD, when they do not actually have ADHD. The DSM-5 states that six (or more) of the symptoms have to be present and persist for at least six months; however, it is worth noting that some students may display five symptoms from the subtypes, which indicates the possibility of the student having ADHD. The unevennes of the subtypes is also questionnable because a student may display three symptoms of inattention and five symptoms of hyperactiviy which should alert the counselor to the possibility of the student having ADHD. The third recommendation would be for counselors to attend certified training sessions to learn more about ADHD and the tools for its assessment and diagnosis.

Implications and Limitations

In this study, we explored counselors' perceptions of ADHD and the techniques they used with students who displayed symptoms of ADHD, and the extent to which they believed the DSM-5 is culturally appropriate to assess students with such symptoms. Perhaps future research could tackle the private and the public sector separately and compare counselors' perceptions and knowledge in both of them. The public and private sectors are viewed differently in Lebanon and it was noticeable that the interviewed counselors from the private sector were more knowledgeable and had more contact with the students since they remained in the schools for more than 80 percent of the time. The counselors from the public sector, however, did not have much contact with the students since they only visited public schools when they were contacted in an emergency.

Further studies are needed to learn more about ADHD from students' and parents' perspectives since their views are also important to identify how ADHD is seen from all angles. Some of the counselors talked about the need for the Lebanese Ministry of Education and Higher Education (MEHE) and private schools to provide them with the tools to diagnose and assess students with ADHD. Thus one recommendation was that policy-makers and decision-makers in the MEHE and in private schools could set up in-service training for counselors about the different assessment tools, helping them to upgrade their knowledge about ADHD.

There are a number of limitations to this study. One is that it was conducted in the area of Beirut so it does not represent all counselors in Lebanon. Another limitation is the number of counselors interviewed, which does not represent all Lebanese counselors. It would be more accurate to include more counselors so that the sample would be more representative.

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Using iPad-delivered Instruction and Self-Monitoring to Improve the Early Literacy Skills of Middle School Nonreaders with Developmental Disabilities

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Abstract: Reading opens the world to individuals and is one of the most important skills learned in school. Around the world, researchers are focused on improving reading instruction for all students, including students with developmental disabilities. Much energy is spent teaching reading basics such as early literacy skills to primary-aged learners because these skills provide the foundation needed for learning to read. In fact, most reading curricula focused on foundational early literacy skills acquisition is designed for elementary-aged students. Many learners with developmental disabilities do not acquire these early literacy skills in the primary grades, however, and improving the reading ability of older students with developmental disabilities who have not yet learned to read is challenging. This study evaluated the effects of an intervention designed to teach early literacy skills to older students with developmental disabilities. The intervention included iPad-delivered early literacy lessons and student self-monitoring. One teacher implemented the early literacy intervention with three middle school students with developmental disabilities (i.e., moderate intellectual disability, autism). Experimental control was demonstrated between the intervention and independent correct responding on level assessments for two participants but not the third. Social validation data collected from the teacher participant were positive. Implications for implementing the intervention with middle school nonreaders with developmental disabilities are discussed, including suggestions for students who are initially unresponsive to the intervention.

Keywords: early literacy skills, iPad-delivered instruction, self-monitoring, developmental disabilities, autism, intellectual disability

Reading vocabulary sight words was once the goal of reading instruction for many students with moderate or severe disabilities (referred to as developmental disabilities in this article; Browder, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzine, 2006). While important, reading sight words is only one of the five components recommended by the National Reading Panel (NRP; 2000) for reading instruction. According to the NRP, students need instruction in phonemic awareness, phonics, vocabulary, fluency, and comprehension to learn to read. Recently, researchers have evaluated the effectiveness of multicomponent reading interventions that addressed all five of these recommended areas with students with developmental disabilities and found improved reading skills for students (for a comprehensive literature, see Afacan, Wilkerson, & Ruppar, 2018). For example, Allor, Mathes, Roberts, Jones, and Champlin (2010) used a group design to evaluate the effects of a reading program for 28 young students with a mean age of 9.5 years and IQs between 40-55. The reading intervention included systematic and explicit instruction on concepts of print, phonological and phonemic awareness, oral language, letter knowledge, word recognition, vocabulary, fluency, and comprehension. The researchers found moderate to strong effect sizes in favor of the treatment. Likewise, Browder, Ahlgrim-Delzell, Flowers, and Baker (2012) used a group design to evaluate the effects of a reading program for 93 students with a mean age of 8.5 years and IQs between 41-43. Their two-part intervention included (a) a scripted curriculum targeting instruction on vocabulary, comprehension, phonemic awareness, and early phonics skills, and (b) read-aloud lessons built around adapted grade-appropriate stories targeting skills for interacting with books and listening comprehension. The researchers found higher posttest mean scores than the comparison group on all dependent variables.

While these results are promising, the materials in these interventions (e.g., stories) were designed for elementary-aged students and are not age-appropriate for middle and high school students who still need instruction on early literacy skills. Only one research study by Mims, Lee, Browder, Zakas, and Flynn (2012) was found that evaluated the effects of a comprehensive reading program for middle schoolers with developmental disabilities but this curriculum focused on literacy skills aligned with middle school English/Language Arts (ELA) standards, not early literacy skills. Because early literacy skills are foundational, when students with developmental disabilities do not learn these skills in elementary school, they will continue to need instruction focused on early literacy skills in middle and high school. For these older students, it remains an empirical question how best to teach early literacy skills.

In addition to becoming more independent readers, learning to monitor one's behavior is an important self-determination skill that could lead to living more independently (Shogren, Wehmeyer, Burke, & Palmer, 2017). Self-monitoring is a component of instruction that has proven effective for improving both social and academic skills of students with developmental disabilities (e.g., Agran et al. 2005; Gilberts, Agran, Hughes, & Wehmeyer, 2001). Self-monitoring involves the student in their own learning by having them monitor their progress towards a goal. For example, Agran et al. (2005) used self-monitoring to increase following-direction skills of students with moderate to severe disabilities in general education. Students made a "+" in the box on the self-monitoring sheet when they completed the step of the task analysis and a "-" for steps that were not completed. Likewise, Gilberts et al. (2001) used peers tutors without disabilities to teach academic survival skills (the behaviors deemed important for success in inclusive general education classes) to five middle schoolers with severe disabilities.

Students were given a list of the survival skills and self-monitored their use of academic survival skills during class by circling "yes" or "no" for each skill.

Comprehensive reading curricula have improved the reading skills for young learners, but it is unknown if similar strategies and activities also be effective in improving the early literacy skills in older students. Additionally, it is unknown if self-monitoring could promote engagement for older learners in their reading instruction. Therefore, the purpose of this study was to investigate the effects of an iPad-delivered early literacy intervention developed for older students and self-monitoring on the acquisition of early literacy skills for middle school students with developmental disabilities who were nonreaders. The questions addressed in this study included:

1. What was the effect of the intervention on the acquisition of early literacy skills of middle-school students with developmental disabilities who are nonreaders?
2. What was the experience of the middle school special education teacher implementing the intervention?

Method

Participants

Students with disabilities. Three middle school students aged 13-16 years who were identified as individuals with severe disabilities (i.e., autism, moderate intellectual disabilities) participated in the study (see Table 1). Pseudonyms have been substituted for the participant's actual names throughout this manuscript to maintain confidentiality. The researcher was interested in the effects of a reading curriculum on these individuals and a single-case design was selected because of the small number of participants available who met the inclusion criteria. The participants were nominated by their teacher because they needed to improve their reading skills, specifically early literacy skills and all met the following inclusion criteria: (1) had a full scale IQ of 55 or less; (2) were enrolled in grades 6-8; (3) had vision within normal limits; (4) were unable to read connected text independently, but could read some sight words; (5) had a reliable way to make selections (e.g., pointing, eye gaze); had at least one IEP goal related to reading; and (6) had regular school attendance (i.e., less than six absences in the school year prior to the study beginning).

Table 1 ***Participant Demographics***

Participant (Pseudonyms used instead of actual names)	Age	Grade	Race/ Ethnicity	Diagnosis	IQ	Adaptive Behavior
Ryan	16	8	African American	Autism, Moderate ID	52 (WISC-V)	70 (ABAS-II)
Elliot	13	7	Caucasian	Moderate ID	40 (WISC-V)	62 (ABAS-II)
Bryce	14	8	African American	Autism, Moderate ID	41 (WISC-V)	61 (Vineland-II)

Note: ABAS - II = Adaptive Behavior Assessment System® - Second Edition (Harrison & Oakland, 2008); ID = intellectual disability; Vineland™-II = Vineland Adaptive Behavior

Scales - Second Edition (Sparrow, Cicchetti, & Balla, 2005); WISC-V = Wechsler Intelligence Scale for Children – Fifth Edition (Wechsler, 2014).

Special education teacher. Five special education teachers were selected by the county's Exceptional Children Director and the Exceptional Children Program Specialist because they taught middle school students with moderate or severe disabilities and expressed an interest in receiving reading professional development. All five teachers received the initial early literacy professional development training. One teacher was not able to obtain parent permission for her students in a timely fashion and did not continue in the study. Another teacher was required by her principal to discontinue her participation in the study. Three teachers began implementing the intervention with students, but only one teacher met the demands of a single-case design by bringing three students into the intervention phase. This teacher held a current special education teaching license, had 14 years of teaching experience, and taught in a separate special education classroom in a public middle school. The teacher was familiar with iPads and had access to iPads in her classroom for students to use during the study.

Settings

Teacher Training. The author held a three-hour early literacy professional development training prior to beginning the study in a centrally-located conference room after school was dismissed for the afternoon. Five teachers completed the training that consisted of four parts: (a) study overview and phases, (b) student inclusion and parent permission, (c) early literacy curriculum components, and (d) student self-monitoring. During the first part of the training, teachers were introduced to the purpose of the study and given a brief overview of the study phases (i.e., baseline and intervention). Second, the inclusion criteria for study participants were discussed as well as procedures for acquiring parental permission. Teachers were encouraged to select four or five students who met the inclusion criteria and seek parental permission for them. At this time, teacher participants completed their informed consent permission forms. Third, each teacher received their own early literacy curriculum appropriate for middle school students. Training on the curriculum included an overview of the intervention components, an introduction to the curriculum's scope and sequence, a walk through the curriculum kit, and directions for downloading the software on a device. Fourth, teachers were trained on how to use student self-monitoring during the iPad-delivered lessons and were given a student self-monitoring sheet to use in their classrooms. Before leaving, teachers completed a demographic sheet about themselves and a training evaluation form. A follow-up email was sent the next day reviewing the steps necessary to begin the study (e.g., obtain parental permission, secure iPad for participants).

Public middle school. The teacher participant taught middle school special education students in a separate classroom in a rural school district located in the southeastern united states. The middle school had 484 students enrolled in grades 5-8. The schools' student body was diverse and 68% of students received free or reduced lunch.

Special education classroom. Participants received the iPad-delivered early literacy intervention in a separate special education classroom located in a public middle school. Participants completed one lesson a day individually via the iPad, three to four times a week. All participants received most of their daily instruction in the special education classroom along with

other students with moderate or severe disabilities; however, the special education participants also had planned opportunities with their nondisabled peers (e.g., music, physical education) and peer tutors regularly assisted in the special education classroom.

Materials

iPad-delivered early literacy lessons. The iPad-delivered intervention was organized into seven levels that addressed 14 early literacy objectives and grew progressively more difficult (see Table 2). Each level contained five lessons that participants completed individually on an iPad. The lessons featured a middle school-aged girl named Sam and were appropriate for older students who had yet to obtain foundational literacy skills (e.g., phonological awareness, letter-sound correspondence). Participants selected an avatar that represented themselves in the lessons and interacted with the lessons by touching the iPad. Systematic instruction (i.e., system of least prompts, constant time delay) and direct instruction (i.e., model-lead-test) were built into the lessons and prompts were provided when needed. For example, the Sam avatar introduced vocabulary sight words for the lesson and asked the user to point to the word on the screen. When no response was given, the avatar provided a prompt (e.g., pointing to the correct word) and repeated the task direction. When the participant touched the correct word, descriptive verbal praise was delivered (e.g., "You're right! The word is *friend*.). When necessary, error correction was delivered, typically by darkening and disabling the incorrect responses and leaving only the correct response available to the user to select. At the top of the iPad screen, highlighted circles tracked their progress through the parts of the lesson. Also, students could pause instruction by hitting the pause button and resume instruction by hitting the play button. After completing the five lessons in a level, participants took a level assessment on the iPad.

Table 2. Early Literacy Objectives Addressed in the iPad-Delivered Lessons*

1. Read sight words
2. Point to sight words to complete sentences
3. Point to text as it is read
4. Say and/or point to a word to complete a repeated story line
5. Respond to questions about a story
6. Demonstrate understanding of syllable segmentation by clapping out syllables in words**
7. Demonstrate understanding of phoneme segmentation by tapping out sounds in VC and CVC word***
8. Identify letter-sound correspondences
9. Point to and/ or say the first/last sounds in words**
10. Identify pictures that begin/end with given sounds**
11. Point to letter sounds in words***
12. Blend sounds to identify pictures***
13. Point to pictures/words representing new vocabulary
14. Use new vocabulary words and personal information to create a story

Note: * iPad-delivered early literacy lessons from the *Early Literacy Skills Builder for Older Students* by Browder, Gibbs, Ahlgrim-Delzell, Courtade, & Lee (2017).
= introduced in Level 2; * = introduced in Level 4

Student self-monitoring sheets. Students used a self-monitoring sheet (see Figure 1) to record their progress through the iPad-delivered lessons in each level. Each level contained five lessons which corresponded with one of five boxes on the self-monitoring sheet. The self-monitoring sheet had a place to note the level at the bottom along with five boxes arranged in a column. To use the self-monitoring sheet, students made an "x" through a box each time they completed a lesson, beginning at the bottom box and working upward. When an "x" was made in all five boxes, participants earned a self-selected prize. At the end of the lesson, teachers used the self-monitoring sheet to review with students how many more lessons were needed to complete the level.

Figure 1. **ELSB for Older Students Self-Monitoring Sheet**

Name:					
Lessons Completed					
	5	5	5	5	5
	4	4	4	4	4
	3	3	3	3	3
	2	2	2	2	2
	1	1	1	1	1
Level:					

Research Design

A single case multiple probe design across participants (Gast, 2010) was used to establish experimental control. Single case studies can provide a scientifically rigorous alternative to random control trials for experimentally determining the effectiveness of interventions with populations that do not allow for large numbers of participants (Kratochwill et al., 2010) such as the population under investigation in this study. In single case research, each participant serves as his/her own comparison, thus controlling for many confounding variables that can impact outcome in rehabilitation research, such as gender, age, socioeconomic level, cognition, home environment, and concurrent interventions (Kratochwill & Levin, 2010). Results can be analyzed and presented to determine whether interventions resulted in changes at the level of the individual, the level at which educational professionals intervene.

A multiple probe design allowed for instruction to begin with one participant while periodic baseline sessions were conducted with all other participants, decreasing the threat of learning through prolonged testing and exposure to intervention materials. Study phases included baseline and intervention. During the baseline phase, a minimum of five data points was collected for each participant until performance data were low and stable or descending for independent correct responses. Once a stable baseline was obtained for all participants, the first participant began the intervention and other participants continued in baseline. A new participant entered intervention when a change in level for independent correct responses was evident for the participant receiving intervention. In this study, a change in level was defined as an assessment score that was 30% higher than the baseline mean. Participants entered the intervention phase in a time-lagged manner until all participants had received intervention. Experimental control was demonstrated by a change in level or trend of participant independent correct responses from baseline to intervention conditions across participants.

Study variables. The independent variable used in this study was comprised of two components: individual early literacy lessons completed on an iPad and student self-monitoring of completed iPad lessons. The dependent variable was the percentage of independent correct responses on the early literacy level assessment completed by participants on the iPad after completing the five lessons in the level. When participants scored a minimum of 80% on the level assessment, they began the lessons in the next higher level. When the level assessment was less than 80%, the lessons in the level were repeated and the assessment was taken again.

Data collection procedures. Participant responses were collected on the iPad every time participants completed a level assessment. Each level assessment score represented the percentage of independent correct responses and was graphed for each participant (see Figure 1). No instructional fidelity or interobserver agreement (IOA) data were collected on the early literacy lessons and level assessments because they were delivered on iPad.

Procedure

Baseline. The intervention's level assessments were used to establish an appropriate starting point for participants to enter the intervention. To do this, initially all participants completed the Level One assessment. When participants' independent correct responses were 60% or higher on this assessment, they completed next higher assessment (i.e., Level Two). This process continued until their independent correct responses on the level assessment was less than 60% correct. Once identified, this level assessment was then used to establish a stable baseline performance level prior to receiving the intervention for each participant (see Figure 2).

Intervention. After baseline was established for all participants, one participant began early literacy instruction on the iPad at their baseline level and all other participants remained in baseline condition. Participants receiving instruction completed five lessons sequentially that addressed 14 early literacy objectives (see Table 2). After completing a lesson, participants used a self-monitoring sheet (see Figure 1) to track their progress in the level. After completing the five lessons in the level, participants completed the level assessment and the percent of independent correct responses was recorded and graphed. When the percent of independent correct responding was 30% more than their baseline mean, the next participant entered

intervention. When the percent of independent correct responding on the level assessment was 80% or higher, the participant began instruction in the next level. This process was repeated until participants completed all seven levels. If their percent of independent correct responding was less than 80%, the participant repeated the level again. Before a new participant began the intervention, another baseline probe was conducted with all participants not receiving instruction to ensure baseline levels remained low and stable. This process was repeated until all participants were receiving the intervention.

Results

In a visual inspection of these data, as seen in Figure 2, results indicate that two participants had increasingly higher percentage of independent correct responses after they completed the early literacy skills lessons in their level, as measured by the level assessment completed on the iPad. Visual analysis was used to determine a functional relationship between the independent variable (i.e., iPad-delivered lessons and student self-monitoring) and the dependent variable (i.e., the percent of independent correct responses on level assessments) for all participants (Barton, Lloyd, Spriggs, & Gast, 2018).

Within conditions visual analysis. Within conditions visual analysis was performed to discern patterns within conditions and to make data-based decisions about condition changes. The a priori hypothesis stated that the baseline conditions would remain stable and that there would be an immediate change in level and a gradual accelerating trend only after the intervention was introduced. A gradual accelerating trend (rather than a steep accelerating trend) is hypothesized during the intervention phase due to the academic nature of the behavior being monitored. During baseline phase, Bryce's percentage of independent correct responses were stable at 57% or less correct. After intervention, there was an immediate change in level and the percentage of independent correct responses were at or greater than 59%. Also noted is a gradual accelerating trend in a therapeutic direction for Bryce. There is no overlap in the percentage of correct responses across adjacent conditions (i.e., the minimum values of the intervention condition were higher than maximum values of the baseline condition). The immediate change, with no overlap, increases confidence in the presence of a functional relation.

Ryan began the intervention at Level 3. During baseline phase, Ryan's percentage of independent correct responses were stable at or less than 44% correct. After intervention, there was an immediate change in level and the percentage of correct responses were at or greater than 46%. Also noted was a slight accelerating trend in a therapeutic direction for Ryan. There was no overlap in the percentage of independent correct responses across adjacent conditions. The immediate change, with no overlap, increases confidence in the presence of a functional relation.

Elliot began the intervention at Level 3. During baseline phase, Elliot's percentage of independent correct responses were stable at or less than 43% correct. After intervention, there was no change in level and the percentage of correct responses were at or greater than 43%. Also noted was a zero celerating trend with the first two data points in the intervention phase and then with the last data point, movement in a non-therapeutic direction for Elliot. There was 33% overlap in the percentage of independent correct responses across adjacent conditions. The lack of immediate change, with overlap, decreases confidence in the presence of a functional relation.

Summative visual analysis. A summative visual analysis was conducted after the study was completed across multiple opportunities to demonstrate behavior change to determine whether a functional relation exists between the independent variable and the dependent variable. Figure 2 shows three intra-participant replications of behavior change when the intervention is introduced. Three inter-participant replications were required to establish experimental control in a multiple baseline across participants design. This was illustrated in Figure 2 with only two participants (Bryce and Ryan), falling short of the three replications needed to establish a functional relationship. Thus, a functional relationship between the intervention and the dependent variable was not established.

Social Validity

After the study was completed, the teacher participant responded to six open-ended questions about her experience with the early literacy intervention: (1) What was your experience using the intervention over that past several months?; (2) What challenges did you experience (e.g., scheduling, materials)?; (3) How did your students react to the intervention?

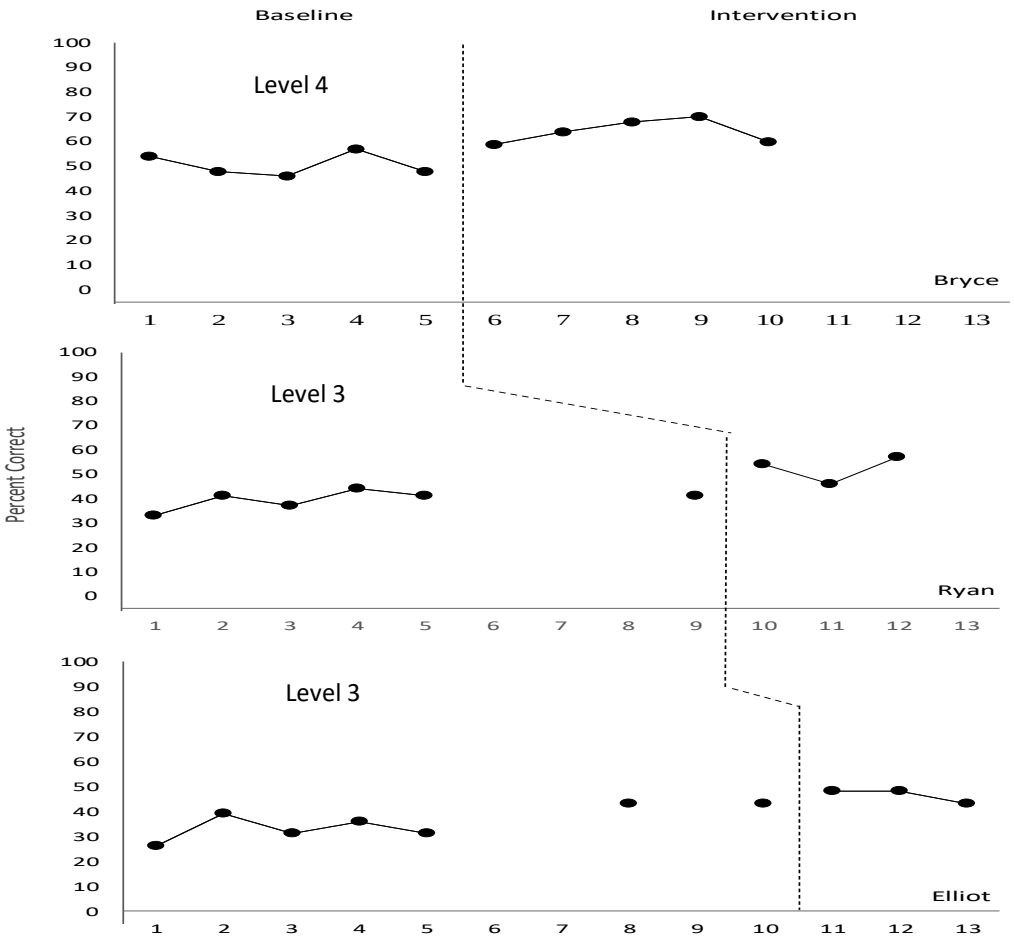

***Figure 2*. Percent of Correct Early Literacy Responses on Level Assessments**

Were there any surprises for you regarding your students' participation?; (4) Did any of your students move up a level in the curriculum? If yes, please describe.; (5) Have you shared use of intervention with any family members or colleagues (e.g., principal)? If so, what comments/feedback did they provide?; and (6) Do you plan to use the intervention next year with students?

For question 1, the teacher described a positive experience with the intervention stating that "the intervention has been a learning experience for the students and myself as well. I had the opportunity to watch these students receive one-on-one instruction with fidelity on a regular basis." For question 2, the teacher described two challenges encountered with the intervention: having time to plan the lessons for the read-aloud lessons and using the app with a student who needed extensive support for the iPad-delivered lessons. For question 3, the teacher was also positive about the reactions of their students stating that her students enjoyed the iPad lessons. She also commented that she was surprised at how well students retained what they learned from week to week. For question 4, the teacher indicated that she did not have a student move up a level in the iPad-delivered intervention. For question 5, the teacher stated that she had shared the program with her principals and other colleagues. For question 6, the teacher indicated that she planned to use the intervention next year with her students.

Discussion

This study evaluates the effects of an iPad-delivered early literacy intervention and self-monitoring on the acquisition of early literacy skills. Two questions are asked: (a) What was the effect of the intervention on the acquisition of early literacy skills of middle-school students with developmental disabilities who are nonreaders? and (b) What was the experience of the middle school special education teacher implementing the intervention?

The effect of the intervention on the acquisition of early literacy skills for participants is mixed. Experimental control is demonstrated between the intervention and the dependent variable for two participants, Bryce and Ryan; however not for the third participant Elliot, whose percentage of independent correct responses on the level assessments during intervention is not much higher than in the baseline condition. Elliot's lack of progress on the level assessment provides an opportunity to evaluate why he did not progress as his classmates did.

First, Elliot is the last participant to enter the intervention and stays in baseline conditions the longest. Perhaps the extended exposure to baseline conditions impacted his performance after he received the intervention. It might also be important to consider that Elliot has the lowest IQ of the three participants, although only one point separated him from Ryan (i.e., 40 vs. 41). Such a small difference in IQ seems unlikely to account for the lack of learning Elliot demonstrates during intervention. A third possible explanation for Elliot's performance is that the intervention needed to be implemented with greater intensity (more lessons) than his peers for Elliot to demonstrate gains in early literacy skills. In their study, Allor, Gifford, Al Otaiba, Miller and Cheatham (2013), found that increasing the intensity of instruction improved the early literacy skills for three participants who had not been responsive to the reading intervention previously (for details of the three-year study, see Allor, Mathes, Roberts, Jones, & Champlin; 2010).

Allor, Champlin et al. (2010) also found three other important factors when planning to increase the intensity of reading instruction for learners with intellectual disability - appropriate level of difficulty, motivation, and meaningfulness to the student. Given the low level of independent correct responding during baseline, it is evident that this is a difficult level for Elliot. Perhaps beginning the intervention at a less difficult level would improve Elliot's performance. Another thought is that there might be a specific skill assessed in Level 3 that Elliott has not yet mastered. If so, he would likely benefit from systematic instruction focused on teaching the skill (or skills). Once mastery on the missing skill is demonstrated, the iPad lessons could be resumed. Teachers can conduct an error-analysis of the questions missed on the level assessment, which are available on the iPad after the assessment is completed.

Allor, Champlin et al. (2010) also found in their research that some students required additional reinforcement for on-task behavior during lessons to benefit from reading instruction. We do not have any information regarding Elliot's on-task behavior. Perhaps adding an individualized behavior management plan to Elliot's early literacy lessons would have increased his percent of independent correct responses on the level assessment. Whether beginning Elliot at a less difficult level or adding a reinforcer for on-task behavior would have made a difference in Elliot's percentage of independent correct responding are important questions for future research.

Another interesting finding from this research is that, while two participants made gains in their percentage of correct responding (i.e., Bryce and Ryan), no participant reached the 80% correct criterion on their level assessment to begin the lessons of the next higher level, even after completing the lessons multiple time (Bryce completed his level lessons five times.) These results might not be surprising given that early numeracy skills are academic behaviors that one would expect to change more slowly than non-academic behaviors, especially for middle-school learners with developmental disabilities who have not learned these skills.

Additionally, the single-case design used in this study required that the percent of independent correct responding during baseline conditions be low and stable; therefore, participants entered the intervention at a level that was challenging for them. The seven levels of the intervention are sequential and grow progressively more difficult from Level 1 to Level 7. Bryce entered the intervention at Level 4 and Ryan and Elliott entered at Level 3. While Bryce and Ryan demonstrated gains in independent correct responding, neither participant made enough progress to begin the next level during this study. These results might have been different had they completed the intervention in sequential order, beginning at Level 1. Classroom teachers who are not confined to the constraints of a research design might experience different results for their students, who can begin the iPad-delivered intervention at Level 1 as intended.

Limitations and Suggestions for Future Research

While the results of this study are promising, they should be interpreted considering these limitations. The first limitation of the study is that the use of self-monitoring was not evaluated. The teacher reported using the self-monitoring sheets with students, but no data was collected as to how or how often they were used or if the participants found them motivating. Future research should systematically investigate the effect of self-monitoring on lesson completion for students receiving the iPad-delivered lessons.

A second limitation of this study was that information about the student participants' experiences with both the iPad-delivered early literacy lessons and the read-aloud lessons were not gathered. The teacher reported anecdotally that their students liked completing the lessons on the iPad, but the participants' opinions about their experiences were not explored. Participants have valuable insights about their own instruction that could be used to improve their learning experiences. Future research should include collecting social validity data from the participants themselves about their experiences with the intervention.

A third limitation was that the length of time participants needed to complete the lessons on the iPad was not recorded consistently across participants. Although the teacher reported that the lesson didn't take long for participants to complete, having the exact amount of time needed would have allowed the researcher to be more specific about the amount of time required to implement the iPad-delivered lessons. Future research could collect these data from the iPad summary after each lesson is completed.

Fourth, data on participants' on-task behavior was not collected. For the most part, students worked independently through lessons, needing only the systematic prompting and support provided by the program. However, participants occasionally needed to be redirected to keep the program going by a teaching assistant. Without data focused on on-task behavior, we do not know how much redirection was provided to participants. On-task behavior could be collected by using a frequency count to indicate the number of times participants are redirected by others (e.g., teachers, teaching assistants, peers) to reengage with the lesson or by using an interval recording system to determine a percent of time on task for participants.

Implications for Practice

There are several importation implications for practice. First, the intervention was effective in increasing the independent correct responses for two of the participants. While not enough to indicate a functional relationship between the intervention and the dependent variable, these results are promising and warrant further research. Given the lack of age-appropriate curricula focused on early literacy skills for older students with developmental disabilities, there is a great need for early literacy curricula such as this.

Second, using a computer program to deliver the early literacy skills lessons enabled the lessons to be delivered with fidelity. Classrooms can be chaotic places and using computer-assisted instruction is a way to deliver high-quality instruction (McKissick, Diegelmann, & Parker, 2017). Delivering lessons with fidelity is important to ensure that the evidence-based practices used in the intervention (e.g., constant time delay, system of least prompts) are delivered as intended every time. Treatment fidelity is critical to improved student outcomes (e.g., Harn, Parisi, & Stoolmiller, 2013).

Third, the lessons and self-monitoring were easily implemented into the classroom routine. After a 3-hour professional development training, the teacher was able to integrate the early literacy lessons into her daily routines. A major factor that enabled the intervention to be implemented with ease was the amount of time each lesson took to complete. While the amount of time needed was not directly collected, anecdotally, the teacher reported that between 10-20

min a lesson was needed for participants to complete a lesson. Several factors could impact the length of time needed to complete the lessons including the amount of content being covered and the prompting and error correction procedures delivered during the lessons by the program.

Fourth, the iPad-delivered intervention enabled instruction focused on early literacy skills to be delivered to a wider range of students with disabilities in middle school. In the past, middle school teachers have not had a grade-appropriate intervention available to them to teach their older students who still needed early literacy skills instruction. Early literacy skills are believed to be necessary for making gains in reading independence (e.g., Allor, Mathes, et al., 2010), so age-appropriate curricula focused on teaching these foundational skills to older students are important.

Fifth, many students with developmental disabilities find iPad-delivered lessons engaging (e.g., Rivera, Hudson, Weis, & Zambone, 2017). In this study, participants individually completed one lesson a day, three to five days a week on the iPad. Anecdotal data from the teacher indicated that participants were excited and interested in completing the lessons on the iPad. As participants independently worked through each lesson, they received instruction, prompts, error correction, and reinforcement from the program's avatar. A teaching assistant sat with participants while they interacted with the lesson to ensure that participants remained focused on the lesson and did not leave the lesson to open another app on the iPad.

Sixth, self-monitoring is an important self-determination skill that students with developmental disabilities often need to be taught. Self-monitoring was used in this study by participants to track the lessons completed on each level. At the end of each lesson, participants made an "x" on their self-monitoring sheet and the teacher reviewed the number of lessons needed to finish the level. When all five boxes contained an "x", participants selected a prize.

Summary

Special education teachers have access to effective curricula for teaching early literacy skills at the elementary level (e.g., Allor, Mathes et al., 2010; Browder et al., 2012) but when students enter middle school without the early literacy skills needed to move forward in reading independence, there are few curriculum options. Reading instruction for secondary students who are nonreaders can be challenging and effective interventions are needed to help teachers deliver age-appropriate instruction to their older students. This study evaluated the effects of iPad-delivered lessons and self-monitoring on the acquisition of early literacy skills for middle school nonreaders with developmental disabilities. Results from the study were mixed. Experimental control was demonstrated for two participants who improved their percent of independent correct responses on level assessments after intervention but not for a third participant, whose intervention responses were not much higher during intervention than in the baseline condition. A middle school special education teacher implementing the intervention integrated the iPad-delivered lessons into her daily schedule and social validity data indicated that she thought the intervention was important and that she planned to continue using the early literacy intervention with her students. While these results are promising, more research is needed.

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Better Education Opportunities for Students with Autism and Intellectual Disabilities Through Digital Technology

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Abstract: The provision of new opportunities to maximize learning is a fundamental right for all students. This paper explores the role of digital technology in the provision of educational opportunities for secondary age students who have been diagnosed with an intellectual disability and/or autism spectrum disorder. We describe a learning environment in which a range of technologies have been introduced to enable students' access to the national curriculum, and acquire skills that improve their ability to navigate the world outside the classroom. Through a qualitative study, we describe promising experiences of emerging technologies used to assist learning at the Inclusive Education Centre of a public secondary school located in regional South Australia. Our results suggest that emerging technologies can provide guidance to groups of students, encourage them to express their ideas, motivate physical activity, and improve general social interaction skills. In particular, we explore the impact, limitations and future opportunities of immersive virtual reality and social robots.

Keywords: Equal education, autism, intellectual disability, technology, social robotics, virtual reality

Parents, families and the global community expect formal education to provide a myriad of opportunities for all individuals, regardless of ethnicity, gender, geographical location, socioeconomic disadvantage, and disability to engage in a rigorous, challenging, authentic, real-world curricula (Saggers et al., 2016). This requires an instructional pedagogy that provides students with the motivational framework to engage successfully in new learning, and activities outside their comfort zone and personal experience.

There is little doubt that decisions made by teachers about the way in which they structure tasks, set expectations, stimulate or impoverish the educational environment, create the balance or imbalance in learners. It is universally acknowledged that digital technology has become an integral element of daily life for many young people (Lever-Duffy et al., 2004; Palfrey & Gasser, 2008; Sharma, 2016; Shelley et al., 2010). In fact, mainstream education has heralded students as digital learners, who integrate technology and multimedia as part of their core learning strategies to innovatively solve and deal with real-life issues both at school and home (Beetham, 2013; Prensky, 2001; Thompson, 2013; Trilling & Fadel, 2012).

Twenty first century learners are visually oriented, 'entertainment' focused, goal oriented, able to efficiently engage in multi-tasking, and communicate across a range of digitally complex and integrated levels (Beetham, 2013; Shelley et al., 2010). Digital technologies including video conferencing, virtual environments, and online classrooms are already becoming the standard learning tools that stimulate student ownership, lifelong learning and the development of international community partnerships (Koper, 2014; Lane, 2012; Ward, 2015). This allows teachers and students to exercise their imagination and integrate possibilities into realities, facilitating more self-directed learning (Beetham, 2013; Candy, 2004). Through the creation of global community networks, digital technology facilitates collaborative mentoring and the development of curricula that reflects constructivist pedagogies that embrace emerging technologies (Amarin, 2013; Clarke et al., 2008; Kozma et al., 2003).

In this paper, we argue that digital technology is central to the integrated learning experiences of young people with a diagnosis of intellectual disability (ID) and/or Autism Spectrum Disorder (ASD). Digital technology is already used to support traditional education, and underpins teaching pedagogy that enables students to acquire the skills necessary to navigate the world outside the classroom (Newbutt et al., 2017; Bauminger-Zviely et al., 2013). Technology can provide environments that allow for self-paced learning and immediate feedback, while minimizing the need for 'real world' social interactions during the learning process, a common source of anxiety for these student populations (Golan et al., 2006). This paper reports on a qualitative study, implemented using focus groups and semi-structured interviews, at the Inclusive Education Centre (IEC) of a public secondary school located in regional South Australia. Our results describe promising experiences of different technologies used to assist learning. In particular, we explore the impact, limitations and future opportunities of immersive virtual reality and social robots from the perspective of parents and staff members.

The Impact of ASD and ID

ASD (hereafter referred as autism) is an ongoing neurodevelopmental condition that results in deficits in communication, social interaction and behavior (American Psychiatric Association

2013; Carrington et al., 2015; Kent et al., 2013). The degree of the impairments related to autism varies significantly across a spectrum, ranging from severe to near-typical social functioning. Characteristics such as narrow interest focus, social and emotional isolation, limited communication, increased frequency of repetitive behaviors, and low capacity to form and maintain relationships can reduce the learning opportunities in students on the autism spectrum (Baird et al., 2003; Bieniarz, 2011; Dahlgren, 2002; Jones et al., 2001; Kenny et al., 2015; Saggers et al., 2016).

Speech and language deficits are evident in early childhood, and form one of the key diagnostic criteria for autism (Prelock & Nelson, 2011). Almost 50% of children on the autism spectrum present with insufficient spoken language for effective communication (Koegel, 2000), with many never developing functional speech. Some will use non-verbal means to express their needs, while others will speak in phrases or sentences that have little-to-no meaning to others (Wainer et al., 2014). When present, verbal communication might be characterized by repetitive or idiosyncratic speech. Additionally, many autistic individuals possess high levels of social anxiety, lack of spontaneity, or have difficulty initiating verbal and non-verbal communication with others, making interpersonal communication challenging.

O'Brien and Pearson (2004) observed that 30% of young people with a severe learning disability are likely to be autistic, and 75% of individuals on the autism spectrum will have a severe learning disability. The impact for some can be significant and reduce the quality of life (Farley et al., 2009). On completing school, young people with ID and autism are far less likely to move into the labor force than their mainstream age peers (Sardo, 2013; Siperstein, Parker & Drascher 2013).

Digital Technology in Special Education

It is well known that young people enjoy playing with computers and mechanical devices. Mainstream technologies—including Mobile Apps, computer games and virtual reality devices––are commonly used to facilitate interpersonal communication for students with intellectual disability and autism (Grynszpan et al., 2014; Bauminger-Zviely et al., 2013; DiGennaro et al., 2011;). It is often believed that by using first-person, realistic-looking, computer-generated environments, students can develop a functional range of daily living skills (e.g. social and communication skills) that would increase their opportunities for a more independent life (Newbutt et al., 2017; Bozgeyikli et al., 2016; Newbutt et al., 2016; Rajendran, 2013). Although these technologies appear to be effective, a significant concern is that the large gap between the safe and structured environment of computer-based interventions and real-world social behavior may result in poor transfer of skills to real world interactions (Bauminger-Zviely et al., 2013). In recent years, consumer grade socially-assistive robots (SARs) and head mounted displays providing 3D immersive virtual reality (IVR) have become affordable and available to the consumer market. These technologies allow people to undertake realistic experiences with high levels of engagement and potential for ecological validity.

Socially-assistive robots. The field of socially-assistive robotics entails the design and implementation of machines (robots) that aid humans through social interaction, rather than physical intervention. The use of robots as attractors, mediators, or assistive tools during therapy for children with autism is one of the first applications of SARs (Feil-Seifer & Mataric, 2009).

To date, existing research in this field has been focused in three main categories: the use of robots to (a) increase engagement and motivation; (b) elicit behaviors and (c) model, teach, and/or practice skills with young children (Diehl et al., 2014; Silvera-Tawil et al., 2018). The outcomes vary according to the intervention method, the robot being used and the severity of the child's symptoms.

Immersive virtual reality. Virtual reality (VR) is a technique that uses computers to simulate life-like, interactive environments and avatars with realistic appearances that emulate the experience of being in an alternate physical space – a 'virtual environment' (VE). Educational virtual environments (EVEs) can be customized to the student's needs, with the potential to increase or reduce stimulus and distractions. Environments and social situations can be easily changed to provide hierarchical learning, reduce social anxiety and promote the transfer of skills across different contexts. Importantly, EVEs provide safe, non-threatening environments where mistakes have no real-life consequences, by providing new opportunities, raising awareness, improving confidence, as well as enhancing social skills and motor skills (Mikropoulos et al., 2011; Mitchell, 2007; Smedley, et al., 2005; Roussou et al., 2006; Munger, 2014; Yogeswara et al., 2013). It has been argued that the realism of computer simulated environments, as well as an increased sense of presence provided by IVR, can help promote learning and increase the probability that a person would generalize newly learned skills into everyday living (Miller & Bugnariu, 2016; Newbutt et al., 2016).

Context of the IEC

An IEC located in regional South Australia has created a technology-rich learning environment that aims to enhance the opportunities of students with moderate to severe intellectual disabilities, language communication disabilities, autism, Down Syndrome and significant severe and multiple disabilities. Eligibility for enrolment is determined by an educational psychologist and accommodates the learning needs of students aged between 13 and 19 years. Between 21 and 30 students are enrolled every year; all of whom have a One Plan (Education Health Care Plan) that outlines the student's educational programs, learning goals, health care support, accommodations, and transition pathways from school to work and the community. Students have the opportunity to undertake work experience, and engage in School-based apprenticeships, work readiness training or attend Day Options on completion of schooling.

During the last decade, a range of digital technologies have been introduced at the IEC to enable students to access the national curriculum and further develop life and work skills. Some of the available technologies include: digital manipulatives in mathematics, Raspberry Pi, Lego Mindstorm, laptops, tablets (e.g. iPads and Kindles), 3D printers, audience response systems (i.e. ActivExpression and Activote), Skoogmusic, Vernier Labquest, an ActivTable and a sound wall. Interactive whiteboards or a Promethean V4 ActivPanel are located in each of the learning spaces, and are used every day.

Learning and technology are interconnected across the IEC. Different technologies are used depending on the subject content. For example, the mixed Augmented and Virtual Reality laboratory encourages students' awareness, within a flexible exploratory framework, to demonstrate the illusion of depth by bringing the content 'alive' in the classroom. In Science, students can pull apart various elements of cells, plants, insects and skeletons and view them in 3D. They can view a virtual heart, look inside it, turn it around, follow the direction of blood flow and speed up the heart rate. The assembly and disassembly of Lego Mindstorm or a robotic

arm, enables them to experience how a basic engineering concept is applied to make a simple robotic structure. Teachers and School Services Officers are gradually introduced to the complexities of new technologies, which they may have otherwise found challenging and intimidating. Consequently, students are exposed to progressions of experiential learning with multiple levels of engagement.

In June 2015, the IEC introduced two types of SARs: NAO and Paro (Figure 1). NAO is a small (58 cm height, 4.3 kg weight), programmable, humanoid robot developed by SoftBank Robotics. It is controlled using a Linux-based operating system, and includes a user interface that allows users to script robot behaviors. The hardware platform includes tactile sensors, speakers, microphones and video cameras, as well as prehensile hands with three fingers. It can reproduce sound, synthesize speech, and understand verbal utterances. NAO allows for a range of applications that stimulate the development of social and communication skills.

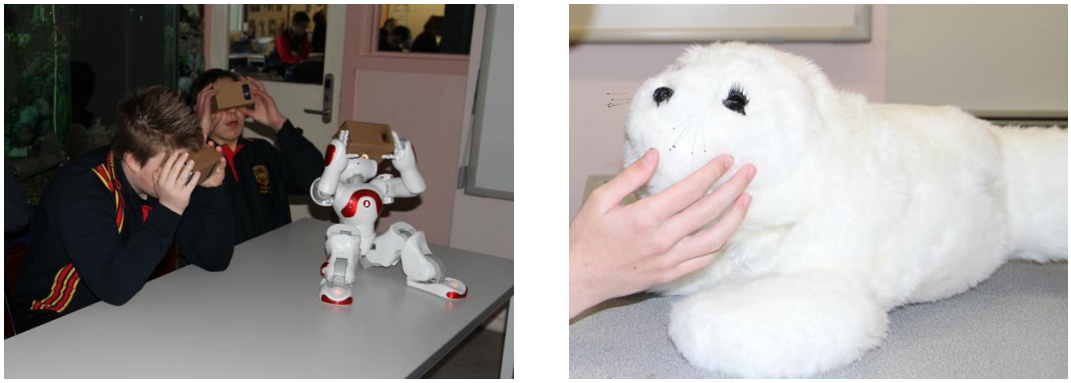

Figure 1. NAO (left) and Paro (right) robots with students from the IEC

Delivery of robot-assisted lessons (with NAO) at the IEC is generally done with groups of five to ten students, where the robots act as an instructor or a social mediator, and provide students with the opportunity to take individual turns. The NAO robots are individually scripted and programmed by staff members to be positive role models and provide specific guidance and instructions during lessons, encourage students to express their ideas and provide positive feedback and reinforcement. Lessons are often reviewed, modified and repeated according to the students' needs and interests, teaching requirements and other demands across the learning areas. Lessons are structured following different formats including: performance, role-playing, step-by-step instructions, questions and answers, and social stories. Under the programmed instruction from NAO, for example, students practice number and letter recognition using the coordinates in basic chess games, design pictures using shapes, cook meals in an industrial training kitchen, practice coding using Raspberry Pi and Lego Mindstorms, and construct Leonardo da Vinci's self-supporting bridge. Additionally, role-play is used to share information and model behaviors related to physical activities, personal safety (e.g. the safe use of a kitchen knife and a 3D doodler pen) and social interaction.

The NAO robots are normally scripted to respond to the students' speech or touch according to the requirements of the lesson. The LEDs in their eyes are programmed to change color depending on the context of the script, or when the robots are ready to listen. Together, these behaviors encourage turn taking, eye contact, active listening, joint attention, problem solving, social interaction and social communication. The NAO robots are used multiple times

per week, depending on the curriculum focus and external activities across the IEC. Each individual session would run for approximately 30-45 min.

In contrast, Paro is a zoomorphic robot that has the appearance of a harpy seal cub. It was designed by Takanori Shibata of the National Institute of Advanced Industrial Science and Technology of Japan. Paro responds to touch and sound by moving its tail, head and opening and closing its eyes, while it simulates sounds similar to those of a seal cub. Paro's physical appearance, soft fur covering, and the movements of its flippers, eyes and tail often result in positive responses from the people who interact with it (Banks, 2013; Gelderblom et al., 2010; Kidd et al., 2006; Stanton et al., 2008; Robinson et al., 2013). Likewise, its simulated cries when touched or stroked provide a catalyst for relaxation and social interaction (Chang et al., 2013; McGlynn et al., 2014; Shibata et al., 2012). Paro was introduced as part of the animal-assisted therapy program with the IEC—together with a giant Flemish rabbit, chickens, a fighting fish and Australian green tree frogs—where it is used as a companion to encourage self-expression, relaxation and emotion regulation.

Since February 2017, additionally, all the students from the IEC experience an introductory programme to VR that consists of several short cameos of different VR contexts, including encounters with a dinosaur, origami animals, an alien, and a high-rise streetscape. After this initial familiarization with the technology, the students are given the opportunity to 'immerse' themselves in different scenarios that relate to their curricula, for example, IVR allows them to explore the African wildlife they observed during their work training at the Zoo. Immersion in a virtual ocean, furthermore, enables them to appreciate a pristine ocean when collecting data about ocean pollution, while a physics puzzle in IVR stimulates decision making, problem solving and risk taking, whilst learning about the effects of gravity and chain reaction. Likewise, a refugee crisis in IVR transports students to a beach with an escaping refugee family, encourages them to appreciate the sadness of war, and stimulates self-expression in Art when designing their refugee posters. Similarly, immersion into the human body allows them to explore the complexities of human physiology, while watching a story about a lonely hedgehog on his birthday encourages the students to feel empathy. During and after all VR sessions, the students are asked questions such as: What can you see? What do you feel? What is happening? What have you learned from this experience? What are the graphics like? They are also given the opportunity to share their experiences with their peers. The interaction with the IVR device is limited to once per week given that only one device is available for all students.

The VR device installed at the IEC is the Oculus Rift. Oculus Rift is an IVR headset developed and manufactured by Oculus VR. The headset includes an OLED display with 960×1080 pixels of resolution per eye, a 90 Hz refresh rate, and 110° field of view. It has integrated headphones, rotational and positional tracking. The headset's positional tracking system is supported by external infrared tracking sensors, which track the position of the headset device. The system includes Oculus Touch, a pair of handheld units (one for each hand) that can be used to detect hand movement and finger gestures within the virtual space.

Methodology

The aim of this study was to collect insights from parents/carers and staff members about the impact of the SARs and IVR at the IEC. Observations of the potential benefits, challenges, limitations and opportunities of these technologies were explored.

Procedure

This study was implemented 24 months after the introduction of the SARs at the IEC. Over the 24-month period (June 2015-2017), 28 children were enrolled and had multiple opportunities to interact with both technologies. Only three students were averse to wearing the head mounted device. Focus groups and semi-structured interviews were conducted between July and November, 2017. Each focus group was audio recorded and a thematic analysis was undertaken by the researchers. Ethics approval was sought and obtained in July 2017.

Participants

All parents/carers and staff members who were involved with the students from their IEC during the 24-month period were invited to participate. Nine focus groups and semi-structured interviews were conducted with a total of 18 participants; six parents/carers, six teachers, and six additional staff members including the school Principal and school services officers (SSOs).

Results

The Use of Technology at the IEC

Overall, participants responded positively toward the use of technology within the IEC. They noted that while different devices are widely used to support education, the more variety there is the greater the opportunities for students to explore their individual learning styles. However, parents emphasized the possibility of the students becoming obsessed with technology. While this hasn't happened with the robots and IVR devices, participants believe it is because they only have access to them at school, as learning tools, and during limited periods of time. Some parents acknowledged that their kids identify most technologies used at the IEC as learning tools, and prefer to do different things when they return home.

> *I have to say because it's so IT advanced in here [at the IEC], when [the student] gets home he has no interest in his iPad or computer… occasionally, he'll grab his iPad and play a game [Parent 3]*

Socially-Assistive Robots at the IEC

According to participants, the appearance and social aspect of the robots is a fundamental component of their success, and provide opportunities that are impossible with other technologies. NAO's small size, simplified human-like form, and monotone voice were referred as key elements in reducing sensory overload in the students. Paro's appearance, on the other hand, was described as cute, soft and cuddly, while its behavior was perceived as friendly and calming. Both robots were referred to as safe, patient, respectful, non-confronting and non-judgmental. Participants also highlighted the capacity of the robots to provide unlimited repetition together with the students' ability to manage the robots' pace (via touch or speech) as key elements in reducing the students' stress and anxiety, creating exceptional opportunities to achieve learning outcomes. Finally, participants mentioned that robots don't convey unexpected changes in behavior as a result of their 'own' emotions providing the level of predictability that was needed by the students.

Main benefits of the humanoid robot NAO. According to participants, NAO has proved to be an engaging social companion for students. It provides positive feedback, encourages active listening and reinforces positive social behavior. It was noted that with the introduction of NAO,

students became more interested in schoolwork, demonstrating a willingness to listen and interact. It also provided a safe environment to develop learning in areas that would originally have been a cause of stress and anxiety, increasing the student's confidence and resilience. While NAO appears intelligent, participants believe that through its technical limitations it has created a safe environment where students feel comfortable to engage in new activities even if they were not proficient. Even after 24 months, it was noted, the students' enthusiasm to interact with NAO remained undiminished as the programs changed with the focus of the curricula and the developing needs of the students. Participants also mentioned that NAO's benefits extended to teachers and parents, by triggering creative thinking and innovation.

Benefits of NAO in learning. Staff participants noted that NAO's capabilities enriched instructional programs by stimulating the learning process, prompting self-initiated interactions, supporting participation, and providing positive reinforcement, encouragement and motivation. Students become involved in observational learning by imitating the posture, gestures and movement of the robots, as well as participating, albeit peripherally at times, in the learning activities, thus having an overall positive influence on their learning development. As a result, the NAO robots enabled students' development in a number of areas including academic skills, speech, life skills, social skills, physical activity, gross and fine motor skills.

Main benefits of Paro the robot seal. At the IEC, Paro was used as a calming strategy to help students reduce anxiety, and as an additional stimulus for communication, particularly for students with low functioning autism and limited verbalization. Participants highlighted that students with indistinct articulation, who did not initiate conversation with their peers, found time relaxing with Paro to be beneficial. For example. Paro's cries and movements resulted in smiles from the non-verbal students, who then progressed to stroking its fur, whilst students with severe and multiple disabilities responded with varying degrees of eye contact, hand clapping and smiles when Paro was placed in front of them. Although initially some students showed little inclination to touch Paro, they responded favorably to its presence and were content to spend extended time with it.

> *Sort of offers security to them... I think if [a student] had a bad day with mum she can sort of express... she can tell that to… Paro but not to anyone else. [SSO 1]*

Generalization and transfer of skills. Some of the skills learned using the robots seemed to transfer to different contexts. Staff and parents mentioned that they have seen improvements in the students' patience, confidence, self-expression, physical activity and emotion regulation. They also mentioned improvements in social communication, interaction and emotion recognition. According to participants, the simple step-by-step instructions provided by NAO were particularly beneficial in reducing anxiety outside the classroom, with many students now being able to separate complex tasks into small steps by themselves.

Limitations. Participants mentioned the robots' cost and fragility as the two main limitations. For this reason, the robots are only used during monitored situations. Participants also mentioned that a minimum level of cognition and verbal ability is required to maintain motivation when interacting with NAO. Participants also mentioned that effective use of the NAO robot requires commitment, imagination and technical skill. If the teachers are not creative, the robot would be a distraction for students and not provide any benefits. The difference in planning a lesson can go

from less than an hour without the robot, to a day depending on the complexity of the lesson, and technical skills of the programmer.

Opportunities. While the robots were used only with students from the IEC, teachers noted they could be used with students from mainstream education classes who have mild learning disabilities. While teachers provide as much attention as they can, larger groups with varying levels of skills make it difficult, and students with cognitive disabilities fall behind, lose interest and concentration:

> *Some of these students fall between the cracks because mainstream education is too difficult for them, but the disability unit is too basic. [Teacher 1]*

Immersive Virtual Reality at the IEC

All participants responded positively toward the use of IVR devices and mentioned that VR is a risk-free environment where students can learn, make mistakes and learn from their mistakes, knowing that if they do the wrong thing, they are not going to get hurt. They also supported both single-user and collaborative VEs but emphasized that, to reduce potential anxiety due to the new interactions introduced into the virtual world, the transition from single-user to collaborative VEs should be slow.

Main benefits. According to participants, the student's engagement with IVR stimulates their imagination, encourages free expression and communication, extended attention spans and increases social communication as they relate their experiences to peers, friends, and family:

> *The other day when several of them had trialed it… they were all excited and talking… because it's on your own… they were then interested to hear about what the other person saw and having quite a discussion about it. [SSO 1]*

Participants also mentioned that the students enjoy the experience provided by the IVR devices, evident from student's comments[1] such as: "*the graphics were awesome*" or "*the scene was cool or fun*". It was noted that students observe the different environments, listen to the narrator (when available) and are often able to comment about the facts they watched or heard, including: "*elephants don't like meat but are fascinated by its smell... they eat plants*." Participants also mentioned that the VEs have triggered the student's feelings and empathy towards the virtual characters, and would make comments such as: "*you're never too prickly to make friends… anyone should be able to have a friend… it's good to get friends*"; "*I feel tingly, a bit happy, it feels real and a bit weird*"; "*I feel a bit weird watching a turtle because I've never seen a turtle in the sea before*"; and "*I feel frightened because great whites are scary*".

Limitations. According to staff participants, while most students have expressed their enjoyment using the technology and their want to use it again, others (approximately 9 out of 28) either disliked the headset or found the immersive experience confronting. The main challenge is that many people in the target population suffer from sensory sensitivities; their senses—sight,

[1] Student's comments were provided by staff members during the focus groups. The identity of the students who made the comment was not shared with the researchers.

hearing, touch, smell and taste—take in either too much or too little information from the environment around them. As a result, the audio-visual stimulus provided by the IVR device may also be overwhelming. Participants also mentioned motion sickness, also known as virtual reality sickness, as a potential limitation causing symptoms such as headaches, nausea, fatigue, drowsiness and disorientation:

> *Even before they [students] get to see anything, they've learnt to put this thing on their head… that might be confronting [SSO 3].*

Opportunities. When asked about the areas where participants believed IVR can beneficial, all participants highlighted that IVEs would be particularly helpful in areas that are either risky, or difficult to teach at school or at home, such as traveling or crossing the street. Staff participants also highlighted key elements for an independent life that could be taught using this technology, including phobia management, choice making, hazard identification, motor skills, and reinforce academic learning in all kinds of subjects matter from mathematics and science, to history and geography, allowing for better and deeper understanding. The importance of social norms and interaction associated with anxiety management was also highlighted by staff and parents. As noted, people with IDs and autism can find it difficult to understand social rules and unpredictable behaviors with small changes or deviation from their expectations, can cause significant distress:

> *He [the student] will see somebody swear or yell at things… if you could get someone like that in the virtual reality where it's controlled to teach him that you can still survive with [people] doing that… then he'll be able to join the rest of the world. [Parent 1]*

Another area of opportunity mentioned by participants was experiential learning. More specifically, experiencing activities that prompt imagination, creative thinking, emotion activation, reflection and a change of mindset or practices:

> *… when you ask them something, they are very limited in what their sort of experiences are… expanding their experiences will then create… perhaps they'll have a bit of a thought process and think and think, "Oh, I remember seeing this" [SSO 3]*

Conclusions

The provision of new opportunities to maximize learning is a fundamental right for all students. Unfortunately, many students with ID and autism, struggle to achieve parity with their mainstream peers. Emerging technologies, however, are demonstrating their influence for sealing this chasm. Through a qualitative research method, outcomes from this study suggest that technology can be used to engage students in multisensory, active, experiential learning that encourages active listening, increases motivation, reinforces positive social behavior and reduces anxiety, further improving learning across the curricula. The integration of SARs has been particularly effective, providing specific guidance to groups of students and encouraging them to express their ideas, involve themselves in physical activity and improve general social

interaction skills. The SARs can be programmed to stimulate participation, provide real-time feedback, offer positive reinforcement, and demonstrate a patient, pleasing communication style across a variety of educational contexts. IVEs, on the other hand, had provided opportunities for students to stimulate their imagination, encourage free expression, empathy and communication.

Looking into the future, we may require changes at many levels of education. The broader educational systems need to be dynamic and spontaneous in the provision of digital technologies. Risk needs to be managed without diminishing the creativity of educational practitioners. While digital devices can be used to shape the learning process to meet the needs of individual students, research partnerships could provide new opportunities for students with ID and autism to acquire a range of daily living and social communication skills, enabling them to become more independent and productive members of the community.

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Gap in Mathematical Achievements of Migrant Students: Is It "Just" a Question of Language?

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Abstract: Between 2015 and 2016 we conducted computer based tests with 177 French migrant students enrolled in primary, middle and high schools, to evaluate their mathematical abilities and their levels of literacy. With 26 of this group, we supplemented data from their results with interviews and exercises on paper. By comparing their scores to those of native speakers, we sought to establish the reasons for the gap in mathematical achievement that exists between these groups of learners. We have observed that academic language plays an essential role in this phenomenon but we have proved that this factor is not necessary linked to their proficiency in French. In addition, we have found other obstacles which hinder mathematical achievement of some migrant students. Consequently, considering the range of these factors, we have concluded that an evaluation of the specific needs of each migrant student has to been made so that each of them can receive the help that they require.

Introduction

In numerous countries, the number of immigrant and refugee students has recently increased. In the United States, the percentage of children with low levels of English literacy has nearly doubled between 1975 and 2005 (Federal Interagency Forum on Child and Family Statistics, 2005. America's Children: Key National Indicators of Well-Being. Washington, D.C.). They now represent one of the fastest growing components of the school-aged population (Fry, 2007) and the number of children with an immigrant background are expected to increase from 12 million in 2005 to 18 million in 2025 (Passel, 2007). In France, around 60 000 multilingual children are enrolled in French schools during the academic year 2016-2017 (Robin, 2018).

These students usually begin with specific classes providing them with an intensive language programme before being integrated full-time in mainstream classrooms. In spite of these measures, immigrant children fail in catching up in academic assessments, even after several years of schooling in their host country (Andon, Thomson & Becker, 2014; Ercikan, Roth, Sandilands & Lyons-Thomas, 2014). In the United States, for example, more than half of 8th grade English Language learners obtain poorer results in national standardised tests and 71% score below basic level in mathematics (Fry, 2007).

This paper investigates the factors which can explain the performance gap between native speakers and second language learners. Previous studies pointed out the impact of limited language skills in academic achievements. Miller (2009) stressed the challenge immigrant children in Australia have to face when they arrive in mainstream classrooms, especially in science lessons. She observed that in spite of the intensive English language courses they received, they do not possess the lexicon necessary to understand the lessons. Abedi and Leon (1999) observed a smaller performance gap between native speakers and second language learners in text-free exercises than in traditional text-based exercises. In 2008, Abedi, Leon, Wolf and Farnsworth complemented this study by proving the relationship between item text length and specific difficulties encountered by second language learners during math assessments (Abedi, Leon, Wolf & Farnsworth, 2008).

However other factors can also have effects on immigrant children's performance. Numerous previous studies highlighted the impact of the families' socio-economic status on second language learners' mathematical achievement (e.g., Chiu & Xihua, 2008; Roberts & Bryant, 2011). Taggart (2018) analysed many studies concerning Latino students and she identified several groups of factors which can undermine their academic achievement: demographic variables, sociocultural variables, prior academic experience, psychological variables, and school/institutional variables. Consequently we would like to give further consideration to this matter: are these factors really significant compared to the role of linguistic challenge? Or is it "just" a question of language?

To frame our discussion, we examined several previous studies concerning the difficulties encountered by second language learners during maths assessments. Then we analysed a range of data gathered from a French multidisciplinary investigation (EVASCOL (2015-2017) which is a research carried out by INSHEA and funded by the 'Défenseur Des Droits'. Available on: https://evascol.hypotheses.org/) conducted during the school year 2015-16. All these considerations lead us to question the actual practises in reception classes and to

develop new strategies likely to improve mathematic teaching for multilingual students.

Theoretical Framework

In this article, we are interested in the performance gap in mathematics between native French speakers and those for whom French is a 'second' language (in some cases French is their third language). In order to better understand this situation, we would like to analyse the effects of several "bias factors" which may contribute to this performance gap. We call 'bias factors', factors which can prevent some students from succeeding in a test even though they possess the mathematical ability to perform at that level. An obvious example would be language itself - when the language of home and the community most familiar to a student is not the language of learning. We will explore the impact of other bias factors in this paper.

The Impact of Language Skills

By examining results of 1,174 eighth graders, Abedi and Lord (2001) demonstrated the impact of the language factor in mathematics tests. After having been given exercises which had been modified to reduce their linguistic complexity, they observed a significant improvement in students' results, especially concerning 'English Language Learners' (ELL). Wolf and Leon (2009) examined the impact of language complexity on English language learners' performances in various national assessments of mathematical ability. They succeeded in separating language difficulty from mathematical content to prove that misunderstanding of instructions hinders the mathematical capability of students with low English language proficiency. This is particularly evident with tasks that should otherwise be 'relatively easy'. According to Pennock-Roman and Rivera (2011), simplifying the text of instructions is really useful for ELLs with intermediate language proficiency: results of students with limited language proficiency are not really improved. Consequently, Brown (2005) raised the issue of the literacy-based performance assessment that requires high levels of literacy in English. By comparing their results to fully English proficient students, she questioned whether it is an appropriate method to evaluate the mathematical achievement of English language learners.

It seems to be difficult to determine the relative contribution of specific features of linguistic complexity on the gap between second language learners and their monolingual peers during mathematic tests. Martiniello (2008) highlighted the implications of non-mathematical language complexity on English language learners' performance. She observed that the gap between ELLs and fully English proficient students increases as language complexity increases. However this phenomenon decreases when non-linguistic schematic representations are included in the instructions. Haag, Heppt, Stanat, Kuhl and Pant (2013) put emphasis on the importance of the 'everyday academic language' (Ehlich, 1999) which refers to vocabulary used both in everyday conversation and in school-related contexts but with a slightly different meaning. Teachers may believe it is not necessary to 'explain' these terms as the words are not specific to their tasks; native speakers succeed in understanding them thanks to knowledge of their meaning in everyday language. Students who barely understand these terms cannot interpret them in a lesson context, so they represent greater challenges for second language learners. Actually, during the analysis of 21,618 assessments, Haag et al. (2013) concluded that everyday academic language constitutes one of the main difficulties when second language learners try to understand

the instructions that accompany mathematical exercises.

However, many researchers (e.g. Gibbs & Orton, 1994; Pimm, 1987; Schleppegrell, 2007; Setati, 2005) identify a 'language' of mathematics (it's special vocabulary and phrases, grammatical patterns, methods of presentation, …) compared to the natural language and these specificities may prevent the second-language learners from understanding mathematics test items (Campbell, Davis & Adams, 2007; Shaftel, Belton-Kocher, Glasnapp & Poggio, 2006) : "Difficult mathematics vocabulary had a consistent effect on performance for all students at all grades" (Shaftel et al., 2006: p.105).

In 1979, Cummins recommended the need to distinguish between basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP). He showed that both kinds of language skills were not always developed at the same time: if two or three years could be sufficient to lead a daily conversation, five to seven years would be necessary to fully understand the language used in classrooms. Endorsing these conclusions, Spolsky and Shohamy (1999) studied second language learners in Israel and found that these students succeeded in speaking fluently in only two to three years whereas they needed seven to nine years to acquire the language skills expected at school. Specific to Mathematics, Millon-Fauré (2011) showed that acquiring the linguistic skills necessary for this discipline does not always require mastering the BICS: she observed that some second-language learners succeed in understanding and producing mathematical statements before being able to lead a daily conversation. As Ni Riordain, Coben and Miller-Reilly (2015) explain: " Mathematics learners are required to possess competency both in everyday language and mathematic-specific language, but competency in the natural language does not necessarily contribute to competency in the mathematic-specific language (Lemke, 1989)" (Ni Riordain et al., 2015, p. 19)

This phenomenon is magnified because the role of language is not limited to communication (understanding mathematics instructions and answering questions). It also affects the elaboration and organisation of thoughts (Ni Riordain and Mccluskey, 2015; Ni Riordain et al., 2015). It raises the question, 'In which language do you *think* when the knowledge you need has been taught in a different language than your first language?' Planas and Setati (2009) noticed that the bilingual students they observed tended to shift from one language to another during mathematical lessons, depending on the context. For example, when they spoke about new knowledge, they tended to use their second language which is the language in which the concept was taught. But when they were deeply engrossed in solving a problem, perhaps in a small group, they used to go back to their first language. We can only imagine the difficulties and the tiredness this practise may add to the mathematical task. Obviously low linguistic skills hinder academic achievement of second-language learners but this phenomenon might also have other explanations.

Factors Independent of Linguistic Skills

Lots of researchers underline the trauma refugee-background young people have faced because of their forced displacement and the repercussions on their schooling: that is the reason why according to Block, Cross, Riggs and Gibbs (2014), schools have to develop an approach focused on learning, social and emotional needs to provide an inclusive education. In the same

way, Miller, Ziaian and Esterman (2018) promote several approaches developed by Australian school in order to take into account these students' refugee background. Furthermore refugee students' trauma is not always caused by their forced displacement: some can appear in the host country when they have to cope with an unfamiliar cultural frame. Consequently Due, Riggs and Augoustinos (2016) support pedagogical practices which rely on migrant children's linguistic and cultural background to facilitate their inclusion and their learnings.

In addition to these factors, Woods (2009) remarks that many refugee-background young people have had an interrupted schooling or sometimes have never attended school. Therefore they may be trying to learn English without having basic foundations in print-based literacy in their first language. Mendonça-Dias (2013) also points to the specific difficulties encountered by immigrant students with interrupted schooling.

Even if they had received complete schooling in their country of origin, the mathematics knowledge taught could be different from one country to another: for example, there exits many ways to execute operations (Girodet, 1996). Besides, pedagogical approaches are not the same. When she tried to determine bias factors in mathematics achievement tests among Israeli students from the Former Soviet Union, Levi-Keren (2016) noticed that these students used to refer to 'formal' mathematical discourse used in textbook and had difficulties to solve exercises which were a bit different from the ones they had studied before. Levi-Keren assumes that this phenomenon is due to the pedagogical approach prevalent in their country of origin which is mainly based on reinforcing technical competences as learners. Lastly some mathematical instructions require some cultural references to be understood, which can be problematic for migrant students (Lamprianou & Boyle, 2004). For example, Campbell et al. (2007) describe a migrant student who has failed in solving a mathematical problem just because he did not know the baseball rules. Taggart (2018) analyses the repercussions of cultural discontinuity concerning school based learning and finds that it has negative effects on academic outcome of Latina/o high school students. All these reasons can explain why Millon-Fauré (2010) has proven that migrant children encounter difficulties to reuse in their host country knowledge previously learnt. Furthermore as migrant students are encouraged not to use their first language, they tend to forget their cultural references and their previous knowledge in the same way (Civil, 2008).

All these reflections show that bias factors in mathematics achievement tests are numerous. However it is difficult to compare their impacts on performance gaps between students with migrant or refugee backgrounds and their counterparts. Are factors independent of linguistic skills really significant?

Method

The Different Tests

In this article, we will use data from a national multi-disciplinary investigation called EVASCOL which aims at evaluating the circumstances of newly arrived children in France (Armagnague, Cossée, Mendonça Dias, Rigoni & Tersigni, 2018). Between 2015 and 2017, students who took part in this research were evaluated in Mathematics and French using several tests (Mendonça Dias, 2017):

- Shortly after their arrival in a French school, 353 students were given multiple-choice exercises in order to determine their language skills in French and their mathematical skills. The exercises taken depend on students' age. In order to prevent their difficulties in French limiting their performance in the exercises, mathematical instructions have been written in their first language thanks to the translations of the CASNAV in Aix-Marseille (Available on: http://galileo.crdp-aix-marseille.fr/mathsenaf/) as you can see in figure 1. These exercises had previously been tested on native students so that we can compare results obtained by migrant students against the mean score reached by a given native student.

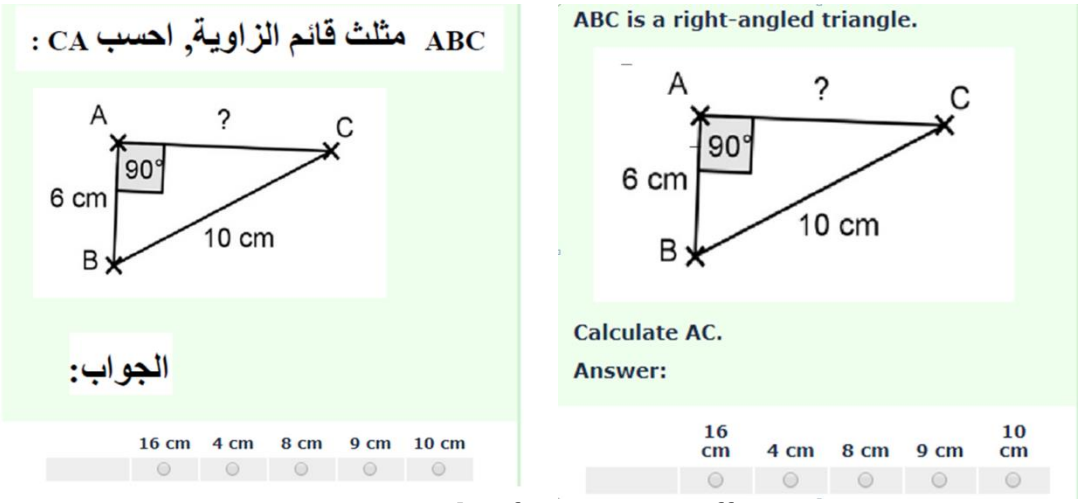

Figure 1. Examples of Exercises in Different Languages

- At the end of their first year of schooling in France, they were given the same test again but all the instructions were in French. For each student we compared the results obtained in both tests in order to measure acquisition or loss during this first year. 177 students passed tests in French and in Mathematics.

- In addition, we made a more detailed study of 26 pupils chosen randomly from the 177 previously identified, to refine our perceptions of their knowledge in French and in Mathematics. We interviewed them and conducted exercises that had to be solved on paper without a computer or calculator. During these tests a researcher observed each student, asking questions to help determine reasons for difficulties with specific exercises. This kind of test allowed us to devise tasks that would otherwise be difficult to assess with computer-based exercises, like drawing geometrical shapes.

We also collected numerous other forms of data on each student including: country of origin, language(s) used at home (prior to departure), and language(s) used since arrival in France. We finally chose four pupils who appeared to be representative of the different types of students we have encountered and we tried to cross-reference all the information concerning them. This study is detailed in Mendonça Dias and Millon-Fauré's article (2018).

Sample

The 177 students who have passed the computer-based tests, were enrolled in mainstream

classrooms but they also followed – for several hours a week - an intensive language programme to learn French (the UPE2A, which means 'Unité pédagogique pour élèves allophones arrivants'. This programme provides specific lessons for multicultural students recently arrived in France). They were between 5 and 18 years old. A quarter was enrolled in one of four 'primary schools' (schools for pupils who are between 6 and 10 years old) and three-quarters attended one of fifteen secondary schools: 69% of the students we interviewed were in 'middle schools' (schools for pupils who are between 10 and 14 years old) and 6% in 'high school' (schools for pupils who are between 14 and 18 years old). Our sample was composed of almost equal numbers of girls and boys (82 girls and 95 boys).

Our 177 students came from 46 different countries, with the majority originating in Spain, Bulgaria and Italy and around 75% had arrived in France only a few months before the beginning of our investigation. They often had a low level of literacy in French: at the beginning of our study 73% were competent at level A1, 23% at level A2 and 4% had achieved level B1 according to the six levels of the Common European Framework of Reference for Languages (from the breakthrough A1 to the mastery C2). Ten months later, 55% were still at level A1, 27% had progressed to A2 and 18% had achieved level B1. Of the 26 pupils interviewed during the follow-up study, 6 were in primary schools and the others in middle schools. They were 14 girls and 12 boys.

Results

Analysis of the First Test

In this test, each student could select the language of the instructions so that difficulties in French did not impact on their mathematical activity. By comparing their results to the scores of their French peers in the same school level, we discovered that 56% of migrant students did not possess the mathematical knowledge required to succeed in the class where they had been placed. This situation can have several causes. For example, these students might have had an interrupted schooling before arriving in France, or the school curriculum could have been different in their country of origin and they may have acquired knowledge which was not relevant in this test. In conclusion, we found that more than half of the migrant students we interviewed had not mastered the mathematical concepts required in a French school and this will almost certainly be a barrier to their school achievement.

By contrast, more than 10% of the students we interviewed had such an advanced level of mathematical comprehension that they could have attended lessons in a higher class than the one in which they had been placed. This helps to illustrate the diversity of the migrant students who arrive in France.

We have also compared the gap between migrant and native students in the different mathematical domains (numbers and calculations; geometry; measurements) to determine whether one of them was particularly difficult for migrant students. There were not real differences except for measurement where the gap was slightly bigger: the exercises of conversion especially were the less performed. The explanation can be that some countries use different units of measurement than ours, which prove that cultural particularities can also have impacts on mathematical achievement of migrant students.

Analysis of the Second Test

The test was identical to the first, except that instructions were in French instead of their first language. When we compared results obtained in this test to those of the first one, we observed a significant regression for 29% of the students we interviewed. As the exercises were exactly the same, we believe this phenomenon is due to the difficulties of understanding the instructions in French. We found one third of the migrant students observed did not succeed in solving some exercises despite possessing the mathematical knowledge required to do so because of their low level of French literacy, even after one year of schooling in France. It is particularly alarming because after one year in the intensive French language programme, migrant students are expected to be able to keep up in mainstream classrooms exactly like native speakers.

In some ways this results surprised us: the figure of 29% was higher than we expected. By contrast, 23% of the study group obtained almost exactly the same results when the instructions were in French compared with when the instructions were in their native language, whilst 48% (almost half of the study group) succeeded in improving their mark between tests. So in little time, they not only gained the language skills necessary to understand instructions and to solve exercises (as if they were in their first language) but they even acquired new mathematical knowledge.

We have tried to determine which factors can be linked to the variations between both tests. First, using an ANOVA with an alpha-risk of 0.05, we have observed that these variations and their mastery of French when they arrived are related (the p-value was equal to 0.016). However there is no correlation between their progress in mathematical and everyday language (either in oral form or in written form), which seems to agree with previous studies (Millon-Fauré, 2011; Ni Riordain et al. (2015b.)). Similarly, there is no correlation between their progress in mathematical tests and the fact they have spoken French (in some cases exclusively French) at home since their arrival.

On the contrary, an ANOVA with an alpha-risk of 0.05 shows that their progress *is* related to their level in mathematics on arrival in France (the p-value was equal to 0,007): students who had high levels of achievement in Maths in their country of origin found it easier to understand the French instructions and to use their previous knowledge. For this sub-group it seemed easy to recognise a mathematical word in French when the accompanying mathematical concept was already understood, whereas students who had a weak foundation in the subject had difficulties to learn the French terms.

Finally, we found no correlation between the results obtained from the first test and the gender of the student, but it appears there may be a weak correlation between progress made in the tests and gender of the students: irrespective of their initial level in mathematics, the girls we observed appeared to succeed slightly better in the test with French instructions than their male peers.

Secondary Study

We conducted one-to-one interviews with 26 students chosen randomly from the 177 in the study group, in order to identify problems they may have experienced whilst completing the tests. Firstly, we observed misunderstandings of basic terms of geometry. For instance, the diagrams below (figure 2) show answers to the instruction "*Construct a circle with centre A and passing through B"*. These drawings reveal confusions between the concept of 'circle' and, respectively, the notions of segment, square and triangle:

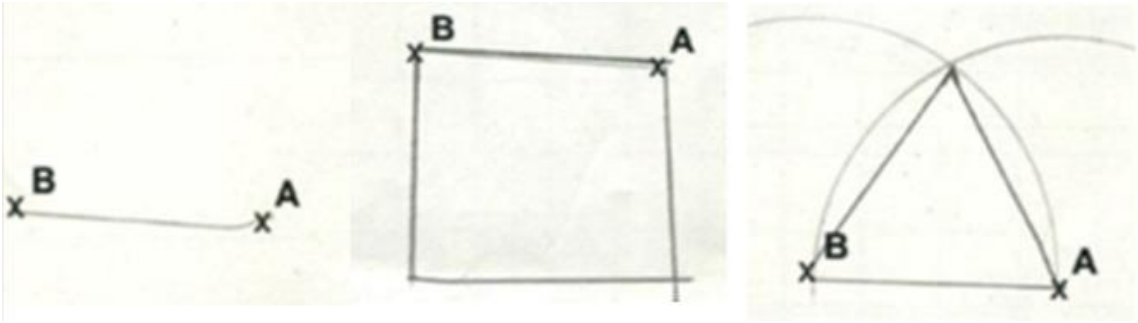

Figure 2. Figures drawn in response to the question "Construct a circle with centre A and passing through B."

Even though in the third diagram it appears that the pupil has used a pair of compasses, which may show that they associate this instrument with the term 'circle', they appear to have not understood the task.

We also observed errors in diagrams produced by non-migrant students, but errors were more pronounced in the work of migrant students. For example, 21 migrant students out of 26 appeared to misunderstand the word 'perpendicular'. In figure 3, we can see some of the answers that were given:

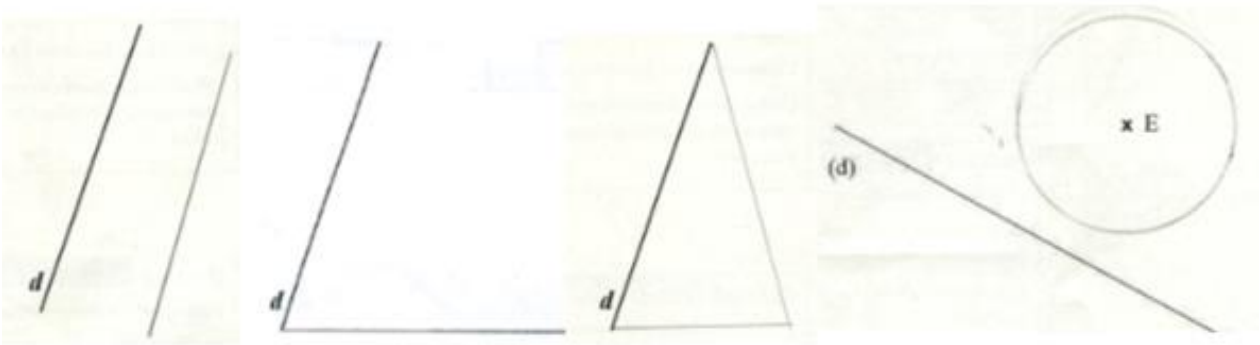

Figure 3. Figures Drawn in Response to the Question "Construct a Line Perpendicular to D"

In the first example, the student appears to have confused 'perpendicular' with 'parallel': we observed this mistake seven times even amongst migrant students who were enrolled in middle school. Three pupils drew a 'horizontal line' (like in the second diagram) instead of

'perpendicular line' (one of these students was in last year of middle school). The third and the fourth diagrams appear to show that some students did not understand the concept of the word 'line': four students have drawn a triangle like in the third diagram and one has drawn a circle. In addition, six students did not answer this question, and two of them have spontaneously said they did not understand the term 'perpendicular'. We may be able to conclude that it was difficult for a number of participating students to understand the instructions to these geometrical exercises.

We also observed another problem: the use of geometrical instruments. For instance, a student in the last year of middle school told us that she did not know how to use a pair of compasses and she preferred to complete the exercise (shown in figure 4) by hand. Another pupil explained that he had never used a pair of compasses before arriving in France.

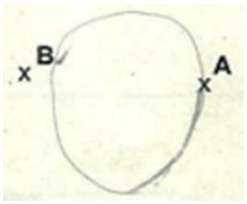

Figure 4. Figure Drawn in Response to the Question "Construct a Circle with Centre A and Passing Through B."

In addition, the measurement of the length of a segment seemed to create some difficulties. Only 13 students out of 26 (just over half) succeeded in completing this task. Three of them misunderstood the question (for example, one pupil calculated the perimeter of the triangle instead of measuring the length of one of its sides) and one of them did not answer the question at all. For 9 of the 26 students, the error was due to misuse of the ruler. We can see some examples of these mistakes in figure 5:

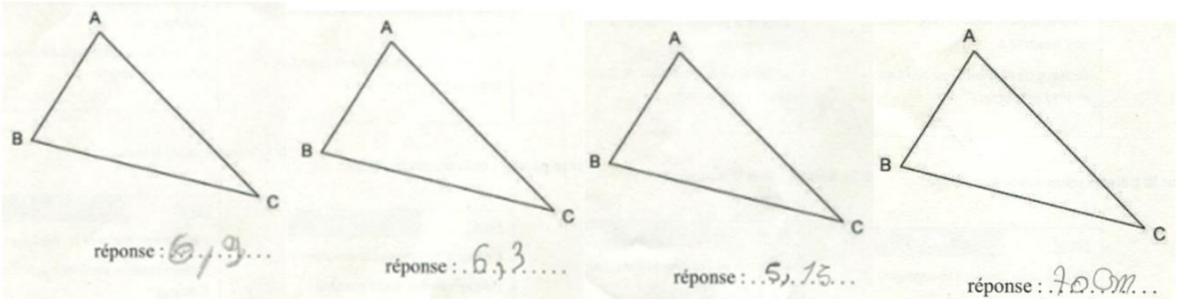

Figure 5. Answers in Response to the Question "Measure the length of the Side [BC]" (which in fact measures 5,7cm)

Three students gave an answer similar to the first one. They did not position the ruler correctly (they have put the graduation '1' in front of the point 'B' instead of the graduation '0') and one pupil was unable to answer the question until the research observer positioned the ruler correctly for them. One student wrote '6,5' instead of '5,6' which could reveal a problem with the writing of decimal numbers (they might have written the number for millimetre before the comma and the number for centimetre after the comma). Two students answered '6,3 cm' like the response in the second diagram. They have correctly positioned the ruler but they appeared to read the length from the graduation '6' by counting the number of smaller graduations to the left (instead of starting at '5' and counting the number of smaller graduations to the right). In the third

diagram, the student has correctly positioned their ruler but they did not achieve the correct reading of the length. They might have noticed that there was a larger 'mark' halfway along (that is to say at '5mm') and one extra smaller measurement beyond that (that is to say '1mm') but they did not succeed in expressing fully the fractional part of the number. Finally the last diagram shows an answer that is difficult to interpret: it might have been due to a misplacement of the ruler (as in the first diagram) and a mistake with understanding the unit of measurement (confusion between centimetre and millimetre).

Finally, we need to comment on the range of responses we observed: some migrant students have succeeded in obtaining really good results to this test. The precision of their constructions and the presence of symbols (to indicate the right angles for example) in their geometrical diagrams seem to prove that they have perfectly understood the expectations of their mathematics teacher.

Conclusion

From an analysis of these tests, we gained a better understanding of the reasons for achievement gaps between migrant and non-migrant students. Our evidence indicated that language difficulties represented one of the key factors. In our opinion, it was the biggest bias factor that inhibited learning. Even after one year following an intensive French language programme, almost one third of the migrant students we questioned did not succeed in solving some exercises when instructions were in French whereas they found solutions when instructions were provided in their native language. It seems that the key factor is essentially the mastery of the academic language: in this investigation, we have shown that many migrant students cannot understand even basic geometry vocabulary.

However there are other factors which can explain difficulties migrant students encounter in mathematics. In other words, it is not 'just' a question of language. We observed that more than half the students we questioned did not possess the mathematical knowledge required to 'keep up' in the class in which they were placed. Whatever the reasons (interrupted schooling, differences between French school curriculum and school curriculum of their native country…), they do not have the mathematical knowledge necessary to understand the new material they have to learn. Furthermore we observed a correlation between their level in mathematics on arrival and their progress after one year in France: the migrant students who possess the mathematical knowledge required in their new context have fewer difficulties to acquire French terms and even to progress quickly in mathematics. In addition we observed that some migrant students encounter real difficulties in the use of geometrical instruments: more than one third of the students we interviewed do not know how to measure with a ruler… Lastly we observed that migrant students have specific difficulties with 'conversions' (litres to decilitres, for example), which shows us that some cultural knowledge is required to solve mathematical problems.

This investigation illustrated the variety of obstacles migrant students encounter during their mathematical learning. Consequently, we believe teachers need to understand really precisely the needs of the migrant students enrolled in their class and to provide individual assistance. In so far as the mastery in academic language is not necessarily linked to proficiency

in casual, everyday language, teachers cannot just rely on their students' fluency in conversation to determine whether they will understand mathematical instructions: in these cases, we believe additional diagnostic tests need to be conducted. In addition, we have shown that programmes in intensive language are not sufficient to acquire mathematical language. It is for this reason that we have devised a specific programme for migrant students to help them learn the necessary mathematical language (Millon-Fauré, 2013, 2017). Finally, we believe that another form of evaluation needs to be scheduled on arrival in order to determine whether there is mastery of the mathematical knowledge necessary to keep up in class. If adopted, this evaluation needs to have instructions written in a student's first language, (so that language difficulty does not hinder understanding), and should also test basic mathematical knowledge, (such as the use of geometrical instruments). Realistically, this requires us to devise individualised programmes that recognise knowledge deficiencies before they become obstacles to success.

Clearly, the difficulties encountered by migrant students are more challenging than the difficulties encountered by native students: addressing the specific needs of each student is the only solution to close the gap in mathematical achievement of migrant children.

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The Effects of a Multi-Component Intervention to Increase Math Performance for Students with EBD in Alternative Educational Settings

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Abstract: Historically, secondary students with emotional behavioral disorders (EBD) have made poor progress in mathematics putting them at risk for school failure and placement in an alternative setting. Two under studied areas essential to success in mathematics are fractions and algebra. The purpose of this study was to test the effects of a multi-component intervention on the math performance for middle school students with EBD in an alternative educational setting. This study used a one-group nonequivalent dependent variables design (Shadish, Cook, & Campbell, 2002) with multiple measures in multiple waves to assess the effects. Repeated measures ANOVA indicated that students significantly improved their math performance on both fractions and algebra using researcher developed measures. Social validity results indicated that teacher and students found the intervention to be an acceptable intervention. Implications from fidelity and social validity data are discussed in addition to intervention components for this population.

Keywords: mathematics, emotional behavioral disorders, secondary, alternative educational settings, at risk

Students with disabilities should have access to and be held to the same challenging academic standards as their peers without disabilities (Every Student Succeeds Act, 2015; Individuals with Disabilities Improvement Act, 2006). Yet, achieving these standards can be difficult for students with disabilities. This is particularly true in the area of mathematics for students with disabilities in general (Butler, Miller, Crehan, & Babbit-Pierce, 2003) and more specifically for those with emotional and behavioral disorders (EBD; Mulcahy, Maccini, Wright, & Miller, 2014) as they often perform several grade levels below their peers in mathematics (Reid, Gonzalez, Nordness, Trout, & Epstein, 2004).

Mathematics Progress and Characteristics for Students with EBD

Students with EBD often struggle behaviorally and academically in the general education classroom (Reid, Gonzalez, Nordness, Trout, & Epstein, 2004). They often (a) perform several grade levels below their peers (Ralston et al., 2014); (b) show less progress in academics across grade levels (Wagner et al., 2006); (c) exhibit low levels of on-task behavior and task completion (Haydon et al., 2012); (d) lack self-regulation skills (Levendoski & Carledge, 2000); and (e) lack academic skills and content when compared to their same aged peers (Reid et al., 2004). Students with EBD have difficulties attending to instruction, relating new information to what is already known, and establishing productive school environments (Carr & Punzo, 1993). Many of these students struggle to act purposefully and strategically for their academic benefit and do not manage their own academic behavior in the school setting (Levendoski & Cartledge, 2000). These struggles cause them to have low math performance (Reid et al., 2004).

Using national longitudinal data, Wagner et al. (2006) found that mathematics scores for students with EBD declined across grade levels. At the elementary school level, students with EBD performed at the 34th percentile level while the average score in high school was at the 28th percentile level. Nelson, Benner, Lane, and Smith (2004) found that 56% of children with EBD ages 5 - 12 years old scored below the norm on mathematics achievement subtests, while 83% of adolescents 13 years old and older scored below the norm. In a longitudinal study, Greenbaum and Dedrick (1996) reported that 93% of students with EBD 12 - 14 years old performed below grade level in mathematics. Considering the low mathematics performance of secondary students with EBD, it is imperative to find interventions that are more effective for them.

Mathematics Research for Students with EBD

Limited fraction or algebra research for secondary students with EBD is available (Mulcahy et al., 2014; Ralston et al., 2014). Most intervention studies have focused on lower level skills and do not emphasize conceptual understanding (Mulcahy et al., 2014; Ralston, Benner, Tsai, Riccomini, & Nelson, 2014; Templeton, Kneel & Blood, 2008). Since mathematic conceptual understanding is a vital part of mathematic instruction, teaching students to acquire the underlying concepts behind mathematical operations is important (Riccomini, Witzel, & Robbins, 2008). The National Mathematic Advisory Panel (2008) suggested that middle school students must master fractions, as they are foundational for success in algebra. Students' conceptual knowledge of fraction magnitude has been linked to algebra readiness in equations

and proportional reasoning (Booth & Newton, 2012). Thus, fraction and algebra instructional strategies for students with EBD are needed (Booth & Newton, 2012).

Math Intervention Components for Students with EBD

Explicit instruction and SRSD. While mathematic research studies for students with EBD is limited (Mulcahy et al., 2014; Ralston et al., 2014), some key findings have emerged. Researchers have suggested that math instruction should involve (a) explicit and clear instruction; (b) material presented in a structured and systematic fashion; (c) daily review of previously learned concepts; (d) sufficient supports provided in the early stages of learning; (e) high levels of opportunities to respond to ensure maximum student engagement; and (f) repeated practice opportunities (Billingsley, Scheuermann, & Webber, 2009; Ralston et al., 2014). Researchers also have found that self-regulation have produced positive mathematical outcomes for students with EBD (Mooney, Ryan, Uhing, Reid, & Epstein, 2005; Mulcahy et al., 2014; Ralston et al., 2014). Ralston et al. (2014) suggested that teachers use the self-regulated strategy development (SRSD) model as a means of providing mathematics instruction to students with EBD. SRSD instruction involves goal setting, self-monitoring, self-instruction, and self-reinforcement and has been shown to be effective for students with math learning disabilities (Case, Harris, & Graham, 1992; Cuenca-Carlino, Freeman-Gree, Stephenson, & Hauth, 2016).

Multiple representations. One way to increase mathematical conceptual knowledge is to use multiple representations of mathematical operations (Gersten et al., 2008). For example, requiring students to use drawings to model each step in fraction computation can help students conceptualize the mathematical operations behind fractions (Butler et al., 2003). Drawings can help students link abstract numbers to underlying mathematical concepts (Riccomini et al., 2008). Multiple representations have shown effectiveness for students with LD in fractions (Butler et al., 2003) and algebra (Witzel, Mercer, & Miller, 2003) and shows potential to increase the mathematical conceptual knowledge for students with EBD (Riccomini et al., 2008).

Graphic organizers. One tool that has shown positive outcomes for students with disabilities are graphic organizers (Dexter & Hughes, 2011). Graphic organizers have been recommended to aid students with disabilities to understand abstract concepts (Dexter & Hughes, 2011). Graphic organizers are visual arrangements of words, phrases, and sentences, and can include elements such as arrows and boxes (Ives, 2007). Using a graphic organizer may help students with EBD organize their thinking and different representations of fraction and algebra problems (Levendoski & Carrtledge, 2000; Mooney et al., 2005).

While the SRSD model instruction in math has potential for students with EBD, minimal research has been conducted on the topic. This is particularly true of algebra and fraction research for students with EBD (e.g., Hodge, Riccomini, Buford, & Herbst, 2006). Creating multiple representations of a math problem and using graphic organizers have shown to help secondary students with disabilities develop conceptual knowledge in algebra and fractions (Myers, Jun, Brownell, & Gagnon, 2015), and may help students with EBD develop a better understanding of algebra and fraction concepts. Considering the dearth of research for secondary students with EBD in mathematics (Mulcahy et al., 2014), it is important to test the effects of these components particularly for those in alternative educational settings (AES).

AES and EBD

Students with EBD may display such high levels of inappropriate behavior and low academic skills that they require placement in an AES specifically focused on behavior (Wilkerson, Afacan, Perzigian, Justin, & Lequia, 2016). AES focused on therapeutic services can benefit students with EBD by providing mental health services in addition to special education services (Gagnon & Leone, 2006). Students in AES: (a) have not demonstrated academic success in traditional school settings (Wilkerson et al., 2016); (b) have lower graduation rates than traditional schools (Carver et al., 2010; Ruzzi & Kraemer, 2006); and (c) may not have access to effective academic interventions (Lehr, Tan, & Ysseldyke, 2009). Yet, the academic needs of youth with EBD in AES are one of the most neglected areas in practice and research (Carver, et al., 2010; Lehr et al., 2009; Schwab, Johnson, Ansley, Houchins, & Varjas, 2016). In additions students at risk may have lower self-efficacy in their ability to master academic content (Matheson, 2015). Thus, it is important to test the effects of math interventions for this population.

Purpose

Fraction and algebra intervention research for students with EBD in AES is limited (Schwab et al., 2016). Since students with EBD are several grade levels below in math (Ralston et al., 2014), math strategies to improve math performance are necessary. Students with EBD struggle with understanding underlying mathematical concepts, self-regulation (Levendoski & Cartledge, 2000) and require supports to organize their math thinking. Using a graphic organizer may help them organize different representations of a math problem. In addition, using self-regulation may help them complete all steps to solve a math problem. Therefore, the purpose of this study was to test the effects of a multi-component intervention on fraction and algebra performance for middle school students with EBD in an AES. This study sought to answer the following research questions: (1) Does the intervention influence student math outcomes in fractions and algebra, including maintenance? (2) Does the intervention influence student math overall ability? (3) Do middle school teachers of students with EBD in AES implement the instruction with fidelity? (4) Do middle school teachers and students with EBD in AES find the instruction to be a socially acceptable intervention?, and (5) Does the intervention influence self-efficacy?

Method

Setting

Students were selected from two urban public AES that offered therapeutic services for students with behavioral and mental health issues in the Southeastern United States. School A was comprised of 400 students in grades K-12. About 75% were classified as EBD while 25% were identified as having an autism spectrum disorder. At school A, two self-contained middle school classrooms were used. Two teachers (Teachers 1 and 2) had a classroom where they taught all academic classes (reading, math, social studies, science) while other teachers taught elective classes (e.g., music, physical education). School B was comprised of 791 students in middle school and included one AES classroom within a regular education middle school. A small group of students with EBD rotated between special education classrooms with one teacher teaching language arts and social while another taught math and science.

Participants

Student participants. Fifteen middle school students across the three classrooms returned both consent and assent forms. Students were selected based on the following criteria: (a) had a history of math difficulty according to their classroom teacher; (b) had a least one Individualized Education Plan math goal on their; (b) had EBD or challenging behaviors; (c) scored below 50% on researcher-developed fraction and algebra pretests; and (d) scored above 80% on the third grade Monitoring Basic Skills Progress Basic Math Computation (MBSP; Fuchs, Hamlett, & Fuchs, 1998) using a calculator. Two students refused to participate in the study. Two students were withdrawn from the school before data collection of all phases were complete. Eleven students completed the study except one student did not complete the maintenance measure. This student was included in all analyses except for the maintenance phase thus 10 students completed all phases of the study (see Table 1 for student demographics).

Teacher participants. Four special education teachers certified in middle school mathematics participated in the study. At School A, teachers 1 and 2 were recruited at the start of the study and provided instruction to their own respective classes. At School B, teacher 3 taught the first two lessons. Due to a scheduling change, teacher 4 implemented lessons 3 through 10 (see Table 2 for teacher demographics).

Table 1. Student Demographics

	Teacher 1 (School A)	Teacher 2 (School A)	Teacher 3,4,5 (School B)	Total
Total	3	4	4	11
Age				
11	2	0	0	2
12	0	2	3	5
14	0	2	1	3
15	1	0	0	1
Gender				
Male	2	3	4	9
Female	1	1	0	2
Race				
Black	3	2	4	9
White	0	2	0	2
Grade				
6th	2	1	2	5
7th	0	3	2	5
8th	1	0	0	1
Primary Disability				
EBD	3	4	2	9
OHI	0	0	1	1
Autism	0	0	1	1
Secondary Disability				
EBD	0	0	1	1
LD	0	1		1
LI	0	0	1	1
OHI	0	0	1	1

IQ			
Mean scores	90.67	78.25	69.00
Standard deviation	17.24	2.22	5.60
Range	72-106	76-81	61-74

Note. The IQ score was taken from Woodcock Johnson Test of Cognitive Abilities; LD= Learning Disability; EBD=Emotional Behavioral Disorder; OHI= Other Health Impaired; LI= Language Impaired

Table 2. ***Teacher Demographics***

Variable	Teacher 1 (School A)	Teacher 2 (School A)	Teacher 3 (School B)	Teacher 4 (School B)
Age	50	52	60	30
Gender	Female	Female	Male	Female
Race	Black	Black	Black	Black
Highest degree earned	Master's	Master's	Educational Specialist	Bachelor's
Number of years teaching	3	19	36	2
Number of years teaching in an alternative school	3	19	15	1
Certification	Special Education	Special Education	Special Education	None

Assessments

Pretest measure. One MBSP (Fuchs et al., 1998) assessment was administered to the students to determine study eligibility. The MBSP is a curriculum-based measurement for grades 1 to 6. The third grade form was selected because it measures the basic operation skills that students will need to be able to perform with a calculator to solve the fraction and algebra problems. The test has a reliability coefficient range of .94-.98 and a criterion validity median coefficient score of .82 for students with disabilities (Fuchs et al., 1998). A percentage score was calculated by taking the number of problem solved correctly divided by the total number of problems.

Standardized measure. The KeyMath-3Revised: A Diagnostic Inventory of Essential Mathematics (KeyMath3-R; Connolly, 1998) was used as the standardized math measure. The KeyMath3-R is a content-referenced test designed to assess student understanding and application of important mathematics concepts and skills. The assessment is available in two parallel forms, designated as Form A and Form B, each of which contain 372 full-color test items grouped into 10 subtests that represent three general math content areas: Basic Concepts, Operations, and Applications. Eight subtests were administered with a flip easel, and two subtests were administered with the Written Computation Examinee Booklet. The KeyMath3-R has a validity score for middle school students ranging from .92-.98 and an internal consistence reliability score ranging from .89-.97. It includes 13 mathematical domains (e.g., numeration,

rational numbers, geometry) organized into three areas (basic concepts, operations, and applications). The numeration and algebra tests were used for this study because they measured the skills closest to the areas targeted in the intervention. Scaled score was used for analyses.

Researcher developed measures. Researcher-developed measures included eight problem fraction computation quizzes involving addition and subtraction, and eight problem two-step variable equations quizzes involving solving equations created by the researcher and then examined by a math expert. The measure included four problems measuring conceptual knowledge and four problems measuring computation or solving equations. For validity purposes, a math expert was given a copy of each measure and confirmed that all the probes measured the skills. Scores for each probe were calculated by dividing the number of digits answered correctly by the total number of total number of digits possible to obtain a percentage score. The primary investigator scored all the assessments while for each test wave, a second person scored six (40%) randomly selected tests. Inter-observer agreement (IOA) between scorers during all tests for fractions was 100%.

Social validity. The social validity measure was the Treatment Acceptability Rating Form–Revised (TARF-R; Reimers & Wacker, 1992). The TARF-R is a brief 20-question seven-point Likert scale assessment. Teachers were asked the entire 20 questions, while the student version was modified to include 10 questions. Means and standard deviations were reported.

Treatment fidelity. Checklists were created to measure adherence, quality of instructional delivery, and student engagement (Dane & Schneider, 1998). The adherence checklist was based upon the modified SRSD intervention instruction. As the teacher completed each step that was planned, observers checked off each component. A math quality of instruction form was created based on Hill et al. (2008). The quality of instruction form required teachers to (a) use the math vocabulary consistently; (b) perform the math correctly or self-correct mistakes; and (c) call on a variety for students (more than two) to answer questions. Each criteria was rated on a scale of 1 to 3. A three indicated high quality of instruction and one indicated low quality of instruction.

Student engagement. Student engagement was measured based on Sutherland, Wehby, and Copeland (2000). A momentary time sample procedure with one-minute intervals measured students' on-task behavior. The classroom was divided into three quadrants, with each group of students representing one quadrant. Student engagement was defined as orientation by the target students toward the appropriate objective or person. This behavior included: (a) following direction given by the teacher, (b) paying attention to the speaker, and (c) working assigned tasks. If any student in the observed quadrant during the time sample did not demonstrate any of the criteria for student engagement, then the observers recorded not engaged for that interval.

Self-efficacy measure. The Sources of Middle School Mathematics Self-Efficacy Scale (Usher & Pajares, 2009) was used to assess student math self-efficacy. The scale has a Cronbach's alpha of .95 across four constructs (a) mastery experience (past successes and failures); (b) vicarious experience (experience by watching others); (c) social persuasions (by peers and others); and (d) psychological state. Items were written as first-person statements

where students were asked to rate how true or false each statement was for them on a scale from 1 (definitely false) to 6 (definitely true).

Intervention and Materials

The intervention consisted of a one page graphic organizer, developed by the first author, comprised of a three-by-one table with three boxes that prompted different student actions designed to reinforce conceptual understanding and help students solve given fraction and algebra problems. Students were to solve the problem numerically in the numerical square, with a drawing in the visual square, and then wrote down the steps to solving the math problem. Students were given sentence starters to reduce the cognitive load while writing down each step (see Figure). Lessons were based on a modified SRSD framework (Ralston et al., 2014). Modification involved providing teachers with lesson scripts to increase instructional fidelity across all 10 lessons (i.e., five fraction computation lessons and five algebra equations lessons). Lessons were 30-45 minutes in length and provided three times weekly. The teacher received (a) formal lesson plans, (b) all teacher materials, and (c) all student materials. Teacher materials included dry erase markers and a laminated graphic organizer chart. Teachers used the laminated graphic organizer to work problems for each lesson. Student materials included blank graphic organizers and math worksheets for each lesson.

Procedures

Pre- and post-assessment procedures. Students were administered the MBSP by their classroom teacher to determine if the students had the necessary computation skills with a calculator. Teachers were trained to mastery on how to administer the MBSP by the first author. Next, students were individually administered the *KeyMath3-R* numeration and algebra subtests and self-efficacy survey by the first author. Third, students took the fraction pretest on one day and on the next day completed the algebra pretest. Fourth, students received instruction on the fraction graphic organizer for five days. At school A, teachers one and two provided instruction for all five fraction lessons. At school B, teacher three provided instruction for the first two fraction lessons, and teacher four provided the remaining three fraction lessons. Fifth, students completed the fraction and algebra posttest one across two consecutive days. Sixth, students received instruction on the algebra graphic organizer for five days from teachers one, two and four. Seventh, students took the fraction and algebra posttest two across two consecutive days. Eighth, one week later, students were given the fraction and algebra maintenance tests each on a separate day. Ninth, students were individually administered the *KeyMah3-R* and self-efficacy survey as the posttest by the first author. Finally, students and teachers completed the TARF-R.

Teacher training. Teachers were trained by the first author for a total of six hours divided into two three-hour trainings with the first training focusing on fraction instruction and the second training focusing on algebra. Teachers at school A attended the trainings together while at school B, teachers were trained individually. The training followed the practice-based professional development outlined in McKeown, Fitzpatrick, and Sandmel (2014). First, teachers shared their concerns about fractions and algebra. Next the rationale for SRSD and graphic organizer was briefly explained as teachers examined the teacher materials. Finally, the researcher modeled teaching lessons one and two to the participants using the same materials that would be used in the classroom. Teachers then taught each other a lesson. Teachers then

received feedback from the trainer. The researcher used a fidelity checklist to ensure that all components were completed. All teachers demonstrated 100% on the fidelity checklist.

Data collector training. Two special education doctoral students were trained on student engagement observational procedures and fidelity instrumentation. They also were trained by the first author to score all math assessments. Once trained, researchers scored all protocols with a minimum of 30% of protocols rescored by a second research staff member independently to calculate IOA. IOA was 100%.

Intervention procedures. All lessons required teachers to (a) develop the background knowledge; (b) discuss the graphic organizer; (c) memorize it; and (d) lesson wrap up. To develop student background knowledge, prerequisite math skill vocabulary was reviewed. For the fraction lessons, the words "fraction," "numerator," "denominator," and "equivalent fractions" were reviewed. How to draw fractions and create equivalent fractions visually were reviewed. For the algebra lessons students were taught the vocabulary words "variable," "inverse operations," and "equation." Students practiced using drawings to represent equations. In the discussion portion, the teacher showed students a completed graphic organizer and students discussed it. The teacher asked students "What do you notice about the graphic organizer?" and "What are the benefits to using it?" In the memorization section, students practiced memorizing the skills and vocabulary that were used in that particular lesson. In the wrap-up section, the teacher summarized the lesson with a discussion of what they had learned and what students were to learn the next instructional day. After the first lesson, teachers modeled the steps to completing the graphic organizer and in subsequent lessons the students practiced completing the graphic organizer with support and then independently. Specific math steps to completing each graphic organizer are described below (See Figure 1 for both graphic organizers).

Fraction graphic organizer. First, the teacher provided a fraction computation problem in the numeric box such as 1/2 + 1/3. Second, the teacher drew each fraction in the visual box using the denominator to decide how many pieces to divide the rectangle in and the numerator to determine how many of those pieces to shade in (e.g., in the fraction 1/3 the rectangle is divided into three pieces with one part shaded in). Third, the teacher explained that due to different denominators the two fractions could not be added or subtracted so a common denominator must be found. Fourth, the teacher used the two fraction denominators to decide how many pieces to divide each fraction into using horizontal lines (e.g., in the fractions 1/2 and 1/3 the teacher would divide the rectangles into thirds and halves respectively). Fifth, the teacher demonstrated that each rectangle now has the same number of pieces and a common denominator of six. Sixth, the teacher used the new shaded portions to determine the new equivalent fractions (e.g., 3/6 and 2/6 for 1/2 and 1/3 respectively). Seventh, the teacher wrote these new fractions in both the numeric and visual boxes. Eighth, the teacher demonstrated adding or subtracting the numerators and leaving the denominator the same with a final answer of 5/6. Finally, in the steps box, the teacher reviewed the steps to solve the problem and wrote: (a) I drew each fraction, (b) I divided my first rectangle into thirds, (c) I divided my second rectangle into halves, (d) I created equivalent fractions, (e) I added the numerators together, and (f) I kept the same denominator. To provide scaffolding, students were provided with sentence

stems with key vocabulary as a word bank and students had to fill in the words "fractions," "divided," "thirds," halves," "added," and denominator."

***Algebra graphic organizer*.** First, in the numeric box the teacher provided an equation to solve (e.g., 2x + 5 =15). Second, the teacher drew the equation in the visuals box using longer rectangles to represent 2x and smaller squares for five and 15. Third, the teacher showed students how to use inverse operations to isolate the 2x (instead of adding 5, subtract 5 from both sides). Students were shown the inverse operation numerically and visually in the respective boxes. Fourth, numerically and visually, the teacher demonstrated using the inverse operation to isolate x by itself (instead of multiplying by two, divide by two on both sides of the equation). Finally, in the steps box, the teacher reviewed the steps and wrote: (a) I drew my equations, (b) I subtracted five from both sides, (c) I brought down 2x and subtracted five from 15 to get 10, (d) I divided both sides by two, and (e) I divided ten by two to get two. Students were provided with sentence stems with key vocabulary as a word bank and students had to fill in the words "equations," "subtracted," "divided," as well as the numbers and variables.

Figure 1 Sample Graphic Organizers for Fractions and Algebra

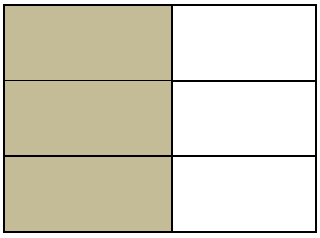
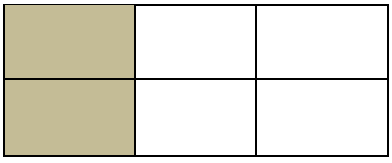
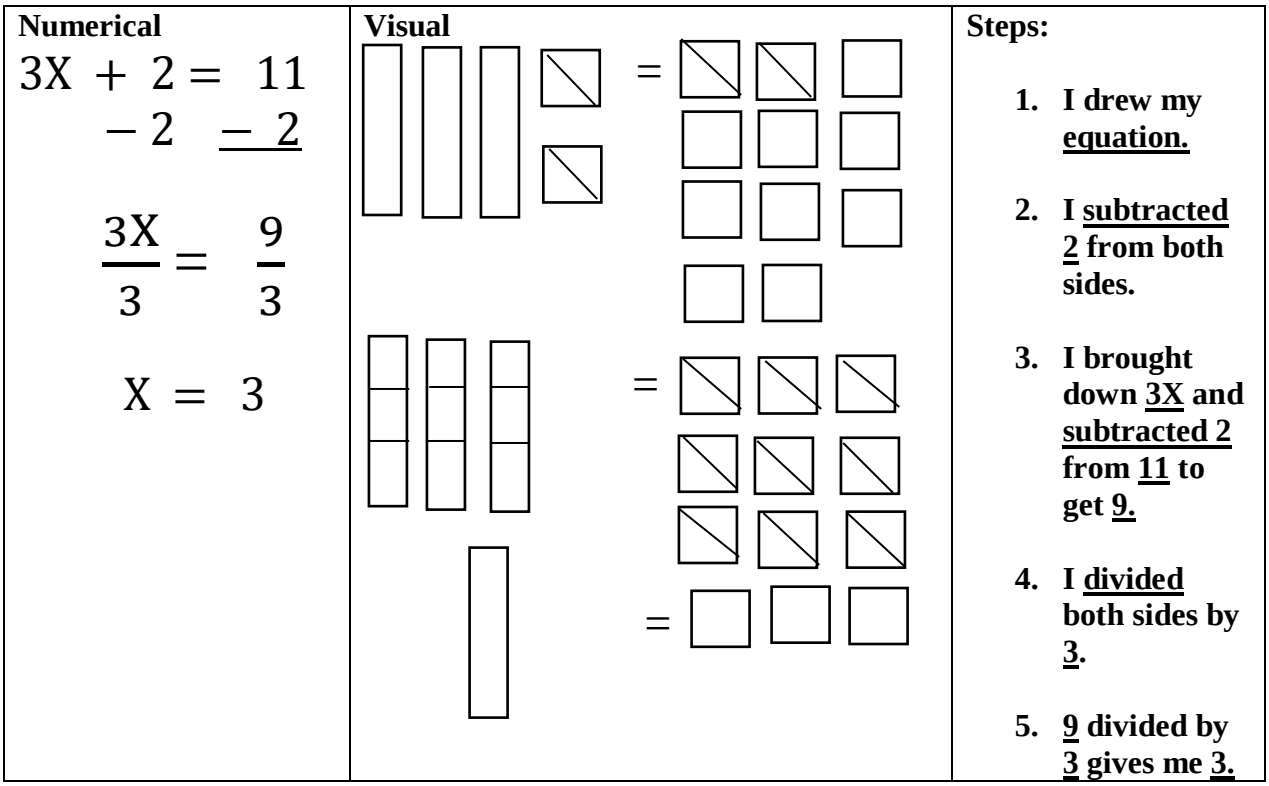
Numerical	**Visual**	**Steps**
$\frac{1}{2} + \frac{1}{3} =$ $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$	 $\frac{1}{2} = \frac{3}{6}$  $\frac{1}{3} = \frac{2}{6}$	1. **I drew my <u>fractions.</u>** 2. **I <u>divided</u> my first square into <u>thirds</u>** 3. **I <u>divided</u> my second fraction square into <u>halves</u>** 4. **I created <u>equivalent</u> fractions.** 5. **I <u>added</u> the numerators together.** 6. **I kept the same <u>denominator.</u>**

Figure 1 Sample Graphic Organizers for Fractions and Algebra



Experimental Design and Analysis

A one-group nonequivalent dependent variables design (Shadish, Cook, & Campbell, 2002) with multiple measures in multiple waves was used to assess the effects of the graphic organizer. This design involves a single group of students being tested on two scales that are conceptually similar, but only one of which is expected to change because of the treatment. The design has effectively been used with previous math research for students with EBD in AES (Bottge, Rueda, & Skivington, 2006). For this study, the fraction measure was expected to change, while the algebra measure was expected to remain the same until algebra instruction was provided. When multiple repeated measures are used in conjunction with this design, and the patterns of achievement are predicted, most plausible threats to internal validity can be ruled out (Bottge et al., 2006). To answer research questions one, two, and five a repeated measures ANOVA was conducted to determine significant differences between each time point. Research questions three and four were answered by reporting means and standard deviations.

Results

Researcher Developed Measures and KeyMath

Table 3 shows the means standard deviations for all measures. There was a statistically significant effect of time on fraction quizzes $F(1.701, 15.309) = 7.770$, $p < .05$, $\eta 2 = .46$, and on algebra quizzes, $F(1.617, 14.555) = 9.718$, $p < .05$, $\eta 2 = .52$. Post hoc tests using the Bonferroni

correction revealed that fractions quizzes showed statistically significant differences between wave 2 and wave 3 (p=.031), and between wave 2 and wave 4 (maintenance) (p=.011). Comparisons for algebra quizzes showed significantly higher achievement for wave 3 compared to wave 2 (pre and post instruction) (p =.003), and for wave 2 compared to wave 4 (maintenance) (p = .046). For fraction pretests, students treated the fractions as whole numbers and added the numerators and denominators. After fraction instruction, the majority of students still treated the fractions as whole numbers, while some used the graphic organizer instruction strategy. KeyMath3-R subtests results indicated no significant differences in achievement in numeration, $F(1,10) = 1$, $p = .09$, or in algebra, $F(1,10) = .102$, $p = .76$.

Table 3. Means and Standard Deviations (SD) by Measure and Test Wave

Measure	Test Wave			
	1	2	3	4
Fraction Quiz				
Mean	19.30	36.50	43.80*	38.00*
SD	7.30	24.18	24.69	17.56
Algebra Quiz				
Mean	7.50	0	57.20*	30.50*
SD	23.72	0	34.67	28.20
KeyMath Numeration				
Mean	4.82	--	--	5.09
SD	2.27	--	--	2.07
KeyMath Algebra				
Mean	4.45	--	--	4.36
SD	1.97	--	--	2.01
Self-Efficacy ME				
Mean	3.85	--	--	3.89
SD	1.15	--	--	
Self-Efficacy VE				
Mean	3.79	--	--	4.28
SD	1.09	--	--	1.40
Self-Efficacy SP				
Mean	3.83	--	--	4.53
SD	1.23	--	--	1.39
Self-Efficacy PS				
Mean	3.25	--	--	3.14
SD	1.52	--	--	1.57

Note. -- indicates that the measure was not given at that time point; ME= Mastery Experience; VE= Vicarious Experience; SP=Social Persuasions; PS=Psychological State

Treatment Fidelity

On adherence and quality of instruction, 14 (43%) of the lessons were observed by the first author and six (43%) of those lessons were observed by a second observer. IOA was calculated by taking the number of agreements and dividing by the number of agreements plus the number of agreements and disagreements. IOA was calculated at 98%. The mean percentage for steps completed across the intervention was 59% for teacher 1, 86% for teacher 2, and 95% for teachers 3 and 4. The quality of instruction for teachers 1 and 2 was low with teachers making

multiple math errors, forgetting steps and partially using the math vocabulary. Anecdotally, teachers 1 and 2 struggled to create the equivalent fractions correctly despite multiple practice with the first author. The quality of instruction for teachers 3 and 4 was high.

For student engagement, 14 (47%) of the lessons were observed and six (43%) of those were observed by a second observer. IOA was calculated at 95%. The mean percentage of intervals for student engagement was 52% for teacher 1, 46% for teacher 2, and 75% for teachers 3 and 4. Student engagement was low for teacher 3, who taught the first two lessons, but after teacher 4 began instruction student engagement was near 100% for four out of the five students.

Social Validity

Student results on the TARF-R indicated that they felt they (a) were clear about the procedures of the study (M=5.45); (b) found the graphic organizer acceptable (M=6.00); (c) found the graphic organizer helped them want to participate in math class (M=5.63); (d) were willing to use it in the future (M=5.27); (e) found it reasonable (M=5.91); (f) were confident it was effective (M=6.00); and (g) overall liked the procedures (M=5.00). Students indicated that they were neutral on whether or not there were disadvantages to using the graphic organizer (M=4.00) and whether or not other students liked using the graphic organizer (M=4.36). Teacher results on the TARF-R indicated (a) they were clear about the study procedures (M=5.67); (b) found the graphic organizer acceptable (M=5.67); (c) found it reasonable (M=5.00); (d) felt there were some disadvantages (M=5.00); (e) felt much time would be needed to implement instruction (M=5.33); (f) were willing to work with other teachers on the graphic organizer (M=5.33); (g) thought some undesirable side effects were likely (M=5.00); and (f) would be willing to change their class routine (M=5.67). Teachers indicated that they were neutral to disagreeing with (a) the likelihood the graphic organizer will make permanent improvements (M=2.67); (b) their confidence level at how effective the instruction was (M=3.00); (c) their students had serious problems in math (M=3.33); (d) the instruction would disrupt their class (M=4.67); (e) the graphic organizer was effective for them (M=3.67); (f) affordability of the graphic organizer (M=3.00); (g) liking the procedures (M=3.00); (h) felt student would feel no discomfort (M=1.67); (i) students' math abilities are not severe (M=4.67); and (j)how well it fits into their curriculum (M=4.67).

Self-efficacy

The Sources of Middle School Mathematics Self-Efficacy Scale (Usher & Pajares, 2009) results indicated no significant differences for scores on mastery experience, $F(1,10) = .025$, $p = .88$ vicarious experience, $F(1,10) = 1.739$, $p = .22$ social persuasions, $F(1,10) = .069$, $p = .80$ or psychological state, $F(1,10) = .069$, $p = .80$.

Discussion

The primary study purpose was to test the effects of a multi-component instruction on fraction and algebra performance for students with EBD in an AES. With regard to the first research question, students did significantly improve their ability to solve both fraction computation and two-step algebra equations indicating that the intervention did improve their

math performance. However, despite graphic organizer instruction, the majority of students continued to treat fractions as whole numbers as most students with math difficulties tend to do (Woodward, Baxter, & Robinson, 1999). Yet, on the algebra pretests, students did not have any prior knowledge on how to solve two step equations. To facilitate proper fraction instruction for students in AES, who have not picked up effective mathematic habits, "unteaching" student misconceptions about fractions may be needed (Woodward et al., 1999) initially. With algebra, no "unteaching" was necessary, which could account for why algebra scores were higher than fraction scores. Also, informal interviews indicated that two of the teachers were more comfortable with algebra, which could account for the higher scores.

With regard to the second research question, students did not significantly improve their performance on the *KeyMath3-R* subtests (Connoly, 1996). The lack of significance with the *KeyMath3-R* could have been because it was a distal measure. Considering the *KeyMath3-R* test measures a wide range of math skills in addition to fraction computation, it is not entirely surprising that student gains made on the researcher-developed measures did not show up on the standardized measure. It also is difficult to get a significant change on a standardized measure within a short time period of intervention (Bottge, Rueda, Grant, Stephens, & Laroque, 2010).

With regard to the third research question, instruction quality and student engagement for two of the teachers 1 and 2 were low, while for teacher 4 was higher. This could explain why the students did not meet mastery. If the students received improper instruction and were not engaged, they may have decided to use what they had been taught previously (i.e., treat fractions as whole numbers). Teachers in AES may not have the resources or knowledge to effectively teach academics (Wilkerson et al., 2016) so it is important to provide quality professional development and support for them. In general, researchers have struggled to find ways to improve the fraction knowledge for teachers who struggle with fractions instruction (Jayanthi, Gersten, Taylor, Smolkowski, & Dimino, 2017.) Jayanthi et al. (2017) suggested that a fraction professional development program that differentiates instruction for teachers with varying math knowledge might be needed especially in an AES. Future research should consider adding a content measure as part of the professional development and/or analyses.

Teachers were provided scripted lessons to help them with adherence to the instruction. Teachers indicated that they felt the scripted lessons helped them use consistent vocabulary. Increasingly, researchers acknowledge the importance of concise math language from grade level to grade level when providing instruction to students (Hughes, Powell, & Stevens, 2016).

Student engagement was low for teachers 1 and 2, which could also explain why the students did not master fractions or algebra. Students with EBD in AES tend to struggle with on-task behavior (Haydon et al., 2012) and motivation (Wehby, Falk, Barton-Arwood, Lane, & Cooley, 2003). Some AES researchers have suggested adding a behavior component to an intervention in order to enhance academic engagement (e.g., Bowmann, Perrot, Greenwood, & Tapia, 2007).

With regard to the fourth research question, overall students and teachers found the graphic organizer instruction to be socially acceptable. It is important to note that students who did not like math did not change their opinions after receiving the intervention instruction. These

students were also the students that continued to have low engagement. It is interesting that some students perceived fractions to be easier than algebra. This could be because their misconceptions about fractions were not directly addressed. These students could have thought fractions were easier than algebra due to treating them as whole numbers (Woodward et al., 1999). In addition, it should be noted that students never saw their scores on pretests or posttests. When students self-monitor their math performance, they tend to do better academically (Shimabukuro, Prater, Jenkins, & Edelen-Smith, 1999). The student perceptions may have been different if they had seen their math scores.

With regard to the fifth research question, student self-efficacy scores did not significantly improve because of intervention instruction. Students remained neutral on all four constructs. However, the power was low on all four constructs (R=.223-.57). If the study had used a larger number of students, then the results may have been different. However, it is important to examine the relationship between student math performance and self-efficacy more closely (Hughes & Riccomini, 2011) with a larger number of students especially in AES.

Limitations and Future Directions

There are several study limitations that should be considered. First, the power using the ANOVA's on the fraction measures was lower (.87) due to low number of students and a lower effect size. Since the difference between fraction scores was not as large as the algebra scores, the power was lower. Therefore, it is more difficult to know whether or not there was a statistical difference between time points on the fraction measures. Future studies should attempt to replicate the results with a larger number of students.

Second, our study design did not require the use of a control group. Using a design with a control might make it easier to tell whether graphic organizer instruction is a more effective intervention than typical classroom instruction for this population. The lack of a control group may have led to inflated effect sizes (Borenstein, Hedges, Higgins, & Rothstein, 2011). Future studies should examine the effects of the graphic organizer instruction using a control group to compare it to typical instruction.

Third, students did not meet mastery level (80% or higher) for the mean percentage scores for fractions (M=43.80) or algebra (M=57.20). This could be because the students only received five lessons on each type of math problem. Since students in AES are several grade levels below their peers (Wilkerson et al., 2016), they may need more than five lessons on fractions and algebra to demonstrate mastery. However, these students had a history of math difficulties and were attending an AES indicating that typical classroom instruction had not been effective for them so seeing some improvement is encouraging. Future researchers should examine the duration and length it takes for students with EBD in AES to master fractions and algebra.

Fourth, for two teachers the fidelity, quality of instruction, and student engagement were low. Future researchers should examine ways to improve teacher fidelity particularly in fraction instruction as well as ways to improve student engagement for students with EBD in AES.

Conclusion

Students with EBD in AES really struggle in math (Schwab et al., 2016) and require supports to improve their math performance. This intervention led to some promising results with this population. However, other factors such as teacher math knowledge, fidelity, student engagement had an impact on their math performance. This study examined each of these, but with a limited number of participants, it was difficult to see some statistical differences. The findings from this study suggest that the intervention can improve fraction and algebra performance, but more time may be needed for these students to reach mastery. Examining these factors in relation to the graphic organizer instruction may lead to improved math outcomes and help students with EBD in AES. With more research on fractions and algebra instruction, students with EBD in AES may obtain more positive math results and return to their regular education schools.

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Reading Literacy Development of Deaf Students in Special Schools in Iran

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Abstract: Reading literacy is one of the most important abilities acquired by students at school. The aim of this study was to compare the development of reading ability of deaf and hearing students in Iran. A retrospective study was done through "Progress in International Reading Literacy Study scale with a cross sectional design. Participants were 80 students with congenital profound hearing loss in primary, middle, and secondary schools for the deaf, as well as 80 hearing peers in regular schools. The results revealed a significant difference in reading literacy between deaf and hearing students in all educational grades. However, no development in reading skills of deaf students was seen after primary schools; denoting that reading skills have not been developing through middle and secondary schools in the deaf students. The mean scores of female students were higher than male students.

*Keywords**:** Reading literacy, Deaf student, Normal hearing*

Reading is a cognitive skill, developed as the result of the interaction between the nervous system and cultural experience (Cohen, 2001). "Reading literacy is the ability to understand and use those written language forms required by society and or valued by the individual. Readers can construct meaning from texts in a variety of forms. They read to learn, to participate in communities of readers in school and everyday life, for enjoyment" (Mullis & Martin, 2015, p.12). Reading literacy enables individuals to deal with life more efficiently and grants them a better understanding of the world in general. Literacy is the right of every human being; readers are more aware of their human rights, the opportunity to study, and development.

Development of reading literacy in deaf children without age-appropriate spoken language skills will be difficult and slow (Musselman, 2000). Access to auditory information will lead to the use of the letter to sound correspondences and a basis for phonological decoding. Deaf children have problems with fundamental skills such as phonology and decoding that will affect word recognition (Kyle & Harris, 2011; Waters & Doehring, 1990), and also language skills such as syntax and grammar that influence sentence comprehension (Bishop, 1983; Kelly, 1996).

As noted, deaf children demonstrate poor word reading, so it is expected that their reading comprehension skills will also be poor. Many studies on the reading skills in deaf students indicate a considerable delay in comparison with their normal-hearing peers (Dillon, Jong & Pisoni, 2011; Wauters, van Bon, & Tellings, 2006; Musselman, 2000; Traxler, 2000). These delays culminate in deaf adolescents leaving school with reading comprehension levels equivalent to those of 9-year-old normal-hearing children (Allen, 1986; Conrad, 1979; Qi & Mitchell, 2011).

Reading literacy is one of the essential abilities acquired by students at school; therefore, it is necessary to be assessed regularly in all students, especially deaf ones. The reading skills of many deaf students lag several years behind normal-hearing students, so it is necessary to identify reading difficulties and implement effective reading support strategies in this population (van Staden, 2013). As children grow older, reading takes on an increasingly important role in enabling them to access the curriculum; they move from 'learning to read' to 'reading to learn' stage (Worsfold, Mahon, Pimperton, Stevenson & Kennedy, 2018). Thus the reading deficits shown by the deaf population are likely to have an increasingly significant impact on their educational attainment and future occupational status (Walter & Dirmyer, 2013).

Education of deaf students has always faced various approaches to the appropriate teaching methods; however, teachers are more contented with the oral or verbal method and sign language than other methods (Alpiner & Mc Carthy, 2002). While some experts focus on using sign language, the proponents of oral or verbal method use the residual-hearing ability and lip-reading in teaching deaf students.

In Iran, education for the deaf dates back to 1925, since Jabbar Baghchebaan opened the first class for deaf children in a kindergarten for normal-hearing students. He also developed his unique method based on the oral method and "Persian finger spelling" which was similar to Cued Speech (Hassanzadeh, 2009). Now oral approach and using hearing aids or cochlear implantation is the main dealing and therapeutic method with deaf education in Iran. Persian Sign Language is not taught in rehabilitation centers and schools. Many studies indicate that

deaf children who have learned sign language in early childhood demonstrate greater advancement in reading skills (Easterbrooks & Huston, 2008; Harris & Beach, 1998; Miller, 2007; Hassanzadeh, 2011).

Teaching reading skills are the main problem in the education of deaf students in Iran (Nikkhoo & Hassanzadeh, 2011), also teaching reading literacy to hear students is the main challenge. The Progress in International Reading Literacy Study (PIRLS) is an international comparative assessment that measures student's learning in reading worldwide. Since 2001, PIRLS has been administered every 5 years. Iran participated in all four previous assessments of PIRLS in 2001, 2006, 2011, and 2016. In all assessments, Iranian students were ranked below the average although their ranking has increased somewhat over the years.

The present study addressed the reading literacy development of deaf students at elementary and high schools in the 4^{th}, 9^{th} and 12^{th} grades. The research aimed at examining the development of reading skill as the educational degrees rise, comparing the reading literacy skill between normal-hearing and impaired-hearing students, as well as comparing the reading abilities in female and male students.

Method

Participants

The study was conducted in Tehran, the capital of Iran. Participants consisted of 80 deaf students who were studying in the end of primary (Fourth grade), end of middle grade (ninth grade), and the end of secondary schools for the deaf (twelfth grade). Also 80 hearing peers from regular school participated in this study. Subjects in two groups were similar in age, school grade, gender and Socioeconomic Status. Demographic information is presented in Table 1.

Table 1. Demographic Characteristic of Participants

	Primary School (Fourth Grade)	Middle School (Ninth Grade)	Secondary School (Twelfth Grade)
Deaf students	23	29	28
Mean(SD) age (years)	10.8(0.73)	15.8(0.61)	18.7(0.72)
Sex			
Male	13	16	16
Female	10	13	12

Socioeconomic class			
Low	11	17	15
Middle	9	7	9
Upper	3	5	4
Hearing students	27	26	27
Mean(SD) age (years)	10.2(0.54)	15.1(0.62)	18.3(0.43)
Sex			
Male	15	15	14
Female	12	13	11
Socioeconomic class			
Low	14	11	16
Middle	8	6	6
Upper	5	9	5

Material and Procedure

PIRLS: The Progress in International Reading Literacy Study (PIRLS, 2016) is an international comparative study for assessment of reading achievement in students at fourth grade of primary school. The fourth grade is a transition point in students reading development, in this grade; students have learned reading and in next year's reading could be a tool for learning on knowledge.

Iran started its coordination officially with International Association of Education Advancement (IEA) from 1991 and participated in four studies of PIRLS in the years of 2001, 2006, 2011 and 2016. In all reports, the performance of Iranian students was lower than the international average (500). PIRLS 2016 is the fourth assessment in the current trend series. There were 61 participants in PIRLS 2016, including 50 countries and 11 benchmarking entities. For countries that have participated in a previous assessment since 2001, the PIRLS 2016 results provide an opportunity to evaluate progress in reading achievement across four time points.

The framework is organized around two overarching purposes for reading for literary experience and to acquire and use information. PIRLS 2016 complete examination booklet contains five literary and five informational passages, but we modified PIRLS examination booklet in the present study due to the difficulty of the whole test for deaf students, we used one literacy and one informative text texts. All deaf and hearing students in three school grades completed a Persian version of those texts, the test was implemented individually.

Results

A total of 80 deaf students and 80 hearing students in the fourth, ninth and twelfth grade replied to the questions of two informative and literary texts. The scores of deaf students on each three grades in informative text, literary text, and overall scores were presented in Table 2. An independent-samples t-test was conducted to compare overall scores in both groups. There was a significant difference in the scores based on hearing ($P<0.001$). A one-way analysis of variance was conducted to compare effect of educational grade (Fourth, ninth, and twelfth grades) on reading literacy of deaf students. (Table 3). The dependent variable was the overall reading scores of PIRLS. An analysis of variance showed that the effect of educational grade on reading literacy of deaf students wasn't significant, $F (2, 77) =1.63$, $P>0.05$ (Table 3). In other words, despite the rise of the class base, the reading grades of these students did not show a growth (Figure 1). In deaf and hearing groups, the average scores of reading literacy in both informative and literary texts, as well as the overall scores of girls were higher than those of boys (Table 4).

Table 2. Mean and SD scores for the Reading Literacy Development in Deaf and Hearing Students

	Deaf Students			Hearing Students		
	Informative Text	Literary Text	Overall Score	Informative Text	Literary text	Overall Score
Fourth Grade	3.61 (2.03)	2.96 (1.79)	6.57 (2.88)	8.67 (3.71)	10.48 (3.45)	19.15 (3.66)
Ninth Grade	4.24 (2.76)	3.31 (2.26)	7.55 (4.62)	11.31 (3.86)	13.23 (3.21)	24.54 (6.41)
Twelfth Grade	5.07 (3.19)	3.89 (3.65)	8.96 (6.00)	10.63 (1.11)	13.41 (2.50)	24.04 (4.98)

Table 3. ANOVA for the Reading Literacy Development in Deaf Students in Three Educational Grades

	Sum of Squares	df	Mean Squares	F
Between Groups	74.69	2	37.34	1.63
Within Groups	1757.78	77	22.82	
Total	1832.47	79		

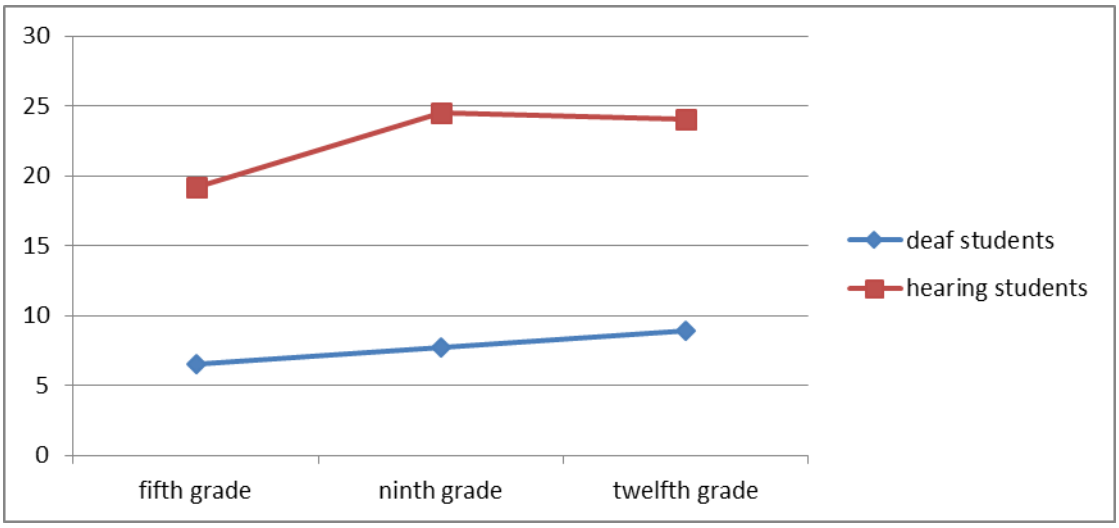

Figure 1. Reading Literacy Development in Deaf and Hearing Students in Three Grades

Table 4. Mean, SD and Overall Score of Deaf Students Regarding Gender

	Female	Male	df	t
Test score	Mean (SD)	Mean (SD)		
Informative text	5.31 (3.00)	3.60 (2.34)	78	2.86
Literary text	4.20 (2.91)	2.80 (4.48)	78	2.31
Overall score	9.51 (5.26)	6.40 (3.99)	78	3.01

Discussion

The objective of present study was to investigate reading literacy development of deaf student in elementary, middle and high schools. To evaluate this, the reading literacy in deaf students who

educated in Fourth grade, ninth grade and twelfth grade was compared to normally hearing peers. In addition, to gain further insight, present research investigated the relation between reading skills and educational grades in deaf and hearing students. The results indicated no significant difference in reading literacy among the deaf students of the mentioned educational grades (mean: Fourth grade (6.57), ninth grade (7.55), and twelfth grade (8.98)). Moreover, findings indicated that girls score significantly higher on average in informative and literary texts and also in their overall performance than boys ($P<0.001$).

Deafness may lead to serious deficiencies in children's linguistic development and their relations with others. Because of the difficulties that deaf children confront with in auditory discrimination (Cheung , Leung & McPherson, 2013) and consequent deficiencies in phonological awareness (Ziegler & Goswami, 2005) and since phonological awareness is a predictor of reading ability (Boscardin, Muthen, Francis, & Baker, 2008; Bryant, 1989; Zhang et al, 2013), it is reasonable to suggest that poor auditory discrimination will lead to reading deficiencies.

The study carried out by Wauters, van Bon and Tellings (2006) approved that deaf children who have better skills in sign language score higher on average in reading c literacy. This finding imply a role for language skills on development of reading skills in deaf children (Moeller, Tomblin, Yoshinaga-Itano, McDonald & Jerger, 2007; Archbold et al, 2008).
The current research did not confirm the results of the above-mentioned study; one major reason might be that sign language is not properly used by Persian speaking deaf individuals. Most of these individuals do not master the rules and principles of this language. In fact, they have not learnt it as their first communication language. The negative attitude of families and teachers toward sign language has highlighted other communication methods in educational settings of Iran. Attempts to establish communication through lip-reading or verbal method with the purpose of approximating deaf children to normal-hearing ones, often denies the former group the opportunity of learning proper speech; the fact that results in their inadequacy in social, educational, and occupational skills. Moreover, findings indicated that girls score significantly higher on average in informative and literary texts and also in their overall performance than boys ($P<0.001$).

These results are in accordance with the results of the reports with PIRLS in 2001 and 2006, 2011 and 2016 administered on normal fourth grade students in various countries including Iran except for Spain and Luxemburg, where the average performance of boys and girls was the same (Paul, 2001). Many results indicate the superiority of girls over boys in productive vocabulary, combining word (Eriksson et al, 2012), syntax (Morisset, Barnard & Booth, 1995), grammar and reading tasks (Jaeger,, Lockwood, Van Valin, Kemmerer & Murphy, 1998); the differences arising from different performance of brain hemispheres in boys and girls. Bilateral activation in the inferior frontal and superior temporal gyri and activation in the left fusiform gyrus of girls was greater than in boys (Bitan, Lifshitz, Breznitz & Booth, 2010). Psychological factors, such as greater internal motivation in girls, as well as social expectations regarding their role as 'mothers' and higher emotional/social involvements with others, all help girls perform better than boys in reading literacy and linguistic skills.

These results are in conformity with the results of the previous research done by Parault and Williams (2009). The research conducted by Gallaudet University in 1996 on 8 to 17-year-old deaf students, partly confirms the obtained results.

It is important to discuss the limitations of our study. First, all deaf students participated in this research were hearing aid users that educated in special schools. We hope that further research investigates the effect of cochlear implant on reading literacy in Iranian deaf students. Second, all deaf student had hearing parents, thus this research didn't investigate the relation between parent hearing statues and reading literacy in deaf students. We suggest further research evaluate the effect of parent deaf communication style on reading literacy.

Conclusion

Regarding the importance of reading literacy in personal, academic and vocational life, it is essential to lay more emphasis on acquisition of comprehension and inference skills by deaf students in Iran. Modification of the educational methods and revising the contents of the textbooks seem to be the initial steps toward this objective. Also, since sign language highly influences reading literacy and academic achievement of deaf students as proven in many studies, its teaching is recommended as an essential component of education for the deaf.

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Repeated Reading as an Intervention for High School Students Identified with a Specific Learning Disability

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Abstract: The current study was conducted to measure the effectiveness of a repeated reading intervention for secondary level students identified with a specific learning disability. Although previous research suggests that repeated reading is an effective intervention to build oral reading fluency for students identified with disabilities, there is little research on its effectiveness with high school students who have been identified with a specific learning disability. This study used a multiple-probe across students design to measure the effectiveness of repeated reading as a strategy to improve oral reading fluency with high school students identified with a specific learning disability. A visual analysis of data suggested a functional relationship was demonstrated with all participating students. While there were differences in performance, the visual analysis indicated repeated reading had a positive affect on oral reading fluency with unpracticed passages for all three students.

Key words: repeated reading, oral reading fluency, specific learning disability.

Although reading problems at the secondary level are diverse and frequently more severe than at the elementary level, reading instruction and remediation do not typically take place in the high school setting (Guerin, & Murphy, 2015; Hawkins, Hale, Sheeley, & Ling, 2011; Paige, Rasinski, & Magpuri-Lavell, 2012). As a result of this, secondary level students who struggle with poor reading skills often continue to demonstrate reading related weaknesses, such as limited vocabulary, lack of background knowledge, and weak comprehension strategies (Barth, Catts, & Anthony, 2009; Hawkins et al., 2011; Wexler, Vaughn, & Roberts, 2010). Particularly, students with a specific learning disability (SLD) in reading are at a greater disadvantage as they may encounter more words with grade-level texts they cannot read by sight and rely on guessing based on the context of the passages, compromising comprehension of text (Torgesen et al., 2001). Once a student enters secondary school, these weaknesses are compounded due to increased amounts of content reading and the high level of expectations in vocabulary knowledge needed to progress in classes. Research indicates that students with poor reading skills are more likely to experience a higher rate of dropping out of school, unemployment, and lower income (Valleley & Shriver, 2003). Therefore, it is imperative to find effective reading remediation while students are still attending high school.

The National Reading Panel (NRP; 2000) reported on reading development and instruction and identified five essential components of reading achievement: phonemic awareness, phonics, vocabulary, oral reading fluency, and comprehension. Of the components identified, oral reading fluency (ORF) is considered a central part of the underlying process of reading proficiency and overall reading achievement (Barth et al., 2009; Hawkins et al., 2011). ORF is the ability to read aloud fluidly and effortlessly with adequate speed and prosody (Shanahan, 2005). Students who demonstrate weaknesses in ORF miss out on text exposure and word reading practice, limiting development of word knowledge and text comprehension (Chard, Ketterlin-Geller, Baker, Doabler, & Apichatabutra, 2009). Additionally, studies have identified evidence supporting the influence of ORF on reading comprehension and overall reading achievement (Lo, Cooke, & Starling, 2011; Schwanenflugel et al., 2009).

There are various evidence-based interventions used in schools to help improve ORF. One of the most commonly recommended interventions for students who are weak in ORF is repeated reading (RR; Hawkins et al., 2011; Ring, Barefoot, Avrit, Brown, & Black, 2013). Research indicates that when the RR intervention was implemented, students showed significant gains in both words correct per minute (WCPM) and reading comprehension (Schwanenflugel et al., 2009). The RR intervention emerged mainly from LaBerge and Samuels' (1974) theory of automatic processing which suggests a student can only attend to one thing at a time but is able to process several things simultaneously as long as only one requires the student's attention. Repetition of text encourages automaticity of recognition of the visual representations of a word, word groups, or short phrases, allowing the reader to direct their attention to comprehension of the text (LaBerge & Samuels, 1974).

The basis of the RR intervention requires a student to reread a short passage aloud to either a teacher or tutor a set number of times (Samuels, 1979) or until the student reaches a predetermined criterion of words read correctly (Lo et al., 2011). With repetition of text, the likelihood of recognizing the words when later encountered increases, therefore building automaticity of text (Chard et al., 2009; Kuhn, Schwanenflugel, & Meisinger, 2010). Also, with

each additional reading, comprehension of text content increases as the student is spending less time decoding to identify words and more time gaining meaning from the passage (Samuels, 1997).

In 2000, the NRP conducted an extensive review of experimental and quasi-experimental research studies that had been published in peer-reviewed journals to examine the effectiveness of various reading fluency interventions. Of the identified 77 studies that met their inclusion criteria, the NRP panel conducted a meta-analysis of 16 studies that met their criteria of methodology of research with RR. The studies utilized in this meta-analysis included students with and without reading weaknesses, in grades second through ninth. Their review suggested oral reading practice with feedback has a positive impact on word knowledge and reading fluency, with some impact on reading comprehension. In addition, What Works Clearinghouse identified two studies of RR that met their group design standards and included students in grades 5 through 12 who were identified with SLD. While their results showed a rating of no discernible effects on reading fluency and overall reading in general, the effect size was large enough to be considered a potentially positive effect for reading comprehension (Institute of Education Sciences, What Works Clearinghouse, 2014).

Therrien (2004) conducted a meta-analysis on RR. The analysis indicated that RR improved reading fluency and comprehension skills for students identified with a learning disability. It also indicated RR demonstrated a large effect size with reading fluency and moderate effect size with comprehension for new material when the intervention is delivered by an adult and included corrective feedback. However, the meta-analysis did not specify its effects on the basis of the age or grade level of the participants for each study analyzed.

Wexler et al. (2010) synthesized research published between 1980 and 2005 to examine the effects of RR for secondary level students. The synthesis focused on the effectiveness of fluency interventions for students in grades six through twelve. The authors suggested while fluency rates on practiced passages with a high degree of word overlap increased, there was little generalization of skills to other reading tasks for secondary level students who participated in a RR intervention. Additionally, the correlation of oral reading fluency and comprehension appears to decrease as the student ages and text becomes more complicated. The authors suggested students would benefit more from spending time reading different text content and focusing on developing comprehension skills rather than participating in a RR intervention.

Although there is a body of literature suggesting RR is an effective method of intervention for improving ORF with students identified with a disability, few studies have focused on high school students with SLD. Only two studies were identified for this review that investigated the effects of RR with high school students with an SLD (Valleley & Shriver, 2003; Josephs & Jolivette, 2016). Valleley and Shriver (2003) researched the effectiveness of RR with four high school students identified with a disability. The participants in this study resided in a residential treatment facility that specialized in working with students with behavioral concerns. Three of the students were identified with SLD in an area of reading, the fourth student was identified with an intellectual disability (ID). While individual results varied, results of their study showed a noticeable increase in WCPM with instructional level reading passages, grade level reading passages, and curriculum passages with all participating students. Additionally, Josephs and Jolivette (2016) investigated RR for high school students with SLD. They utilized a

peer-mediated RR intervention with four high school students who demonstrated weaknesses in reading. The researchers paired students who demontrated a higher reading level with students who read at a lower level and then randomly assigned them to a treatment condition. The authors indicated all participants in this study showed increases in ORF suggesting peer-mediated RR was an effective intervention. However, while all students in their study demonstrated reading weaknesses, only one of the four participating high school students had been identified with SLD.

Research shows utilizing a RR intervention that requires students to read a passage multiple times is beneficial to students with and without disabilities (Alber-Morgan, Ramp, Anderson, & Martin, 2007). Yet, there are few studies that focused on high school students with SLD. Thus, the purpose of this study was to extend the literature on the effectiveness of RR as an intervention for improving oral reading fluency skills for high school students with SLD.

Research Questions

- What are the effects of a RR intervention on WCPM with unpracticed passages for high school students identified with SLD?
- What are the effects of a RR intervention on WCPM with practiced passages for high school students identified with SLD?

Method

Participants

Three high school students identified with SLD took part in this study (see Table 1). Inclusion criteria to recruit participants were as follows: (a) high school students meeting Texas state criteria as having an SLD, (b) enrollment in the special education reading course, (c) demonstrating an academic need for improving reading fluency, and (d) receipt of parental consent and student assent to participate. To recruit participants, the principal researcher met with the high school administrator and special education teachers and identified a special education reading class for participation. All nine students enrolled in the special education reading class were given the opportunity to volunteer for participation in the study. Parental consents and student assents, along with a recruitment letter informing families of the study, were sent home to gain permission. Seven of the parents and students returned parental consents and student assents. After obtaining the consents and assents, the students' IEPs were reviewed to determine if they met the inclusion criteria. Finally, three of the students met inclusion criteria and were included in this study.

Sarah. Sarah was a Hispanic female 10th grader identified as a student with SLD in the areas of basic reading and math problem solving. With deficits in basic reading, Sarah demonstrated weaknesses in word identification with both familiar and unfamiliar words. Due to weaknesses in word recognition, she demonstrated deficits in reading comprehension and math problem solving and received strategic reading and math instruction within a special education setting, with modified instruction in science and social studies within a general education setting. According to her previous standardized intellectual evaluation, she demonstrated weaknesses in the cognitive processing areas of short-term memory and long-term memory, with a full-scale intellectual quotient (IQ) of 86. Records showed Sarah repeated first grade due to limited academic progress and had received special education services since 1st grade with supports as an English Language Learner.

John. John was an African American male 10th grader identified as a student with dyslexia and an SLD in the areas of basic reading, written expression, math calculations, and math problem solving, with an Other Health Impairment (OHI) due to a diagnosis of Attention Deficit Hyperactive Disorder (ADHD). Due to academic weaknesses, he received strategic reading and math instruction within a special education setting, with modified instruction in science and social studies within a general education setting. His previous standardized intellectual evaluation indicated he demonstrated weaknesses in the cognitive processing area of short-term memory, with a full-scale IQ of 91. Records show John had received special education services since 9th grade. Prior to this, he attended grades three through eighth in a private school dedicated to educating students with disabilities.

Matthew. Matthew was a Hispanic male tenth grader identified as a student with an SLD in basic reading and math calculations, with a speech impairment in the areas of receptive and expressive language. His previous standardized intellectual evaluation indicated he demonstrated weaknesses in the cognitive processing areas of crystallized knowledge, short-term memory, and long-term memory, with a full-scale IQ of 87. Due to academic weaknesses, he received strategic modified instruction within a special education setting for reading, language arts, and math, with modified inclusion supports for science and social studies in a general education setting, and weekly speech therapy sessions. Records show Matthew had received special education services since 1st grade, with supports as an English Language Learner. Additionally, he repeated 1st grade, demonstrated a history of low academic progress, and sporadic school attendance.

Table 1. Demographic Information of Participants

Student #	Sex	Age	Grade	Identified Disability	Reading Level	ELL
Sarah	F	16	10	SLD	5th	yes
John	M	15	10	SLD, and OHI for ADHD	4th	no
Matthew	M	16	10	SLD and SI	5th	yes

Note: ADHD = Attention Deficit Hyperactive Disorder, ELL = English Language Learner, OHI = Other Health Impairment, SI = Speech Impairment, SLD = Specific Learning Disability.

Instructional Setting

This study was conducted in a special education classroom at an urban high school located in the South-Central United States. The high school enrolled 2,727 students in grades nine through twelve. The ethnicity of the school was as follows; Hispanic/Latino 42.5%, White 26.8%, African American 18.7%, Asian 7.6%, and American Indian .4%. Of these students 47.5% were considered economically disadvantaged, 6.4% were limited English proficient, and 8.2% received supports through special education (RISD, 2018). The special education classroom specifically focused on reading instruction for students with disabilities (i.e. intellectual disabilities, learning disabilities, autism, etc.). The classroom had approximately 15 student desks, with a teacher's desk, and a table with two chairs. The table with two chairs were situated away from the student desks and utilized during this study.

Materials

Reading Passages. Individual reading passages were used during baseline, intervention, and probe sessions. Reading passages utilized in this study were found on an educational website (Education.com) which offered educational tools and learning resources for parents and educators with lessons ranging from pre-kindergarten through high school. The principal researcher downloaded fourth, fifth, and sixth grade level lessons and worksheets from the website for the study prior to implementation in order to have a new passage for each individual baseline, intervention, and probe. The principal researcher edited the downloaded passages to ensure each individual passage was within a 120- to 150-word range and fell within the appropriate reading level. The text difficulty of each passage was measured by using the spelling and grammar check function key found in Microsoft Word (Burke & Greenberg, 2010). This function determined the approximate reading ease and grade level of a passage by analyzing the number of sentences, words, syllables, and characters.

Data Collection Documents. The principal researcher developed data collection documents: a daily tracking form to track the participants' words correct per minute (WCPM) and WCPM graphing form. The WCPM Daily Tracking form was used to document each session date and session number, reading passage number, and beginning and end times. Daily performance in WCPM, number of errors, and antidotal information (i.e., absences) were also documented on this form. The WCPM Progress Graph was completed each day for visual representation of a student's progress.

Dependent Variables

The dependent variables were words correct per minute (WCPM) on practiced passages and WCPM on unpracticed passages. WCPM with practiced passages were measured during the first minute of the fourth reading of the practiced passage during each RR intervention session (Chafouleas, Martens, Dobson, Weinstein, & Gardner, 2004; Welsch, 2007). WCPM on unpracticed passages were measured during the first minute of the first reading of a unfamiliar passage (Kubina, Amato, Schwilk, & Therrien, 2008). Measurements of WCPM on unpracticed passages were taken following the completion of the RR intervention sessions every third day. WCPM was calculated by subtracting words read incorrectly from the total number of words read in one minute (Kostewicz & Kubina, 2011). Miscues were defined as words that were mispronounced, omitted, inserted, substituted, or not pronounced correctly within 3 seconds (Alber-Morgan et al., 2007). Self-corrections made within three seconds and repetitions were not counted as errors (Josephs & Jolivette, 2016).

Experimental Design

A multiple probe across student design was used to examine the effectiveness of RR on increasing WCPM with practice and unpracticed reading passages. This study consisted of three phases: (a) baseline, (b) RR with practice passages, and (c) probes with unpracticed passages. The baseline phase was used to measure the student's present level of ORF with unpracticed passages on their individual reading levels. The RR intervention phase measured the student's progress in ORF with practiced and unpracticed passages on their individual reading levels.

Procedures

Teacher Training Session. Prior to the start of the school year, the principal researcher and the participating teacher met for a training session. During this session, the principal researcher presented the teacher with an unmarked folder that included an example of a reading passage, a procedural checklist, a WCPM Daily Tracking form, and a WCPM Progress Graph. The teacher and principal researcher then reviewed the procedural checklist and discussed and practiced delivering the intervention. The principal researcher and the teacher then reviewed the WCPM Daily Tracking form and the WCPM Progress Graph and discussed how to document the collected data. At the end of this session, the folder was given to the teacher to allow her to independently practice prior to the implementation of the study. This training session took approximately 30 minutes. During this session, the teacher was given the opportunity to ask questions to gain clarification of procedures, if needed.

Each week the principal researcher provided the teacher with an unmarked folder for each student. The folder included four different new reading passages based on the student's individual reading level. Three of the reading passages in the folder were utilized for the three days of RR intervention sessions. The fourth passage was for measuring WCPM with an unpracticed passage on the third day, after the RR intervention sessions had completed. The unmarked folder also included procedural checklists that were to be completed for each session, the WCPM Daily Tracking form, and WCPM Progress Graphs.

Baseline phase. The RR intervention was not implemented during the baseline phase; however, the reading teacher began the process of implementing the core reading curriculum (e.g., introducing the program, getting the students to access the program on their computers, etc.) with the students during class time.

To start the baseline sessions, the principal researcher called the first student over to the table situated away from the other students in the classroom. Sitting at the table across from the principal researcher, the first reading passage was given to the student and they were asked to read aloud to the principal researcher as clearly as possible. While the student read the passage aloud, the principal researcher kept time with a stop watch and marked miscues. Miscues were defined as words that were mispronounced, omitted, inserted, substituted, or not pronounced correctly within 3 seconds (Alber-Morgan et al., 2007). Self-corrections made within 3 seconds and repetitions were not counted as miscues (Josephs & Jolivette, 2016). WCPM were reported to the student and documented on the WCPM Daily Tracking form. This process was repeated once per day during class time until baseline was established for the student. Baseline was established when the student demonstrated at least three consecutive reading data points within 50% of the mean (Josephs & Jolivette, 2016). Once baseline was established for the first student, the principal researcher advised the teacher they were ready to enter the intervention phase. At that time, the next student entered the baseline phase. Each session lasted approximately 5 to 10 minutes per student, depending on their daily performance.

Intervention phase. The RR intervention sessions were delivered to students individually while the remaining students in the class received core reading instruction. During each intervention session, the principal researcher or the teacher picked up the student's

individual study folder from a locked cabinet along with a stop-watch, and moved with the student to a table located away from the other students in the classroom.

When seated at the table, the principal researcher or teacher removed a new reading passage from the student's study folder, along with the study procedural checklist, WCPM Data Tracking form, and the WCPM Graphing Sheet. The student was then given the reading passage and asked to read it aloud three times. The examiner corrected the student's miscues while they were reading the passage. Miscues were defined as words that were mispronounced, omitted, inserted, substituted, or not pronounced correctly within 3 seconds (Alber-Morgan et al., 2007). Self-corrections made within 3 seconds and repetitions were not counted as miscues (Josephs & Jolivette, 2016). During the student's fourth read aloud, the examiner kept time with the stop watch and noted miscues without comment to the student. After the student's fourth read, WCPM were reported to the student, noted on the student's WCPM Daily Tracking form, and graphed on the WCPM Graphing Sheet to illustrate progress.

A new reading passage was presented to the student during each RR intervention session. On the third day of the RR intervention sessions, after the RR intervention sessions had completed, the student was given a new unpracticed passage and asked to read it aloud to the examiner. During this read, miscues were not corrected and no anecdotal comments were made regarding the student's reading performance. After the student had completed reading the new unpracticed passage, WCPM were reported to the student, noted on the student's WCPM Daily Tracking form, and graphed to illustrate progress. This process was utilized for the remaining students throughout the study. Each session lasted approximately 5 to 10 minutes per student, depending on the student's daily performance.

Inter-observer Agreement

Inter-observer agreement and treatment integrity for WCPM were assessed throughout the baseline, intervention, and probe phases. Each individual reading passage, the WCPM Daily Tracking form, and the WCPM Graphing Sheets were reviewed by the principal researcher at the end of each week to ensure information noted on the tracking forms matched notes made on the individual reading passages. Words read correct and miscues noted were recalculated at that time by the principal researcher. An agreement was counted if the WCPM calculated was correct on both the reading passages and the WCPM Daily Tracking forms. The inter-observer agreement was calculated by dividing the number of agreements between the teacher and the principal researcher with the total number of agreements and disagreements multiplied by 100 (Hawkins et al, 2011). There was a mean agreement of 90% between the teacher and the principal researcher.

Procedural Integrity

Procedural integrity for this study was assessed throughout the baseline, intervention, and probe phases to ensure adherence to established intervention and scoring procedures by utilizing a 14 point checklist (e.g., classroom teacher and student will be seated across from each other at a table, classroom teacher will give the student a copy of the practice passage, etc.). A new procedural checklist was completed during each individual session. Before implementing the

study, the principal researcher trained the teacher on the exact procedures for conducting baseline sessions and implementation of the RR intervention phase.

At the start of the study, the principal researcher delivered the first baseline with the first student while the teacher observed. The principal researcher then observed the teacher deliver the second baseline session with the first student during the second day of the study to ensure understanding of procedures. During all sessions, the teacher and principal researcher utilized the procedural checklist to ensure adherence to established intervention and scoring procedures (Kubina et al., 2008). Procedural integrity was assessed by the principal researcher reviewing the procedural checklists weekly to assess adherence to the study's procedures. The principal researcher reviewed the procedural checklists, the WCPM Daily Tracking forms, and the WCPM Graphing Sheet for each session in the study on a weekly basis. During 17 sessions the WCPM were not graphed by the teacher. This was most often due to a student surpassing WCPM on the WCPM Graphing Sheet. Additional WCPM Graphing Sheets were developed with a higher number of WCPM for use when working with students.

Results

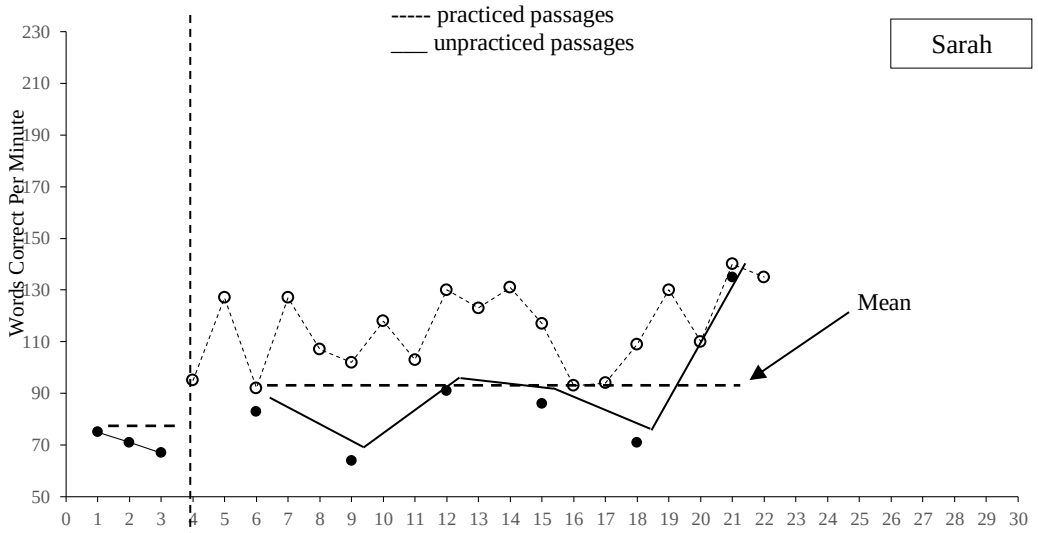
Results for each student are presented in Figure 1. A visual analysis was utilized to examine the change in ORF when RR was introduced. All participating students in this study demonstrated an immediate increase in WCPM with practiced passages during the repeated reading intervention sessions, as well as demonstrating an immediate increase in WCPM when presented an unpracticed passage.

Sarah. During the baseline phase, three data points were collected, with Sarah demonstrating a mean of the baseline data (unpracticed passages) of 71.0 WCPM (range = 67.0 – 75.0). During the intervention phase, 19 data points for practiced passages and five data points for unpracticed passages were collected. There was an immediate change when the RR intervention was introduced with Sarah's performance with practiced passages significantly improving with a mean of 114.9 WCPM (range = 92.0 – 140.0). Her performance of unpracticed passages also demonstrated an immediate improvement with a mean of 88.3 WCPM (range = 64.0 – 135.0). Sarah's performance with unpracticed passages improved by approximately 24.4% as compared to the baseline data. During most of this study, Sarah demonstrated consistent daily attendance and study participation. However, eight weeks into the study an inappropriate conduct incident occurred during school hours, resulting in her having to drop out of the study due to placement in an alternative educational setting.

John. During the baseline phase, three data points were collected, with a mean of the baseline data (unpracticed passages) of 71.0 WCPM (range = 54.0 – 84.0). During the intervention phase, 20 data points for practices passages and six data points for unpracticed passages were collected. When the RR intervention was introduced, John's performance of practiced passages showed an immediate improvement with a mean of 129.0 WCPM (range = 102.0 – 166.0). His performance with unpracticed passages also exhibited an immediate improvement with a mean of 90.0 WCPM (range = 58.0 -106.0). John's performance with unpracticed passages improved by approximately 26.8% as compared to the baseline data. John demonstrated a sharp decrease in performance during the last measure of unpracticed passages. During this session, John appeared frustrated with the task and the principal researcher was having difficulty getting get him focused on the reading session. While he performed well on the

practiced passages, when presented with the unpracticed passage John had to be encouraged to read and finish out the session, thus affecting his performance with the unpracticed passage.

Matthew. In the baseline sessions, three data points were collected, with a mean of the baseline data (unpracticed passages) of 134.0 WCPM (range = 114.0 – 161.0). During the intervention phase, twelve data points for practices passages and four data point with an unpracticed passage were collected. When the RR intervention was introduced, Matthew's performance with the practiced passages showed an immediate significant improvement with a mean of 203 WCPM (range = 189.0 – 216.0). His performance with the unpracticed passage also improved with 143 WCPM (Matthew only had one data point for unpracticed passages for this level). His performance with the unpracticed passage improved by approximately 6.7% when compared to the baseline data. Due Matthew's high level of performance with the instructional reading level 5, his level was increased to an instructional reading level 6. During this phase, nine data points for practiced passages and three data points for unpracticed passages were collected. Matthew's performance during practiced passages continued to show an immediate improvement with a mean of 179.0 WCPM (range = 134.0 – 227.0). Matthew continued to show improvement with unpracticed passages achieving a mean of 141.00 WCPM (range = 105.0 – 183.0), with a performance improvement of approximately 5.2% when compared to the baseline data. There was a sharp decrease in Matthew's reading performance during the last two sessions with unpracticed passages. Throughout the intervention sessions, Matthew's attendance was inconsistent and he missed many sessions, which affected his performance during the intervention sessions. During the repeated reading intervention sessions with practiced passages, his performance improved during each reading of a passage. However, when given an unpracticed passage with unfamiliar vocabulary, Matthew's reading was slow, with many stops and starts, affecting his overall performance.



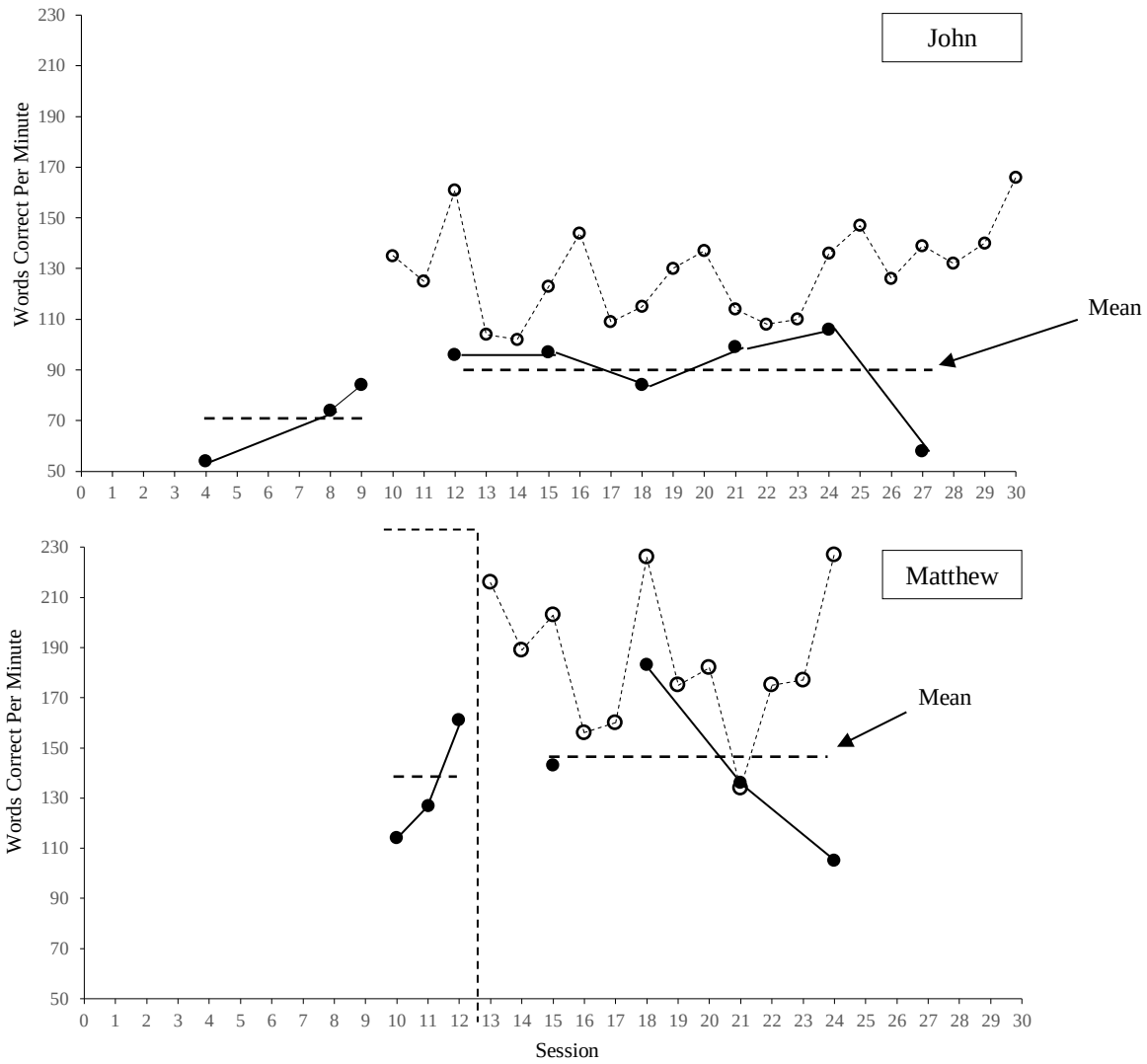


Figure 1. **Words Correct Per Minute with Practiced and Unpracticed Passages.**

Discussion

High school curriculum includes an extensive amount of reading with expectations of word knowledge (Hawkins et al., 2011; Paige et al., 2012). Studies show ORF is a prerequisite skill for students to gain meaning from text (NRP, 2000; Wexler et al., 2010). Those who are proficient in ORF are able to recognize words with automaticity allowing them to focus their attention on the text rather than having to decode a word (Samuels, 1997). LaBerge and Samuels' theory of automatic processing suggested automaticity of recognition of letters, spelling patterns, and individual words improves with repeated practice, much like an athlete practicing a sport (LaBerge & Samuels, 1974). Thus, oral reading practice helps build automaticity of ORF by providing successive exposure to print (Kuhn et al., 2010; LaBerge & Samuels, 1974). Additionally, fluency instruction exposes students to both familiar and unfamiliar vocabulary, increasing the chance of recognition of a word the next time it is encountered (Samuels, 1997).

There are a plethora of studies regarding interventions for increasing ORF for students with and without disabilities (NRP, 2000). In 2000, the NRP conducted an extensive review of liturature and reported RR has a, "consistent, and positive impact on word recognition, fluency, and comprehension as measured by a variety of test instruments and at a range of grade levels" (NRP, 2000, p. 3-3). The results of their report suggest RR as an intervention for secondary level students identified with SLD and who struggle with reading can be effective as it exposes them to unfamiliar spelling patterns and words, allowing opportunities to build automaticity of word recognition and improving ORF. A review of the literature for this study indicated RR can be an effective intervention for building ORF, yet there were few studies with RR that focused on high school students who had been identified with SLD and demonstrated reading related weaknesses (Wexler et al., 2010). Thus, the purpose of this study was to investigate the effects of a RR intervention on WCPM with practiced and unpracticed passages for secondary level students identified with SLD.

A visual analysis of results for this study showed a functional relationship was established between the RR intervention and the immediate improvement of reading fluency for the participating students identified with SLD. While there were differences and variability within performances, visual analysis indicates RR had an immediate positive affect on oral reading fluency with practiced and unpractice passages for all three students. Sarah participated in the intervention consistently for 19 sessions and demonstrated an immediate improvement with unpractice passages by approximately 24.4% as compared to the baseline data. Likewise, John participated in 20 sessions and demonstrated immediate improvements in WCPM with unpractice passages by approximately 26.8%. Matthew participated in 12 sessions and received the RR intervention inconsistently due to inconsistent school attendance. While Matthew did not demonstrate the same level of ORF increase when compared to the performances of Sarah and John, he demonstrated an immediate increase over the baseline mean with unpracticed passages of approximately 6.7% with reading level five, and 5.2% with reading level six. Matthew's low performance during this study may be related to his inconsistent participation in the study. Additionally, his reading rate started at a considerably higher level at baseline than Sarah and John. Research shows those students with a lower level of performance in decoding and word recognition demonstrate the greatest gains with the RR intervention (Alber-Morgan et al., 2007).

The findings of this study support previous research that indicated RR as an intervention to increase ORF has a positive effect on increasing WCPM for secondary level students who have been identified with a disability (Hawkins et al., 2010; Josephs & Jolivette, 2016; Valleley & Shriver, 2003). This study is significant in that it focuses specifically on high school students who have been identified with SLD and demonstrated a history of academic weaknesses associated with reading deficits.

Limitations

Studies report establishing a stable baseline prior to a participant entering the intervention phase of a study helps in demonstrating a cause and effect relationship (Barger-Anderson, Domaracki, Kearney-Vakulick, & Kubina, 2004). During this study, two participants entered the intervention phase of the study demonstrating an increasing baseline, rather than a stable baseline. Thus, it is difficult to determine if the immediate increase in ORF performance is a direct result of introducing the intervention rather than a continuation of the baseline improvement.

Due to the high level of oral reading fluency performance for Matthew with reading level 5, reading level 6 was implemented the second week of his intervention sessions resulting in an immediate change in oral reading rate. Additionally, there was a procedural irregularity with John during the baseline phase. On days two, three, and four of the baseline phases, the teacher did not follow baseline procedures and asked John to read the baseline passages four times measuring WCPM during the fourth read. Due to this error, the baseline phase for John continued into the third week.

This study was conducted within a special education reading classroom with high school students who have been identified with a disability (SLD, Other Health Impairment, etc.). Due to student absences, demands of core content, student discipline issues, and classroom time constraints, it was difficult to implement the RR intervention consistently three day a week for 10 weeks. Additionally, since this study was a single-subject design utilizing a limited number of participants, generalizability of the results may be limited. Finally, all participants continued to receive academic instruction in all classes, including the reading class. Since the students continued receiving academic instruction, they were exposed to more vocabulary practice, thus risking influencing the participating student's WCPM and the study outcome
.

Implications for Practice

This study supports previous studies indicating RR as an intervention for high school students identified with SLD and who struggle with reading can be effective as it exposes students to unfamiliar spelling patterns and words, allowing opportunities to build automaticity of word recognition, thus improving oral reading fluency. The RR intervention was easy to implement, took little time per student, and is cost effective. This intervention allowed students to practice oral reading in a safe environment with guidance from a teacher who could provide appropriate and accurate corrective feedback. Thus, the RR intervention provided participating students word level practice that was needed to help improve oral reading fluency and overall reading achievement.

Implications for Future Research

This study focused on high school students who had been identified with SLD in word recognition and demonstrated a history of struggling with reading achievement. While visual analysis of this study shows an immediate improvement with WCPM when the RR intervention was introduced, it is difficult to determine if these are the result of implementation of the intervention due to questions regarding baseline data. Additionally, all students in this study have been identified with SLD however, two of the students had been identified with an additional disability under IDEA (Other Health Impairment for ADHD and Speech Language Impairment). Thus, more research is needed that focuses on high school students solely identified with SLD in an area of reading (i.e. basic reading, reading comprehension, reading fluency). This research may offer a better understanding of the effectiveness of RR with students identified with SLD and struggling with reading. With this knowledge, reading interventions can be more individualized and strategic thus improving overall reading achievement.

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Values of Artistic Activity in Social Development of Individuals with Johanson-Blizzard Syndrome

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Abstract: This paper aims at examining the relationship between the psychosocial conditions of artistic activity through dance and its effect on women with Johanson-Blizzard syndrome (JBS), concerning their mental and social health, their social and emotional development in the area of public health as well as the quality of their functioning in their communities. The dance therapy exercises were based on a choreographic system invented by the author as a profile of research into social and emotional development of women with Johanson-Blizzard syndrome. On the basis of participating observation, the author gathered and discussed the results of achievements of three women aged 20-25 participating in dance activities for five years.
The findings proved that the level of the risk of delay in the process of social and emotional development in individuals with Johanson-Blizzard syndrome could considerably decrease in the area of public health, positively influencing the improvement of the quality of independent functioning of women in their communities. For five years the described women developed an improvement in the areas of interpersonal communication, relationships and their self-assessment. Also, respondents developed a more adult style in their preference of independent roles towards their parents and their partner in one case.

Keywords: Johanson-Blizzard syndrome, dance therapy, psychosocial functioning, artistic activity, emotional and social development

Introduction

Individuals afflicted with a complex of congenital anomalies called Johanson-Blizzard syndrome (JBS), are characterized with a rare autosomal recessive state, involving particularly pancreatic exocrine insufficiency, oligodontia, growth retardation, hearing loss, mental impairment, skull defects, hypothyreosis, a congenital heart defect and others, e.g. anus anesthesia (Alpay, Gül, Lenk, & Ogur, 2000; Johanson & Blizzard, 1971; Kulkarni, Shetty, Kallambella, & Kulkarni, 2004; Mcheik, Hendiri, Vabres, Berthier, Cardona, Bonneau & Levard, 2002; Zenker, Mayerle, Reis, & Lerch, 2006). Individuals described in this paper reveal an underdevelopment of the central part of the face, though the spectrum of potential functions and physical symptoms associated with JBS have an individual nature and have a wide and diverse dimension. This study focuses on three cases of women aged 20-25 who, within a period of five years, as a result of active participation in organized artistic dance activity, obtained an unexpectedly high level of functioning in their independent lives on an everyday basis. The described women revealed substantial differences in their appearance, differences in the level of their social functioning, the status of their origin, the case history, the type of family complications, yet all the cases confirmed the assumptions that all physical defects, such as exocrine pancreatic insufficiency, intellectual disability, limitations caused by heart defects, anomalies regarding sight and touch, internal and external complications in disorders and deformations of the body, do not eliminate their social functioning and the final shape of the course of the social and emotional development of individuals with Johanson-Blizzard syndrome (Cheung, Thomson, Buncic, Héon & Levin, 2009; Elting, Kariminejad, de Sonnaville, Ottenkamp, Bauhuber, Bozorgmehr, Zenker, & Cobben, 2008; Zenker, Mayerle, Lerch, Tagariello, Zerres, Durie, Beier, Hülskamp, Guzman, Rehder et al., 2005; Zenker, Mayerle, Reis, & Lerch, 2006). The women involved in this study come from Warsaw, Poland, they are from Jewish families and their parents are related in the first degree. Earlier their parents lived in Kazakhstan (one family), Ukraine (one family), Israel (one family). The women revealed typical features of the disease, i.e.: pancreatic hypofunction, congenital hypothyroidism, sensory deafness, short stature, typical JBS facial features, lack of permanent dentition (large orthodontic anomalies), atrial septal defect and heart failure in one case (Alpay, Gül, Lenk & Ogur, 2000; Gershoni-Baruch, Lerner, Braun, Katzir, Iancu & Benderly, 1990; Sandhu & Brueton, 1989). Intellectual disability was found in all the women. Also, it was ascertained that the respondents' hearing was psychomotoric development were correct, which clearly confirmed the conviction that they have a relatively gentle phenotype.

Why artistic activity through dance?

Studying the specificity of motoric activity of individuals with Johanson-Blizzard syndrome is not an easy task because each individual body language user has a unique module of his or her personal motoric experiences (Williams, 2004). When including the group of women described here in dance classes, the class educators primarily bore in mind an attempt to isolate the participants' body language from their individual manifestations, consequently separating what is social from what is individually caused or defined in connection with the possessed syndrome, and what is essential from what is accidental. The point was to allow dance class participants with JBS, according to their individual possibilities, to consider their body movements as signs or symbols of their emotional states currently expressed as their subjective feelings. That symbolism shown in the participants' gestures, poses and motoric sequences was supposed to model the forms of their motoric activity while communicating their mood. It was supposed that

the essence of the power was in the cognitive-sensory-motoric and aesthetic ability to create the body and transform the current and often disordered state of mood, e.g. emphasizing or denying a linguistic form of communication. Another point was to allow the motoric activity accompanying the participants' emotional sphere to stimulate or sublimate the palette of their feelings conveniently during exercises. In this case dance was supposed to be a form of escape from all restrictions and limitations connected with their disease. When moving in time and space, the dancers' bodies allowed kinesthetic communication (Anderson, 1974). Empathy between the dancer and the recipient, revealed in the dance, allowed transfer of information, direct co-experience and specific somatic-muscular reception. Apart from the kinesthetic way, dancing permitted transferring meanings via additional channels, such as visual, sonic, tactile and aromatic channels (Hanna, 1987). Therefore, dance participants were offered five transmission channels allowing information transfer. Therefore, as a result, artistic activity classes through dance, in reference to adult females with JBS with a low intelligence quotient appeared to be a definitely suitable and individually available form of art therapy and an excellent form of supplementing the treatment process through properly structured influence concerning stimulation, education as well as pathogenetical, biological, pathological and social factors (Cheung, Thomson, Buncic, Heon, Levin, 2009; Hillecke, 2006; Lueger, 1995).

A Model of artistic activity through dance for individuals with JBS

The model of artistic activity through dance, designed and used in Warsaw, involved a number of elements as follows: controlled expressiveness according to Traue (1998); interdisciplinarity; therapy phasicity according to Lueger (1995); the complexity of the specificity of factors connected with barriers of functioning of individuals with JBS in their daily lives; inclusion of participants' families in the therapy; considering strong points in functioning of dance therapy participants, social and emotional development, socializing stimulation (Farmer, 1994; Lueger, 1995; Traue, 1998). Apart from the described women also a group of men with intellectual disability participated in the dance group. All the dance classes participants were of age and had parents or one family member. The stimulation classes were held once a week and lasted three hours. In special cases the participants met twice a week, mostly before public presentations of their skills.

Method

The course of dance therapy for participants with JBS. The author used his method of motoric activation by dance. Moreover, the author took into account the monographic method and the qualitative method: observation, interview, documentation analysis, valuation.
The procedure included three phases. These are detailed as follows:
Phase 1

1. Observing and noting the basic difficulties and limitations in participants' movement in dance;
2. Formulating a conception of motoric stimulation-through-dance activities; and
3. Analytic and experimental confirmation of key functions of the introduced motoric stimulation-through-dance activities.

Phase 2

1. Verifying new components of motoric stimulation-through-dance activities in reference to individual dancers' cases;

2. Verifying new components of motoric stimulation-through-dance activities in reference to a group of dancers;
3. Building a model of a set of motoric stimulation-through-dance activities aimed at therapeutic development (referring to individuals); and
4. Building a model of a set of motoric stimulation-through-dance activities aimed at therapeutic development (referring to groups).

Phase 3

1. Implementing the model of motoric stimulation-through-dance activities in a group;
2. Verifying therapeutic developmental activities through their particular applications;
3. Accepting the final version of the method for motoric development through dance.

Individuals invited to participate in artistic activity classes through dance were three women aged 20-25 in 2012. Dance therapy was based on a phasic model considering certain psychological and behavioral changes in participants. The dance therapy model consisted of 3 phases: phase 1 - radiation, involving noticeable changes in participants' mood and self-confidence; phase 2 - stimulation, involving noticeable changes regarding the intensity of one's activity, improvement of motivation regarding social functioning; phase 3 - improvement in the area of "general functioning", perceptible changes concerning extensions of ways to cope independently with everyday situations. Consequently, during the three-phase course of dance therapy, the educator/therapists' effort was aimed at improving the participants' general mood as well as reducing the frequency of fits of anger, reluctance towards activity, the states of extreme emotional lability, unexpected excessive effort, states of frustration and finally improving the participants' general functioning in task situations on an everyday basis. All the phases of pedagogic conduct during the activities were thoroughly worked out, analyzed and executed in compliance with the set aim of dance therapy, i.e. optimization of the social and emotional development of the respondents with JBS.

The social and emotional development of individuals with JBS

The social and emotional development of individuals with Johanson-Blizzard syndrome, if properly supported, creates an extremely important foundation of their socially expected functioning during all their lives. Their participation in artistic activity through dance allowed creating a splendid opportunity to provide those participants systematically with competences which allow effective and satisfactory adaptation in the environment, both now and in the future. Furthermore, properly provided care and artistic education in implementation of health and intervention schemes during participation in artistic stimulation, allowed supporting the development of skills essential for educational and social success of all dancers. Planning influences aimed at optimizing social and emotional development, including its compensation in the described group of participants, requires recognizing weak and strong points of their functioning as regards their self-reliance, persistence, curiosity, skills, resourcefulness and talents. In order to achieve it, the author used the knowledge concerning the course and the correctness of the social and emotional development of women with Johanson-Blizzard syndrome, and on this basis, he tried to select suitable tools allowing monitoring constantly their emotional and social development through dance and other motoric and musical exercises in the group of thirty individuals. As stressed by R. Thompson "[...] social relations create a context which is the most essential for developing the skill of coping with emotions and the effectiveness

of those skills depends significantly on reaction of social partners and challenges of the social environment" [...] (Thompson, 1994).

For the needs of the discussed issues, the validity of the description of observable types of behavior of individuals with Johanson-Blizzard syndrome, it was assumed that social and emotional competences provide an ability to understand and control one's feelings and behavior, understand other individuals' feelings and establish harmonious and friendly relationships and relations with other all other participants of artistic activity. The model used for recognizing and designing a preventive and interventionist scheme for the needs of stimulation with dance considered five categories of social and emotional competences which revealed the most frequent difficulties among the described cases, i.e.: self-awareness, social consciousness, responsible decision making, controlling one's behavior and controlling relations with other individuals in the group (Zins, Bloodworth, Weissberg, & Walberg 2004). In this scope, the author gradually increased the number of situations which allowed eliminating effectively any emerging difficulties and improving earlier taught techniques of coping on an everyday basis.

As regards women with JBS, it was assumed already at the start of collaboration with educators that those individuals could feel discomfort in establishing contacts with their peers, regardless their register age and the degree of limitation caused by their disease. It was caused by the fact that those individuals normally experienced a feeling of excessive occurrence of disadvantageous changes in their cognitive functioning. Those changes sometimes took a subtle form and did not give in to accurate clinical or neurological diagnosis. Consequently, however, those had a considerable negative impact on the quality of functioning of the discussed participants in their artistic stimulation through, e.g. disruptions of memory processes, understanding or a strong mood fluctuations, irritation and lack of self-confidence (Farmer, 1994). After introducing a proper scheme for recognizing potential psychomotoric abilities in the respondents, all the obtained information played an essential and positive role in designing a strategy of methodical conduct, and allowed using dance therapy effectively (Lanie, 2010).

Results

While diagnosing the women with JBS it was assumed that the previously mentioned competences and skills presented in Table 1 were developed in different degrees starting from their birth through subsequent stages of development and on the basis of gradually acquired and formed competences.

Table 1. Categories of Social and Emotional Competences Developed in Women with JBS (at the Elementary and the Advanced Stage of Dance Classes Scheme)

Category	Component competences	1st stage of participation	2nd stage of participation
Awareness	- identification and recognizing one's emotions;	weak	correct
	- perception of oneself adequate to reality;	weak	correct
	- adequate recognition of one's features (strong	weak	correct

	and weak points); - efficiency in achieving goals.	 weak	 good
Social awareness	- ability to take other individuals' points of view; - empathy; - acceptance of differences between people; - respect to others.	weak weak weak expected	correct correct weak correct
Responsible decision making	- a skill to analyze the situation in order to identify the most important problems; - problem solving skills; - ability to reflect over one's behavior; - ability to take responsibility.	weak weak weak weak	correct sufficient expected correct
Controlling one's behavior	- controlling one's impulses (restraining, modulating, socially accepted expression); - internal motivation for activity; - controlling one's behavior; - self-discipline; - ability to set aims and organizing one's activity.	weak weak weak weak weak	good good sufficient expected expected
Managing one's relations with others	- communication skills (transferring, receiving and interpreting information); - ability to become involved emotionally and build relationships with other people; - negotiation skills; - ability to refuse in a socially acceptable way; - ability to solve conflicts with others; - ability to ask for help and offer help.	expected weak expected weak weak expected	good expected expected expected expected good

Source: the author's study, based on Zins, Bloodworth, Weissberg and Walberg (2004). Rating equivalents: *weak* - a hardly perceptible level of participants' signs; *expected* - a level comparable with one's peers; *correct* - a level better than expected, though lower than sufficient; *sufficient* - a level higher than expected - signs have their own acquired elements; *good* - a level of one's acquired signs established above the expected level in reference to one's peers.

On the basis of the carried out survey with the women's parents it was ascertained that in each family the development of competences in a child was solved differently and with very varied results. The organization of stimulation by dance therapy in the described women with JBS involved primarily those categories of competences which in the educators' and parents' opinion were rated at a deficit level.

Table 2. Factors Which Support and Disrupt the Functioning of Women with JBS

Type of factors	Individual development (ontogenesis)	Family (a microsystem)	Local environment (an egzosystem)
Permanent risk factors	• chronic health problems • insufficient care and relations with parents in one's early life • intellectual retardation (intellectual defect)	• lack of support motivating for artistic activity • financial difficulties • the parents' psychological problems	• lack of understanding of the situation in the local environment • social acceptance for intolerance • social isolation • racism, exclusion
Temporary risk factors	• diseases and complications connected with the syndrome • difficult life situations • temporary failures	• difficulty in harmonizing one's professional career with taking care of one's child • separation or divorce • daily problems	• loss of social support • temporary conflict in providing health and social care
Permanent supporting factors	• easygoing personality • talents and inborn skills • good adaptation to a group • willingness to learn	• good matrimonial and family relations • parents' regular employment • a high level of child care in the dancing activity	• support from the local network • support from humanitarian organizations • good social services • permanence of dance activities

Temporary supporting factors	• taking pride in one's own dancing achievements • good relations with the dance instructor and volunteers	• positive results of care • organization of non-family care • support from one's family	• social support from public benefit organizations • providing resources for medical therapy

Source: the author's own study based on Cicchetti, Toth and Maughan (2000).

The pedagogic and psychological focus was mainly on the women's particular abilities to establish relations with other people, e.g. smile or vocalization, and this was the basis for further gradual enlargement of chances for developing other social and emotional skills. However, this task did not appear to be easy because the emotional baggage connected with overcoming difficulties connected with daily activities involving health and hygiene, opposing constantly to attacks of pain and unexpected physical limitations of their bodies, comparatively large daily doses of medicines and obligatory supplementary therapies, often led to life apathy, low motivation and reluctance to overcome difficulties connected with dance and education. The two-stage participating observation during the women's artistic activity took into account the level of factors supporting and disrupting their functioning at the first stage of collaboration, and then at the advanced stage (Table 2).

The observation was affected on the basis of the author's observation sheet for individuals with JBS. For this purpose, the ecological transactional model was used, which allowed proper understanding of the course and effects of the development of artistic activity in the participants. The author used a wide analysis of the context of the lives of women with JBS, examining a great number of external (interactional) factors, connected with the characteristics of the environment, and internal factors, connected with the profiles of individuals, whose interactions shape one's individual development (Cicchetti, Toth, & Maughan, 2000). Such a look at the described women, as developing individuals, functioning under certain conditions and subject to different influences, created conditions for the theoretical basis for diagnosing and designing adequate individual schemes to support the development and provide suitable specialist therapeutic assistance in individualized categories.

Summing up the obtained results of participation of individuals with JBS in artistic stimulation through dance for the period of five years, it can be confirmed that the obtained results were impressive. When comparing in Table 1, the results of Stage 1 (elementary) with Stage 2 (advanced), it can be noticed that the development of the scope of competences in all participants reached statistically a very positive result. A favorable improvement was observed almost in every competence category, and in some categories an unexpectedly high level was reached. What is more, young women showed a positive change of their attitudes towards their friends and colleagues together with a possibility to introduce constructive changes in their behavior on an everyday basis. Learning musical freedom and flexibility appeared to be an important factor which allowed individual participants to significantly improve the scope of

movement, their endurance, muscular power, co-ordination of lower and upper extremities, their postural control, dexterity and grasp, body mobility, perception and feeling. Moreover, on the individual level, participants showed a higher level of general improvement and stabilization of learned behavior, techniques, experience and using it for extended self-reliability and resourcefulness in their lives on an everyday basis.

Discussion

When emphasizing the values of artistic activity through dance in the social and emotional development of individuals with JBS, it must be stressed that this form of art therapy can become an extremely essential element in their lives to complement the process of supplementary therapy and their adaptation to the social environment. It must be stressed that newly formed social competences of the described women with JBS and the freedom with which, under the influence of participation in artistic stimulation, they were able to establish relations with their peers, does not remain in a distinct relationship with their inclination towards externalizational behavior, e.g. damaging objects, revealing signs of fury, falling into states of disappointment, transferring their aggression to objects of daily use. It appears that externalization seems to occur regardless of one's health condition and can be negatively connected with the ability to take social roles and cope with tasks associated with one's independent functioning in the community. Controlling one’s externalizational behavior seems to be strongly related to cognitive functioning, which could be evidently observed in this study. It must be admitted that developing the ability to focus participants' attention on dance for a longer period of time in the elementary phase was also a serious problem and was reflected in connection with other competences concerning the ability to control one's emotions and behavior. Therefore, it is no surprise that one can observe a correlation according to which the smaller the individual's ability to focus his or her attention, the higher the intensity of externalizational behavior. This problem was particularly stressed regarding therapeutic influences in artistic stimulation through dance.

The positive relationship of reaction to artistic activity as an innovation in the lives of women with JBS with the level of their socialization, i.e. with their social competences and freedom in establishing social relationships confirms the hypothesis that difficulties in social relations acquired during supplementary therapy and long-term pharmacotherapy are often a consequence of an inflated level of fear of new situations in life and types of behavior in the community. In this case, one's self-assessment tended to remain on a very low level with a downward trend towards the extremity. Owing to their participation in artistic stimulation, the described respondents strengthened their self-assessment and consolidated the level of their self-assurance and the feeling of their personal value.

It can be accepted that depriving young women with JBS with intellectual disability of any possibilities to participate in artistic stimulation can lead to extreme limitation of their chances for developing their independence in social roles in their adulthood. Such isolation will result in losing their chances for development in order to start their professional career and fulfill their plans to start their own families. Without being provided with medical and social support and care, those individuals have practically very limited possibilities to survive in the community. Since their fate and lives are, as it were, doomed to constant fight with a chronic disease and difficulties in becoming independent, doomed to a struggle for social adaptation and

decent existence with permanent outside assistance, everything should be done so that they could participate in different forms of social stimulation. Due to this reason, it is worth implementing different forms of artistic stimulation for those individuals in order to successfully open the window on the outside world for them. As indicated by the results of the observations in artistic stimulation through dance, participants with JBS significantly improved the area of interpersonal communication and their relations and self-assessment reached an unexpectedly positive level, i.e. from 'weak' to 'good'.

Implications for rehabilitation

Summing up, on the basis of the findings of the study it is also worth indicating the following implications for rehabilitation:

- The study found positive health consequences in women resulting from their regular participation in dance therapy, both in psychophysical and social health;
- In the face of the revealed emotional reactions towards therapists in dance therapy, it seems crucial to select educators and therapists who carefully consider their personality styles and preferred techniques of artistic work;
- Specialists working with disabled individuals, including those with Johanson-Blizzard syndrome, must accept the significance of social support for this group and their families, especially as regards chronic diseases and psychophysical indispositions;
- Educators and therapists should focus their efforts on providing participants with assistance in experiencing and observing their disrupted perceptions in a sufficiently changed quantity so that they can systematically improve, modify and neutralize extremely negative reactions caused by chronic states of illness and anxiety;
- The social environment, including medical staff, should accept the fact that, influenced by regular participation in dance therapy, the level of independent social functioning of participants with Johanson-Blizzard syndrome increases considerably, which translates into the level of their being accepted in the community and reduction of stress associated with overcoming complaints connected with their disease;
- It must be accepted that that intensification of problems regarding the development of social and emotional functioning of women with Johanson-Blizzard syndrome has an upward trend together with irregularities of their participation in dance therapy sessions.

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Final Memories

My Dear Friends,

Now that I have reached 90 years of existence, I would like to thank all of you for helping me to get this far. Your support, your photos, smiles, messages all came pouring in. As I was in hospital in Toronto I could not respond, but finally they released me today with the promise that I stay around here a few more days before I return to Vancouver with some oxygen for the flight.

I was told that I would not last a flight to Tanzania and I found no cruises going that way, but I would like to send a message when the time comes. My life was wonderful, travelling everywhere, making new friends and new contacts, who joined us to accept, protect, and educate children with special needs. From acceptance to inclusion and through the editing of the International Journal of Special Education, from many countries local research was published, the awareness has grown. The battle from grass roots started to stir up enough dust for action. However, the fact remains that we all have some kind of "disability" beyond the psychiatric categories, which are not to stop and one hopes that the whole education system will recognize that sooner or later. I do not know whether my old ticker will last for another year or not but I am extremely grateful for all you did to give me moral support. It was great to be alive this century, to remember the first radio, telephone, television, computers, robots, moon and Mars landings. My arms wish to embrace you all at .....(sorry I can't figure out the next word).....In a wonderful adventure . Many thanks and 100% appreciation. I love all of you. Marg. (personal communication, journal, March, 2019).

“I would also like to take this opportunity to thank you all for your contribution in enriching my mother’s life.” Helga