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Supervisory Teacher Coaching in K-12 Classrooms

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Abstract

Coaching has been identified as a critical support for persistent use of newly adopted practices and skills (Joyce & Showers, 1982). A systematic review of the literature was conducted to examine the literature base on supervisory coaching, an approach in which an outside expert or supervisor gives specific, positive, and corrective coaching when needed and is offered to the teacher after the completion of the observed lesson in an effort to move the recipient toward a desired level of performance (Joyce & Showers, 1981; 1982; Maeda, 2001; Simonsen, Myers, & DeLuca, 2010). Sixteen quasi-experimental and single-subject studies were identified and reviewed using quality indicators specific to quasi-experimental (Gersten et al., 2005) and single subject (Horner et al., 2005) research. Only six of the sixteen studies met all quality indicators. Mixed results were found across the studies, with six reporting improved teacher results and four reporting improved student behaviors.

Key Terms: Supervisory Coaching, K-12 classrooms

Supervisory Teacher Coaching in K-12 Classrooms

In recent years, the push for increased rigor and accountability in kindergarten through twelfth grade (k-12) classrooms has been at the forefront of national, state, and local legislators' educational agendas (National Statistics for Education Statistics, 2007). As legislators and instructional reformers lead the charge to change what children learn and how they learn it, classroom teachers are responsible for the implementation of these changes. In addition to daily classroom responsibilities that include instruction, assessment, classroom management, and differentiation for a variety of learners, teachers are also expected to continue their own learning (Darling-Hammond, 2014). While teachers are expected to be lifelong learners (Merriam, Caffarella, Baumgertner, 2012), their development as professionals must be effective and meaningful. In-service teachers rely overwhelmingly on professional development to learn new evidence-based techniques to implement in the classroom (Desimone, Porter, Garet, Yoon & Birman, 2002). With continual professional development, as well as daily classroom responsibilities, teachers may need additional supports to reinforce professional learning (Gregory, Allen, Mikami, Hafen & Pianta, 2014).

What is Professional Development?

Hargreaves (2014) defines *professional development* (PD) as the "experiences that take place within a collaborative culture of shared leadership, that increase educators' knowledge about content and pedagogy and enable them to use that knowledge to improve classroom and school

practices that improve student learning" (p. 44). This definition describes the importance of the professional growth of the teacher as an individual, but also takes into account the need for teachers to learn as a community and the impact PD has on the entire school community. Researchers have suggested that traditional PD generally consists of three activities: (1) within district workshops, (2) courses for college credit, and (3) out-of-district workshops (Desimone et al., 2002). These activities are conventionally comprised of one-time workshops, in which teachers are inactive consumers of knowledge, with little to no follow-up (Loucks-Horsley, 1998, Putnam & Borko, 2000).

Garet and colleagues (2001) surveyed 1027 teachers in 358 school districts. Teachers were asked to compare recent PD opportunities they had attended as grantees of the Eisenhower Professional Development Program over four semesters. Teachers reported that short term "sit and get" PD delivered by outside experts with little connection to the reality of the classroom did not have the same positive effects as long term hands-on PD. They reported that short term PD rarely translated into actual and prolonged implementation in the classroom.

What Makes Professional Development Effective?

School administrators and PD providers must plan and implement effective PD that engages and encourages teachers and improves the instruction students receive (Billingsley, 2005). What constitutes effective PD has been discussed comprehensively in the literature (Birman, Desimone, Porter & Garet, 2000; Borko, 2004; Leko & Brownell, 2009). Some general principles of effective PD have been suggested over the years. First, in a report to US Department of Education, Yoon and colleagues (2007) recommended that effective PD be coherent and aligned with teachers' objectives and needs in the classroom (Klingner, 2004; Penuel, Fishman, Yamaguchi, & Gallegher, 2007; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). Effective PD efforts help teachers align the content standards that they are responsible for teaching with the practical delivery and implications of classroom implementation.

Second, effective PD should be content focused. Desimone and colleagues (2002) conducted a longitudinal survey study, over 3 years, of 207 teachers in 30 schools. Teachers reported that PD focused on specific instructional practices increased their use of that instructional practice. Participant responses to the surveys also indicated that, in creating content focused PD, it is important to carefully blend theory, content area knowledge, understanding of students as learners, and general pedagogical skills. These elements help ensure that teachers not only understand the content, but also are able to properly implement content area knowledge that connects to student needs. In a mixed method case study, Vavasseur and MacGregor (2008) investigated how the professional development of middle school teachers was facilitated through their participation in content-focused online communities of practice. Results indicated that, in this content-focused context, teachers gained curriculum-based knowledge, developed enhanced self-efficacy with respect to implementing technology, and collaborated on the development of interdisciplinary curriculum units.

Third, effective PD includes monitoring of student gains. Faulkner and Cain (2013) conducted a 5-day professional development module to improve teachers' math knowledge and understanding of number sense. Using a quasi-experimental design, they investigated if the students enrolled in the trained teachers' classrooms improved in mathematics content

performance. Significant changes in student performance were not found, which was attributed to teachers not continuously monitoring student achievement and student responses. Because this may be difficult while also learning new instructional material or interventions, an element of effective PD may be to provide teachers with tools to monitor gains in student achievement (Yoon, Duncan, Lee, & Shapley, 2008).

Fourth, it is suggested that effective PD is active. Researchers suggest that teachers be actively engaged in learning new instructional practices, preferably in actual classroom settings (Dagan & Bean, 2014; Desimone et al., 2002; McCutchen et al., 2002). Browder and colleagues (2012) developed an interactive PD on alternate achievement standards for 193 teachers of students with severe disabilities. Results of this quasi-experimental study indicated that teachers improved in aligning standards and generalizing the training to other content areas. It is suggested that teachers receiving PD obtain tangible images and demonstrations on how to apply new instructional strategies in the classroom (Bryant, Linan-Thonpson, Ugel, Hamff, & Hogan, 2001).

Finally, effective PD can be collaborative in nature (Brock & Carter, 2013; Garet et al., 2001; Penuel et al., 2007). Teachers may benefit from continuous feedback, opportunities to observe, and coaching inside the classroom when implementing new materials (Billingsley, 2005; Brownell, Ross, Colon, & McCallum 2005; Neufeld & Roper, 2003). Researchers have suggested that during and after PD, teachers and school personnel should work together to share ideas, discuss problems that may arise, discuss student response to new material, and share instructional resources needed for proper implementation (Wayne, Yoon, Zhu, Cronen, & Garet, 2008).

Reform PD

These elements of effective PD move the field away from more traditional types of PD toward what has been referred to as *reform PD* (Darling-Hammond & McLaughlin, 1995). Penuel and colleagues (2007) conducted a survey of 454 teachers involved in an inquiry science program to examine the effects of different characteristics of PD. This study points to the significance of teachers' perceptions about how coherent their professional development experiences were for teacher learning and program implementation. Teachers reported that the following aspects of reform PD increased their contact with the content being acquired: (1) teacher study groups, (2) teacher networks or communities, (3) mentoring or coaching, (4) internships, and (5) resource centers. It has been suggested that reform PD is more effective than traditional PD because it requires that teachers take time to explore new theories and strategies, introduced briefly, to improve classroom practice. According to Hargreaves (2014), of the reform-oriented PD elements, teacher coaching is the most widely used and has been mentioned in professional literature as an effective means to encourage necessary follow-up and on-going discussion about professional learning.

Coaching. Defined as the study and teaching of theory, the observation of demonstrations, and opportunities for feedback given by a peer, mentor, supervisor, or PD provider (Showers, 1982), coaching is a critical support for persistent use of newly adopted practices (Joyce & Showers, 1982). According to Fixsen and colleagues (2005), coaching is a core component of effective program implementation because newly acquired behavior is (a) rudimentary when compared to

routine of a more experienced practitioner, (b) delicate and needs to be reinforced for consumers in a natural setting, and (c) imperfect and will need to be formed to be most functional in a natural setting. The form coaching takes differs in the literature, but it is likely to include some combination of the following components: planning, teaching, modeling, practicing new skills, direct supervision of implementation of target practices in the classroom, and feedback (Fixsen et al., 2005; Stormont & Reinke, 2012). A growing body of research substantiates the positive effects coaching can have on both teacher behavior and student outcomes. For example, Bradshaw and colleagues (2008) conducted a quasi-experimental study on using PD and coaching to implement school-wide positive behavior intervention supports (SWPBIS). Twenty-one schools received training, and 16 schools did not. The schools receiving PD and coaching showed significant gains in SWPBIS implementation as compared to the control group.

Supervisory Teacher Coaching. An outside expert or supervisor who gives specific, positive, and corrective coaching when needed provides supervisory teacher coaching. This type of coaching can be offered to the teacher after the completion of the observed lesson or in an effort to move the recipient toward a desired level of performance (Joyce & Showers, 1981; 1982; Maeda, 2001; Simonsen, Myers, & DeLuca, 2010). Supervisory teacher coaching offers a supportive means for teachers to implement new learning and improve fidelity over time (Joyce & Showers, 1982; Miller, Harris, &Watanabe, 1991; Shidler, 2009; Showers 1985). Supervisory coaching offers an extension of PD from an expert or supervisor that offers an in-depth study of the theory behind the skill being coached, observations of demonstrations, and continuous practice with timely feedback.

Supervisory teacher coaching as a reform PD activity has a growing evidence base; however, the relationship between supervisory coaching and positive teacher behaviors remains unclear. That is, in some studies, supervisory coaching results in significant change in teacher behavior, while in other studies no significant effects are observed. Moreover, the quality of these studies is inconsistent, with some designed according to standards for conducting impactful, high-quality research and others only meeting some of those standards. Therefore, the purpose of this systematic review of the literature is to answer the following questions:

1. What studies can be identified as implementing supervisory coaching?
2. Among these studies, what are the characteristics and components of supervisory teacher coaching that lead to successful teacher and student outcomes?
3. What is the quality of the existing literature on supervisory teacher coaching?

Method

Search and Selection Process

A search was conducted using the following EBSCO databases: Academic Search Complete, Education Full Text, Professional Development Collection, PsycARTICLES, PsycEXTRA, Psychology and Behavioral Sciences Collection, PsycINFO, and Sociological Collection. An additional search was conducted using ProQuest and Google Scholar. The search terms used included the following: *special education and teacher coaching and k-12 education and teacher coaching* or *supervisory coaching* or *in vivo coaching* and *professional development* or *staff development* or *teacher training* or *in-service* and *teacher* or *practitioner* or *educator* or *instructor*.

To be included in this systematic review of literature, studies had to meet six inclusionary criteria: (a) conducted with special or general education teachers; (b) conducted with teachers of k-12 students; (c) utilized a supervisory coaching model as the independent variable in the study; (d) published in a peer reviewed journal; (e) use of experimental or quasi-experimental research design to show a causal relationship between supervisory teacher coaching and teacher behavior; (f) conducted in the United States. As a result of these requirements, articles containing the following were excluded: (a) teachers certified in bilingual education subjects only; (b) settings in preschool classrooms; (c) utilization of peer coaching models; (d) use of qualitative methods; and (e) studies conducted in classrooms outside the United States. An ancestral search was conducted on all articles that met criteria. The search originally rendered 277 articles, 16 of which met criteria for inclusion (see Table 1).

Quality Indicators

Intervention research sets out to establish that the desired change in participants' behavior was caused by the intervention and not because of any other reasonable explanation. To assess the quality of experimental and quasi-experimental, Gersten and colleagues (2005) set forth a set of quality standards. Gersten et al. provided 10 quality indicators within four domains for evaluating experimental and quasi-experimental research (see Table 2). The six experimental and quasi-experimental design studies were coded using Gersten et al.'s (2005) standards and the following guiding questions:

1. *Participants and Settings* addresses three questions: (a) are participant difficulties or disabilities described sufficiently?; (b) are relevant characteristics comparable across conditions?; and (c) are characteristics of interventionist/teachers described sufficiently, and are they comparable across conditions?
2. *Implementation of Intervention and Description of Comparison Conditions* addresses three questions: (a) are interventions clearly and specifically described?; (b) is fidelity of implementation described and assessed?; and (c) are comparison conditions described?
3. *Outcome Measures* addresses two questions: (a) are multiple measures closely aligned with intervention?; and (b) are outcomes for capturing the intervention's effect measured at appropriate times?
4. *Data Analysis* addresses two questions: (a) are techniques linked to research questions?; and (b) did the research report include inferential statistics and effect size calculations?

To systematically assess the quality of single-subject research, Horner and colleagues (2005) provided 18 quality indicators within seven domains for evaluating single-subject studies (see Table 3). The ten single case design studies were coded using Horner et al.'s (2005) standards and the following guiding questions:

1. *Participants and Setting* addresses three questions: (a) are the participants described sufficiently to be replicated by the reader?; (b) is the selection of participants described sufficiently to be replicated by the reader?; and (c) is the setting of the study described sufficiently to be replicated by the reader?
2. *Dependent Variable* addresses five questions: (a) was it described well enough to be replicated?; (b) was it observable?; (c) how it was measured?; (d) how often it was

measured?; and (e) was inter-observer reliability reported, and did it meet minimum levels of acceptability (e.g. IOA= 80%)?

3. *Independent Variable* addresses three questions: (a) was it described sufficiently enough to be replicated?; (b) was it systematically manipulated?; and (c) was procedural fidelity described and measured?
4. *Baseline* addresses two questions: (a) was the condition of baseline described sufficiently as to be replicated by the reader?; and (b) was evidence provided regarding baseline patterns and trends?
5. *Experimental Control/Internal Validity* addresses three questions: (a) were there three demonstrations of experimental effect?; (b) did the design control for threats to internal validity?; and (c) did the results indicate a pattern that demonstrated experimental control, as judged by visual analysis?

Procedures

Studies chosen to be included in this review of the literature were evaluated to identify student and teacher participants, settings, dependent variables, independent variables, design, and results. To analyze the chosen studies, each domain was rated *Yes* if all quality indicators were present. If one quality indicator was not present in a domain, that domain was rated *No.* In addition, the quality indicator that dealt with procedural fidelity only received a *Yes* rating if fidelity had been collected on the actual coaching procedures. Finally, studies were analyzed for components of coaching procedures commonly identified in the literature: (a) modeling, (b) prior training, (c) pre-observation meeting, (d) e-mail feedback, (e) handwritten feedback, (f) face-to-face feedback, and (g) teacher goal setting.

Reliability was coded for the evaluation of the quality of the articles after the literature review was completed. An independent coder was trained on the established inclusion criteria and search methods, including a mock search to agree on search terms and criteria. Researcher and independent coder reached 100% agreement during training. Then, the independent coder read all chosen articles and reviewed them for basic evaluation criteria, quality indicators and components of coaching procedures. All total, 588 items were coded. Each research question was coded: research evaluation (n = 112), coaching components (n = 112), and quasi-experimental (n = 84) and single case (n = 280) quality indicators.

The formula for calculating reliability involved dividing the number of agreements by the sum of agreements and disagreements and multiplying by 100. Reliability agreement was 100% for the total number of articles. Reliability on the research evaluation reached 90.1%. Reliability on the information coded for the quasi-experimental studies was 98.8%. Reliability on single case studies was 97.5%, and the reliability on coaching components evaluated was 97.3%.

Results

Supervisory Coaching Study Evaluation

A total of 485 teacher participants were included in the studies that met the criteria for this review of literature. Of those teachers, 11 (3%) were teachers in gifted/honors classrooms, 76 (15%) were classified as in-service special education teachers, 292 (60%) were general education teachers, and 106 (22%) were dually certified as general education and English language learner

(ELL) teachers. One teacher was a preschool teacher who did not meet inclusion criteria; therefore, that teacher's data were not included in the analyses. The teachers included in these studies taught students in a variety of settings. While 75% of the studies were conducted in an elementary classroom, studies also were conducted in alternative schools (17.65%), middle schools (23.5%), and high schools (17.65%). The majority of the studies (56.25%) included in this review were conducted in a general education classroom; 37.5% of studies were conducted in a self-contained special education classroom; and 6.25% of studies were conducted in an inclusion classroom.

Over 56% of the studies discussed in this review of literature used teacher praise as a teacher participant dependent variable. That is, a coaching intervention was used to increase the use of teacher praise. Of the remaining studies, 31.25% (n = 5) measured the teachers' fidelity of implementation of the function-based intervention; fidelity was maintained after the coaching intervention was removed for two weeks. Kretlow et al. (2011; 2012) observed an increase in accuracy of delivery of academic tasks, i.e., math problem solving, use of response cards, by teachers with the introduction of teacher coaching. An immediate increase in desired academic tasks was observed in both studies with the onset of supervisory coaching. The improved fidelity of implementation of an established behavior plan was measured in Codding and colleagues (2005). Teachers received a coaching intervention, and with the onset of intervention, fidelity of implementation improved and was maintained even after the end of the intervention phase.

In this review, supervisory teacher coaching was used as a stand-alone intervention in 23.5% of the studies. The remaining studies offer supervisory coaching along with PD. Of the studies reviewed, general education teachers displayed relatively positive results with some change in teacher behaviors after the introduction of supervisory coaching. Although studies focusing on special education classrooms also displayed positive results, special education teachers represented only small number of participants (Gregory et al., 2013; Kretlow et al., 2011; Kretlow et al., 2012; Matsumara et al., 2012, Podhajski et al., 2009; Rienke et al., 2014, Sailors & Price, 2015; Thompson et al., 2012).

Components of Coaching

Fidelity of implementation on the coaching procedure was examined, as well as the description of components of supervisory coaching, in each study (see Table 4). Fidelity of implementation was collected on coaching procedures in only 50% of examined studies. Face–to-face feedback was offered in 94% of studies. Components offered along with face-to-face coaching included email feedback (12%) and face-to-face coaching offered via web (12%). Of the studies reviewed, only two studies explored the option of using widely available web-based technologies. Ruble et al. (2013) compared web-based coaching to face-to-face coaching with similar gains in positive teacher behaviors, compared to the placebo group that received no coaching. Gregory et al. (2013) showed a modest increase in student engagement with the use of the "My Teaching Partner" web-based program in secondary classrooms. Training was offered to participants in 81% of studies, while modeling and pre-observation meetings were offered in 50% of studies. Handwritten feedback was offered in 44% of studies, while teacher goal setting was utilized in only 31% of studies. Location of coaching was discussed in 31%, and time spent coaching, or dosage, was mentioned in 37.5% of reviewed studies.

Evaluation of Research Quality

Of the six experimental or group design studies, two (Ruble et al., 2009; Sailors & Price, 2015) met all four quality indicator domains for group design studies. The remaining group design studies failed to describe or report the collection of treatment fidelity, therefore not meeting one domain of quality indicators.

Of the ten single case design studies, only four (Bethune & Wood, 2013; Duchaine et al., 2011; Kretlow et al., 2012; Kretlow et al., 2011) met all quality indicator domains and 3 of the 4 studies measured the fidelity of implementation of a specific academic task. The remaining single case studies failed to meet indicators in the dependent variable, independent variable, baseline, internal validity, and social validity domains. Although the studies did meet most of the domains, each domain and sub-domain had to have been met (*Yes*) for the study to meet all quality indicators.

Of the single case studies, Marten et al. (1997) utilized a multiple baseline design with only two cases as opposed to the three cases suggested by What Works Clearinghouse (Kratochwill et al. (2010), therefore not meeting requirements for internal validity quality indicators. Sutherland and colleagues (2000) used a withdrawal (ABAB) single case design to measure an intervention that is seemingly not reversible. Sutherland collected baseline data, introduced coaching, and withdrew the coaching intervention. Kazdin (2011) would suggest that the participant could not withdraw information that has been learned. The remaining single case studies failed to meet indicators in the dependent variable, independent variable, baseline, internal validity, and social validity domains. Single case studies also did not meet indicators in the dependent variable, independent variable, baseline, internal validity, and social validity domains (Codding et al., 2005; Martens et al., 1997; Miller et al., 1991; Simonsen et al., 2010; Sutherland et al., 2000; Thompson et al., 2012).

Discussion

The purpose of this systematic review of the literature was to examine the literature that tested the effects of supervisory teacher coaching with K-12 classroom teachers. Results of this literature review suggest that supervisory teacher coaching may be a promising strategy to change classroom teacher behaviors. The results have been mixed. In general, supervisory teacher coaching increased desired behaviors in classroom teachers; however, the behavior was not always maintained nor was maintenance always measured. Duchaine and colleagues displayed mixed results among teachers with the maintenance of behavior specific praise statements. A majority of studies included in this review did not collect maintenance data at all (Gregory et al.,2014; Kretlow et al., 2012; 2011; Martens et al., 1997; Matsumara et al., 2010; Podhajski et al., 2009; Reinke et al., 2014; Ruble et al., 2013; Sailors et al., 2015; Simonsen et al., 2010; Sutherland et al., 2000; Thompson et al., 2012) therefore it is not possible to know for sure if the teachers effectively maintained the strategy introduced by the coach. Student data were also mixed. In studies where student data were collected, they did not always show completely positive results. Where student data were collected students often made small gains or gains that were not maintained without the intervention. The included studies seem to assert that supervisory teacher coaching has a more positive effect on teacher outcomes than student outcomes.

Over half of the studies reviewed concentrated on coaching to increase teacher praise. In each study, teacher praise increased with the support of the coaching intervention. In addition to teacher praise, one study found an increase in the use of higher level questioning and a decrease in general, nonspecific praise. Although supervisory coaching did not have the same positive outcomes on teacher-specific behaviors as it did on students' academic performance, it is important to note that the teacher-specific behaviors are of interest in these studies. Studies that focused on academic outcomes showed gains in student performance and teacher implementation of the specific academic task.

Another important finding from the review was that several specific components of supervisory coaching are often not described in the literature. These components are necessary to evaluate the effectiveness of a coaching package and to replicate implementation of the intervention. It is also an important factor in informing future research in coaching and creating a solid evidence base for the field. Details such as location and dosage of coaching could have a substantial impact on the outcome.

Finally, when standards for high quality research were applied to the reviewed studies, the results indicated that quality was highest in both single case and quasi-experimental design studies where teachers received coaching to improve the fidelity of implementation of specific academic tasks (e.g., reading comprehension, calendar math), as compared to when it was introduced to change teacher-specific behaviors (e.g., praise statements, opportunities to respond). Not only did studies concentrating on specific academic tasks meet more quality indicators (Gersten et al., 2005; Horner et al., 2005), they also demonstrated more immediate and sustained positive outcomes (Bethune & Wood, 2013; Kretlow et al., 2011; Kretlow et al., 2012).

The discrepancy in the adherence to quality indicators could be connected to the fact that it may be easier to measure data on a specific academic task as opposed to teacher-specific behaviors where guidelines may not be as clear as in specific academic tasks. Of the majority of studies that offered face to face coaching, only Bethune and Wood, 2013; Duchaine et al., 2011; Kretlow et al., 2012; Kretlow et al., 2011; Sailors & Price, 2015; Ruble et al, 2009 met all quality indicators.

Although we attempted to do a comprehensive review of the current evidence base surround supervisory coaching in k-12 classrooms, there is a possibility that studies that should have been included were not found. There may have been other search terms we should have added to our list or studies missed in manual ancestral searches.

Implications for Future Research

This systematic review of the literature revealed gaps in the teacher coaching literature that should be addressed in future research. First, all studies included in this review were conducted using university researchers or coaches trained by university researchers to implement the intervention. Future research could explore the effectiveness of school personnel providing the coaching (e.g., academic coaches, school psychologists, administrators). Further investigation would be necessary to determine whether the supervisory teacher coaching interventions would generalize with k-12 classroom teachers using school personnel as the coach of record.

Second, follow-up or maintenance data may be collected to add information to the literature base on the sustainability of the evidence based practice that the teacher was coached to use. Collecting follow-up data is important in these investigations, as it provides information on the extent that continuous use of teacher coaching is needed. Third, it is suggested that future researchers ensure that quality indicators are adhered to in an effort to increase the output of quality research that is replicable and reliable. For researchers interested in delving into the effects of specific teacher behaviors, such as specific praise or opportunities to respond, it is recommended that researchers maintain strict standards and that those standards be properly and thoroughly explained to ensure valuable research based on proposed quality indicators.

Fourth, in planning and carrying out coaching studies, it is recommended that components of the coaching package being used (e.g. coaching dosage, location of coaching) are carefully described. The components need to be described not only to increase the likelihood of accurate replication but also to ensure that researchers can identify which components have the greatest effect on the intervention outcome. Fidelity of implementation also should be collected to ensure that the coaching procedure is implemented as described.

Fifth, it is suggested that future researchers work to expand research into special education and secondary classrooms. The number of special education teachers and students included in published coaching studies is very low compared to the larger number of general education teachers and students. Moreover, of the special education classrooms included in this review, the majority of study participants were teachers in self-contained classrooms with students who have severe disabilities. Teachers of students with high-incidence disabilities and in collaboratively taught classrooms only represented a small number of included studies. Another disparity in population was the very low number of secondary classrooms included. Teachers in secondary classrooms could benefit from supervisory coaching on newly acquired academic tasks learned in PD and on implementing behavioral interventions for students who display challenging behaviors. Going forward, researchers may concentrate on those populations and classroom settings, which may support both generalizability and impact of this approach to coaching. Finally, researchers should continue to explore the viability of technology-based coaching for teachers in k-12 classrooms. As technology continues to be more immersed in aspects of daily life, researchers should explore the option of offering PD and follow-up coaching via technology. Using technology to train teachers may not only be a cost effective option; it also may offer flexibility for the coach and teacher.

Conclusion

This review revealed that desirable teacher behaviors can improve with the use of supervisory teacher coaching in several settings. This review indicated that supervisory teacher coaching might be a practical strategy for improving and increasing teachers' use of evidence-based strategies. While the studies included in this review displayed some positive change in teacher behavior, it is not possible to say conclusively that the supervisory teacher coaching intervention will have a long term positive impact on teacher behaviors without additional research.

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Table 1

Overview of Supervisory Teacher Coaching Studies

Citation	**Teacher Participant**	**Student Participant**	**Setting**	**DV**	**IV**	**Design**	**Results**
Bethune & Wood, (2013)	3 special education teachers, 4yrs exp M, 3yrs exp, 15yrs exp, 2 female, 1 male, SpEd Cert, Did not report age	4 Students w/ moderate to severe disabilities w/challenging BX, 1-DS – 8 yo, 1-SevAutism – 5yo, 1 – autism-10yo	Elementary school self-contained	Percent accuracy of teacher implementation of function based intervention -Measure of the students problem behavior - Measure of the students replacement behavior	Researcher implemented side by side coaching	Delayed MB across participants design for teachers, MB across participants design for students	Teacher implementation function based interventions improved. Student problem behavior decreased with FBI and coaching. Replacement bx results varied.
Codding et al. (2005)	5 special education teachers, Experience ranged from, 6-30 months,	3 students with non-traumatic brain injury, -2 with TBI, Ages 10-19	Private school for students with brain injuries ages 10-19	Integrity of steps of behavior plan implemented as written.	Face to face Performance feedback	Concurrent MB across teacher-student dyads	Increase with all 5 teacher-student dyads on proper implementation of antecedent

Citation	**Teacher Participant**	**Student Participant**	**Setting**	**DV**	**IV**	**Design**	**Results**
	Bachelor's degrees, SpEd Cert, Did not report age						and consequence components. The results varied; all of the teachers did not respond to the entire intervention.
Duchaine et al. (2011)	1 sp ed, - MA degree 2 gen ed – 1 BA 1 MA	Random sample of students with and w/out disabilities	High School Inclusion math	Teacher Praise, On-task BX	Written performance feedback with training	Multiple Baseline across teachers	Increase in Praise. Inconclusive w/ on-task BX; Maintenance showed return to baseline BX.
Gregory et al. (2013)	87 teachers in 12 schools	n/a	61% middle school general ed 39% high school	student engagement	My Teaching Partner - Secondary	Randomized control trial	Although, modest increase in student bx engagement. Results were mixed; the

Citation	**Teacher Participant**	**Student Participant**	**Setting**	**DV**	**IV**	**Design**	**Results**
							Emotional Support domain of the CLASS-S the intervention did not result in a major shift
Kretlow et al. (2012)	3 1st grade teachers	28-30 students per class 84-90 students total	Elementary school 1st grade classroom	Accuracy in implementation of trained calendar math and an untrained math practice	Professional Development and coaching	Multiple baseline across teachers	Mean instructional accuracy increased post in-service and again post coaching. No student data collected
Kretlow et al. (2011)	3 kindergarten teachers	n/a	Elementary school kindergarten classroom	Accuracy in group instructional units	Professional Development and coaching	multiple baseline	Mean instructional accuracy increased post in-service and again post coaching. No causal relation in-

Citation	**Teacher Participant**	**Student Participant**	**Setting**	**DV**	**IV**	**Design**	**Results**
							service training was simultaneous .
Martens et al. (1997)	1 special education teacher, Female, SpEd Cert, Did not report age or degree	2 boys w/ ED, 6 yrs old	Self-contained elementary classroom	Combined appropriate BX (schoolwork , attending to instruction, responding aloud)	Goal setting plus written feedback	Multiple baseline across students design	Appropriate BX increased immediately and remained stable with intervention. Study does not meet evidence based practice standards
Matsumara et al. (2010)	177 4th and 5th grade teachers (79 left) - 2nd year 171(73 added) 4th and 5th grade teachers	1269 student standardized student test scores	32 Elementary schools	state standardized test for English language learners	Content focused coaching	HLM analyses	CFC program predicted significantly higher school level gains on the state standardized test for English language learners.

Citation	**Teacher Participant**	**Student Participant**	**Setting**	**DV**	**IV**	**Design**	**Results**
							Only half the intended teachers participated in the study.
Miller et al. (1991)	6 special education teachers , 2 M, 4 B, SpEd Cert, Did not report age or sex	N/A	Elementary, Middle & High summer school for low achievers	Effective and ineffective teacher BX	Florida Performance Measurement System (coaching form)	Multiple baseline across teachers	Effective teacher BX increased while ineffective practices remained low. Results were mixed, after coaching, neither teacher in team 3 demonstrated improvements in teaching behaviors. No Student data collected.

Citation	**Teacher Participant**	**Student Participant**	**Setting**	**DV**	**IV**	**Design**	**Results**
Podhajski et al. (2009)	Experimental group 4 1st and 2nd grade teachers Control group 3 1st and 2nd grade teachers	Experimental - 33 1st grd 20 2nd grade students - 3 504 3 IEPs Control - 14 1st grd, 22 2nd grd - 1 504, 1 IEP	Public school 1st and 2nd grade classrooms	scientifically based reading instruction	TIME for teachers professional development plus coaching	Randomized control trial	Teacher growth on teacher knowledge and student growth in student measures. Mixed results; TOWRE Sight Word Efficiency showed no growth pretest to posttest.
Reinke et al. (2014)	68 teachers 34 teachers received coaching	1,148 total students	Grades k-3 grades	Teacher reprimands, teacher use of general and specific praise	Coaching using universal classroom management program	quasi-experimental	Decrease in teacher reprimands. Although low, increase in teacher general and specific praise

Citation	**Teacher Participant**	**Student Participant**	**Setting**	**DV**	**IV**	**Design**	**Results**
Ruble et al. (2013)	49 special education teachers, 1 male , 48 female, SpEd Cert, 22 – B 45%, 23 – M 47%, 4 – DNI 8%, Did not report age	49 students with Autism (1 per teacher) ages 3-9 years old	Elementary, one to one work on IEP goals	IEP goals as measured with PET-GAS tool	COMPASS coaching tool	Randomized control trial	COMPASS tool improves IEP goal outcomes for students with Autism than the placebo group. Unable to detect differences in web group versus face-to-face group.
Sailors & Price (2015)	120 teacher - 50 control - 70 treatment - grades 2(16%), 3(12%), 4(13%), 5(15%), 6(17%), 7(15%), 8(12%)	1496 student participants	3 school districts in Texas 2-8th grade classrooms	comprehension instruction	workshops plus SIPIC (Support for the Improvement of Practices through Intensive Coaching) coaching model	quasi-experimental - pre/post test	Coached teachers improved comprehension instruction. Also, SIPIC model of coaching improved the practices of reading teachers and

Citation	**Teacher Participant**	**Student Participant**	**Setting**	**DV**	**IV**	**Design**	**Results**
							increased the student achievement.
Simonsen et al. (2010)	3 special education teachers , 2 female, 1 male, SpEd Cert, M 16yr exp, 13 yr exp, M 13 yrs exp, Did not report age	N/A	Self-contained classrooms alt setting	Prompts, OTRs and SP	PORT training and feedback	Multiple baseline across DV	Training alone did not increase praise or OTR. Feedback increased praise & OTR.
Sutherland et al. (2000)	1 special education teacher – male Did not report age or degree	9 students with E/BD, 2 girls, 7 boys, ages 10-11, 6 Black, 3 White	5th grade self-contained classroom	Non-behavior specific praise - Behavior specific praise -On-task behavior	Observation and verbal feedback	ABAB withdrawal design	NBSP and BSP increased with observer feedback. On-task BX improved with the increase of NBSP & BSP. No

Citation	**Teacher Participant**	**Student Participant**	**Setting**	**DV**	**IV**	**Design**	**Results**
							student data collected; replication during academic instruction is needed to determine on-task behavior of students.
Thompson et al. (2012)	3 Female teachers between ages 40-50	3 students ages 8,10&11 displayed non-compliant/disruptive bx	3 public elementary schools	Teacher BSP - Student On-Task	Training, Video Self-Monitoring, Coaching	Multiple Probe Multiple Baseline	Increase BSP by teachers' on-task bx increased. After tier the faculty training, results show that the participants' BSP did not increase as intended. Also, one participant did not

Citation	**Teacher Participant**	**Student Participant**	**Setting**	**DV**	**IV**	**Design**	**Results**
							attend scheduled coaching sessions, due to absence.

Table 2
Quality Indicators of Group Experimental and Quasi-Experimental Research Design

	Gregory et al. (2013)	Matsumara et al.(2010)	Reinke et al. (2014)	Ruble et al. (2013)	Podhajski et al. (2009)	Sailors & Price (2015)
Participants	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Sufficient info provided to determine disability/difficulties	N/A	Yes	Yes	Yes	Yes	Yes
Relevant characteristics comparable across conditions	Yes	Yes	Yes	Yes	Yes	Yes
Sufficient info characterizing interventionist/teachers. Comparable across conditions.	Yes	Yes	Yes	Yes	Yes	Yes
Implementation of Intervention and Description of Comparison Conditions	**No**	**No**	**No**	**Yes**	**No**	**Yes**
Intervention clearly described and specific	Yes	Yes	Yes	Yes	Yes	Yes
Fidelity of implementation described and assessed (coaching)	No	No	No	Yes	No	Yes
Comparison condition described	Yes	Yes	Yes	Yes	Yes	Yes
Outcome Measures	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Multiple measures closely aligned with intervention	Yes	Yes	Yes	Yes	Yes	Yes

	Gregory et al. (2013)	Matsumara et al.(2010)	Reinke et al. (2014)	Ruble et al. (2013)	Podhajski et al. (2009)	Sailors & Price (2015)
Outcomes for capturing the intervention's effect measured at appropriate times	Yes	Yes	Yes	Yes	Yes	Yes
Data Analysis	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Analysis techniques linked to research questions	Yes	Yes	Yes	Yes	Yes	Yes
Did the research report include inferential statistics and effect size calculations	Yes	Yes	Yes	Yes	Yes	Yes

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C., & Innocenti, M. S. (2005). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children*, *71*, 149-164.

Table 3

Quality Indicators of Single Subject Design

	Bethune & Wood (2013)	Coddi ng, et al. (2005)	Duchaine et al. (2011)	Kretlow et al. (2012)	Kretlow et al. (2011)	Martens et al. (1997)	Miller et al. (1991)	Simonsen et al. (2010)	Sutherland et al. (2000)	Thompson et al. (2012)
Participants	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Replicable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sufficient description of participants	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Bethune & Wood (2013)	Coddi ng, et al. (2005)	Duchaine et al. (2011)	Kretlow et al. (2012)	Kretlow et al. (2011)	Martens et al. (1997)	Miller et al. (1991)	Simonsen et al. (2010)	Sutherland et al. (2000)	Thompson et al. (2012)
Sufficient description of setting	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dependent Variable	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**	**Yes**	**Yes**
DV replicable	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Quantifiable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Measurement valid and replicable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Measurement repeated	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IOA reported	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Yes
Independent Variable	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**	**Yes**	**Yes**
IV replicable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Systematically manipulated	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Procedural fidelity measured and described	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Yes

	Bethune & Wood (2013)	Coddi ng, et al. (2005)	Duchaine et al. (2011)	Kretlow et al. (2012)	Kretlow et al. (2011)	Martens et al. (1997)	Miller et al. (1991)	Simonsen et al. (2010)	Sutherland et al. (2000)	Thompson et al. (2012)
Baseline	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**	**Yes**	**No**
Conditions replicable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline pattern prior to intervention	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No
Experimental control/intern al validity	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**	**No**	**Yes**
3 demonstrations of effect	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
Design controlled threats to internal validity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Visual analysis	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes
External Validity	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**
Replicated across participants	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes

	Bethune & Wood (2013)	Coddi ng, et al. (2005)	Duchaine et al. (2011)	Kretlow et al. (2012)	Kretlow et al. (2011)	Martens et al. (1997)	Miller et al. (1991)	Simonsen et al. (2010)	Sutherland et al. (2000)	Thompson et al. (2012)
Social validity	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**	**Yes**
DV socially important	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Change in DV due to intervention	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
IV cost effective	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IV implemented over time	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes

Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children*, *71*, 165-179.

Table 4
Coaching Components

	Modeling	Prior training	Pre-observation meeting	E-mail Feedback	Hand written Feedback	Face to Face Feedback	Teacher Goal Setting	Location of coaching
Bethune & Wood (2013)	Yes	Yes	Yes	No	No	Yes	No	Classroom
Codding et al. (2005)	Yes	Yes	No	No	Yes	Yes	No	Outside Classroom
Duchaine et al. (2011)	Yes	Yes	Yes	No	Yes	Yes	Yes	Not Mentioned
Gregory et al. (2013)	No	Yes	No	No	Yes	No	No	Web/Telephone
Kretlow et al. (2012)	Yes	Yes	Yes	No	No	Yes	No	Not Mentioned
Kretlow et al. (2011)	Yes	Yes	Yes	No	No	Yes	No	Not Mentioned
Martens et al. (1997)	No	No	Yes	No	Yes	Yes	Yes	Not Mentioned
Matsumara et al.(2010)	Yes	Yes	No	No	No	Yes	No	Not Mentioned
Miller et al. (1991)	No	No	No	No	Yes	Yes	Yes	Not Mentioned
Podhajski et al. (2009)	Yes	Yes	No	No	No	Yes	No	Not Mentioned
Reinke et al.(2014)	No	Yes	No	No	No	Yes	No	Not Mentioned
Ruble et al. (2013)	No	No	No	No	Yes	Yes	No	Web
Sailors & Price (2015)	Yes	Yes	Yes	Yes	No	Yes	No	In Classroom
Simonsen et al. (2010)	No	Yes	Yes	Yes	Yes	Yes	Yes	Not Mentioned
Sutherland et al (2000)	No	Yes	Yes	No	No	Yes	No	Not Mentioned
Thompson et al. (2012)	No	Yes	No	No	No	Yes	No	Not Mentioned

Factors that May Hinder the Implementation of the School-Wide Positive Behavior Intervention Support Model

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Abstract

A growing body of research shows that the School-wide Positive Behavior Intervention Support model (SWPBIS) has the potential to reduce the occurrence of problem behavior in school settings, create positive school environments and enhance the academic outcomes of all students. However, although there is a growing body of research showing its efficacy, little is known about the challenges encountered when implementing the model. The purpose of this study was to determine the individual and environmental barriers that may hinder the implementation of SWPBIS. Results indicated that philosophical differences regarding SWPBIS and availability of resources were the main barriers to the implementation of SWPBIS. Recommendations are provided.

Keywords: school-wide positive behavior intervention support, implementation, problem behavior, school climate.

Factors that May Hinder the Implementation of the School-Wide Positive Behavior Intervention Support Model

The occurrence of problem behavior (i.e., violent, disruptive, and dangerous behavior) in most public schools across the country has become one of the most pressing issues for school personnel. These behaviors are regarded as problematic because they interfere with the learning process and compromise the ability of school personnel to provide students with effective educational supports. According to statistics, it is estimated that approximately 12% to 22% of school-aged children engage in problem behavior and the numbers continue to grow (Lassen, Steele, & Sailor, 2006; Lewis, Powers, Kely, & Newcomer, 2002; Osher, Bear, Sprague, & Doyle, 2010). The increasing challenge of providing effective instruction to students who engage in problem behavior has prompted the search for effective practices to address the occurrence of problem behavior in school settings. Traditionally, school personnel have responded to the occurrence of problem behavior using punitive practices (i.e., suspension, expulsion, seclusion, and time-out procedures). However, most of these practices have not been shown to be effective in reducing the occurrence of problem behavior (American Psychological Association, 2008; Ryan & Peterson, 2004; Ryan, Peterson, & Rozalski, 2007; Sugai & Horner, 2002). In addition, some of these practices compromise the provision of free and appropriate education (FAPE) for students with disabilities.

These concerns have prompted researchers and school personnel to search for systematic, comprehensive, and effective approaches to manage problem behavior. One approach to emerge out of this search is the School-wide Positive Behavior Intervention Support model (SWPBIS). SWPBIS is an intervention framework developed by researchers at the University of Oregon in the 1980s. The framework integrates empirically validated practices in a school setting to reduce and prevent the occurrence of problem behavior (Sugai & Horner, 2002).

One of the main characteristics of the SWPBIS is that it provides a continuum of behavior supports to the entire student population through the use of three intervention levels (i.e., primary, secondary, tertiary). The primary tier is intended for all students, staff, and in all settings. The main goal of the primary tier is to prevent the occurrence of problem behavior by explicitly defining and teaching behavioral expectations across the entire school. Students who meet the behavioral expectations are rewarded in an effort to enhance the future occurrence of desired behavior. Students who do not benefit from primary level interventions are exposed to secondary level interventions. The main goal of secondary tier interventions is to provide additional support (e.g., small group social skills instruction) to students who show patterns of behavior considered a precursor to chronic behavioral problems. An example of a secondary intervention is Check in Check out (CICO). CICO involves a student daily checking in with an adult at the start of the school day to retrieve a goal sheet and encouragement and teachers provide feedback throughout the day. At the end of the day the student checks out with the same adult and takes the sheet home to be signed, returning it the following morning at check in. Even with such specific interventions, there are students who continue to engage in problem behavior, and these students are exposed to tertiary level interventions. Students who are exposed to tertiary level interventions engage in chronic behavior problems that interfere with their learning. Tertiary level supports also involve a process called Functional Behavioral Assessment (FBA) which determines the underlying purpose of a behavior and an intervention is developed from the data gathered. Collectively, these three tiers of support form a proactive approach capable of transforming school environments from aversive environments into settings that promote learning for all students.

Evidence demonstrating the utility of SWPBIS in school settings is mounting (e.g., Caldarella, Shatzer, Gray, Young, & Young, 2011; Farkas, Simonson, Migdole, Donovan, Clemens, Cicchese, 2012; Luiselli, Putnam, & Sunderland, 2002). This has resulted in an increase in the number of schools implementing the model in the past decade. Currently it is estimated that over 20,000 schools across the 50 states are implementing SWPBIS (OSEP, 2013). Although the number of schools implementing SWPBIS has dramatically increased, there is limited research that has been done on the barriers that may impede its implementation. Examining the challenges associated with the implementation of the SWPBIS is crucial as results may be used to improve its implementation, thereby promoting better behavioral and academic outcomes for all students including those with disabilities (Fallon, McCarthy, & Sanetti, 2014).

A few studies have examined the challenges school personnel face when implementing SWPBIS. For example, Chitiyo and Wheeler (2009) examined the challenges faced by teachers in a Midwestern school district in their efforts to adopt SWPBIS practices. Participants were 21 school teachers (i.e., 19 were regular education teachers and two were special education

teachers). A survey comprising of 21 SWPBIS practices was used. The practices were derived from literature and were divided into four categories: Skills (e.g., collecting and reporting data), techniques (e.g., use of reinforcement), shared values (e.g., collaborating with families) and other areas (e.g., availability of resources, time resources). Participants indicated that time and resources (i.e., time, money) made it challenging to implement different SWPBIS practices. In addition, the participants indicated that soliciting family collaboration and obtaining administrative support were also challenges to the successful implementation of SWPBIS practices. Although the sample size for this study was low, the results suggest the amount of time to roll out the SWPBIS framework may compete with instructional planning and delivery. The results also suggest that a potential barrier to long-term implementation and use of the framework may be impeded if monetary, material, and social supports are not provided to the personnel expected to carry out the responsibilities of implementation.

In another study, Fallon and colleagues (2014) examined the difficulties school personnel face when implementing the SWPBIS model. Participants were 171 school personnel employed in Connecticut schools implementing SWPBIS. The sample consisted of general education teachers, special education teachers, related service providers, exploratory teachers, and paraprofessionals. Participants were asked to indicate the extent to which implementing the practices in their classrooms was challenging. Results indicated that acknowledging expected behaviors, teaching expected behaviors, clearly defining routines, clearly defining problem behavior, and directly teaching routines were relatively easy aspects of the framework to implement. However, the practices that were found to be challenging included; providing consequences for problem behavior, matching instructional materials to student ability, and aligning school-wide procedures with procedures for expected behaviors. What these results suggest is that, school personnel responsible for implementing the framework can easily implement procedures that align with standard classroom practices, but implementation across school-wide activities and routines that are functionally dissimilar create parallel planning and teaching practices is challenging. For example, expected behaviors across school environments may not be the same, so generalizing training and materials across those environments would require additional time, resources, and training.

No doubt, studies like those mentioned above are a welcomed resource for professionals involved in the implementation of SWPBIS as they unravel the complexity of that process. It is important to note that these studies looked at the challenges school personnel encounter when implementing different SWPBIS classroom-based practices. However, the SWPBIS is a school-wide approach, thus, there is need to examine some of the challenges encountered when implementing the whole model. In addition, it is important to conduct more research on the factors that may hinder the implementation of SWPBIS.

Research on the implementation of practices indicates that there may be different environmental or individual barriers that hinder their implementation (Scott, Plotnikoff, Karunsmuni, Blize, & Rogers, 2008; Wells, Free, & Adams, 2007). Environmental barriers may be defined as organizational procedures that hinder the implementation of a practice. These barriers may relate to the characteristics of a school including its routines and systems, availability of resources, and senior leadership support. Individual barriers occur at the individual level and they obstruct the adoption and implementation of practices (e.g., lack of knowledge about a practice, attitudes,

lack of motivation or buy in). An understanding of individual and organizational barriers that may impede the implementation of SWPBIS is needed to inform the development of strategies aimed at alleviating the barriers.

The primary objective of the current study was to examine the environmental and individual characteristics school personnel face when implementing SWPBIS. Specifically, the researchers wanted to establish the exact barriers that may impede the implementation of SWPBIS as a model. A secondary objective of the study was to determine if there were any differences in the participants' perceptions of the barriers to using SWPBIS by position type. Some school personnel may experience less barriers compared to others. For instance, special education teachers because of their academic training may report facing fewer individual barriers than other school personnel.

Method

Participants

Participants were 97 school personnel employed in school settings implementing the SWPBIS model in Midwestern USA. The sample was made up of 19 special education teachers, 47 general education teachers, five school administrators, 26 related service providers, and five school administrators. With regard to the education level of participants, 67 had a masters' degree and 30 held a bachelor's degree. Seventy-one participants worked in elementary schools, 18 worked in middle schools, and eight worked in high schools. The participants' work experience ranged from one year to 36 years and their experience with SWPBIS ranged from three months to 17 years. A detailed summary of the participants' demographics is presented in Table 1.

Table 1

Demographic Characteristics of Study Participants (n = 97)

Demographic Item	*N*	Percentage (%)
Gender		
Male	17	18
Female	80	82
Highest degree	36	32
Bachelors	75	68
Masters		
Level of school		
Elementary	71	73
Middle	18	19
High school	8	8
Job Position		
Special Education	19	20
teachers	47	48
General education	5	5
teachers	26	27
School		
administrators		
Related service	30	31
Providers	35	36
	27	27
Years of working	5	5
experience		
1-10		
11-20		
21-30	50	52
31-36	47	48
Years of experience		
with SWPBIS		
1-5		
5-17		

Instrumentation

A questionnaire developed by the first author was used to collect data. The questionnaire had three sections. The first section solicited the participants' demographic information (i.e., years of teaching/working experience, job position, and level of school they are employed). The second section collected information about how the participants learned about SWPBIS. A total of five options were presented (i.e., school-wide training program, university coursework, reading a published article, personal communication with colleagues, and presentation at workshop/conference) and the participants were supposed to indicate all that applied. Finally, the third section examined participants' perspective on the barriers to using SWPBIS. There were eight statements representing the barriers to using the SWPBIS model, categorized as either environmental barriers (policies in my school prevent changes, requires more resources for implementation, lack of consensus amongst colleagues, the model is not feasible in my daily work routine) or individual barriers (insufficient time to implement the model, lack of knowledge in the model, does not meet the needs for my students). These statements were derived from literature regarding potential barriers to the use of evidence based practices and were each measured on a five point Likert type scale (i.e., 5 = *Strongly Agree*, 4 = *Agree*, 3 = *Neither Agree Nor disagree*, 2 = *Disagree*, 1= *Strongly Disagree)*.

Procedure

The study was approved by the IRB at a Midwestern University. An online platform *Qualtrics*© was used to collect data. Potential participants for the study were school personnel working in school settings implementing the SWPBIS model in 24 school districts in Midwestern USA. Schools implementing the SWPBIS model were identified by going through the school's policy manual. Upon identifying all schools implementing the SWPBIS model, the researchers obtained email addresses of school personnel working in those schools from the schools directory and sent an email containing a link which when clicked directed participants to an electronic questionnaire. The email also contained an explanation of the study, how the participants' contact details were obtained, the amount of time it would take to complete the questionnaire, and a statement stating that participation is voluntary and completing the survey indicated consent to participate. The email was sent out three times with a two week interval in-between.

Data Analysis

All data were analyzed using SPSS 19.0 (SPSS Inc, 2010). Descriptive statistics (i.e., percentages) were generated to summarize participant data. In addition, descriptive statistics were also used to establish the number of participants who "Strongly Agreed", "Agreed", "Disagreed", Strongly Disagreed" to the items measuring the barriers to using SWPBIS. The percentage of participants who responded positively and to each item was computed by adding the percentages of those who "strongly agreed" and those "agreed" to the item. Similarly, the percentage of participants who responded negatively to each item was calculated by adding the percentage of those who "strongly disagreed" and "disagreed" with the item. Finally, Analysis of Variance (ANOVA) was used to determine if there were any differences in the participants' responses regarding the barriers to using SWPBIS based on job position.

Results

A majority of the participants (74%) indicated they learned about SWPBIS through a school-wide training program offered at their respective schools, 31% communication with colleagues, 30% from presentations at professional workshops or conferences, 5% by reading a published journal article, and 15% of the participants indicated they learned through university coursework. These results are presented in Figure 1.

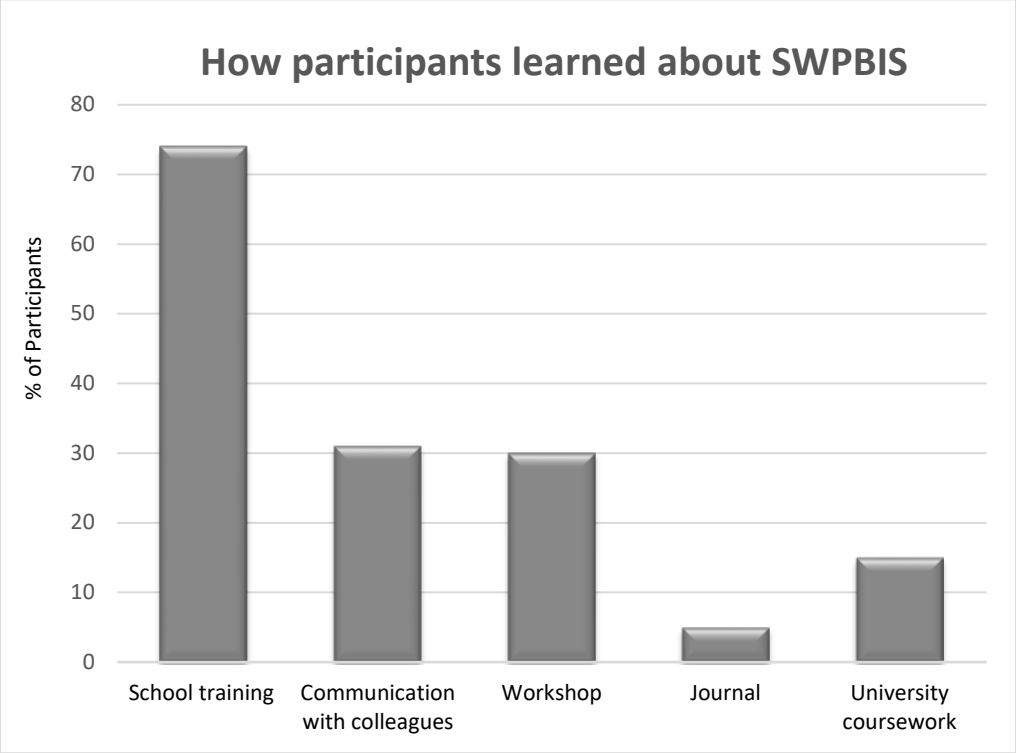

Figure: How participants learned about SWPBIS

For the primary research question guiding the study, frequencies were computed to ascertain the degree to which participants agreed or disagreed with the statements representing the organizational or individual barriers to using the SWPBIS. Regarding environmental barriers, almost half of the participants (48%) affirmed that colleagues at their respective schools disagree with the philosophy guiding SWPBIS. This might suggest that there might be philosophical differences among the participants regarding the SWPBIS. The other common environmental barrier was that the SWPBIS model requires a lot of resources for its successful implementation. Thirty five percent of the participants affirmed this assertion.

However, a majority of participants (76%) denied that policies at their respective schools prevent changes (i.e. adoption of SWPBIS). This finding implies that the schools these personnel work in schools that have policies that support the implementation of SWPBIS making it less of a barrier. Furthermore, 71% of the participants also denied that the implementation of SWPBIS is not feasible in their normal daily work. This finding might suggest the school environments in which the school personnel surveyed in this study work in is supportive of the implementation of SWPBIS making it also less of a barrier.

With regard to individual barriers, 24% of the participants acknowledged that there is insufficient time to implement SWPBIS. This finding suggests that the implementation of SWPBIS is time consuming, hence, they need to commit more time for its successful implementation. However, although SWPBIS implementation was cited as time consuming, 69% of the participants denied that they have limited knowledge regarding the use of the model, hence it is less of a barrier. This finding suggests that a majority of the participants have the conceptual knowledge needed for the implementation of SWPBIS. Table 2 provides a detailed summary of the percentages of participants' responses on all the barriers to using SWPBIS.

Table 2

Percentage of Participants Responses on the Barriers to using SWPBIS

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It is not a priority area for me	28%	37%	22%	12%	1%
Insufficient time	23%	34%	20%	23%	1%
Policies in my school prevent changes	28%	48%	21%	3%	0%
Requires a lot resources for implementation	23%	24%	18%	30%	5%
The model is not feasible in my normal daily work	25%	46%	19%	9%	1%
The model does not meet the needs of my students	23%	35%	20%	17%	5%
My colleagues disagree with the philosophy of the model	14%	11%	25%	37%	12%
I have limited knowledge in the model	31%	38%	20%	6%	5%

Second, a one-way analysis of variance (ANOVA) was conducted to examine if there were any differences in the participants' perceptions on the environmental and individual barriers to using SWPBIS based on job position. Results showed no significant differences between the participants' perceptions of the barriers to using the SWPBIS among all job positions, (environmental $F(1, 95) = 0.33$, $p = 0.57$, (individual) $F(1, 95) = 0.06$ $p = 0.80$. Overall, this finding suggests that participants do not differ in their perceptions of the environmental as well as the individual barriers to using SWPBIS.

Discussion

This study is not without its limitations. First, participants came from one geographical region and that may limit the generalizability of the results across other regions. Second, there was no information on who chose not to respond to the survey. Obtaining information on those who did not respond could provide a better interpretation of the results. Third, the questionnaire that was used in this study was not pilot tested to establish its reliability and validity. Finally, the data was collected from school personnel working in all school levels (i.e., elementary, middle, and high school). The way the model is implemented across school levels might be different hence, barriers might be different. Despite recognition of these limitations, findings from this study provide valuable information and insight regarding factors that may hinder the successful implementation of SWPBIS which will be useful to researchers.

First, it is worrisome that only 15% of participants learned about SWPBIS through university coursework. Lack of academic training is a barrier that may hinder the implementation of SWPBIS (Pinkelman McIntosh, Rasplica, Berg, & Cohen, 2015). This finding is also consistent with previous research on the lack of academic training among school personnel in school preventative practices such as SWPBIS (Wagner, Friend, Bursuk, Kutash, Duchnowski et al., 2006).

Second, the most common environmental barrier identified in the current study was the lack of agreement among personnel regarding the philosophy guiding SWPBIS. The philosophical differences may manifest in the way school personnel respond to problem behavior. For example, some school personnel may possibly choose to respond to the occurrence of problem behavior with punitive practices versus the proactive SWPBIS instructional strategies because they view them as more effective. Although this study did not measure these philosophical differences, previous research has found that such differences can hinder the successful implementation of SWPBIS. For example, Lohrman and colleagues (2008) found philosophical differences among school personnel regarding SWPBIS universal interventions as one of the main barriers to the implementation of SWPBIS practices. Therefore, it is crucial to establish common ground for school personnel to advance the implementation of SWPBIS. A viable option might be to increase the frequency of professional development opportunities for school personnel to continuously equip them with knowledge about SWPBIS the model.

The other common environmental barrier cited was that the SWPBIS model requires extensive resources for its implementation. The resources may include money, materials, administrator and staff support. This finding is also consistent with previous research (Pinkelman et al., 2014; McIntosh et al., 2014). However, it was encouraging to find that a majority of participants denied that policies at their respective schools prevent changes to occur. Previous research on the implementation of school-based practices shows that different school policies are among the potential barriers to using the practices.

Regarding individual barriers, a majority of participants prioritize the use of SWPBIS making it is less of a barrier. This finding may reflect the commitment of staff to the implementation of the model. Existing research on the implementation of SWPBIS has demonstrated that staff commitment is one of the strongest predictors for the successful implementation of the SWPBIS

model (Kincaid, Childs, Blase, & Wallace, 2007; Pinkelman et al., 2015). Most participants also denied that they have limited knowledge regarding the implementation of SWPBIS. This is also encouraging as it shows that school personnel are knowledgeable about SWPBIS. In addition, most participants also disagreed that the SWPBIS does not meet the needs of their students. This shows that participants perceive the SWPBIS to be beneficial for their students. This finding might also be used to advance research on the efficacy of SWPBIS. Thus, the effectiveness of the SWPBIS is less of a barrier to its implementation.

However, it is important to note that some participants acknowledged that there is insufficient time to implement the SWPBIS model. This finding is also in line with previous research (Lindsey 2008, Pinkelman et al., 2015). The implementation of the SWPBIS requires personnel to attend several training and professional development workshops related to data collection and recording, implementing and monitoring different interventions. Considering all this it is apparent that the implementation of SWPBIS may be time consuming for school personnel. Additionally, certain SWPBIS practices can only be executed by certain school personnel. For instance, behavior assessment (i.e., FBA) is usually the responsibility of a specialist (i.e., special education, school psychologist) rather than general education teachers and other school personnel (Vollmer & Northup, 1996). Research shows that most general education teachers are not familiar with FBA and may not be confident working with students with significant problem behaviors in the absence of trained specialists (Gottlieb, Alter, Gottlieb, & Wishner, 1994; Scott et al., 2004). As a result, the specialists who work with students who display significant problem behavior may be overwhelmed as there are only a few in each school and the teacher student ratio is very high.

Finally, no significant differences were found among participants' perceptions on the barriers to using SWPBIS. This indicates that there is not a subgroup of educators who hold different views regarding the barriers to implementation of SWPBS. In other terms, all types of educators are familiar with the model to a similar extent.

Recommendations

First, the findings from this study adds on to existing calls for university programs to design courses that expose school personnel to school based practices such as SWPBIS. This will equip them with the necessary conceptual knowledge needed for the implementation of SWPBIS. Second, regarding resources needed for implementation of SWPBIS, it is important for school administration to ensure that resources required for the successful implementation of the model are readily available for school personnel. These resources may include money, additional staff at the school and administrator support. Furthermore, when school personnel see the commitment of the administration in ensuring that resources are available, they may become more committed to the implementation of the model. In addition, existing research has shown that SWPBIS can be successfully implemented with little additional money after initial implementation (Pinkelman et al, 2014). Therefore, school personnel may focus on designing free materials (i.e., free reinforcers) such that money may be less of a barrier to the implementation of the model (Blonigen et al., 2008).

In addition, researchers and other practitioners involved in the implementation of SWPBIS need to focus on how to make its implementation less time consuming. A viable option might be for school personnel to share job responsibilities so that the burden of executing certain tasks is not on specific personnel. For example, training general education teachers and any other school personnel who work with students with significant problem behavior in behavior assessment strategies (i.e., FBA) within the context of their everyday roles in the school. This might relieve special education teachers and other specialists who work with students with significant problem behavior from certain responsibilities, thereby, making them more available to assume other roles.

Conclusion

The results of this study provide valuable information regarding individual and environmental barriers that may hinder the implementation of SWPBIS. Future research may explore ways to address the potential barriers identified in this study as this will enhance the implementation of SWPBIS thereby promoting more positive outcomes. Additionally, future research may also identify ways to foster the implementation of SWPBIS among school systems to enhance the outcomes of students. This may include exploring strategies to promote collaboration among professionals.

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Matching Students to Augmentative and Alternative Communication: A Single Case Study

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Abstract

The purpose of this case study was to examine if the Matching Assistive Technology to Child-Augmentative Communication Evaluation Simplified (MATCH-ACES) assessment can help a special education team select an augmentative and alternative communication (AAC) intervention for a student with special needs. Additionally, this study identified the relative contributions of other interventions that the student received to begin to understand the impact that AAC had on the student. This study was a single case study and used a pretest-posttest design. There was a relationship between using the MATCH-ACES and the student's individualized education goal improvement. Personal assistance, support from related services, and AAC device use significantly contributed to the student's goal improvement. Future research should address using the MATCH-ACES assessment tool with a larger sample of students and examine the significance of the contributions of other interventions to confirm and identify critical supports for students with special needs.

Introduction

The Individuals with Disabilities Education Improvement Act of 2004 (IDEA) directs special education teams to consider assistive technology (AT), including augmentative and alternative communication (AAC) intervention, during the drafting of every student's annual Individualized Educational Program (IEP) (U.S. Department of Education, 34 CFR 300.324(a)(2)(v), 2006). In 2011, approximately 6.4 million students ages 3-21 years received special education services under IDEA (University of New Hampshire Institute on Disability, 2014). Furthermore, the use of AT has been shown to increase a student's access to school activities and to improve a student's quality of life (Garcia, Loureiro, Gonzalez, Riveiro, & Sierra, 2011; Watson, Ito, Smith, & Anderson, 2010).

Over the past several years, there has been an increasing emphasis on the inclusion of students with special needs in the general education classroom. Approximately 80% of students with special needs spend 40% or more of their time in a general education classroom (University of New Hampshire Institute on Disability, 2014). Many of these students may not use speech functionally and may be candidates for AAC intervention.

Despite the IDEA directives and the trend toward inclusion, little evidence exists on an assessment tool that can help an educational team choose an AAC intervention for a student. Additionally, research has only just begun to explore the impact that an AAC intervention can have on a student while simultaneously considering other interventions that a student receives. This limited amount of research could preclude the use of AT by educational teams, thereby forgoing a potentially effective intervention strategy for helping a student meet his or her IEP goals.

Background

Assessment

Studies addressing AT assessment focus on the positives of using a collaborative assessment tool and how this could benefit an educational team and potentially lead to improving student outcomes. Copley and Ziviani (2004, 2007) conducted two studies that both had similar results. In a 2004 literature review, Copley and Ziviani determined that a team model is the most effective method for AT assessment and planning. They also identified that it is important to involve members of an educational team, including support by a technology consultant (Copley & Ziviani, 2004). Similar results were found in Copley and Ziviani's (2007) pilot study. This case study concluded that using a team-based AT assessment can support team members in the planning and implementation of AT for students with multiple disabilities and will thus provide more effective outcomes. While both of these studies support using team-based collaborative assessments, they both recognize that formal collaborative assessments are not readily available.

Many studies on AT assessments focus on including the AT user in the device selection process to increase the user's satisfaction with the AAC intervention, and thus his or her likelihood of continuing to use the intervention rather than abandoning it. Studies with this focus show that abandonment of assistive devices hinges directly on the input that the user has during the process of AAC intervention selection (Martin, Martin, Stumbo, & Morrill, 2011; Reimer-Reiss & Wacker, 2000). Including a student with cognitive challenges, such as autism, in the selection of an AAC intervention can be difficult simply due to the student's difficulty with communication (Francis, Balbo, & Firth, 2009). However, finding alternative ways for the student to be involved in the selection of his or her AAC intervention is important. Zapf, Scherer, Baxter, and Rintala (2016) stated that it is imperative for AT users to be involved in the selection of their AT devices in order to increase satisfaction and decrease device abandonment. Zapf et al. (2016) recognized that if the AT user is a child, it is important to include the child, to the extent it is possible, as well as the child's teacher and family in order to understand the user's activity participation, performance, and social arenas during assessment. Similar to Zapf et al., Copley and Ziviani (2007) concluded that student involvement in device selection is important and can lead to increased use of an assistive device. They recognized that using a team-based approach, including the student, during assessment could increase the likelihood of the device being used

across school and home settings and therefore decrease device abandonment (Copley & Ziviani, 2007). While studies show the importance of including a user in the assessment process, few studies demonstrate or explore a particular assessment tool for this process.

In addition to the satisfaction of the device user, AT assessment studies explore teachers' satisfaction with and attitude toward AAC interventions in the classroom and how that contributes to the adoption or abandonment of the intervention. Including teachers in the collaborative assessment process for a student's AAC intervention is important. Finke, McNaughton, and Drager (2009) reported that teachers feel they need significant support to help students who use AAC devices to participate in class. This includes support for themselves and for the students in the form of collaboration with other educational team members and training (Finke et al., 2009). Most important, this study concluded that a teacher's attitude may positively or negatively affect the inclusion of students with AAC devices in general education classrooms and that the experience of inclusion is largely driven by the perspective of the teacher (Finke et al., 2009). Garcia, Loureiro, Gonzalez, Riveiro, and Sierra (2011) reported complementary results in their study, which examined the satisfaction level of students who use AAC interventions and the educators who work with them. The results showed that AAC interventions could only provide support to students if their teachers are fully involved and committed (Garcia et al., 2011). While studies support involving the teacher in the assessment process for AT, there is little research that explores the use of a specific tool to help an educational team select an assistive device for a student.

Intervention

Literature on AT intervention specific to schools promotes the use of various types of AT and highlights that using these interventions can benefit a student, potentially leading to increasing student outcomes (Lidström & Hemmingsson, 2014; Flanagan, Bouck, & Richardson, 2013). A systematic literature review by Lidström and Hemmingsson (2014) explored the use of information and communication technology (ICT) for students with physical disabilities. While each study in the review differed in design, technology type, and participant population, the results found that ICT use is beneficial for students, especially in the areas of writing, spelling, and communication (Lidström & Hemmingsson, 2014). A study by Flanagan, Bouck, and Richardson (2013) found similar results. This survey study examined the perceptions of middle school teacher's use of various low-tech and high-tech AT during literacy instruction (Flanagan et al., 2013). The results of the study found that teachers who used AT during instruction felt that it was effective intervention for literacy support (Flanagan et al., 2013). While these studies differed in design and focus, they both show that AT intervention was effective, however, they do not address the impact that AT has on the user, nor the relative contribution of other interventions.

A study by Watson, Ito, Smith, and Anderson (2010) began to explore the impact of AT on the user. This study used the Student Performance Profile (SPP) to measure AT's effectiveness and to examine the relative contribution of other interventions to begin to understand the impact that AT had on the user (Watson et al., 2010). The results found that students made progress on their IEP goals when using AT and that this technology can be more effective than other possible intervention strategies including related support services and adaptations to specific curricular

tasks (Watson et al., 2010). The results of this study suggest that the use of AT and AAC intervention may have an impact on a student's ability to master his or her IEP goals and may have a greater impact than other interventions.

The literature on AT assessments explores the benefits of a collaborative assessment and the importance of user and teacher satisfaction on device use versus abandonment. The literature on AT interventions explores the benefits of using various types of assistive technology for students in schools and begins to explore the impact that AT has on a user. Further exploration is needed using a particular collaborative assessment tool that could help an educational team choose an AAC intervention for a student as well as explore the impact that the AAC had on the user. This study addressed the shortcomings that were identified in the literature review by exploring the Matching Assistive Technology to Child and Augmentative Communication Evaluation Simplified (MATCH-ACES), a collaborative assessment tool that considers a variety of factors such as the student's personality, environment, and teacher's perspective when matching a student with an AAC intervention. This study used the SPP to compare the student's AAC intervention with other interventions to begin to understand the impact that the AAC had on the student. The purpose of this study was to examine if the MATCH-ACES assessment can help a special education teacher (SPED) teacher and a speech and language therapist (SLP) select an AAC intervention for a student with special needs. Additionally, this study identified the relative contributions of other interventions that the student received to begin to understand the impact that AAC had on the student.

The study questions were:

1. Is there a relationship between using the MATCH-ACES to assess a student's AAC needs and improved achievement of the student's IEP goals as measured by the Student Performance Profile (SPP)?

2. What are the relative contributions of other interventions that, in conjunction with using the MATCH-ACES, contribute to a student's IEP goal progress as measured by the SPP?

Method

Case Study Participant: Adam

This study was a single case study and used a pretest-posttest design. The Institutional Review Board (IRB) at Texas Woman's University approved this study and all participants provided informed consent. The student, who will be referred to as "Adam," is a first-grade student with a diagnosis of autism. He lives in a New England town with his mother and older sister. He attends a public school and is in a special education program for students with autism. He spends 80% of his day in his special education classroom and attends lunch and recess with general education students. He visits his general education first-grade classroom for up to 30 minutes per day. He has an aide who works with him one-to-one throughout the school day. Adam receives support from occupational therapy, special education, speech and language therapy, and adapted physical education. His academic programming is based in the principles of applied behavior analysis (ABA) and he learns best through structure and repetition of skills. When introduced to new activities or changes in routine, Adam can become frustrated which usually results in aggressive

behaviors toward staff. Adam demonstrates limited verbal skills and is unable to communicate his basic needs. He will attempt to use grunts and other sounds to indicate preference or disapproval. He is unable to communicate his basic needs. At the time of the evaluation, Adam was beginning to approximate some words verbally, including “water,” “mom,” and “help.” Adam can become physically aggressive with staff and peers when he is unable to communicate. Despite current research that supports the inclusion of the AT user in the assessment process, Adam’s special education team, including his mother, felt it was best not to include him due to his complicated profile and tendency toward aggressive behaviors with communication challenges and routine changes. Adam’s mother was precluded from participating in this study due to research restrictions by the school district.

Adam received an AAC evaluation by his school district in the spring of 2014. Prior to the evaluation, Adam had used the Picture Exchange Communication System (PECS), which, according to his SPED teacher and SLP, was not effective in aiding his communication. The results of the district evaluation recommended that Adam receive a NOVA chat 7 AAC, a high-tech voice output device. This device uses software that allows a student to choose symbols, pictures, and/or words on the device, which generates a synthesized voice that speaks the relevant selection. The NOVA chat 7 is small and is easily portable around a school. Adam’s device arrived in June 2014, was used for four weeks, and then was returned to the company for repairs. The device was returned to Adam in September. Within three weeks, the device again was not working properly and was returned to the company for a second repair. Adam received the device again in November. By January 2015, Adam had only been using the device consistently for a total of six weeks. Adam’s SPED teacher and SLP were interested in using the MATCH-ACES to determine if Adam's device was still appropriate and to assess his progress with his IEP goals since receiving the first AAC evaluation in the spring of 2014.

Instruments

MATCH-ACES. The MATCH-ACES is a collaborative assessment tool that identifies students’ needs for AT and/or AAC based on their educational challenges, strengths, skills, and environment as they relate to the device features (Zapf, 2012; Zapf, Scherer, Baxter, & Rintala, 2016). This assessment tool includes eight forms, with each form focusing on the student, AAC device, environment, or a combination thereof. There are three forms that directly address the student. These include the Needs Analysis form, the AAC Evaluation form, and the Person Skills and Device Features form. First, the Needs Analysis form directs evaluators to rate the student’s current level of performance in various educational activities such as following directions, self-feeding, and classroom mobility. This form can help evaluators identify what challenges a student has that can be helped by AT. Second, the MATCH-ACES AAC Evaluation form includes questions about the student’s history, skills, and communication style to guide the evaluators in understanding the student’s need for AAC. Third, the Person Skills and Device Features form is a conceptual worksheet to assess the student’s current hearing, cognition, fine and gross motor skills, and current communication skills while considering various device features. The Technology Utilization Worksheet form addresses technology and the student’s environment. This form guides evaluators to list previously or currently used assistive devices and to rate them according to their effectiveness.

The MATCH-ACES includes two forms that can be scored and interpreted, the Predisposition to AT form and the Score form. The Predisposition to AT form includes three sections. In the first section, the student rates his or her experience with technology. If the student is unable to complete this section, an equivalent elementary section including pictures and graphs is available. If the student is unable to complete both forms, the teacher or parent can complete this section on behalf of the student. In the second section, the teacher is asked to rate the student's behavior and personality in school. Finally, in section three, the teacher or parent is asked to rate their own overall interaction with technology. Each section rating is on a 1 to 5 scale. Total scores are calculated for each section and then mean scores are obtained.

The Score form assesses the evaluators' feelings on the match between the student and the AT/AAC technology. The evaluators are directed to rate each question on a scale between 1 and 5 (1 being a mismatch and 5 being a good match). The scores are added and the mean score is obtained.

Based on the results of the MATCH-ACES forms, including the scores from both the Predisposition to AT form and the Score form, the evaluators decide if and/or what type of AT/AAC intervention is appropriate for the student. A Recommendation and Follow-up form can also be used to create an intervention plan with the chosen AAC intervention.

In a level three quasi-experimental study of the MATCH-ACES, Zapf et al. (2016) analyzed the predictive validity and internal reliability of the assessment tool. Zapf et al. found that the assessment has good internal reliability on all scales included in the predisposition to AT form, which indicates good internal consistency, Student Experience with Assistive Technology (α= .88), Student Behavior/Personality (α= 0.84), Teacher Perspective, (α= 0.88). This study also noted that the MATCH-ACES has good clinical utility and the participants rated the assessment high in measuring the need for AT, the assessment addressed critical AT factors, was useful in making AT decisions, aligns with the IEP process and the assessment was consumer-centered (Zapf et al., 2016). Ease to administer, clear direction, and efficiency of the MATCH-ACES scores indicated that the tool was lacking in efficiency and administration (Zapf et al., 2016). Finally, Zapf et al. (2016) conducted a preliminary inter-rater reliability analysis using the Score form and the Recommendations and Follow-up form comparing mean scores, recommendations, and intervention plans. Overall, there was a 97% agreement across three experienced AT evaluators' responses on the MATCH-ACES (Zapf et al., 2016). Zapf et al. concluded that the MATCH-ACES is a validated, evidence-based assessment. However, further studies are needed with larger subject groups to strengthen the validation of this assessment tool.

Student performance profile. The SPP is recognized as a tool that measures the effectiveness of AT in a public school setting (Watson, 2012). This outcome measurement uses the student's established IEP goals to track progress by measuring the change in the student's ability with the addition of an assistive device (Watson et al., 2010). The SPP includes a pretest and posttest form. The pretest form includes student information, area of need for AT, IEP goals, and current performance level. The posttest form includes student information, post-score performance on IEP goals, current ability level (of previously identified relevant IEP goals), and contribution of interventions.

The SPP pretest form first directs evaluators to complete general information about the student including his or her age and diagnosis. Following this, evaluators complete the area of need section, which records the student's school challenges such as communication, computer/technology, English/writing, history, mathematics, and science. After completing both of these sections, evaluators are asked to identify relevant IEP goals to track a student's progress and to rate his or her current ability level using interval data from 0% ability to 100% ability with 10% increments. See Table 1 for SPP scoring information.

The SPP posttest form first directs evaluators to complete general information on the student including any major changes that could have affected the student's progress (changes to the school building, student's health/family, etc.). The posttest form then directs evaluators to rate the student's current performance blindly based on the progress the student has made since the pretest. Following the completion of the posttest current performance level section, evaluators complete the contribution of interventions section. This section seeks to determine which factors contribute to a student's progress on the AT relevant IEP goals. This section also measures the evaluator's feelings on how much the AT has contributed to the student's goal improvement in relation to other categories such as related services, natural development, and participation in general education instruction. This section is scored using an ordinal scale with scores ranging from 0 (no contribution) to 10 (substantial contribution). See Table 1 for SPP scoring information.

Table 1
SPP Scoring

	Data	Low	High
Current Ability Level	Interval	0%	100%
Contribution of Interventions	Ordinal	0	10

The SPP was specifically developed as an outcome measurement for use in the Ohio Assistive Technology Infusion Project, which provided students who have special needs with assistive devices (Fennema-Jansen, 2005). While the SPP did not undergo a typical test development process, limited pilot testing was conducted (Fennema-Jansen, 2005). While there is little research published on the psychometric properties of the tool, the use of the SPP as an outcome measure is supported in research studies. A study by Watson et al. (2010) found that the SPP was able to measure AT outcomes for students in a public school setting effectively. A dissertation by Fennema-Jansen (2005), which used the SPP as a measurement outcome on 1,760 students who received AT, showed that the SPP was effective in measuring AT outcomes and showed evidence of content and discriminant validity (Fennema-Jansen, 2005). A study by Watson and Smith (2012) found that the SPP had ease of administration, rating, and scoring; specificity to relevant measurement constructs (IEP) goals; and sensitivity to change in performance over time. This study concluded that this tool has the potential to measure the outcomes of AT intervention in schools effectively (Watson & Smith, 2012).

Data Collection Procedures
During the pretest data collection (A1), the SPP pretest form was used to document student information, area of need for AT, and IEP goals. During this time, the SLP and SPED teacher identified two IEP goals relevant to Adam's communication using AAC. The first goal was responding to a peer's greeting, which addresses how Adam answers a peer after the peer has initiated interaction with him, such as verbally approximating "hi" or using his AAC to say hello. The second goal was commenting on actions, which addresses Adam's ability to answer "what" questions about a person performing an activity, such as "what is the person doing?" Adam would use a sign, gesture, or AAC device to respond "drinking," "eating," "running," and so on.

Next, during intervention phase (B), the primary author trained Adam's SPED teacher and SLP in the use of the MATCH-ACES. Following this training, Adam's SPED teacher and SLP completed the MATCH-ACES on Adam. Then, during follow-up posttest (A2) data collection, the posttest SPP form was completed after three months of the student's consistent use of the NOVA chat 7. The forms completed included student information, post-score performance on IEP goals, and contribution of interventions. Finally, during the final posttest data collection (A3), the posttest SPP form was completed two months after A2 data collection. The forms completed included student information, post-score performance on IEP goals, and contribution of interventions.

Data Analysis
Data from the MATCH-ACES and the SPP, completed by the SLP and SPED teacher, were analyzed for this case study. First, the Predisposition to AT form and Score form were analyzed. Raw scores were calculated from each of the forms and mean scores were obtained and analyzed visually in a table.

Second, the SPP current ability level was analyzed. This section measured Adam's current ability level (ranging from 0% to 100% in 10% increments) at both pretest (A1) and two posttest data collections (A2 and A3). Both participants' scores were visually analyzed in tables. Comparisons between scores and time periods were made.

Finally, the SPP contribution of interventions was analyzed to understand the contribution of the AAC intervention compared with other interventions during the time of the study at both posttest collections (A2 and A3). Ratings are on a scale from 0 (no contribution) to 10 (substantial contribution). The results were analyzed to recognize similarities in scores between the SLP and the SPED teacher. Results were reported when both participants rated an intervention contribution with a score of 5 or higher. Results were incorporated into a table and analyzed visually.

Results

MATCH-ACES
Predisposition to AT form. The MATCH-ACES predisposition to AT form includes three sections – student experience with assistive technology, student behavior/personality, and the teacher perspective – and calculates the student's and teacher's predisposition to AT. Scores between 4-5 indicate a good potential match between student and technology. A score of a 3

means a potential match between student and technology with mild/moderate adaptation, and a score of 2 indicates it will be difficult for the student to use AT.

Table 2 displays the scores of Adam's predisposition to AT form. The scores of Adam's experience with technology section were high with a score of 4.6, indicating that both participants felt there was a potential good match between Adam and AT. They reported that Adam finds technology satisfying and that he enjoys using technology. Scores from the teacher perspective section were also high, with the SLP scoring 4.1 and the SPED teacher scoring 4.3, indicating that they would both match well with Adam's technology. Both participants mentioned that they were willing to learn about technology and that they encourage the use of AT with students. Finally, scores for Adam's personality were rated in the difficult/need support range with a score of 2.7. Both participants recognized that Adam's challenges with communication make him easily frustrated and can result in aggressive behaviors.

Table 2
MATCH-ACES Predisposition to AT Results

	Student Experience with AT	Student Behavior/Personality	Teacher Perspective
SLP	4.6	2.7	4.1
SPED	4.6	2.7	4.3

Score form. This form assesses the requirements of the AAC and the resources of the student. Scores between 4-5 indicate a good potential match between the student and the technology. Results of this form from the SLP and the SPED teacher resulted in a score of 4.7. Scores on this section were relatively high because both participants considered the personal assistance to operate the device that Adam would receive from his aide. Both participants also considered that Adam would be able to meet the physical demands required of the device, would have adequate support and training in the device, and that the device would likely be able to be funded based on Adam's intense need.

In conclusion, the completion of the MATCH-ACES assessment identified Adam's personal traits and potential device features to help the SLP and SPED teacher make an informed decision about an AAC device for Adam. While completing the MATCH-ACES, the SLP and SPED teacher determined that Adam should use a high-tech device with support and training throughout the school day. They also noted that Adam would benefit from a device that was small, easy to carry, could include words and pictures, had a built-in keyboard, and could use digitized human voice output. Based on these results from the assessment tool, the SLP and the SPED teacher were able to reconfirm that the NOVA chat 7 continues to be the best device for Adam.

Student Performance Profile

Current ability level. At the SPP pretest A1 data collection for goal 1, responding to a peers greeting, Adam received a score of 10% on current ability level. At posttest data collection A2, the participants' mean score showed a 50% goal improvement. At the final posttest A3 data

collection, the participants' mean score showed an overall 65% goal improvement. This shows a 55% increase in Adam's ability to respond to peers. See Table 3 for a detailed display of the results of Adam's current ability level at pretest and posttest for goal 1.

At the SPP pretest A1 data collection for goal 2, commenting on actions, both participants scored Adam at 10% for his current ability. At posttest data collection A2, there was a 20% improvement in Adam's ability level to comment on actions. Adam maintained a 20% improvement at the A3 data collection scored by the SLP. The SPED teacher did not complete the A3 data collection for goal 2. See Table 3 for a detailed display of the results of Adam's current ability level at pretest and posttest for goal 2.

Table 3
Current Ability Level

	A1	A2	A3	Mean Improvement
Goal 1 SLP	10%	60%	70%	
Goal 1 SPED	10%	60%	80%	55%
Goal 2 SLP	10%	30%	30%	
Goal 2 SPED	10%	30%		20%

Relative Contribution of AT Compared With Other Interventions

Goal 1: A2 data collection. For the first goal, responding to a peer's greeting, there were three non-AAC interventions that both participants scored above a 5 at the A2 data collection. The first contribution was Adam's participation in general education instruction. Additionally, both participants agreed that related support services were a large contributor to progress. Finally, both the SPED teacher and SLP rated personal assistance 8 and 9 respectively. This highlights that Adam's aide's help with Adam's AAC device had contributed to his progress in responding to a peer's greetings. Finally, both participants agreed that the AAC device provided a substantial contribution for Adam's improvement in responding to a peer's greeting. Results from the A2 data collection for goal 1 are included in Figure 1.

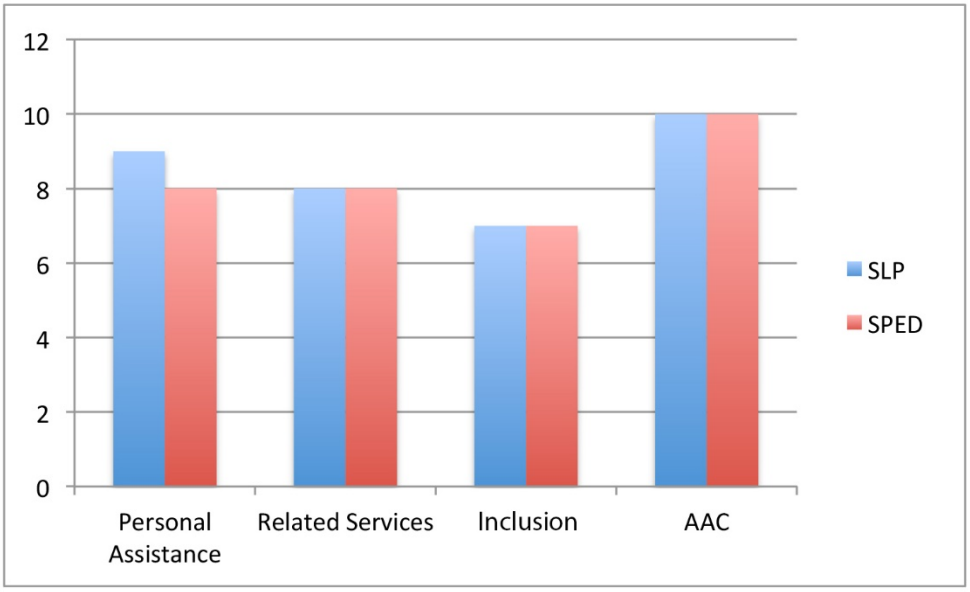

Figure 1: Relative contribution of AT compared with other interventions at A2 data collection for goal one

Goal 1: A3 data collection. At the A3 data collection for goal 1, there were five non-AAC interventions that both participants scored above a 5. One contribution included natural development. Additionally, both participants scored related services and personal assistance as being large contributors to Adam's improvement with responding to peers. Finally, both participants rated Adam's AAC device as a substantial element in Adam's improvement responding to a peer's greeting. Results from the A3 data collection for goal 1 are included in Figure 2.

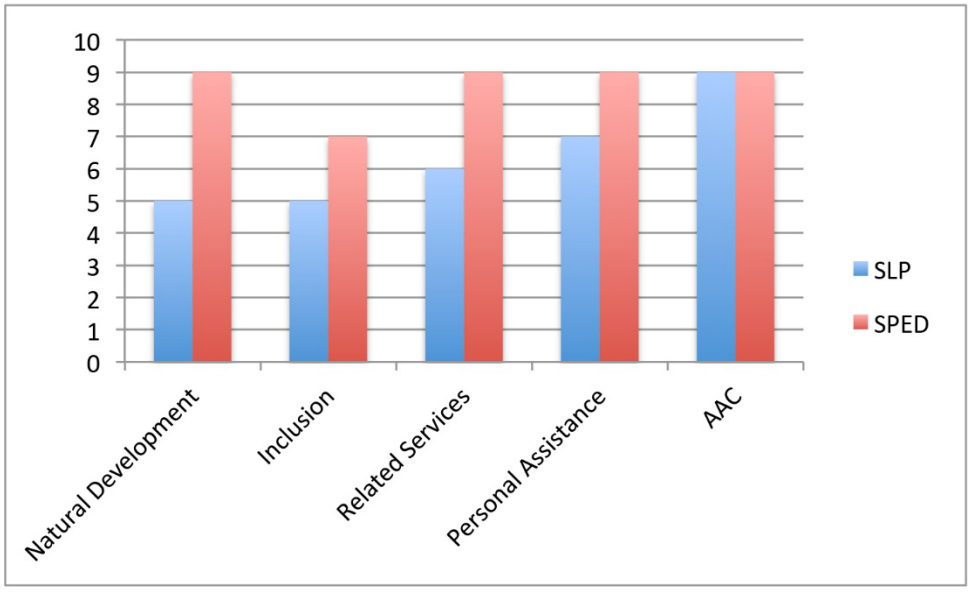

Figure 2: Relative contribution of AT compared with other interventions at A3 data collection for goal one

Goal 2: A2 data collection. For the second goal, commenting on actions, there were two non-AAC interventions that both participants scored above a 5 at the A2 data collection. The first non-AAC intervention was related services. The second contribution was personal assistance the SLP and SPED scores of a 5 and 8 respectively. Both the SLP and the SPED teacher recognized that the use of Adam's AAC device made a substantial contribution in his ability to comment on actions. Results from the A2 data collection for goal 2 are included in Figure 3.

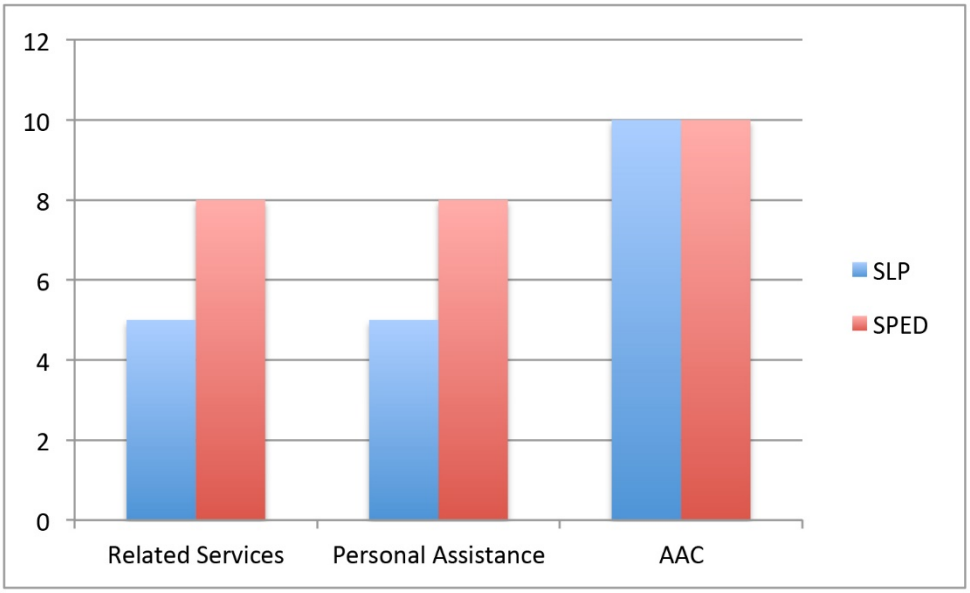

Figure 3: Relative contribution of AT compared with other interventions at A2 data collection for goal two

Goal 2: A3 data collection. At A3 data collection for goal 2, there were two non-AAC interventions that both participants scored above a 5. The first non-AAC intervention was natural development. Additionally, both participants noted that the personal assistance that Adam received, mostly from his aide, helped him make progress toward his goal. Both the SLP and the SPED teacher rated Adam's AAC device to be the most substantial contribution to Adam's achievement to IEP goals. Results from the A3 data collection for goal 2 are included in Figure 4.

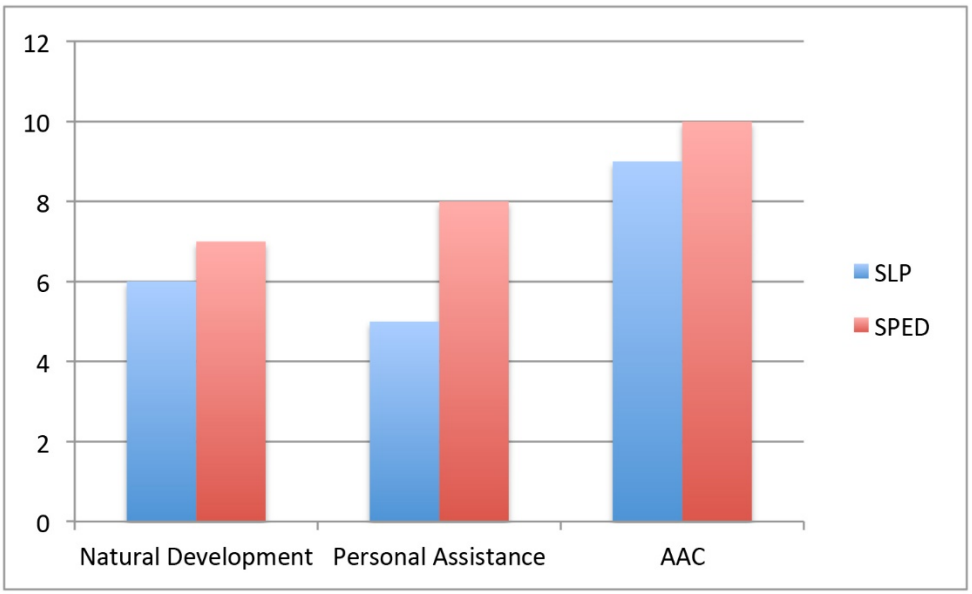

Figure 4: Relative contribution of AT compared with other interventions at A3 data collection for goal two

In summary, results from the SPP show that Adam made progress with both of his IEP goals including responding to a peer's greeting and commenting on actions. The two consistent contributors to Adam's improved IEP goals were related services and personal assistance. Results revealed that both the SLP and the SPED teacher reported that Adam's AAC device was the most substantial contributor to Adam's progress with his IEP goals.

Discussion

The purpose of this study was to examine if the MATCH-ACES assessment can help a SPED teacher and an SLP select an AAC intervention for a student with special needs. Additionally, this study identified the relative contribution of other interventions and the AAC intervention. Addressing a lack of evidence in this area, this case study investigated assessment tool use to match students with special needs to assistive devices and to understand the impact that an AAC intervention can have on a student while simultaneously considering other interventions that a student receives.

Overall, results from the SPP show that Adam made progress with both IEP goals using the NOVA chat 7. This device choice was reconfirmed from a previous evaluation after the SLP and SPED teacher completed the MATCH-ACES. The results show that there was a relationship between using the MATCH-ACES and improved IEP goals. Results revealed that personal assistance and support from related services also made an important contribution to Adam's IEP goal improvement. Additionally, the highest rated and consistent contribution to Adam's IEP goal improvement was the use of his AAC device. According to the SPP results, the SPED teacher frequently scored Adam higher than the SLP. This may have been affected by the amount of time that both participants spend with Adam. The SPED teacher spends more time with Adam, educating him in class 80% of the day, where the SLP service delivery involved only brief increments of time with Adam over the course of each week. The SPED teacher may have

been able to observe his abilities across the school day more often then the SLP. Additionally, the scoring on the SPP is subjective and can be skewed by participants' personality, bias, and dispositions.

Personal Assistance

Results from the SPP revealed that the personal assistance that Adam receives from his full day, one-to-one aide contributed to his progress toward his IEP goals. This finding suggests that personal assistance had a direct influence on Adam's use of the device, which is consistent with the results of the MATCH-ACES assessment. During the assessment, the SLP and the SPED teacher both noted that there would be a good match between technology and Adam when they were considering the one-to-one assistance that Adam would have from his aide.

The literature on AT for students in schools indicates that additional support is important, not only to help a student use a device, but for a teacher to support a student's device use (Barker, Akaba, Brady, & Thiemann-Bourque, 2013; Finke et al., 2009). While these studies differed from this case study in terms of focus and design, the results are similar, in that additional support is necessary to support a student's use of AT.

A survey study by Barker, Akaba, Brady, and Thiemann-Bourque (2013) explored preschoolers' AAC use in the classroom. The survey results showed that teachers, other classroom adults, and peers infrequently used the students' high-tech AAC devices (Barker et al., 2013). Overall, students were using their AAC devices only five or six times a day (Barker et al., 2013). Additional results showed that students who had more peers communicating with them using their AAC devices demonstrated larger increased skill growth over the course of the study, compared with students with whom fewer peers interacted (Barker et al., 2013). This shows that a student not only requires teacher support but peer support as well to use their AAC devices (Barker et al., 2013). Similarly, results from a qualitative study by Johnson, Inglebret, Jones, and Ray (2006) concluded that additional support for a user's device use can be an important factor in that person's success with the device. If the facilitator is motivated to help the student access and practice the device, the user will be more likely to experience success with the device (Johnson, Inglebret, Jones, & Ray, 2006).

Additionally, the results from a qualitative study by Finke et al. (2009) mirror finding by Barker et al. (2013) and Johnson et al. (2006) regarding the importance of assistance. In Finke et al., general education teachers who worked with students who used AAC devices recognized that there was a need for additional supports in the classroom including well-trained educational aides to help students use AAC devices successfully. This finding is consistent with the assistance provided to Adam from his aide to help use and incorporate his AAC device during the school day. The personal assistance that he received from his aide contributed to the use of his device, the incorporation of his device into the classroom for social support, and ultimately his improved IEP goals.

Related Services

In addition to the support that Adam received from his aide, results from the SPP show related service support from disciplines such as speech and language therapy, occupational therapy,

adaptive physical education, and special education contributed to Adam's improved IEP goals. This finding suggests that additional assistance from various disciplines is important to support a student who uses an AAC intervention in school.

Results from a quantitative study by Watson et al. (2010) showed similar results as this study. Watson et al. explored the performance outcomes of students using AT in schools. Using the SPP as a measure, the study found that AT provided by a multidisciplinary team that is committed to seeking and implementing AT may have a significant effect on a student's IEP goal improvement. While using different methods and focus, Finke et al. (2009) found similar results. In the study, general education teachers noted that related services were a critical element in the inclusion process for students who use AAC devices in school (Finke et al., 2009). Additionally, the study reported that teachers felt that they need to collaborate with related services on a daily basis, and that having their support in the classroom contributed to the student's success in using AAC devices in school (Finke et al., 2009). The results from this study are consistent with results from literature showing that students with assistive devices are best supported by a variety of related service providers.

Augmentative and Alternative Communication

Overall, the results from the SPP show that both the SLP and SPED teacher felt that the most important contribution to Adam's improved IEP goals was the use of his AAC device, reconfirmed by the completion of the MATCH-ACES. This finding is consistent with the results of many studies that explore communication development using an AAC device (Millar, Light, & Schlosser, 2006; Schlosser & Wendt, 2008). Results from a systematic review conducted by Schlosser and Wendt (2008), showed that most children with autism who use an AAC device experience a modest increase in speech production. Additionally, a research review by Millar, Light, and Schlosser (2006) reviewed 27 cases and found that 89% of the participants studied demonstrated modest gains in speech production.

In conclusion, the MATCH-ACES was successful in considering the match between Adam, the device, and the personal assistance that Adam would receive. The findings from the research suggest that comprehensive support from related service staff as well as personal assistance might help students be successful using an AAC intervention in school, making it more likely that students would experience IEP goal improvement. Finally, the most important contribution to Adam's goal improvement was his AAC device and the support that he received in order to use it.

Limitations

This study is limited by the single case study pretest-posttest design. This study represents one student in an elementary school in an affluent community in New England where the primary author was employed. Therefore, results of this study are not generalizable to other populations. This study did not include statistical analysis and the outcomes could only be inferred through visual analysis. Additionally, this study is limited by the use of the MATCH-ACES and SPP. Both tools have limited research published on their psychometric properties and are not widely used.

Future Research

Future research should address the MATCH-ACES assessment tool at various education levels and socioeconomic communities. Including a larger population or using a case series design would allow for statistical analysis. Additionally, further research is needed to examine the significance of the contributions of other interventions to confirm and identify critical supports for students with special needs. Future research should also address the use of the MATCH-ACES including the family and student when possible.

Conclusion

With an increasing number of students with special needs being included in general education classrooms, the need to support students who use AT and AAC is likewise increasing. This study used the MATCH-ACES assessment tool to help a SPED teacher and an SLP choose an AAC intervention for a student and examined the student's IEP progress and the relative contribution of other interventions. The first conclusion of this case study is that there was a relationship between using the MATCH-ACES and improved IEP goals. The second conclusion was that related services and personal assistance were important contributors to the student's IEP goal progress. The results provide evidence that the student's AAC device was the most important contribution to his goal progress. Further research should examine the significance of the contributions of other interventions, as well as the AAC intervention, using a larger sample size over an extended amount of time.

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Academic Experiences of Students Who are Deaf at the University of Education, Winneba, Ghana

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Abstract

Guided by Tinto's (1975) model of student retention or departure, this phenomenological study explored academic experiences of students who are deaf at the University of Education, Winneba (UEW), Ghana. Fourteen deaf students were purposively sampled from a population of 36 students. Data were gathered through a semi-structured interview. Data were coded and analyzed using thematic approach. Academically, participants indicated that they were usually assessed on content areas they are taught. They also added that assessment became challenging when Sign Language interpreters were not present at the examination halls. The study recommended that tertiary educational institutions that practice inclusion for deaf employ more Sign Language interpreters, and note-takers to help deaf students have equal access to the curricular and that this study be replicated elsewhere that would include more public tertiary educational institutions with larger number of participants.

Keywords: *d/Deaf students, academic experiences, tertiary institution*

Introduction

In Ghana, majority of students who are Deaf and belong to the Deaf cultural community pursue their Secondary school education in a segregated public Secondary/Technical School for the Deaf. At the Secondary/Technical School for the Deaf, the official mode of communication and medium of instruction is signing in the form of Ghanaian Sign Language (GSL). Quite a substantial number of deaf students who successfully graduate from the Secondary/Technical School for the Deaf continue to further their tertiary education at the University of Education, Winneba (UEW). The University of Education, Winneba is a reputable public tertiary institution of Ghana that practices inclusion with support services in the forms of Sign Language interpreting, note-taking, tutoring, and information and communication technology (ICT) in order to make the curriculum equally accessible to students who are Deaf.

Often, the extent that individual Deaf students successfully or otherwise go through their academic programs of study at the tertiary level is determined by the perceptions of teaching and non-teaching staff and sometimes parents. The experiences of the students who are the

consumers are often overlooked. It is always imperative that voices of consumers of academic programs, are heard by providers and other stakeholders in order to improve upon the support services provided to consumers (The UN Convention on the Rights of the Child, 2006). In Ghana, the Persons with Disability Act, (2006) stresses the right of persons with disability to have access to education facilities and equipment in educational institutions. Individual students' lived academic experiences may sometimes vary from one student to the other and may also be different from that assumed by teaching and non-teaching staff of the institution and parents (Jarvis, Sinka, & Iantaffi, 2002). This study therefore explored the lived academic experiences of individual Deaf students in a public tertiary institution in order to provide useful empirical information that could lead to improved academic achievements among such students.

At UEW, both hearing and Deaf students live together in the same halls of residence, attend lectures together, go on field/educational trips together, and go through the same assessment procedures daily, monthly and at the end of each semester. In this study, the problem relates to the lived academic experiences that individual students who are Deaf go through at the tertiary level in Ghana. Academic experiences of Deaf students at the tertiary level in Ghana has so far not been researched into and documented. The purpose of the present qualitative phenomenological study was for individual participants who are Deaf to describe their lived experiences in an inclusive public tertiary educational institution with regards to: (a) access to information, (b) experiences with regards to how they understand lectures and (c) experiences with tests/examination/assessments. A semi-structured interview guide was used to collect data for analysis.

In this study, the term "Deaf" was used to refer to individual students who, in addition to not perceiving auditory sounds naturally via their auditory mechanisms, function by choice as members of the community of a minority group that follow their cultural norms, values, and tradition. The term "academic experiences" are the learning/teaching processes that students go through in a tertiary institution as they access information, understand lectures, and are assessed.

The present study was guided by Tinto's (1975) theory of retention and departure which states that an individual student's decision to persist or depart from an institution is dependent on their pre-university characteristics, their level of commitment and intention towards their academic goal, and their ability to integrate academically into the institutional culture. It was assumed that at the tertiary level, if students who are profoundly deaf and belong to the Deaf cultural community are provided with support services in their learning/teaching process in an inclusive tertiary institution to pursue their individual academic programs successfully, then the lived academic experiences of such students may vary. If individual deaf students have full access to their academic programs of study, then they would be retained to continue with their various academic programs till they complete successfully. On the other hand, lack or incomplete access to the various support services may result in withdrawal or abandonment of their academic programs. In line with Tinto's learning theory of retention or departure, the present study interviewed individual Deaf students to tell the researchers about their academic experiences in an inclusive public tertiary educational institution.

Evidence in the literature suggests, that much is not known about the academic experiences of students who are deaf in tertiary institutions in Ghana. Few studies that have been conducted on

the experiences of students who are deaf were conducted at the Basic level (Mantey, 2011; Oppong, & Fobi, 2016; Oppong, Fobi, & Fobi, 2016). Whereas some studies give accounts of negative academic experiences of deaf students who learn together with their hearing peers (Bell, 2013; Magongwa, 2008; Mantey, 2011), results of other studies revealed that deaf students' academic experiences are not dependent on whether or not they are educated in a segregated or inclusive educational setting (Batten, Oakes, & Alexander, 2014; Schick, Skalicky, Edwards, Kushalnagar, Topolski, & Patrick, 2013; Nikolaraizi & Hadjikakou, 2006). Three research questions guided the present study: (1) What are the experiences of deaf students with regards to access to information? (2) What are deaf students experiences regarding understanding of lectures at the tertiary level? (3) What are deaf students' experiences on assessment in a tertiary institution?

Experiences of Deaf Students with Regards to Access to Information

A university context is often challenging for all categories of students. Problems of adjusting to academic life and the obligations imposed could often lead to failure and abandonment. Sampaio and Santos (2002) indicated that for students who are deaf to assimilate new information and knowledge, they have to overcome the shortcomings of their pre-tertiary experiences, such as language deficiencies, inadequate study conditions, a lack of coping skills, problems with reading comprehension and difficulty in producing text. University life requires free flowing and meaningful communication with colleagues, teachers and the environment. Effective communication is fundamental in the early years of higher education for improving the chances of academic success (Diniz, & Almeida, 2005; Ferreira, Almeida, & Soares, 2001). Students who are deaf, like any other students, must deal with expectations, standards and ways of functioning that are different from their previous special segregated school experience. The ability of students to adapt to new way of learning in an inclusive educational institution, is often contingent upon their individual pre-tertiary educational experiences, inherent characteristics such as hearing loss, gender, and emotional conditions among others and the type of educational institution (in this study, tertiary inclusive educational institution) in which the students are educated.

Sameshima (1999) investigated the realities of tertiary experience of New Zealand Deaf, and hard of hearing students by interviewing twenty-eight Deaf university students and fifteen coordinators of support services for Deaf students in universities and polytechnics. Sameshima's study found that majority of Deaf and hard of hearing students had low quality of education prior to entry into university, Sign Language interpreters and note-takers were insufficiently trained, there was lack of awareness about Deaf students by institutions of higher education, and disability office coordinators' lack of signing skills and knowledge about Deaf students' needs. The study also found that Deaf and hard of hearing students could not interact meaningfully among themselves as a result of communication problems. In addition, she found that seventy-five percent of the participants reported some degree of difficulty in reading and writing English Language.

Magongwa (2008) adopted a qualitative approach to explore the experiences of Deaf teachers who had attended a tertiary institution in South Africa. In-depth interviews and documentary information were used to collect data from twelve current and past Deaf and hard of hearing students. Current theory, practice and legislation designed to guide the creation of an inclusive

education society were examined in order to explore the implications they have for Deaf students in terms of inclusion and access to education. The findings revealed high level of academic competitiveness among the Deaf and hard of hearing students but low social participation. Their academic success was driven by factors such as commitment to Deaf education, the availability of Sign Language interpreting services, having Deaf peers, and their pre-university experiences.

In a qualitative case study, Mantey (2011) explored the experiences of Upper Primary pupils with post-lingual hearing impairment in a public Basic Practice School in Ghana. Data were collected through interview and observation. A sample of 5 pupils with post-lingual deafness were involved. Findings from the study revealed that participants did not have access to facilities that enhanced their academic success in the inclusive school. Again, there were no positive interactions between the pupils and their hearing peers as a result of communication gap. The study further revealed that teachers interacted and demonstrated positive attitude towards the pupils with post-lingual hearing impairment. The study recommended that teachers should create opportunities in the classroom that will encourage frequent peer interaction and general social skills development.

Experiences on Understanding Lectures

Students with deafness enrolled in general educational settings frequently require classroom support services if they are to realize their academic potential. Academic support that could enhance deaf students' understanding of lectures in a tertiary institution include: Sign Language interpreting services, note taking services, and accessibility to internet facilities (Roe, 2008). O'Brien (1998) argued that deaf students must have complete access to all academic facilities to enhance their learning outcomes.

Marschark, Sapere, Convertino, and Seewagen (2005) recognized that even with interpreting and note-taking services, students who are deaf at the tertiary level receive less information from lectures and tutorials than their hearing peers. Marschark et al. (2005) conducted a study on deaf students' experiences on Sign Language interpreting at Rochester Institute of Technology (RIT) in the United States of America and found that deaf participants did not acquire as much information from lectures as their hearing peers even with experienced interpreters who were familiar to the students. In Australia, Napier and Barker (2004) conducted a study involving four deaf university students in a panel discussion about their perceptions of Sign Language interpreting at lectures. Participants reported that they never accessed 100% of a university lecture.

Oppong, et al. (2016) explored perceptions of deaf students about the quality of Sign Language interpreting services rendered them in a public tertiary institution in Ghana. A descriptive survey design was adopted to elicit from respondents their views about the quality of Sign Language interpreting services rendered them. A 15-item questionnaire that employed a four-point Likert scale was used to gather data for the study. Out of a target population of 34 respondents 23 were randomly sampled for the study. Among other findings, it was revealed that the quality of Sign Language interpreting services was a major issue of concern to students who are Deaf and who adopted Sign Language interpreting services in accessing information at lectures. The study recommended that the institution took steps to make Sign Language interpreting a general program of study in order to train qualified interpreters for deaf students.

Experiences on Assessment

Literature has it that assessment for deaf students and their hearing colleagues should be assessed on the same content areas (Marschark, Convertino, & LaRock, 2006), since deaf students learn the same things as their hearing colleagues. However, due to the communication challenges that deaf students face, some adaptations can be made in order to meet their learning needs. Magongwa (2008) argued that when deaf students are assessed differently from their hearing counterparts, the possibility of compromising the standards could lead to discrimination in the qualifications of the two categories of individuals.

Bell (2013) adopted a case study design to explore teaching and learning support for students with hearing impairment at a university in the Western Cape of South Africa. The study focused specifically on educational barriers, coping strategies, assistive technologies, curriculum accessibility as well as support services. Thirteen undergraduate and graduate deaf students were purposively sampled for the study. Data were collected through a semi-structured interview guide with participating students, university lecturers and a staff member from theeir disability unit. Data were analysed using ATLAS.ti to code responses using grounded theory methods. Results of the study revealed that: (a) all of the participants belonged to the hearing rather than Deaf identity cultural paradigm, (b) limited curriculum transformation had taken place, (c) existing support services were largely inadequate, (d) a large number of barriers related to teaching and assessment were experienced, and (e) a variety of academic and personal coping strategies were used by the students to support their needs.

Method

The present study employed a phenomenological case study design because participants were made to describe their lived academic experiences in a public inclusive tertiary institution in Ghana. Phenomenological design permitted the researchers to discover participants' feelings about their current lived experiences and to understand their personal meaning. Fourteen profoundly deaf students were purposively sampled from a population of 36 deaf students.

Participants were made up of 8 males and 6 females aged between 22 and 28 years with an average age of 25. Four of the participants were in level 400, five in level 300 and five in level 200. Level 100 deaf students were not included in the study because the study considered only deaf students who had spent more than one year learning experience in the university. All participants had their Senior High School education in a Secondary/Technical School for the Deaf in Ghana. None of the participants had additional disabilities such as blindness, intellectual disability, or physical disability.

A semi-structured interview guide was used to gather data from both individual and small groups for the study. Individual interviews gave the opportunity for each participant's voice to be heard – allowing for discussion of sensitive issues. Group (3 to 4 in a group) interview allowed for participants in small groups to have confidence to often set the agenda for the discussion. The group interviews also allowed for more participants to freely and willingly actively participate in the discussion since they were more comfortable being with their colleagues, though a few participants might have felt timid to express their feelings in the presence of their colleagues. To

address this problem, each participant in the group was made to introduce themselves in a friendly interactive manner. The researchers introduced themselves first. The interview guide was grouped into three parts namely: (1) experiences on access to information, (2) experiences on understanding lectures, and (3) experiences on assessment. Each major question item had probes and prompts that gave directions to respondents on themes.

A male deaf individual from the Ghana National Association of the Deaf (GNAD) helped the researchers to review the video-taped interview. Two skilled Sign Language interpreters who had successfully gone through tertiary education also reviewed the video-recorded interviews to ensure the accuracy of translations. The video-recorded interviews and transcriptions were further reviewed by the researchers to check on the accuracy of the recordings and transcriptions.

Procedure for Data Collection

Permission was sought from heads of the various Departments whose students participated in the study. The purpose of the study was explained to potential participants. To overcome the problem of researchers' bias in administration of the interview, two trained Sign Language interpreters were made to conduct the interview within one week at the participants' convenient time in the presence of the researchers to check whether or not the interpreters interpreted question items as they were stated in the interview guide. Each interview session was videoed by a photographer with a Samsung Galaxy Note 3 phone. Participants were given the opportunity to express their feelings without any pressure in a quiet lecture hall where there were minimal obstructions. Each interview lasted between 30 minutes and one hour. Having the interview conducted with a Sign Language interpreter who was familiar with the respondents facilitated communication during the interview and that no information was lost because the participants were more familiar with their interpreters. The confidentiality and rights of respondents at every stage of this study were treated with utmost care. Each Sign Language interpreter was tasked to transcribe the video-taped Ghanaian Sign Language (GSL) interview data into written GSL in Microsoft Word. Data were translated verbatim from written GSL to scripts in grammatically correct English Language.

After the transcriptions on the same day, the two trained interpreters and the researchers met to cross check each of the transcriptions to make sure they depicted what was said in the interview.

Data Analysis

The researchers and the two trained Sign Language interpreters read the interviews from the videotapes and transcribed them in grammatically correct English Language. The researchers developed codes with the emerging themes from the transcriptions. Expressions of the participants were used for the analysis.

Presentation and Analysis of Results

The present study explored the academic experiences of Deaf students in a public tertiary institution in Ghana. Three sub-themes were raised to elicit data to support this objective. The sub-themes included experiences of participants with regards to access to information, deaf students' experiences on how they understood lectures, and experiences on assessment.

Experiences on Access to Information

To establish whether or not respondents had access to information in the university, they were given the opportunity to freely express their views. Respondents expressed diverse views. Some indicated that in order for them to have access to information at the lecture halls, in the absence of their Sign Language interpreters, they employed the services of their colleague students who could sign. Others explained that since their main source of information at the lecture hall was through their interpreters, if the interpreters were absent, they abandoned the lecture since they did not see the need to be at a lecture where they would not benefit. In their own expressions participants noted:

> *We would sometimes call our course mates who can interpret when a professional interpreter is not available. (Expression of Pre-lingual student 1).*
>
> *In the absence of my Sign Language interpreter, I access lecture via speech reading to obtain some clues as to what the lecturer is talking about. This method, however, is not accurate. I also depend on power point projections when there are no Signs Language interpreters. (Expression of Post-lingual student 2).*
>
> *In the absence of interpreter, I sit and wait to collect notes from somebody to copy because my mates refuse to sign for me. (Expression of Post-lingual student 5).*

Some of the students also reported that some lecturers made lecture notes available to copy whereas other students said that lecturers did not give them their lecture notes.

> *Yes, lecturers give us notes to photocopy. (Expression of Pre-lingual student 1).*
>
> *We are given photocopies of lecture notes, however, they usually reach us late. (Expression of Post-lingual student 3).*
>
> *No, lecturers never give us notes to photocopy. (Expression of Post-lingual student 6).*

Providing services that are effective can promote the academic success of deaf students (minority group) who are found in the midst of a hearing populace (majority group). It was therefore prudent to inquire from the deaf consumers the effectiveness or otherwise of the services rendered to them in the university. The respondents gave their accounts as follows:

> *The services are effective in that they enable us to be included. They help to promote our understanding of what is taught at lectures. They also enhance retention. (Expression of Post-lingual student 2).*

The services are not perfect in interpreting what goes on at lectures. They interpret slowly. I would like the interpreters to interpret clearly. At the Secondary School, my teachers signed and I understood them, but here in the university, I find it difficult to understand interpreters (Expression of Post-lingual student 3).

Sometimes interpreters don't give clear explanations at lectures. (Expression of Post-lingual student 4).

The services are not always effective. The reason is that, if the interpreter is good, we enjoy the class but if the interpreter is not good the class becomes boring. (Expression of Post-lingual student 11).

The interpreting service help us but not as effective as hearing people get information from lecture, but it helps us to improve on our academic work. My understanding of academic information at the Secondary School was better than in the university. At the Secondary school, all our teachers signed to us in class and we understood them. (Expression of Post-lingual student 5).

Responses from the majority of participants indicated that even though the presence of an interpreter at lecture was beneficial to the deaf student, yet, not every interpreter could provide services that were effective to the student. Again, it was revealed that although Sign Language and note-taking services were provided to the deaf students, yet it was not provided on regular basis. Some of the respondents intimated:

In this university I have interpreting services, resource services, and note-taking services. The support services are not provided on regular basis. (Expression of Post-lingual student 5).

Yes interpreters are always punctual but note-takers are not punctual. (Expression of Post-lingual student 8).

No I don't always have note-takers. Interpreters sometimes don't come. (Expression of Post-lingual student 12).

From the minority point of view, Sign Language interpreters available at the university were not proficient so they preferred technology to translate lecture notes for them. Other forms of support services such as projections, tutoring, counselling, resource center, and photocopies were also mentioned occasionally. They stated:

I have technology to translate big words lecturers use at lectures. Most often I don't have interpreters and note-takers. I had interpreter at level 100, but was not skillful so that interpreter only wrote notes for me. Interpreters absent themselves very often. Sometimes, the interpreter may be good but I have problem when my interpreter only finger spells all the time, I don't understand. (Expression of Post-lingual student 7).

The support services available to deaf students at UEW include Sign Language interpreters, note takers, projections, and photocopies of lecture notes. (Expression of Post-lingual student 2).

The services I have seen at the University of Education, Winneba are tutoring service, counselling service, disability service, students funding, health care, resource center service, advisor. (Expression of Post-lingual student 9).

From the responses of the respondents, it was obvious that the University of Education, Winneba has made available services such as Sign Language interpreting, note taking, tutoring, counselling, and information technology services. These services help deaf students to learn in the same environment with their hearing colleagues with minimal hindrances. Respondents gave different accounts concerning their experiences during lectures. They noted:

Yes sometimes I encounter some challenges at lecture hall when the Sign Language interpreter is not available. It makes me feel lonely in class and do not know what is going on. (Expression of Post-lingual student 4).

When there is a change of venue, sometimes I don't hear about it but sometimes the class rep informs me. Sometimes, I feel included as a student during lectures but I also become afraid to ask question in class because some lecturers show the attitude that deaf students questions may not be important. In this university, the interpreters are not skillful so when I sign to them sometimes they don't understand. (Expression of student 6).

My challenge is that, technology words are big so interpreters don't understand therefore interpreting becomes confusing. (Expression of Post-lingual student 7).

When interpreter is absent, class becomes boring. Again, students' attitudes towards the deaf are very poor so if the university can give education on disability it will be good. Also, the university environment is not good for disable people, example, the resource center is too small to keep us and the Blind for our private studies, cars move anyhow, anywhere and don't even care about deaf people so moving on campus is difficult. (Expression of Post-lingual student 10).

Some lecture rooms become dark around 5:30pm so seeing the hand of the interpreter is difficult but if the room is bright I can see. Also the seating arrangement is not the best. Deaf people class room must be round but here is different. (Expression of Post-lingual student 12).

Despite the concerns raised by respondents, they elaborated a number of benefits they derived from the services that made them have access to academic information. Responses from participants were:

These services are beneficial because they motivate me to participate during lectures, and to learn hard on my own. In the absence of these support services, I can feel how important they are in our education in the university. (Expression of Post-lingual student 2).

These services, especially note takers are beneficial to me. It always appear in quizzes and exams as well as I use to learn after class. (Expression of Post-lingual student 4).

I get benefits from interpreters but for note-takers sometimes. (Expression of Post-lingual student 5).

The support services given to me are beneficial to me because without them, our class becomes boring; so we enjoy. (Expression of Post-lingual student 13).

The support services are beneficial to me because interpreters help me to hear whatever goes on at lectures and outside lectures. (Expression of student 14).

However, from the minority perspective, the services available at the university did not benefit them in any way since according to them the Sign Language interpreters were not proficient enough to render them services that could make them enjoy lectures. One respondent remarked:

I don't benefit from interpreters because they are not skillful and many of the signs they use are not familiar to me so I don't enjoy. (Expression of Post-lingual student 7).

The responses indicated that the deaf students appreciated the efforts of the services available at the university. They indicated that Sign Language interpreters are of use to them even though few of the respondents did not agree. Concerning change in venue and times for lectures, participants gave different opinions. They indicated that often they did not get information about change in venue and time. They also indicated that sometimes lectures were fixed for odd times that made it difficult for them to see their interpreters clearly. They indicated:

When there is a change of venue, sometimes I don't hear but sometimes the class rep also informs me. Social gathering is a problem for me. Because am deaf I always socialize with my deaf colleagues which prevents me from getting information outside the school. (Expression of Post-lingual student 6).

Sometimes, our class rep thinks deaf people will get the information which is not so but rather deaf people get the information when the thing has already happened and this has always been my challenge. (Expression of Post-lingual student 8).

Experiences on Understanding Lectures

Another key issue that was explored in this study was the experiences of deaf students in understanding lectures. Respondents gave different accounts concerning how they understood lecturers. Some participants indicated that if lecturers used Sing Language, then understanding the lecture was not difficult for them. Others stressed that since majority of the lecturers could not sign, they did not understand them even though Sign Language interpreters were present. Participants' accounts were recorded as:

> *Sometimes, lecturers communicate in a language that I understand. (Expression of Pre-lingual student 1).*
>
> *Yes, I understand lecturers who know and use my Sign Language at lectures. (Expression of Post-lingual student 4).*
>
> *No, lecturers don't communicate in Sign Language so I don't understand them. (Expression of Post-lingual student 5).*
>
> *It is difficult to understand lecturers because some lecturers talk fast and if the interpreter is slow it becomes difficult for me to understand. (Expression of Post-lingual student 12).*

On the issue of the preference for either simultaneous or consecutive interpreting, respondents gave different accounts. Some respondents stated that they preferred one of the two interpreting types. They stated:

> *I like simultaneous interpretation because of the accuracy, that is, with simultaneous interpretation, there is little deviation from what the lecturer is teaching. (Expression of Post-lingual student 3).*
>
> *I would like my Sign Language interpreter to use consecutive but not simultaneous. (Expression of Post-lingual student 5).*
>
> *I prefer consecutive interpreting to simultaneous interpreting. (Expression of Post-lingual student 6).*
>
> *I prefer consecutive interpreting. (Expression of Post-lingual student 7).*
>
> *If I say hear before sign, interpreter may sign wrong thing if he is not skillful and also if sign as the lecturer talks at the same time, the interpreter may sign wrong thing. (Expression of Post-lingual student 13).*

However, one respondent indicated that they preferred both the consecutive and simultaneous interpreting. The respondent said that depending upon the context and how it was used, both the consecutive and simultaneous interpreting mode could be useful. They intimated:

I want the interpreters to use both the consecutive and simultaneous methods in interpreting for me because I can combine both of them at lectures. (Expression of Pre-lingual student 1).

Experiences on Assessment

In as much as it is recognized that assessment is key in education, it is important to note that assessment should give a fair ground to all categories of students irrespective of their disabilities. This strand inquired from participants their experiences on assessments for students in the university. Participants indicated that they were often given prior notice before their assessment dates. Some students, however preferred that their assessment be separated from their hearing colleagues. Others thought it fair for all of them to be assessed on the same subject content taught since they were all taught the same content. Three of the respondents suggested that they should be assessed based on how they learn and how they believe their learning was different from their hearing colleagues. However, some respondents did not agree to that assertion. In their responses, they intimated:

Yes, we are given prior notice before quizzes or exams. No, my assessment is not different from that of my hearing colleagues because the curriculum that we use is all the same. I would like to be assessed on how I learn and how it differs from that of my hearing colleagues. (Expression of Pre-lingual student 1).

We are given prior notices before quizzes and exams. Also, there are Sign Language interpreters available to assist deaf students during quizzes and exams. The assessment of deaf students is not different from that of hearing students. However, in the case of deaf students, more attention is given to content rather than grammar since deaf students generally have problem with English Language, especially grammar. If I had the choice, I would like to be assessed through objective questions, fill in the blank spaces and questions requiring short answers rather than essay questions which require extensive use of grammar. (Expression of Post-lingual student 3).

If I get the opportunity, I want additional time and there should always be interpreter at every exam hall. (Expression of Post-lingual student 13).

Analysis of the transcript from respondents revealed that some of them deafness did not have any communication challenge concerning their assessment. They said that they were assessed on what they were taught. They indicated:

"*Yes, we are given additional time to complete quizzes and exams." (Expression of Pre-lingual student 1)*

"I have no problem with how we are assessed. It is a thing worthy of commendation that more time is given me to complete my work during both quizzes and exams. The attitude of lecturers toward deaf students are commendable. They show concern and care. They motivate both disabled

and non-disabled students to study hard." (Expression of Post-lingual student 5)

Other respondents did not support the idea that assessment at the university has been fair to them. The respondents reported:

> *"No, we are not given additional time to complete our quizzes and exams." (Expression of Post-lingual of student 2)*
>
> *"No additional time is given to me during my quizzes and exams." (Expressions of student 1 and student 2)*
>
> *"No additional time is given to deaf in terms of assessment, we complained but they refused." (Expression of Post-lingual student 13)*

From the analysis, it is indicative that although assessment is a major challenge that needs redress in order to promote deaf students learning, yet not all participants agreed to that since they indicated that the university provided fair grounds on assessment to them.

Discussion of Findings

The research question inquired from participants their academic experiences in the university. Results of the study revealed that in order to have access to information at the lecture halls in the absence of their Sign Language interpreters, deaf students employed the services of their colleague students who could sign. Other students did not see the need to employ the services of their colleagues in the absence of an interpreter. Participants further indicated that they were sometimes given prior notice before their assessment dates and were assessed on subject content areas they had been taught. A few participants indicated that if lecturers used language they understood then, they understood the lecture. Others stressed that since the lecturers could not sign, they did not understand them even though Sign Language interpreters were present.

On the issue of the preference for either simultaneous or consecutive interpreting, different participants gave different views. Some of them stated that they preferred one of the two interpreting types. These findings are supported by Commey and Gogoe (2000) who stressed that when students who are deaf do not have note-takers they may miss much of the things taught during lessons while they try to take notes and watch Sign Language interpreters and projectors. Komesaroff (2005) found that often, deaf students have challenges understanding lectures because many interpreters lack the skills necessary to interpret at the university level. Findings of the presents study also support Gearheart and Weishahn (1980) and Traynor and Harrington (2003) who admitted that the provision of instruction through the use of technology and computers, televisions and projectors often helped deaf and hard of hearing students to understand lectures better.

Results of the present study revealed that there were two main types of support available to deaf students. These were: Sign Language interpreting and note taking services. The analysis also revealed that other forms of support services such as projections, tutoring, counselling, resource

center, and photocopies were also provided to support the learning needs of the students. These support services were provided to ensure that deaf students are well integrated in a university where majority of the students are hearing. Again, it was revealed that although Sign Language and note taking services were provided to the students, yet they were not provided on regular bases. The irregularity of the services provided could possibly lead to the students not getting the required information needed to sustain their stay at the university.

Despite the gloomy picture painted by a few of the respondents in the present study, quite a majority of the respondents highlighted the benefits they derived from such support services. Findings of this study were supported by Marschark et al. (2006), Mitchell and Karchmer, (2006), Marschark et al. (2003), and Traxler (2000) who argued that the provision of support services in the forms of Sign Language interpreting and note-taking will go a long way to make the curricular equally accessible to majority of student who are Deaf. Findings of the present study was also supported by Roe (2008) who stressed that support services required for students who are deaf to survive in a university must include Sign Language interpreting, note taking, tutoring, school library, and computer laboratory services.

Findings of this study are in congruence with Hyde, Punch, Power, Hartley, Brennan, & Neale (2008) who found that when students with deafness get all the required support services needed in a university, then they are likely to compete fairly with other students and graduate successfully. Marschark et al. (2005) stressed that students with deafness did not acquire as much information from lectures as their hearing counterparts even with experienced interpreters who were familiar with the students.

Findings of this study were supported by Tinto's (1975) model of students retention and departure which indicated that an individual student's decision to persist or depart from an educational institution is dependent on their pre-university characteristics, their level of commitment and intention towards their academic goal, and their ability to integrate academically and socially, both formally and informally, into the institutional culture. For students with deafness to integrate academically and be retained to successfully complete their programs of study, they require support services that meet their learning needs.

Conclusion

Findings of the presents study indicated that although support services provided for students who are deaf at the University of Education, Winneba, are not adequate enough. There is the need to provide more interpreters and note takers who are skillful to provide regular services to the students. Since the present study was delimited to one public tertiary educational institution in Ghana and that participants included a small number of students, findings of this study are not meant for generalization.

Recommendations

It is recommended that this study be replicated elsewhere to include more public tertiary institutions with larger numbers of participants.

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The Effect of Video Modeling on Preschoolers' Learning Who are Diagnosed with Autism Spectrum Disorder: A Meta-Analysis

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Abstract

We conducted a meta-analysis of 22 video modeling intervention studies that included 49 preschool children diagnosed with autism spectrum disorders. Using the Nonoverlap of all pairs (*NAP*), an index of data overlap between phases in single-case research, we calculated effect size. Effect sizes for subgroups were also calculated. The subgroups included play, socialization, communication, imitation, and life skills. Finally, we conducted a t- test to compare effect sizes between subgroups. Results showed that overall effect size was 0.85 which was found to be medium and subgroups were all found to have medium effects as well and ranged from 0.73 to 0.92. The *t*- test yielded non-significant results between the five sub-groups. Results across the studies indicated that video modeling is effective in teaching these skills. We discuss the results and make suggestions for future researchers and practitioners.

Keywords: *Autism. Video modeling. Preschool. Play. Socialization. Communication. Imitation. Life skills. Meta-analysis.*

The Effect of Video Modeling on Preschoolers' Learning Who are Diagnosed with Autism Spectrum Disorder: A Meta-Analysis

Autism spectrum disorder (ASD) has been defined as "Persistent deficits in social communication and social interaction across contexts, not accounted for by general developmental delays, and manifest by 3 of 3 symptoms: Deficits in social-emotional reciprocity; ranging from abnormal social approach and failure of normal back and forth conversation through reduced sharing of interests, emotions, and affect and response to total lack of initiation of social interaction. Deficits in nonverbal communicative behaviors used for social interaction; ranging from poorly integrated-verbal and nonverbal communication, through abnormalities in eye contact and body-language, or deficits in understanding and use of nonverbal communication, to total lack of facial expression or gestures. Deficits in developing and maintaining relationships, appropriate to developmental level (beyond those with caregivers); ranging from difficulties adjusting behavior to suit different social contexts through difficulties in sharing imaginative play and in making friends to an apparent absence of interest in people. Restricted, repetitive patterns of behavior, interests, or activities as manifested by at least 2 of 4 symptoms: Stereotyped or repetitive speech, motor movements, or use of objects; (such as simple motor stereotypies, echolalia, repetitive use of objects, or idiosyncratic phrases). Excessive adherence to routines, ritualized patterns of verbal or nonverbal behavior, or excessive resistance to change; (such as motoric rituals, insistence on same route or food, repetitive questioning, or extreme distress at small changes). Highly restricted, fixated interests that are

abnormal in intensity or focus; (such as strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests). Hyper-or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment; (such as apparent indifference to pain/heat/cold, adverse response to specific sounds or textures, excessive smelling or touching of objects, fascination with lights or spinning objects). Symptoms must be present in early childhood (but may not become fully manifest until social demands exceed limited capacities. Symptoms together limit and impair everyday functioning." American Psychiatric Association (2013). Signs of ASD begin during early childhood and typically last throughout a person's life (CDC, 2014).

Based on the CDC's recent surveillance report (2014), 1 in 68 children is diagnosed with autism in the USA. Due to the increasing number of children diagnosed with ASD, much research has been devoted to develop early intervention strategies targeting the essential deficits in children with autism (Litras, Moore & Anderson, 2010) including socialization, communication, imitation, life skills, and play skills using different interventions. They include, peer mediated interventions (Bene, Banda, and Brown, 2014; Dugan, Kamps, and Leonard, 1995; Kamps, Barbetta, Leonard, & Delquadri, 1994; Maione and Mirenda, 2006; Sperry, Neitzel, and Engelhardt-Wells, 2010), PRT (Pierce and Schreibman, 1995; Stahmer, 1995), self-management strategies (Callahan, and Rademacher, 1999; Koegel, Koegel, Hurley, and Frea, 1992; Lee, Simpson, and Shogren, 2007; Stahmer, and Schreibman, 1992), and video modeling (Boudreau & D'Entremont, 2010; D'Ateno, Mangiapanello & Taylor, 2003; Hine & Wolery, 2006; ; Kleeberger and Mirenda, 2008; MacDonald, Clark, Garrigan & Vangala, 2005; MacDonald, Sacromone, Mansfield, Wiltz & Ahearn, 2009; Tereshko, MacDonald & Ahearn, 2009; Maione & Mirenda, 2006).

In recent years however, technology, particularly video modeling (VM) has emerged as an effective instructional technique to teach various skills to children with ASD. VM has been reported as an evidenced-based practice by the National Autism Center (NAC, 2009). It is an instructional technique which focuses on learning through observation and imitation of others, that typically involves presenting a videotaped sample of a model engaging in a series of scripted actions and/or verbalizations. The target student then demonstrates the observed behavior. Video modeling can include any number of components but generally involve the following: (a) edited images of appropriate or new behavior shown on a monitor to a child, (b) repeated clips of the behavior shown to the participant, (c) discrete practice sessions or role-playing of the new skills, (d) assessment of skills generalization (e.g. probes across settings, people or materials) and (e) periodic review of tapes, if needed (Hine & Wolery, 2006).

According to the National Professional Development Center on Autism Spectrum Disorders (2011), video modeling is an evidenced-based intervention for individuals with ASD in elementary through middle school. The models that have been used in the videos include peers (Maione & Mirenda, 2006), adults (Rehfeldt et al., 2003), parents and siblings (Taylor, Levin, & Jasper, 1999). Several studies have found that ASD can be reliably diagnosed in children less than 3 years of age by experienced, highly trained clinicians in specialty clinic and research settings (Charman et al., 2005; Lord et al., 2006; Turner & Stone, 2007). Children at a young age learn a vast array of skills by observing others (Bellini & Akullian, 2007); hence video modeling serves the purpose of directing the child's attention to a given task by observing it.

Video modeling is based on social learning theory (Bandura, 1977). In his social learning theory, Bandura highlighted the fact that most behavior is learned through modeling or observing another person performing a given behavior. Hence, observational learning through video modeling can help children diagnosed with ASD to learn direct instruction of skills and behaviors. In video modeling for example, the child copies behavior from watching recorded behaviors displayed by his peers or other people. Elements that motivate his peers or other people also motivate the child. Video modeling is based mainly on observation of a behavior and its associated reinforcing elements. Bellini, Akullian, and Hopf (2007) defined video modeling as an intervention method that is often utilized for social skills training involving participants who watch a video of someone who models a preferred behavior. The participants then imitate the behavior showed in the video.

There have been few reviews on video modeling on children with autism (Acar & Diken, 2012; Delano, 2007). Bellinini and Akullian (2007) focused their meta-analysis study on participants ranging from 3 through 11 years of age. They reviewed 31 peer-reviewed articles on VM with children with autism. Results of studies have indicated that video modeling is effective on teaching social skills, play skills, language and communication skills, functional skills, self-care skills, and daily life skills to children with autism. The studies have been categorized based on their scopes: studies conducted using only video modeling, video modeling studies in which subjects of studies are models, studies in which video modeling and additional practices are used together and studies in which video modeling is compared with other practices.

Delano (2007) conducted a review of 19 VM studies with individuals with autism. The findings suggest that video modeling interventions are effective in teaching a variety of skills to children with autism. There are some reviews on children focusing on specific skills with video modeling as one of the interventions. For example, in terms of play skills, Jung and Sainato (2013) and Lang, O'Reilly, Rispoli et al. (2009) reported 5 studies using video modeling in children of the age group 3-9 and 0-8 respectively. Gillis and Butler's review (2007) on social skills intervention for preschoolers (2-5 years old) reported 4 studies using video modeling intervention. However, these reviews did not address skills in communication, imitation and living skills. Also, these reviews used PND (Percentage of non-overlapping data) and not NAP (Nonoverlap of all pairs). In addition, the previous meta-analysis study addressed social-communication, functional and daily living skills as well as play skills but the targeted age group was three through twenty-year-old (Bellini & Akullian, 2007). Although the above reviews (Jung & Sainato, 2013; Gillis & Butler, 2007; Lang et al., 2009) targeted the age groups of 0-9 years old, they did not specifically look at pre-school age groups and they also reported only a few studies using video modeling as an evidence-based practice.

Stahmer, Ingrsoll, & Carter (2003) found that VM may be beneficial for children who initially avoid interactions, who present with limited reinforcers to use in more traditional behavioral teaching techniques. The advantage is that models can be watched several times and watching videos can be a natural reinforcement which motivates these individuals (Charlop-Christy, Le, & Freeman, 2000; Corbett, 2003; Corbett & Abdullah, 2005). Therefore, this increases the predictability and controllability of the model, which makes learning easier for children with autism as it allows extraneous features to be filtered out (Hine & Wolery, 2006).

The purpose of this meta-analytic study was to analyze the effectiveness of video modeling by focusing on communication, imitation, and living skills including play and socialization in the preschool age group. This review also included studies conducted from 2003 through 2014 to obtain more recent findings. This may help to inform practitioners and researchers by extending the knowledge level on the effectiveness of video modeling on preschoolers with autism spectrum disorder.

Method

We searched EBSCO databases, which included PsychInfo, ERIC, Social Sciences Index, and Psychological Abstracts using the following terms: *video modeling, video modeling and preschoolers, autism and video modeling and ASD and modeling, teaching communication, social, and academic development to children diagnosed with autism, ASD, improving social skills and disruptive behavior in children with autism.* We selected studies that met the following criteria. (a) Researchers conducted studies with children with autism spectrum disorder between 3 to 5 years of age using VM (b) studies used single-subject designs (c) investigators used children between the age group of 3 through 5 years. (e) studies were published in peer-reviewed journals between 2003-2016.We conducted an ancestral search for additional studies under the reference section of each selected study and found none. Overall, we selected 22 studies that met the inclusion criteria.

A graduate student and special education faculty member examined 30 % of the selected studies to determine fidelity to the inclusion criteria and found 100 % agreement regarding the identification and presence of the inclusion criteria. We analyzed the selected studies across several variables including demographics, target skills, designs, results [effect sizes using nonoverlap of all pairs (NAP)], maintenance, generalization, and social validity.

NAP is an index of data overlap between conditions in single-subject design research. Its main hypothetical advantage is that it is an inclusive test of all possible sources of data overlap. NAP is a probability score, generally ranging from 0.5 to 1. It has been described as a strong methodology (Parker and Vannest 2009). It discriminates better among results from a large group of published studies and produces less human errors in calculations than the other three hand-calculated indices i.e., PND: percentage of non-overlapping data points, PAND: percent of all non-overlapping data, and PEM: percentage of data exceeding the median (Parker & Vannest 2009).

When using NAP, the researchers measured all baselines against all treatment data points. First, the researchers multiplied the total number of data points in the baseline phase by the total number of data points in the treatment phase. Next the researchers measured each point in the baseline against each treatment data point that overlap. For each point in the baseline phase that is higher than each treatment point, the analysis yielded 1 point and for points that are on the same line, the analysis yields 0.5 point. Finally, the researchers computed total score by summing up all yielded points, which they divided by the result of the division in the first phase. Parker and Vannest (2009) proposed tentative NAP ranges: 0–0.65 = weak effects, 0.66–0.92 = medium effects and 0.93–1.0 l = large or strong effects. Transforming NAP to a zero-chance level gives these corresponding ranges: weak effects, 0–0.31; medium effects, 0.32–0.84; and large or strong effects, 0.85–1.0

Results

Participants

The 22 studies reviewed included 49 participants of the age group 2 – 5 years 11 months, with an average age of 3 years 8 months. Most the participants were diagnosed with autism (n=47), some with developmental delay (n=7) and only 1 with Asperger syndrome.

Settings

The most common settings that researchers have conducted their studies were homes (Cardon, 2012; Gena, Coloura & Kymissis, 2005; Kleeberger and Mirenda, 2008; Litras, Moore & Anderson, 2010; Maione & Mirenda, 2006; Sherer, Pierce & Paredes 2001; Shrestha, Anderson & Moore, 2013), classrooms (Apple, Billingsley & Shwartz, 2005; Cihak, Smith, Cornett & Coleman, 2012; MacDonald, Clark, Garrigan & Vangala, 2005; Plavnick, 2012; Plavnick & Ferrari, 2011; Tereshko, Wert & Neisworth, 2003; Wilson, 2013) and university clinics (Hine & Wolery, 2006; MacDonald, Sacromone, Mansfield, Wiltz & Ahearn, 2009; Shipley-Benamox, Lutzker & Taubman, 2002;) respectively. Three studies were also carried out in a treatment or intervention centers (Boudreau & D'Entremont, 2010; D'Ateno, Mangiapanello & Taylor, 2003; Scheflen, Freeman & Paparella, 2012) and one in a school playground (Buggey, 2012)**.**

Trainers

Eight studies reported researchers as trainers (Apple, Billingsley & Shwartz, 2005; Cardon, 2012; Hine & Wolery, 2006; Litras, Moore & Anderson, 2010; MacDonald, Sacromone, Mansfield, Wiltz & Ahearn, 2009; Maione & Mirenda, 2006; Wert & Neisworth, 2003; Wilson, 2013). Three studies have therapists as trainers (Gena, Coloura & Kymissis, 2005; Kleeberger &Mirenda, 2008; Sherer, Pierce & Paredes 2001;). Another three studies have researchers themselves creating the videos (Buggey, 2012; Scheflen, Freeman & Paparella, 2012; Shipley-Benamox, Lutzker & Taubman, 2002). However, eight studies did not report any trainer (Boudreau & D'Entremont, 2010; Cihak, Smith, Cornett & Coleman, 2012; D'Ateno, Mangiapanello & Taylor, 2003; MacDonald, Clark, Garrigan & Vangala, 2005; Plavnick, 2012; Plavnick & Ferrari, 2011; Shrestha, Anderson & Moore, 2013; Tereshko, MacDonald & Ahearn, 2009).

Targeted Skills

One half of studies (n=11) targeted communication skills of preschoolers (Apple, Billingsley & Shwartz, 2005; Buggey, 2012; Cihak, Smith, Cornett & Coleman, 2012; Gena, Coloura & Kymissis, 2005; Litras, Moore & Anderson, 2010; Maione & Mirenda, 2006; Plavnick & Ferrari, 2011; Scheflen, Freeman & Paparella, 2012; Wilson, 2013 Sherer, Pierce & Paredes 2001; Wert & Neisworth, 2003). Four studies focused on improving attention and imitating skills (Cardon, 2012; Plavnick, 2012; Kleeberger and Mirenda, 2008; Tereshko, MacDonald & Ahearn, 2009;) and five studies on play actions (Boudreau & D'Entremont, 2010; D'Ateno, Mangiapanello & Taylor, 2003; Hine & Wolery, 2006; MacDonald, Clark, Garrigan & Vangala, 2005; MacDonald, Sacromone, Mansfield, Wiltz & Ahearn, 2009).

Video Models

In most of the studies (n=8), adults were used as models in the video clips (Boudreau & D'Entremont, 2010; D'Ateno, Mangiapanello & Taylor, 2003; Hine & Wolery, 2006; Kleeberger and Mirenda, 2008; MacDonald, Clark, Garrigan & Vangala, 2005; MacDonald, Sacromone, Mansfield, Wiltz &

Ahearn, 2009; Maione & Mirenda, 2006; Tereshko, MacDonald & Ahearn, 2009). Peers were also used as models in four studies (; Cihak, Smith, Cornett & Coleman, 2012; Gena, Coloura & Kymissis, 2005; Plavnick, 2012; Plavnick & Ferrari, 2011).

Only two studies have used self-video models (Buggey, 2012; Wert & Neisworth, 2003) and in two studies researchers were models (Scheflen, Freeman & Paparella, 2012; Shipley-Benamox, Lutzker & Taubman, 2002). Teachers (Wilson, 2013), a parent (Shrestha, Anderson & Moore, 2013), and a caregiver and siblings (Cardon, 2012) were also used as models in the studies. Only six (Boudreau & D'Entremont, 2010; Cardon, 2012; Cihak, Smith, Cornett & Coleman, 2012; Shrestha, Anderson & Moore, 2013; Wilson, 2013; Wert & Neisworth, 2003) out of the 22 studies reported the length of video clips with a means of 6 minutes per video clip and a range from1.15 to 13.13.

Mode of Presentation

All studies have selected different modes of video presentation. Researchers in seven studies selected the television as a mode of presentation (D'Ateno, Mangiapanello & Taylor, 2003; Gena, Coloura & Kymissis, 2005; MacDonald, Clark, Garrigan & Vangala, 2005; MacDonald, Sacromone, Mansfield, Wiltz & Ahearn, 2009; Maione & Mirenda, 2006; Shipley-Benamox, Lutzker & Taubman, 2002; Wert & Neisworth, 2003), followed by three studies using video cameras (Buggey, 2012; Cihak, Smith, Cornett & Coleman, 2012; Sherer, Pierce & Paredes 2001). Some studies used computer screens (Litras, Moore & Anderson, 2010; Scheflen, Freeman & Paparella, 2012; Shrestha, Anderson & Moore, 2013), laptops (Boudreau & D'Entremont, 2010; Hine & Wolery, 2006), iPhones (Plavnick, 2012; Plavnick & Ferrari, 2011;), DVD played on DVD players (Kleeberger and Mirenda, 2008; Tereshko, MacDonald & Ahearn, 2009), iPad (Cardon, 2012), and movie (Apple, Billingsley & Shwartz, 2005) as a mode of presentation. However, one study (Wilson, 2013) did not mention the mode of presentation.

Effectiveness of the strategy based on the Effect size (NAP)

The overall Effect size for all 22 studies is 0.85 with a 95% C. I. [0.80, 0.89]. We split the data into five sub-groups – play, communication, imitation, socialization, and living skills. The effect size for play is 0.87, communication is 0.85, imitation is 0.92, socialization is 0.73 and life skills are 0.9. A *t*- test yielded non-significant results between the five sub-groups. Thus, we can say that video modeling was evidenced as strongly effective in teaching the five different target behaviors to the pre-school age group.

Parker and Vannest (2009) proposed tentative NAP ranges: 0–0.65=weak effects, 0.66–0.92=medium effects, and 0.93– 1.0 l=large or strong effects. Transforming NAP to a zero chance level gives these corresponding ranges: weak effects, 0–0.31; medium effects, 0.32–0.84; and large or strong effects, 0.85–1.0. Thus, we interpreted the overall effect size of 0.85 as being a strong effect for video modeling. Tables 1 and 2 provide a detailed summary of studies with effect sizes.

Designs

Majority of the studies (n=11) used a multiple baseline across behavior, participants or activities design (Apple, Billingsley & Shwartz, 2005; Boudreau & D'Entremont, 2010; Buggey, 2012; Cardon, 2012; D'Ateno, Mangiapanello & Taylor, 2003; Gena, Coloura & Kymissis, 2005; Kleeberger and Mirenda, 2008; Litras, Moore & Anderson, 2010; Maione & Mirenda, 2006;

Scheflen, Freeman & Paparella, 2012; Wert & Neisworth, 2003). Five studies used a multiple probe design (Hine & Wolery, 2006; MacDonald, Clark, Garrigan & Vangala, 2005; MacDonald, Sacromone, Mansfield, Wiltz & Ahearn, 2009; Shipley-Benamox, Lutzker & Taubman, 2002; Tereshko, MacDonald & Ahearn, 2009) and two studies used an alternative treatment design (Cihak, Smith, Cornett & Coleman, 2012 Cihak, Smith, Cornett & Coleman, 2012; Wilson, 2013). In addition to these designs, two studies used a changing criterion design (Plavnick, 2012; Shrestha, Anderson & Moore, 2013). However, some studies (n=2) used a combination of both alternative treatment design and multiple baseline/probe design (Plavnick & Ferrari, 2011; Sherer, Pierce & Paredes 2001)**.**

Video Modeling combined with Other Strategies

Some studies have effectively combined video modeling and other strategies such as forward chaining, Picture Exchange communication System (PECS), self-management and video feedback to enhance the behaviors of the participants. Shrestha, Anderson and Moore (2013) reported that a combination of point-of-view modeling and forward chaining was effective in teaching the child with autism functional help skills such as serving himself a snack without any prompting. Cihak, Smith, Cornett & Coleman's study (2012) has shown that using video modeling as a priming technique in conjunction with PECS has increased communicative interactions in preschoolers with limited to no verbal communication skills. The addition of self-management to video modeling helped in producing and maintaining social initiations as seen in Apple, Billingsley and Shwartz's study (2005). In Maione and Mirenda's study (2006), video modeling was effective in increasing social language in 2 out of 3 activities. In the third activity, video feedback plus prompting were done in addition to video modeling to achieve a significant change of target behavior. Participants using PECS+VM to request items that have not previously been acquired during PECS-only intervention.

Comparison across studies

Four studies have done a comparative study of video modeling and other interventions. For example, Wilson (2013) has reported a heterogeneous treatment response of participants to video and in vivo modeling. In the Wilson's study (2013), of the three participants who responded to one or both treatments, outcomes favored video modeling in the first case and in vivo modeling in the second, while treatments were equally effective in the third case. This study shows that some students with ASD may learn more efficiently through in vivo modeling or a combination of modeling modalities. However, greater attention to video model was seen with a margin of 3-48 % attention across sessions and participants. Effect size for in vivo was 0.57; effect size for video modeling was 0.65. On the other hand, a study done by Gena, Coloura and Kymissis (2005), has shown that both video modeling and in vivo modeling increased the affective categories of all 3 participants in the study with effect size of 0.8 for in vivo and 0.9 for video modeling. This difference in findings between the two studies may be due to the fact that the participant in the former study had complex medical diagnoses that may attribute to her lack of response to modeling intervention. Moreover, the latter make use of reinforcement and prompting procedures in both in vivo and video modeling which was not reported in the former study. Another study (Maione & Mirenda, 2006) reported that a combination of video modeling and video feedback is more effective than video modeling alone with effect size of 0.96 and 0.82 respectively.

Sherer et al. (2001) compared the efficacy of 'self' versus 'other' video modeling interventions to enhance the conversation skills in children with autism. The result showed that there was no overall

difference in rate of task acquisition between self-modeling (effect size of 0.73) and other video modeled conditions (effect size of 0.80) and children learn equally well via both treatment approaches.

Maintenance and Generalization

Fifteen studies reported maintenance of skills by participants in their studies (Boudreau & D' Entremont, 2010; Cardon, 2012; Gena, Couloura & Kymissis, 2005;Hine & Wolery, 2006;); Litras, Moore & Anderson, 2010; MacDonald, Clark, Garrigan & Vangala, 2005; MacDonald, Sacramone, Mansfield, Wiltz & Ahearn, 2009; Maione & Mirenda, 2006; Plavnick & Ferreri, 201; Scheflen, Freeman & Paparella, 2012; Sherer, Pierce & Paredes, 2001; Shipley-Benamox, Lutzker & Taubman, 2002; Shrestha, Anderson & Moore, 2013; Wert & Neisworth, 2003; Wilson, 2013). However, maintenance of skills ranged from marginal (Wilson, 2013) to high levels (Boudreau & D'Entremont, 2010). Some studies also reported maintenance of skills at follow up sessions but there was no generalization to objects/settings (MacDonald, Sacromone, Mansfield, Wiltz & Ahearn, 2009; Maione & Mirenda, 2006; Wilson, 2013).

Similarly, fifteen studies assessed generalization of targeted skills (Apple, Billingsley & Schwartz, 2005; Boudreau & D' Entremont, 2010; Cardon, 2012; Gena, Couloura & Kymissis, 2005; Hine & Wolery, 2006; Kleeberger & Mirenda, 2008; Litras, Moore & Anderson, 2010; Plavnick, 2012; Plavnick & Ferreri, 2011; Scheflen, Freeman & Paparella, 2012; Sherer, Pierce & Paredes, 2001; Shipley-Benamox, Lutzker & Taubman, 2002; Shrestha, Anderson & Moore, 2013; Tereshko, MacDonald and Ahearn, 2009; Wert & Neisworth, 2003). Other studies reported actions generalized to settings but maintenance of skills were not reported (Kleeberger and Mirenda, 2008; Tereshko, MacDonald & Ahearn, 2009). In one study (Shrestha, Anderson & Moore, 2013), generalization was limited although the participant maintained his skills during follow up.

Social Validity

Social validity was assessed in eight out of 22 studies (Apple, Billingsley & Shwartz, 2005; Boudreau & D'Entremont, 2010; Buggey, 2012; Cihak, Smith, Cornett & Coleman, 2012; Litras, Moore & Anderson, 2010; Plavnick & Ferrari, 2011; Scheflen, Freeman & Paparella, 2012; Shrestha, Anderson & Moore, 2013). Researchers involved adults, caregivers, parents, teachers, and therapists to assess the social validity of their studies through questionnaires, informal interviews, parents' satisfaction forms and reports. The purpose of social validity was to determine whether interventions were socially relevant, that is whether the results were appropriate, significant or important. Overall, teachers, paraprofessionals, adults, graduate students reported children having significantly better skills in communication, socialization, play skills, imitation and living skills. Parents also reported satisfaction both with the procedures and with the outcomes of the intervention. Some studies found that the investigation procedures were acceptable and video modeling was both time and cost effective (Scheflen, Freeman & Paparella, 2012) and the procedure was appropriate, perceived as fair and ethical (Shrestha, Anderson & Moore, 2013). Parents reported that they perceived acceleration in their child's communicative progress and in overall social functioning and general behavior across the intervention (Litras, Moore & Anderson, 2010). Parent and teacher reports showed that the children frequently responded properly with compliments when presented with initiations from others outside observation periods (Apple, Billingsley & Shwartz, 2005). In Plavnick and Ferreri (2011) caregivers rated both intervention conditions higher than baseline on all items. In Cihak et al.

(2012) all instructors believed that the effect of VM before PECS was positive for all children. They reported that they will continue to use VM as an intervention method for a wide variety of skills. In Buggey (2012), the therapists and parents were keen about making their personal videos. Two teachers reported positive changes in behaviors following the children viewing the videos. Boudreau & D'Entremont, (2010) did not provide details about social validity in their study.

Discussion

The purpose of this study was to analyze the effectiveness of video modeling on five sub-groups – play, communication, imitation socialization and living skills of preschool age group. Based on the results of this study, it can be concluded that video modeling is effective on teaching the different target behaviors to the pre-school age group. Sixty-eight percent of the studies reported maintenance of skills by the participants and another 68% on generalization of learned skills. Moreover, in comparison between video modeling and other interventions (e.g., in vivo modeling), it was reported that greater attention to video model was seen across sessions and participants. Furthermore, video modeling was effectively combined with other strategies such as forward chaining, Picture Exchange communication System (PECS), self-management and video feedback to enhance the behaviors of the participants (Apple et al., 2005; Cihak et al., 2012; Maione & Mirenda, 2006; Shrestha, Anderson & Moore, 2013).

These findings are not different from past meta-analysis. For example, in their study, Bellini, & Akullian (2007) found similar results. For example, Intervention effects for video modeling and video self-modeling (VSM) were both found to be moderate (81% and 77%). Maintenance effects for video modeling and VSM were also both moderate (88% and 71%). Generalization effects were moderate for video modeling (82%). NAP for the current study was .85 with a 95% C. I. [.80, .89] indicating that both studies yielded similar results.

They used 23 single-subject design studies and assessed interventions, maintenance, and generalization effects by computing the percentage of non-overlapping data points (PND). They found that video modeling and VSM are effective intervention strategies for addressing social-communication skills, functional skills, and behavioral functioning in children and adolescents with ASD suggesting that procedures promote skill acquisition and that skills acquired via video modeling and VSM are maintained over time and transferred across persons and settings.

In Bellini & Akullian's study (2007), twenty-three single-subject design studies were included in the meta-analysis. Participants' age ranged from 3-20 years old but it was mostly focused on elementary school-aged children. The number of intervention sessions in each study ranged from 4 to 33 (median = 9.5). The duration of the video clips used during the intervention sessions ranged from 30 seconds to 13 minutes and 30 seconds. This meta-analysis looked at social communication skills and found out that the effect size was 0.77. Intervention, maintenance, and generalization effects were measured by computing the percentage of non-overlapping data points (PND). The study suggested that video modeling and video self-modeling are effective intervention strategies for addressing skills like social-communication, functional and behavioral functioning in children and adolescents with ASD. Moreover, the study also found that these

procedures promote skill acquisition and that skills acquired via video modeling and VSM are maintained over time and transferred across persons and settings.

In another meta-analysis that examined the use of video modeling (VM)–based interventions to reduce the disruptive behaviors of students diagnosed with emotional or behavioral disorders, overall effects were found to be large for reducing challenging behaviors (Losinski, Wiseman, White, & Balluch, 2015).

On the other hand, in the present meta-analysis, twenty-two single subject designs using video modeling as an intervention were included. The age range of the participants in the study is three to five years old. The present meta-analysis also looked at social and communication skills besides other skills and found out that the effect size was 0.73 and 0.85. Interventions were measured by computing the percentage of non-overlap of all pairs (NAP). Generalization and maintenance effects were not measured. The study suggested that video modeling is an effective intervention strategy for addressing skills like play, socialization, imitation, communication and life skills in pre-school children with ASD.

We hypothesize that video modeling is an effective method to teach children with ASD because children like the technology it uses. For example, video modeling utilizes images of appropriate or new behavior shown on a monitor to a child. Repeated clips of the behavior shown to the participant makes it easy for children to learn the targeted behavior. Also the discrete practice sessions or role-playing of the new skills is an asset. Video modeling involves the child viewing videos of a model demonstrating a target skill. Social cognitive theory asserts the more the model and the observer look alike, the better the effect of the model on the learner.

Wolfe (1978) noted that it is critical for the intervention used to result in socially important changes. However, this review showed that there is a lack of studies reporting on social validity (only 50%). Additionally, the length of the videos used was reported in only 4 out of 22 studies. In the present study, the researchers did not find any significant difference between shorter length video and longer ones. For example, in Buggey (2012), the participants viewed videos for 15 minutes daily and resulted in none of the participants making gains in their frequency of social initiations, whereas in Wert & Neisworth (2003), viewing of videos within 60 minutes of school attendance resulted in participants showing significant improvements in requesting. In Cihak, Smith, Cornett & Coleman (2012), a shorter length video of 20-30 seconds showed that all participants learned to use PECS and increased the number of independent communicative initiations.

It was also seen from the review that only 4 studies have done a comparison between video modeling and other interventions, Hence, there is a need for more comparative studies to compare the efficacy of video modeling and other behavioral interventions.

The present study contributes to the existing knowledge based in that, it summarizes past individual studies including meta-analysis studies. Furthermore, it corroborates past findings of video modeling as evidence based practice. Based on the effect size in this study we can infer that video modeling as an early intervention in pre-school children is effective and it is also crucial in order to remediate as early as possible their behavior and skills development. Thus,

video modeling might be one of the approaches that work well with young children diagnosed with ASD.

Limitations

Even though the review concluded the positive effects of video modeling on play, communication, imitation, socialization and life skills of preschool children with autism and developmental disabilities, the findings need to be considered in the view of some limitations. First, we did not include dissertations or unpublished studies, studies available in other languages or/ and unpublished dissertations. Second, some studies did not provide a clear graphic analysis of the results limiting the calculation of effect sizes for some variables. Thirdly, the results of the studies are based on limited number of studies with participants' ages between 3 to 5 years old.

Implications

Scheflen et al. (2012) emphasize the need of proper written instructions to be given to parents and caregivers of children with autism if video modeling is to be effectively implemented. Some other suggestions for practitioners that emerged from the review are the following: (i) providing training in simple editing programs (e.g., Microsoft Movie Maker, Avid FreeDV and Pinnacle VideoSpin) for parents/caregivers and teachers so that they can use such procedures to teach new skills to preschool children with autism and help them increase their independence. (ii) If a child with autism does not initially demonstrate the ability to attend to videos, explicit training in video attending should be used prior to implementing video modeling. (iii) Breaking down video models into video segments to allow children to acquire the skills by requiring shorter period to attend.

Conclusion

This review shows that video modeling may be a viable intervention for teaching different type of skills to preschool children. It facilitated maintenance and generalization of learned skills in several of the participants. However, it should be noted that one of the important tasks of a researcher is to determine what type of children with autism may benefit most from video modeling interventions. Future research in evaluating pre-requisite skills for video modeling is warranted. As seen from this review, video modeling may be an effective technique to use in conjunction with other interventions. But it is necessary to evaluate the effectiveness of this intervention with other age groups, disability categories, and cultural backgrounds as well.

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Table1.
Summary of studies

Authors	Participants	Target behaviors	Intervention/Model Duration	Effect size
Apple, Billingsley & Schwartz (2005)	2 children with autism aged 5 years	compliment giving behaviors	classroom peers and adults3 times/week	Video Modeling: .71 Video Modeling + Reinforcement: 1.00
Boudreau & D' Entremont (2010)	2 children with autism aged 4 years	pretend play skills related to particular toy sets	adult/ 22 sessions for participant 1 and 25 sessions for participant 2	Modelled actions: 1.00 Unmodelled actions: .51. Modelled verbalization: .96. Unmodelled verbalization: .45
Buggey (2012)	3 children with autism aged 3 to 4 years	social initiation during play	participants/ 15-minute daily observation	Initiations: .55
Cardon (2012)	4 children with autism aged 2 to 3	imitation skills	caregivers and participant's siblings 12 sessions (3 times/week).	Imitated actions: .97
Cihak et al (2012)	4 children with autism aged 3 years	Independent communicative initiations	peer/ three 20-30 second videos	Video Modeling + PECS:1 PECS: .96
D'Ateno, Mangiapanello & Taylor (2003)	1 child with autism aged 3 years	acquisition of motor and verbal play sequences	adult/ each session is 5 minutes	Verbal: .89 Motor: .82
Gena, Couloura & Kymissis (2005)	3 children with autism aged 3 – 5 years	affective responses	peer/ 2-4 times/week	Training trial: .80 Probe trial: .80

Authors	Participants	Target behaviors	Intervention/Model Duration	Effect size
Hine & Wolery (2006)	2 children with autism aged 2-3 years	pretend play actions	adult/15-minute daily	Gardening: .81 Cooking: .73
Kleeberger & Mirenda (2008)	1 child with autism aged 4 years	imitation skills during song and play activities	adults/ daily for 30 to 60 minutes	Video Modeling: .67 Video Modeling + Highlighting: .62 Video Modeling + Highlighting + Prompting + Reinforcement: 1.00
Litras, Moore & Anderson (2010)	1 child with autism aged 3 years	greeting, inviting to play and contingent responding	peer and parents and presented in the form of animated puppets	Scripted social initiations: .96 Generalized social initiations: .91
MacDonald et al., (2005)	1 child with PDD-Autism aged 4 years	verbalization and play actions	adult/ 4 minutes of play	Action: .97 Verbalization: 1
MacDonald, Sacramone, Mansfield, Wiltz & Ahearn (2009)	1 child with autism aged 5 years	reciprocal pretend play repertoires	adults/ watched videos twice and allowed 4 minutes of play	Action: .94 Verbalization: .98
Maione & Mirenda (2006)	1 child with autism aged 5 years	social interaction skills	adults/ 15-minute activity sessions2-3 times/week	Video Modeling: .816 Video Modeling + Video Feedback: .956
Plavnick (2012)	1 child with autism aged 4 years	mand acquisition	peer/ 5-10 trials. 3 in a day sessions	Attending: 1.00 Imitating: .97

Authors	Participants	Target behaviors	Intervention/Model	Effect size

			Duration	
Plavnick & Ferreri (2011)	3 children with autism aged 4 years	mand acquisition	peer/ 10 trials of video modeling conditions	Function based: .92 Non-function: .63
Scheflen, Freeman & Paparella (2012)	4 children with autism aged 2-3 years	Appropriate play skills and connected speech	2nd author/ twice weekly for 15 minutes	Play: .95 Instruction: .92
Sherer et al. (2001)	2 children with autism aged 4-5 years	appropriate responses to conversational questions	self and peer/ 22 sessions for participant 1 and 18 Sessions for participant 2	self: .73 others: .81
Shipley-Benamou (2002)	3 children with autism aged 5 years	functional living skills	primary researcher/ sessions typically ran approximately 15-20 minutes	Mailing a letter: .90 Table setting: .92 Pet care: 1.00
Shrestha, Anderson & Moore (2013)	1 child with autism aged 4 years	self-serving afternoon snacks	participant's mom/ 6 sessions in 3 phases	Independent steps: .98
Tereshko, MacDonald and Ahearn (2009)	1 child with autism aged 4 years	imitate response chains	Adult/sessions were run daily. Participant view 1 step of video. modeling 2 consecutive times	Toy A: .92 Toy B: .97 Toy C: .96 Toy D: 1.00
Wert & Neisworth 2003	4 children with autism aged 4 -5 years	spontaneous requesting	self/ one time each day for 5 consecutive school days within 60 minutes of school attendance	Video Self-modeling: 1.00
Wilson (2013)	4 children with autism aged 3-5 years	Social communication behavior	teacher and teacher assistant/ video and in vivo were 3 minutes, 3 times per week for 5 sessions	In vivo: .57 Video: .65

Table 2
Methodological parameters

Authors	Interventions	IOA	PI	SV	M	G
Apple, Billingsley & Schwartz (2005)	Exp.1: a) Video Modeling b) video modeling +reinforcement c) reinforcement only Exp:2: self-management	Yes	Yes	Yes	No	Yes
Boudreau & D' Entremont (2010)	Video modeling	Yes	Yes	Yes	Yes	Yes
Buggey (2012)	Video self-modeling	Yes	No	yes	No	No
Cardon (2012)	Video modeling	No	Yes	No	Yes	Yes
Cihak et al (2012)	PEC+ Video modeling	Yes	Yes	Yes	No	No
D'Ateno, Mangiapanello & Taylor (2003	Video modeling	Yes	No	No	No	No
Gena, Couloura & Kymissis (2005)	Video modeling And in vivo	Yes	No	No	Yes	Yes
Hine & Wolery (2006)	Video modeling	Yes	Yes	Yes	Yes	Yes
Kleeberger & Mirenda (2008	Video modeling	Yes	Yes	No	No	No
Litras, Moore & Anderson (2010)	Video self-modeling	Yes	Yes	Yes	Yes	Yes
MacDonald et al., (2005)	Video modeling	Yes	No	No	No	Yes
MacDonald, Sacramone, Mansfield, Wiltz & Ahearn (2009)	Video modeling	Yes	No	No	Yes	No
Maione & Mirenda (2006)	Video modeling	Yes	Yes	No	Yes	No
Plavnick (2012)	Video modeling	Yes	No	No	Yes	No
Plavnick & Ferreri (2011)	Video modeling	Yes	Yes	Yes	Yes	Yes
Scheflen, Freeman & Paparella (2012)	Video modeling	No	Yes	Yes	Yes	Yes
Sherer et al. (2001)	Self-modeling + modeling	No	No	No	Yes	Yes

Authors	Interventions	IOA	PI	SV	M	G
Shipley-Benamou (2002)	Video modeling	Yes	No	No	Yes	Yes
Shrestha, Anderson & Moore (2013)	Video modeling And verbal prompts	Yes	Yes	Yes	Yes	Yes
Tereshko, MacDonald and Ahearn (2009)	Video modeling	Yes	No	No	No	Yes
Wert & Neisworth 2003	Video Self-modeling	Yes	No	No	Yes	Yes
Wilson (2013)	Video and in vivo	Yes	Yes	No	Yes	No

Autism Support Teachers' Attitudes about Inclusion for Children with Autism

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Abstract

This study examined autism support teachers' attitudes about inclusion, as well as perceived barriers and resource needs. A survey was developed for this study and administered to 27 elementary teachers in autism support (AS) classrooms in a large, urban district. Approximately 75% of students in the sample were educated primarily in self-contained settings, although 70% had teachers who recommended more inclusion. AS teachers were more concerned about the readiness of general education teachers and their classrooms than the readiness of their students. The greatest needs were school-wide training (47%), acceptance of students with autism (38%), smaller class sizes (31%) and more support staff (31%). AS teachers' attitudes about student placement were somewhat conflicted, underscoring the need to build school-wide capacity and promote greater acceptance.

Keywords: *autism, inclusion, teacher attitudes, special education, placement*

Autism Support Teachers' Attitudes about Inclusion for Children with Autism

According to the American Psychiatric Association (2013), ASD is a developmental disorder characterized by impairment in basic areas of functioning that include social, communication, and behavioral domains, with delays in functioning often present before the age of three. The proportion of students with autism spectrum disorders (ASD) included in general education settings is increasing (National Center for Educational Statistics [NCES], 2013). From 2000 to 2011, the percentage of students with ASD spending 80% or more of the school day in a general education setting has increased from approximately 25% to nearly 40% (NCES, 2013). Most children with ASD still spend the majority of their time in segregated education settings, however. As of 2011, 43% of students with autism between the ages of 6 and 21 were educated primarily in self-contained classrooms or in more restrictive settings, while approximately 18% spent between 21% and 60% of their school day outside of the general education classroom (NCES, 2013). Little is known regarding the factors that affect placement decisions. Special education teachers (specifically autism support teachers) are critical stakeholders in this process who provide recommendations for student placement. Given autism support teachers' specialized training and knowledge of their students' needs, it is important to understand their perspective on the barriers to inclusion within the urban context and the resource needs they identify at the child, teacher, classroom, parent and school levels.

Research on key stakeholders' attitudes about inclusion has resulted in mixed findings, and has not examined the attitudes of special education teachers, nor has it focused on the placement decision process for students with ASD. Studies on this topic have considered teachers' attitudes about inclusion from a broader, hypothetical standpoint, rather than for specific students with whom they work. Principals and teachers more strongly favored inclusion of children with mild disabilities (Avramidis & Norwich, 2012; Cook, Semmel, & Gerber, 1999) and had more positive beliefs on inclusion when they had more training and knowledge of disabilities (Beacham & Rouse, 2012; Fazal, 2012; Praisner, 2012). Special educators, on the other hand, seemed to be more enthusiastic about the opportunities inherent in inclusion, but lacked confidence in the academic benefits of inclusive classrooms (Cook, Semmel, & Gerber, 1999; Familia-Garcia, 2001).

Child, classroom, and school-level variables all may play a role in the process of placement decision-making. Needs driven placement decisions should first consider the child's level of functioning. Child-level variables that have been found to be associated with educational placement for students with ASD are age, cognitive ability, academic achievement, and the severity of autistic behavior (Avramidis & Norwich, 2002; Avramidis & Norwich, 2012; Eaves & Ho, 1997). Other research has shown that while children with ASD often are able to meet the academic demands of a general classroom setting, the social aspects present much more of a challenge (Chamberlain, Kasari, & Rotheram-Fuller, 2007; Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011; Rotheram-Fuller, Kasari, Chamberlain, & Locke, 2010). While children with ASD display more prosocial behavior in an inclusive setting than they do in a segregated classroom (Carr & Darcy, 1990; Eldar, Talmor, & Wolf-Zuckerman, 2010; Garfinkle & Schwartz, 2002; 1994; McGregor & Vogelsberg, 1998; Ryndak, Downing, Jacqueline, & Morrison, 1995), they also are rejected more often by their typical peers, perceive fewer friendships, and report more loneliness (Church, Alisanski, & Amanullah, 2000; Locke, Ishijima, Kasari, & London, 2010).

Classroom level considerations that may affect placement decisions include class size, the degree of structure within the classroom environment, empathy and openness of peers related to the inclusion of a student with a disability, and teacher attitudes and prior experience with inclusion. A meta-analysis by Scruggs and Mastropieri (1996) of 28 studies found that while 65% of general education teachers claim to support inclusion, only 29% feel prepared to support it in their classrooms. Avramidis and Norwich (202) identified teacher support (including supports from parents, other teachers, specialists, and administrators, as well as technology and instructional resources) as most influential in attitudes about inclusion. Large classroom enrollment in many urban settings can create challenges both for children with ASD used to receiving more individualized support and also for general education teachers who need to divide their resources among students with a wider variety of needs.

School-level considerations for placement decisions include financial constraints, teacher and staff training, principals' attitudes toward inclusion, and the current pressure of the standards movement being faced in schools across the nation based on No Child Left Behind (Voltz, Sims, Nelson, & Bivens, 2008). Schools in large, urban districts often struggle to raise student test scores, and their challenge of meeting accountability standards may be exacerbated by a lack of

resources (Voltz et al., 2008). The current test-driven culture of many urban schools has been associated with increased referrals to special education, demonstrating teachers' concerns that student test scores and their own teaching skills may be adversely affected by having students with disabilities in the classroom (Defur, 2002). Principals' belief that children with ASD should be included in general education settings has been found to be one of the most important factors predicting the attitudes of other stakeholders within the school, as well as how many recommendations are made for inclusive placement (Eldar et al., 2010).

Special education teachers may offer a unique perspective on the skills and readiness of a child with ASD, as well as the general education and school environments. Prior research also indicates that teachers need additional resources, including training and broader structural changes (e.g. smaller class size), to make inclusion more successful (Buell, Hallam, & Gamel-McCormick, 1999). However, the specific resources needed to support students with ASD in inclusive classroom settings from the perspective of AS teachers have not yet been explored. The majority of the research on stakeholder attitudes has focused on general education teachers, who are primarily responsible for the implementation of inclusion, and on principals, who are seen as key supervisors of special education classrooms at the building level (Horrocks, White, & Roberts, 2008). The purpose of this study was to examine the attitudes of AS teachers about the inclusion of students with high-functioning ASD, to determine what AS teachers perceive to be the barriers of inclusion at the child, classroom, and school-wide levels, and to identify what resources AS teachers think would make inclusion more successful within this unique context.

Methods

Study Context. Data collection for this project was part of a larger study, the Autism Instructional Methods Study (AIMS), which comprised a three-year randomized controlled trial of two classroom-based instructional programs for students with autism in kindergarten through second grade autism support classrooms (Mandell et al., 2013).

Sample and Procedure. The researchers administered a survey to autism support teachers working in elementary public school classrooms participating in AIMS. Teacher volunteers were asked to respond about specific children, who were selected because they had a General Conceptual Ability (GCA) score of 80 or above on the Differential Ability Scale, 2nd edition (see measures). The GCA score is a composite score that measures reasoning and conceptual abilities. This cutoff was selected because the research team agreed that a score >80 would make the student a more likely candidate for inclusion. Teachers could complete a survey for more than one child in their classrooms. The teacher survey took approximately 15 minutes to complete for each student. Teachers were given the surveys to complete during the final round of data collection for AIMS, which took place in May, 2011. Surveys were either mailed out to individual teachers or delivered in-person by AIMS consultants traveling to various school sites during the process of collecting student data. Completed surveys were then collected by these consultants during subsequent visits to the school sites.

Measures

Child Cognitive Ability. The *Differential Ability Scales, Second Edition* (DAS-II; Elliott, 2007) was used to measure the cognitive ability of the students with ASD participating in AIMS. This

measure is designed for use with children between the ages of 2 years 6 months and 17 years 11 months. It produces an overall General Conceptual Ability (GCA) composite score, which serves as a broad indicator of cognitive functioning. Scores from the final administration of the DAS-II during the third year of AIMS (May 2011) by trained clinicians were used to identify the students for whom teachers would complete surveys for this study.

Teacher Attitudes Survey. A range of measures have been developed to help determine teacher attitudes' toward inclusion. A vast majority of these measures rely on self-report that follow a Likert-type format. No validated measure explores teacher attitudes towards the inclusion of students with ASD specifically. We therefore developed a measure for this study based on the framework for synthesizing the literature on teachers' attitudes about inclusion used by Avramidis and Norwich (2002), who organized their literature review into 'child-related,' 'teacher-related,' and 'educational environment-related' variables. A copy of the survey is available from the authors. After the students with ASD who met the criteria for being higher-functioning (score of 80 or above on the DAS-II) were identified, their teachers were asked to complete a survey for that specific child. Instructions stated that teachers should "think specifically about this child's level of functioning in relation to the specific resources or challenges present" in their school setting.

In Part 1 of the survey, teachers were asked to provide demographic information about themselves, their classrooms, and their students to identify child, classroom, and school-level factors. In Part 2, teachers were asked to provide their own perceptions about the child's current and future educational placement. Specifically, they were asked about the appropriateness of the current placement, as well as how likely they would be to recommend the student for more time in a general education setting in the next year. In Part 3, teachers were asked about various child, classroom, teacher, and school factors that they might consider when making placement decisions for the child. They had to rate how much they would consider each item (e.g. "I would consider this a lot/little/not at all") on a 3 point Likert-scale. In Part 4, teachers were asked to think specifically about their school and which of the factors (identified in Part 3) were currently in place. This part also included a four point Likert-type scale with options ranging from "Strongly Disagree" to "Strongly Agree." Part 5 was an open-ended section asking AS teachers to identify what resources would make inclusion more successful at the student, classroom, and school-wide levels.

Analysis. Means and standard deviations or percentages were calculated for teacher and classroom demographic variables, as well as for teachers' ratings of appropriateness and future recommendations for student placement. Items in Part 3 and Part 4 of the survey were conceptualized as clusters of child and context-related variables described in the literature as impacting attitudes about inclusion. Means and standard deviations were computed for each cluster (i.e., child, classroom, teacher, parent, school), as well as for each individual item. T-tests were used to check for significant differences between items. Open-ended responses from the final section of the survey were independently coded by three raters for themes, with inter-rater reliability ranging from 0.91 to 0.97 across items. Percentages were then calculated by survey (child) for each barrier or resource need identified at the child level, and by teacher for each barrier or resource need identified at the classroom and school-wide levels.

Results

Thirty-seven surveys were completed by 27 AS teachers. Teacher experience varied widely in length of time they had been teaching (*M* = 10.1 years, *SD* = 11.3) and length of time they had worked specifically with students with ASD (*M* = 3.1 years, *SD* = 2.6). Teachers' current class size averaged 7.6 students (*SD* = 1.5), though some classrooms had as few as 3 students and others as many as 11. The number of classroom assistants or paraprofessionals assigned to work with an individual student within each class ranged from 1 to 7.

Approximately 75% of students in the sample spent more time in self-contained AS classrooms than in the general education setting, while 14% of students spent most of their school day in a general education classroom. Eleven percent was included for half of the school day. For 73% of students, teachers thought that the current placement was somewhat or completely appropriate. For 70% of students, teachers indicated that they probably or definitely would recommend more time in a general education setting within the next year.

Teachers rated how much they would consider each of the child, teacher, classroom, school, and parent-related factors when making a decision about whether to recommend a particular student for more time in an inclusive setting (see Table 1). Overall, there were no statistically significant differences in how much each cluster of factors was considered; however, significant differences did occur at the individual item level. Teachers ranked classroom structure and organization as most influential (*M* = 2.9, *SD* = 0.3) among classroom variables in their decision to recommend the student for more time in the general education setting. Peer academic levels, or the academic levels of other students in the class, was rated as significantly less important (*M* = 1.8, *SD* = 0.6) than all other variables. Teachers' recommendation for more inclusion for a specific student was statistically significantly correlated with how much the teacher weighted the following considerations: a well-structured and organized environment (r = 0.37), a calm classroom environment (r = 0.34), and friendly students (r = 0.36). The recommendation for more time in general education by AS teachers was also correlated with how much the teacher considered the extent to which the general education teacher and classroom peers make an effort to speak with the child (r = 0.58).

Table 1
AS Teacher Considerations about Placement Decisions and Factors Currently in Place at Their Schools

Factors	Decision Considerations[a]	Factors Currently in Place[b]
	M (SD)	*M (SD)*
Classroom-related factors	2.6 (0.4)	3.0 (0.7)
Number of students	2.5 (0.6)	2.0 (1.2)
Well-structured and organized	2.9 (0.3)	3.5 (0.6)
Calm environment	2.7 (0.5)	3.2 (0.8)
Well-behaved students	2.7 (0.5)	3.1 (0.8)
Friendly students	2.6 (0.5)	
Peer academic levels	1.8 (0.6)	

Teacher/peers speak with child	2.8 (0.4)	
Teacher-related factors	2.6 (0.3)	2.9 (0.8)
Supportive of inclusion	2.8 (0.5)	3.1 (1.0)
Prior experience	2.2 (0.7)	2.3 (0.8)
Available support staff	2.7 (0.5)	2.6 (1.1)
Experience differentiating instruction	2.6 (0.6)	3.5 (0.8)
Child-related factors	2.7 (0.5)	3.3 (0.5)
Adequate social functioning	2.7 (0.5)	
Inappropriate behavior		2.5 (1.0)
Appropriate academic levels		3.4 (0.9)
Sufficient communication skills		3.4 (0.9)
Social functioning will improve		3.7 (0.4)
Parent-related factors	2.7 (0.5)	3.5 (0.7)
Parent-teacher communication	2.7 (0.5)	
Want child included		3.5 (0.7)
Active involvement		3.5 (0.9)
School-related factors	2.4 (0.7)	2.9 (1.1)
Common planning time	2.4 (0.7)	2.9 (1.1)

Note. Blanks indicate that the item was not included in the scale.
[a] Would consider a lot=3, Would consider a little=2, Would not consider=1
[b] Strongly agree=4, Somewhat agree=3, Somewhat disagree=2, Disagree=1

Teachers then ranked the extent to which they agreed or disagreed that certain components of inclusion were already in place at their schools (see Table 1). AS teachers rated parent (M = 3.5, SD = 0.7) and child (M = 3.3, SD = 0.5) factors as higher than classroom (M = 3.0, SD = 0.7), teacher (M = 2.9, SD = 0.8), or school (M = 2.9, SD = 1.1) level variables. Among classroom variables, AS teachers reported on average that appropriate class size was not in place in their school (M = 2.0, SD = 1.2). They reported that general education classrooms in their school had appropriate structure for inclusion (M = 3.5, SD = 0.6). AS teachers also indicated that while the general education teachers were mostly supportive of inclusion (M = 3.1, SD = 1.0) and knew how to differentiate instruction (M = 3.5, SD = 0.8), they lacked experience with ASD (M = 2.3, SD = 0.8) and the necessary support staff to assist in incorporating these students into their classes (M = 2.6, SD = 1.1). Overall, AS teachers perceived parents to be actively involved (M = 3.5, SD = 0.9) and that the students were prepared in terms of their academic (M = 3.4, SD = 0.9) and communication skills (M = 3.4, SD = 0.9). There was a significant association between the recommendation for more time in a general education setting and AS teacher's belief that the child's social functioning would improve from increased exposure to his or her typically developing peers (r = 0.40).

In the final portion of the survey, teachers identified the resources they felt were needed to make inclusion more successful at the child, classroom, and school-wide levels. AS teachers independently generated responses within this section and could list as many resources as they wanted. At the child-level, teachers indicated that student behavior issues required the most

intervention (59%), followed by academic needs (41%). Teachers cited other areas around which their students with ASD may require supports if they were included in the general education setting, although these areas – communication skills (8%), social skills (8%), sensory needs (5%), transitions (5%), and motor skills (3%) – do not appear to be as much of a concern to AS teachers in determining placement (see Figure 1).

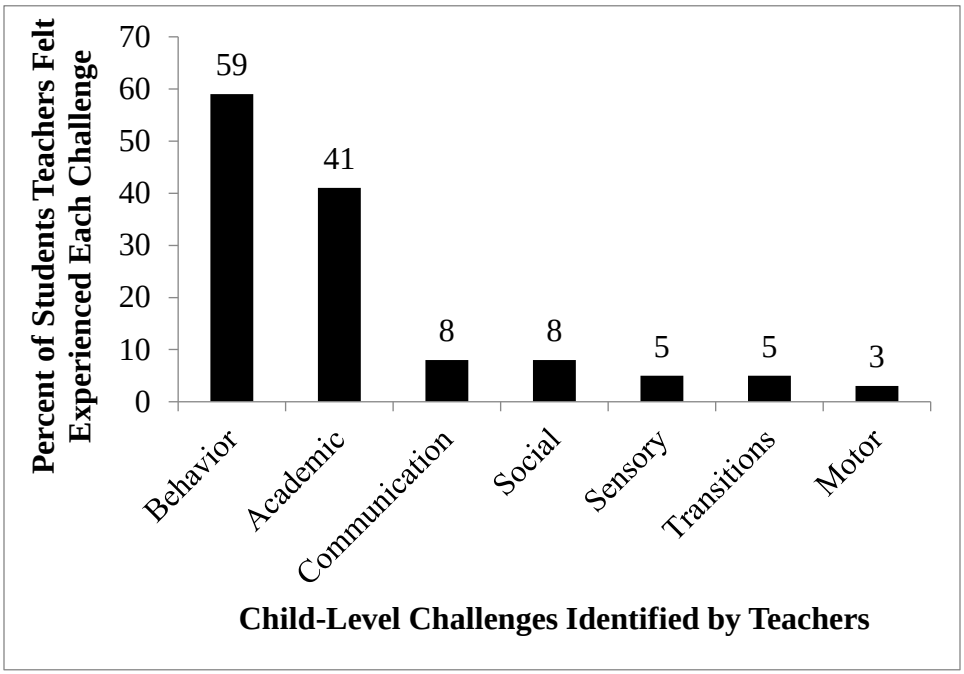

Figure 1. Child-level challenges

At the classroom level, 31% of teachers wanted smaller class size, and 31% of AS teachers also indicated the need for additional personnel within the general education classrooms at their schools. Additional identified needs within the general education classrooms included support with behavior management (24%), autism-specific training (21%), and support with differentiating instruction in the classroom (21%; see Figure 2).

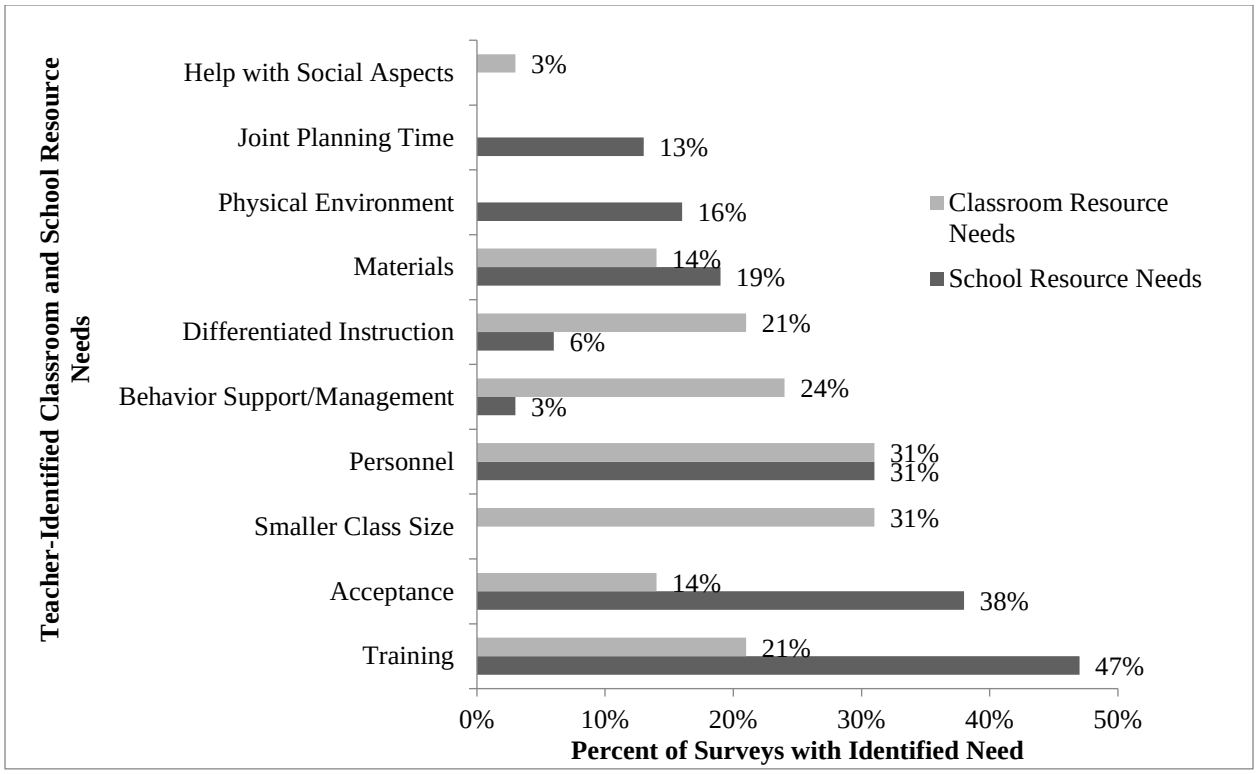

Figure 2. Resource needs at the classroom and school levels

Training, while mentioned as a classroom-level need, was the highest ranked support need at the school-wide level (47%), followed by the need for all school staff and students to have an understanding of ASD (38%). Personnel was again mentioned as a school-wide need by 31% of teachers, followed by needing additional materials (endorsed by 19% of teachers), changes to the physical environment (16%), joint planning time (13%), instructional differentiation (6%), and a school-wide behavior management system (3%).

Discussion

The results of this study indicate that AS teachers believe that many of their students with ASD and average or above average cognitive ability are ready for inclusion. Student readiness was not the sole consideration, however, in recommending a placement in the general education classroom. Teachers considered a variety of other child, classroom, school, and parent factors in making these decisions.

Many teachers' responses suggested conflicting thoughts, in that they recommended that their students spend more time in inclusive settings, despite indicating that the current placement was appropriate. AS teachers may believe that ideally, their students should be included more in the general education setting, yet given the existing barriers and resources available, the present placement of their students is best. Teachers may also be avoiding the cognitive dissonance that may accompany the claim that a student's current placement is inappropriate.

Another potential explanation of this apparent contradiction may relate to the current push for inclusion in schools. Schools are under increasing pressure to include students, in part due to

legal mandates (Hyatt & Filler, 2011), but also because of its social justice implications and its potential to better prepare students with disabilities for life beyond schooling. For some, inclusion may be an ethical consideration that has a clear significance for quality of life outcomes. All AS teachers thought that the social functioning of the child would improve in a more inclusive environment. Social interaction and social communication tend to be the main areas of impairment for the children with ASD described in the present study (Kasari & Rotheram-Fuller, 2005), and skills in these areas are necessary in order to maximize one's opportunities in life beyond schooling. Despite the potential of inclusion, however, placement decision-making must consider the extent to which the system-wide supports for this educational model are in place.

Teachers reported that they would consider a broad range of contextual factors when deciding whether their students should spend more time in an inclusive setting. The highest-rated classroom factor was the structure and organization of the general education classroom, which makes sense given that children with ASD tend to function much better in a stable and predictable environment (Ferraioli & Harris, 2011). The academic achievement of the classroom peers was a variable that AS teachers would not strongly consider, perhaps because of the individualized nature of their students' programming and AS teachers' greater concern about the extent to which the general education teacher can differentiate instruction effectively, a need identified by 21% of AS teachers.

In regard to the current barriers related to inclusion at their schools, concerns were mainly targeted at the general education teachers and their classrooms, rather than at the students with ASD. While AS teachers perceived that general educators at their schools were open to including students with ASD, they also thought that these general educators lacked sufficient prior experience with this population of students. AS teachers were also concerned about staff-to-student ratios in general education classrooms and the availability of support staff. While the average class sizes in the AS classrooms surveyed was only 7.6 students, the average public elementary school class size in Pennsylvania (in 2011-2012) was 22.4 students (NCES, 2013). The general education setting, by design, will always have a higher class size than an AS classroom. Yet, it may be that the appropriateness of this placement depends on the level of structure and organization that has been achieved, hence the identification of this latter component as most critical in recommending inclusion by AS teachers.

AS teachers' greatest concern at the child-level was student behavior. For students with ASD, the behaviors that manifest in the classroom can vary widely. Training and support have the potential to improve teacher attitudes towards inclusion (Avramidis & Norwich, 2002), as well as their skills in working with this population of students. Thus, the fact that training was identified by AS teachers as the most critical resource need was not surprising.

What was most notable about the need for training, however, was that AS teachers identified it primarily as a school-wide need. Multiple teachers expressed this need, not only for general education teachers expecting to have students with ASD in their classrooms, but for the entire school staff. Training has broad implications, particularly in terms of fostering competence, as well as greater acceptance for students with ASD. Acceptance was, in fact, identified as the second greatest need at the school-wide level. This aligns with the underlying philosophy of

inclusion, which AS teachers seem to have recognized as a school-wide attribute. Thus, it is not the students with ASD that need to be "ready" for inclusion, but rather the school and classroom that need to be prepared to meet the needs of these children.

Limitations

Overall sample size in this study was small due to the study's criteria in evaluating the perceptions of teachers who were presently teaching students with ASD. Additionally, the student criteria (i.e., GCA cutoff score of 80 on the DAS-II) further restricted the sample of teachers able to participate in this study, as only a subgroup of teachers involved in the larger AIMS study (Mandell et al., 2013) had eligible students in their classrooms.

The fact that the surveys used in this study were student-specific meant that some teachers completed multiple surveys, depending on the number of students in their classrooms that met our eligibility requirements. Nineteen teachers in our study only completed one survey, while seven teachers completed two surveys each, and one teacher completed four surveys. Although this was a minority of our sample overall, it is important to mention in consideration of our results, particularly for questions that were not specifically asking about an individual child. Within the open-ended section of the survey, the responses of teachers who completed more than one survey were only counted once, unless they differed across surveys. This occurred for one teacher only.

Our consideration of teachers' schedules and workload led us to keep the survey fairly brief. As a result, we limited the number of survey items, particularly in sections three and four of the survey. Survey items in these sections were grouped into teacher, classroom, child, parent, and school-related variables. Each domain contained between two and four survey items that were thought to best capture its key components related to this high-stakes decision. Given this limited number of items, however, results should be considered with caution.

While the teachers that participated in this study received training and coaching as part of the broader AIMS study, this support was not related to students' placement or inclusionary practices. Rather, it was specifically focused on developing teachers' skills to implement instructional methods for students with autism, and to do so with fidelity (Mandell et al., 2013). Thus, while teachers did receive additional resources to support their students, it is unlikely that their responses to the survey described in the current study reflect the provision of these resources.

Finally, social desirability cannot be ruled out within the context of this survey, since inclusion is considered a deeper philosophical issue in which equal opportunity is at stake. In asking these teachers whether they think students with ASD should be included, the role of this potential bias cannot be known. It is also likely that during the course of their educational training, AS teachers were taught about the potential positive outcomes of inclusion. Thus, even if teachers had not yet seen inclusion implemented successfully at the time of this study, they may have had the inclination to support it for its possibilities.

Conclusions

The unique training and perspective of AS teachers allowed a good understanding of not only some of the variables that go into the placement decision-making process, but the importance of such variables in making these high stakes decisions. Considering how the placement decision-making process differs across stakeholders, however, we hope to not only replicate this study in an effort to validate our measure and expand our sample, but also to adapt the measure in order to ask some of the same questions to parents, administrators, general education teachers, and students. By doing so, we hope to gain more insight about inclusion-related decisions for students with ASD, as well as a more well-rounded view of the complex dynamics of this process.

Beyond the decision-making process itself, this study reiterated the need to place greater focus on preparing teachers and schools for inclusion. This is something that needs to happen at both the pre-service and in-service levels. Traditionally, special education and general education teachers have been trained separately, yet more and more programs are merging these two tracks as a result of the growing need to prepare all teachers for an increasingly diverse student population.

For teachers already out in the schools, ongoing training and support is imperative. Not only is there a need for training specifically about ASD, but on differentiation, behavioral principles and interventions, and methods for improving students' social skills within an inclusive environment. AS teachers, as well as other specially-trained professionals, such as school psychologists, counselors, and behavior specialists, are well-positioned to provide consultation, training, and support to general education teachers and other school staff in these areas. As inclusion continues to become a more widespread practice, these efforts can help ensure that it is also best practice.

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Disabilities and Social Engagement: Inclusive Classroom Preparation for Pre-Service Art Teachers

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Abstract

In light of disability studies' recent examinations of the dichotomy between medical and social models in terms of their influence upon attitudes toward people with disabilities, the author discusses her selection of course materials for a college-level course, Art and the Exceptional Learner, targeted to pre-service art teachers. Structured teaching opportunities with disabled high school students and adults are also recounted, as well as student reactions to these experiences. The conclusions of both author and students favor a social model as the best foundation for establishing inclusive classrooms in U.S. public schools, which in turn are thought to have the best potential to bring about social change that favors better understanding and acceptance of disability across the social spectrum.

Disabilities and Social Engagement: Inclusive Classroom Preparation for Pre-Service Art Teachers

In this article I discuss current discourse in Disability Studies, particularly the differences between medical and social models, with particular focus on facets of a specific social model that I believe to be the most productive for preparing art teachers to work with students with disabilities. In terms of both teaching and learning, in my experience pedagogical practices derived from a social model align with an ethic of care as well as essential relational aspects. I define and describe some of these practices, both theoretically and experientially, as well as in light of pre-service teachers' learning experiences. I also discuss social and pedagogical implications of this social model as depicted in research studies and from the pre-service learning experiences of art education students.

Mandatory mainstreaming in U.S. public schools, which was instituted in 1990 by the Individuals with Disabilities Act (IDEA; Public Law No. 94-142), has made it likely that teachers of any subject will have students with disabilities in their classrooms. Because art is often viewed as a less "academic" subject, art teachers are even more likely to have students with disabilities (Feldman, Carter, Asmus, & Brock, 2016). The experiences I recount herein have convinced me that the socially driven teaching ideals and practices can help prepare art teachers for accommodating and teaching such students.

IDEA, which brought tens of thousands of children with disabilities into the American public school system (Engle, 2003; Kluth, Straut, & Biklen, 2003; Sommerstein & Weisels, 1996), mandated that such children be educated in the "least restricted environment appropriate to meet their specific need" (Bain & Hasio, 2011, p. 34); this usually means "regular track" classrooms

(Tilton, 1996). The placement of these students in such classrooms forms the basic definition of inclusion (Bain & Hasio, 2011).

The societal effects of IDEA have spread beyond student life. Special needs educators and researchers have affirmed that "regular schools with [an] inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving justice for all" (Foreman & Arthur-Kelly, 2008; cited in Obiakor, Harris, Mutua, Rotatori, & Algozzine, 2012, p. 477). The implementation of IEA has raised the bar in school for students with disabilties: "[w]ith inclusion, students with disabilities are expected to achieve academic and emotional success while learning beside their peers without disabilities" (Obiakor, Harris, Mutua, Rotatori, & Algozzine 2012, p. 477; see also Algozzine & Ysseldyke, 2006; Hall et al., 2004; Theoharris, 2007).

Despite the widespread implementation of inclusion in schools, in practice it does not often reach its full potential or truly benefit the intellectual and emotional development of all students (Obiakor, Harris, Mutua, Rotatori, & Algozzine, 2012). These failures are particularly salient for students with disabilities. Beginning and seasoned teachers alike have ignored or not effectively attended to the needs of students with disabilities, including not making necessary accommodations for them. Practical reasons for these failures may include teachers not having enough time or resources (Bain & Hasio, 2011). A lack of knowledge about and experience in working with people with disabilities may also account for the diminished benefits of inclusion (Bain & Hasio, 2011).

Another problem arises from the fact that many university programs that train teachers lack opportunities for authentic experience, particularly field-teaching, and rely instead on cursory courses (Bain & Hasio, 2011). In terms of meeting the intellectual and emotional needs of special needs students, educators and researchers who are concerned with establishing equitable classrooms have advocated for pre-service teachers to interact and engage with people with disabilities, so that they may gain necessary skills and confidence (Bain & Hasio, 2011; Jay, 2008). This emphasis underscores that readings and lectures which provide explanations and definitions of various disabilities do not, on their own, sufficiently prepare teachers to run fully inclusive classrooms. Instead, many pre-service teachers report feeling overwhelmed and confused by diagnostic language, medical definitions of disabilities, and explanations of special needs categories (Bain & Hasio, 2011). Research has supported that interactions between pre-service teachers and people with disabilities are necessary to alleviate these feelings (Bain & Hasio, 2011, Power & Costley, 2014). Research has also shown that interactions between people with and without disabilities may work to diminish fears and to challenge preconceptions, biases, and low expectations (Jay, 2008; Power & Costley, 2014).

I personally became aware of the importance of interaction between pre-service students and people with disabilities in 2013, when I was first given the opportunity to teach Art for the Exceptional Learner (a disability course for pre-service Art Education students and one of two required courses that are intended to prepare pre-service art teachers for teaching students with disabilities) at a university in North Carolina. The amount of planning and preparation I ended up taking on for this course was both significant and, at times, overwhelming. In each passage of each book I read in order to bring my background in Disability Studies up to par, I encountered

unfamiliar acronyms; medical terms and definitions; genetic descriptions; explanations of biological manifestations, as well as physical and mental limitations; and diagnoses and treatments.

The difficulties I experienced in deciphering these sources and selecting materials for the course were exacerbated by the astounding number of articles and books pertaining to the wide spectrum and variations of many disabilities. Even after I narrowed my literature review to the 13 categories of special education defined by IDEA (http://www.understandingspecialeducation.com/13-categories-of-special-education.html), which are used to determine which students are qualified to receive special education (see Table 1), both the amount and content of the information remained exorbitant. When I reflected on how pre-service teachers might hypothesize the necessary adaptations and accommodations to address the 13 categories, even in part, the task seemed impossible. Moreover, without the presence of real students, in class we would only be able to discuss fictitious students.

Table 1
Thirteen categories for special education

In order to qualify for special education, the IEP team must determine that a child has one of the following:

- Autism
- Blindness
- Deafness
- Emotional Disturbance
- Hearing Impairment
- Intellectual Disability
- Multiple Disabilities
- Orthopedic Impairment
- Other Health Impaired
- Specific Learning Disability
- Speech or Language Impairment
- Traumatic Brain Injury
- Visual Impairment

Source: http://www.understandingspecialeducation.com/13-categories-of-special-education.html

This conviction was confirmed very soon after the course was underway and the class had reviewed accounts of disabilities and hypothesized corresponding accommodations. Clearly, field experience that would allow my pre-service teachers to interact with real students with real disabilities was going to be essential. I therefore arranged for a nearby high school to send 15 students with disabilities and their teachers to engage in art education with me and my pre-service teachers in our university classroom. The high school informed me ahead of time that several of the students used wheelchairs and that some had very limited body and motor functions. Without knowing much more about our high school guests or what their specific needs would be, my students and I collectively applied our best judgment and planned for their visit.

To make our space more accommodating for wheelchairs, we rearranged the classroom furniture and provided easy access to tables and workspaces. We also designated each workspace for the use of different art materials and for processes that required different levels of skill and ability. We hoped that our efforts would successfully engage and accommodate the students' diverse abilities.

However, in many ways we were not prepared for the high school students' arrival. As soon as they exited their bus, outside our building, the ones in wheelchairs had to be rerouted to an entrance near the elevators that would get them to our third-floor classroom. I felt embarrassed as I watched them getting rained on as they moved to the alternative entrance, knowing they would have to use the same route to leave the building later. I was again caught off guard, when they finally entered our classroom, by my instant feeling of sympathy for them and the challenges they faced in doing such things as walking or talking—things that many people take for granted.

However, as the three-hour visit unfolded, and as I interacted with the high school students, my emotions moved away from sympathy. Not only had the pre-service teachers and I successfully chosen materials and processes for them, they welcomed the opportunity to make their own choices; many navigated the room to use the workspaces that we had set up. As I moved around to observe and talk with them, I was fascinated by some of the processes they were engaged in. Most memorable to me was the painting process of a boy whose teacher informed me had severe autism. I watched as he systematically painted title characters from the 1937 Disney animated film *Snow White and the Seven Dwarfs*. He began by painting seven identically shaped and colored heads, in two rows. He then painted seven hats, one at a time, until every head wore a differently colored hat of the same shape. He eventually added seven bodies of the same shape but differently sized, using colors that matched the hats had already painted. When he was finished, he had achieved a remarkable likeness to the Disney renditions.

Also memorable to me and to many of my students was the experience of a girl with autism who frequently stuck out her tongue. She spent the majority of the time making a rubber-band harmonica with large popsicle sticks that she had decorated. Once she was done she was interested only in playing her new harmonica; her teacher responded to this enthusiasm by allowing her to play the instrument as a reward for her engagement in some of the other available art processes. A week or so later, this teacher wrote to tell me that the harmonica continued to serve as a useful tool for motivating this student both to engage in classroom activities and to remember to keep her tongue inside her mouth.

An experience that awed many of my students and me was the ability of one boy to communicate through a computer. Most of us had never seen this kind of technology. We were awed that it allowed him to express his desire for different materials and to talk to us in general.

These and other experiences stirred my students to share their beliefs, emotions, and misunderstandings about disabilities in later class discussions. Like me, many had also felt sympathetic upon first meeting the high school students; before their visit, all of us had held preconceived notions and expectations. The actual experience, however, dislodged these. As a class we had initially focused on the perceived limitations of and challenges we assumed were routinely faced by these high school students. But when we witnessed the things they could do,

as we interacted with them, our focus began to shift. We watched as they painted expressively, meticulously, and without hesitation and while they played the harmonicas they made; and we noticed how they idiosyncratically communicated and expressed themselves. Behaviors such as these made strong impressions on us.

The short time that the high school students spent in my class reminded me that in order to effectively teach and learn, you must first get to know those who you are teaching and learning with. This and other similar realizations, which were shared by my students, continued to fuel deeply reflective and thoughtful discussions for the remainder of the semester.

Medical Model vs. Social Model

The visit from the high school students, and the dialogues it provoked, caused a significant change in the way I subsequently structured the course. Namely, that semester I moved away from the perspective of the medical model I had researched to that of a social model along the lines of what I had experienced. In fact, social models and their connotations have come to supply an explicit framework for the evolution of both my perspective on teaching and my teaching practices. As my consideration for people with special needs and my convictions about the necessity of classroom inclusion for them have become very different, so has what I value in the pre-service education of art teachers.

The differences between medical and social models account for some of this shift. Haegele and Hodge (2016) indicate that the way people describe and talk about disability contributes to their expectations and interactions with people who have disabilities (see also Barton, 2009). When I first started teaching on the topic of disability, the bulk of my knowledge had been gleaned from textbooks, other types of books, and research articles that focused on medical descriptions, causes, and symptoms of various disabilities. Accordingly, the descriptive rhetoric I employed in class lectures and discussions reflected medical models. The freshness of such discourse in the minds of the pre-service teachers and myself when we first met the high-school students likely influenced our initial responses to their disabilities. Studies have supported this association: "[T]he way disability is defined and understood is important because the language people use to describe people with disabilities influences their expectations and interactions with them" (Haegele & Hodge, 2016, p. 193; see also Barton, 2009).

Medical model

The language used by authors who write from a medical model focuses on what is "wrong" with a person and on his or her limitations (Bloom, 2014). Individuals are described according to their disability, which becomes the defining characteristic that shapes others' beliefs about them (Bloom, 2014; Haegele & Hodge, 2016; Row-Heyveld, 2015; Wiesel & Bigby, 2016). Disability in the medical realm is understood as a deficiency, such as an illness, which must be treated and "cured" to allow people to fully function in society (Haegele & Hodge, 2016). The negative perceptions and deficit-based definitions embedded in a medical model have strong potential to negatively influence how society talks about people with disabilities and how other people interact with them (Bloom, 2014; Haegele & Hodge, 2016; Row-Heyveld, 2015; Wiesel & Bigby, 2016).

Once a person has been diagnosed with a disability, and thus with its associated limitations, that status often shapes and becomes the focus for how they identify themselves and how others identify them (Bloom, 2014; Haegele & Hodge, 2016; Power & Costley, 2014; Row-Heyveld, 2015). Such people become the ones who "can't" or "don't"—the ones who need help. An identity that focuses on the content of a person's limitations may causes reactions in others such as anxiety and avoidance both of which hinder positive social interaction; the reaction of sympathy, while nominally more positive, can do the same (Bloom, 2014; Corbett, 2015; Wiesel & Bigby, 2016).

How children are diagnostically identified determines the educational services they will receive (Haegele & Hodge, 2016). These services, which do not always take into account the wishes of the child or family, may even interfere with the child's social and emotional development (Haegele & Hodge, 2016; Feldman, Carter, Asmus, & Brock, 2016). One example would be educational services that entail removing children from classrooms where their peers without disabilities remain. Such special placements, which single out children on the basis of their disabilities, can easily threaten how they are identified and accepted by their peers (Feldman, Carter, Asmus, & Brock, 2016; Power & Costley, 2014; Haegele & Hodge, 2016).

On a more general level, the physical separation of students with and without disabilities is one of many examples of educational policy that can disempower marginalized groups and impart "symbolic violence" (Bourdieu, 1977, 1986, 1997; Power & Costley, 2016). Bourdieu defined symbolic violence "as social power that imposes limitations on those who do not have the social capital required to combat challenges, in this case imposed by the mainstream system" (Power & Costley, 2014, p. 36). "Social capital" or "social power," as described by Bourdieu (1997, 1986, 1997), are qualities necessary for mainstream success; as such, they are doled out by the entities that impose limitations on marginalized groups. The segregation of students with disabilities (i.e., students who have little or no social capital or social power) from their peers without disabilities (who are assumed to have both social capital and social power0 makes it difficult for the former to establish relationships that enhance their feelings of social acceptance (Feldman, Carter, Asmus, & Brock, 2016).

Classroom segregation takes on a new importance during adolescence, a challenging developmental stage in which fulfillment of social and emotional needs are perceived as paramount. For adolescents, feelings of social acceptance are extremely important for the development of their self-efficacy and for their emotional well-being (Feldman, Carter, Asmus, & Brock, 2016; Obiakor, Mateba, Kagendo, Rotatori, & Algozzine, 2012; Power & Costley, 2014). Being singled out as different from peers, particularly when the difference has been socially deemed inferior, can be emotionally damaging for adolescents. (Feldman, Carter, Asmus, & Brock, 2016; Power & Costley, 2014). At any age, the removal of students from a "regular" classroom for the purposes additional attention, support, or resources may indeed be necessary for their intellectual development; however, removal does not necessarily consider, and can potentially damage, social and emotional aspects of their development (Feldman, Carter, Asmus, & Brock, 2016; Obiakor, Mateba, Kagendo, Rotatori, & Algozzine, 2012; Power & Costley, 2014).

Medical model implications for teachers. After extensive reading about the fundamentals and implications of a medical model applied to the education of special needs students, I concluded that a medical model alone is not enough even when a correct diagnosis supplies important information about a singular aspect of a student with disabilities and helps teachers to determine and fulfill that student's educational needs. This conclusion is supported by Haegele and Hodge (2016). Moreover, my research strongly indicated that a teacher who is only focused on or concerned about disability or limitation cannot teach and respond to a student with disabilities in a way that will help him or her attain full potential (Foss, 2015; Haegele & Hodge, 2016; Obiakor, Festus, Mateba, Kagendo, Rotatori, & Algozzine, 2012).

This type of singular focus ignores a student's inherent gifts and strengths, which I believe should be given equal (or greater) attention so that they can be nurtured, developed, and sustained. Research affirms that helping sudents with disabilities build their strengths and recognize, develop, and exercise their gifts can offset or even outweigh the negative impacts of disability (Foss, 2015; Huk, 2015; Stanbeck, 2015). This approach also supports the idea that medical view(s) should be expanded to include social views. Such an expanded view will allow for a more holistic understanding of children with disabilities and for teachers to see and respond to students beyond their disabilities or limitations (Bloom, 2014; Haegele & Hodge, 2016; Jay, 2008).

A social model

The underlying premise of a social model involves changing society rather than changing a person with a disability (Haegele & Hodge, 2016). This is because a social model subverts the concepts of a medical model by suggesting "that it is not one's bodily functions that limits his or her abilities, it is society" (Haegele & Hodge, 2016, p. 197; also see Barney, 2012; Roush & Sharby, 2011). A social model has also been explained by Bloom (2014) as "examining disability not as a physical or mental defect but a cultural and minority identity" (p. 181). In this work, Bloom positions this explanation under the paradigm of social dismodernist theory, which considers disability a normal aspect of the human condition, queries the social categories around disability, and questions what it actually means to be "abled" and "disabled." In her deconstruction of medical models that are focused on individual defects, Bloom also urges us to consider "new ways in which differences can really speak to, challenge and transfer institutions, communities, and people" (p. 181).

Bloom (2014) faults social construction for negative perceptions of disability; these include, stigma, silence, and habitual assumptions. She defines stigma as "a social construct that allows people to feel inferior to others by way of comparison and the designation of some human differences as discrediting others" (Bloom, 2014, p. 182), and "silence as socially constructed behavior that perpetuates exclusion" (Bloom, 2014, p. 184). The assumption that most directly accounts for silence indicates that people do not want to talk about their disability but instead "just want to be treated like everyone else, and therefore one should overlook and not mention their disability" (Bloom, 2014, p. 182). This silence causes awkwardness between people with and without disabilities, thereby hindering their social interaction. Haegele and Hodge (2016) have concluded that these negative social perceptions are compounded by other social factors, including ignorance and/or fear of differences. Collectively, these social constructs perpetuate

segregation and exclusion of and discrimination against people with disabilities (Haegele & Hodge, 2016; see also Blustein, 2012; Brittain, 2004; Palmer & Harley, 2012).

Becasue disability has been recognized as socially constructed concept, it seems feasible to deconstruct it via social means. In that case, deconstruction would yield to social reconstruction and thereby allow disability to be more positively defined and understood, and in turn for people with disabilities to be more easily accepted. In short, social changes are necessary for creating more positive and engaging experiences for the disabled, in America's communities as well as its schools (Bloom, 2014; Haegele & Hodge, 2016; Jay, 2008; Stanbeck, 2015).

Social model implications for teachers. Both my research and classroom experience have convinced me that teacher preparation based on the premises of a social model is likely to supply a viable framework for socially redefining and reconstructing concepts of disability in the U.S., as well as to increase social justice and equality in U.S. communities and in classrooms. In part, I have reached this conclusion because the same conditions in American society that separate people with differences and diverse abilities from the mainstream also exist in American schools. Symbolic violence expressed by the physical separation of students, classrooms that do not accommodate all types of students, silences, and damaging assumptions are routine in U.S. schools (Power & Costley, 2014). As noted above, as they do in the larger society, these conditions perpetuate the segregation and exclusion of, as well as discrimination against, students with disabilities in the nation's schools.

A school's implementation of inclusion as intended by IDEA has the potential to reverse symbolic violence. Inclusion allows not only for social interaction between students with and without disabilities but also for the development of an accepting environment that accommodates all types of students. Researchers in special needs education have gone so far as to say that "regular schools with an inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all" (Foreman & Arthur-Kelly, 2008; cited by Obiakor, Festus, Matua, Rotatori, & Algozzine, 2012, p. 477). In terms of pre-service training, if inclusion is to most effectively foment both education and social change, it is essential for teacher training curricula to include experiences that prepare teachers to run inclusive classrooms.

The majority of inclusive educational experiences that have been defended in disability studies, and the majority of studies that have declared such experiences to be essential for pre-service teachers have been derived from/based on a social model. Each of these experiences (building relationships, crossing boundaries, and practicing self-reflection, authentification, and normalization) is dependent on the interaction of pre-service teachers and students with disabilities. Keddie and Lingard (2013) make this point explicitly:

Pedagogies that connect with the non-dominant knowledges of marginalised/ disadvantaged students in ways that accord these students a voice and a sense of autonomy are necessary to foster cultural and political justice. Such practices are all the more imperative at this moment of increasingly diverse student populations. (p. 443)

Pre-service teaching at Watauga Opportunities Inc.

Having learned the significance of interaction between pre-service teachers and people with disabilities, as I prepared for my third semester of teaching art for special needs students I planned an extended period of time for my pre-service teachers to interact with such students. After some failed attempts to arrange consecutive days for my pre-service teachers to visit local classrooms for students with disabilities, I turned to Watauga Opportunities Incorporated (WOI), "a non-profit community rehabilitation program providing vocational training, job placement, employment opportunities, community opportunities and residential services to adults who have barriers to employment and community inclusion" (www.woiworks.org/index.cfm/about-woi/about-us/).

Although at WOI my pre-service teachers would be working with adults and not with school-aged children, I believed they would benefit from repeated visits and longer periods of engaging with people with disabilities. (Eventually, I was able to arrange for them to spend shorter periods in inclusive, self-contained local school classrooms). According to Jay (2008), in some ways it may be more beneficial for college-aged students to work with adults rather than children. He based this conclusion on the idea that college students may feel superior to children, who obviously are younger and less knowledgeable. For my part, I welcomed the opportunity to schedule teaching and learning experiences for my students during which they would be less likely to be tempted to feel superior. Moreover, I felt confident that my pre-service teachers could learn from the WOI adult participants and that they would be able to adapt their experiences to working with children. I also knew that our meetings in our university classrooms after their visits to WOI would provide opportunities to relate these visits to formal pedagogical practices and K–12 classrooms.

Many of the pre-service teachers felt apprehensive before our visits to WOI began and even after a few visits had been completed. In our class discussion after the first visit, one said that she had been nervous about "maybe messing up or not being able to handle a situation." Another student felt "a little intimidated about working with adults with disabilities since I only had limited experience with disabilities and only with people my age or younger." A third was "slightly nervous…as I had never had the opportunity to work with adults or anybody with disabilities before."

The art activities we had planned to do with the WOI participants became an entry point for talking and becoming comfortable with them and for facilitating the building of more extended dialogue and deeper relationships. Explaining art materials (e.g., watercolor, oils, pastels, markers) and techniques to the participants—in other words, having specific topics to share, about which they were confident—made it easy for the pre-service teachers to initiate other types of conversation. Their explanations also helped participants feel comfortable asking questions, which in turn led to more explanations and interactions. One pre-service teacher reflected on the effectiveness of using art materials as an ice-breaker by saying: "I was really awed at how something as simple as drawing with markers was creating an environment for us to share and build connections between everyone at the table."

As the interactions initiated by artmaking continued over subsequent visits, the pre-service

teachers became comfortable enough to discuss subjects other than art with the WOI participants. As this progression unfolded I was reminded of Jay (2008), who observed that "[w]orking across borders of difference [in this case, becoming immersed and engaged with a marginalized population] can help people [in this case, pre-service art teachers] to "overcom[e] initial attitudes of superiority, fear, and prejudice" (p. 264). Where my students had not previously even been aware of WOI's existence, they had now moved across a boundary and had initiated and experienced "dialogue across differences" (Jay, 2008, p. 256).

My students continued to acclimate to this new environment, to become familiar with a population with which they had no prior experience, and to become more confident and comfortable teaching and learning with them. Accordingly, as we neared the end of our eight-week semester, our class discussions no longer reflected reservations; instead, the pre-service teachers were clearly having a good time as they learned from their experiences at WOI. One shared, "I have really enjoyed getting to know some of the adults and making some personal connections. One participant drives past my bus stop every day to get to work, he recognizes me and waves to me every day as he passes." Another pre-service teacher added, "I have learned so much from simply being there and interacting in a way I never had before!"

A few members of the WOI staff noticed the pre-service teachers' increased relaxation. A habilitation technician observed that "they seem more comfortable and friendly now." The assistant director commented that "at the beginning, the participants appeared to feel unsure and maybe a little scared, this was likely mirrored by the students' [pre-service teachers] feelings. This all changed once the participants and students connected through art."

After the visitation period ended, as my students and I reflected on our initial difficulties with understanding what some of the participants were trying to communicate, one student said that she had "learned to pay attention to [a nonverbal participant] because she was fully capable of giving me signs if I was willing to look for them. Nonverbal communication is possible and looking for any sign of response will help communication go further." Another student said that she had "felt extremely inadequate the first few times…I felt awkward asking them to keep repeating what they were saying. After a good amount of time working consecutively with them I learned to decipher what they were saying. The consistent weekly experience impacted how we interacted and gave me a certain comfort level where I felt OK communicating."

I also faced an initial challenge, which involved communicating with an 80-year-old woman who mumbled seemingly nonsensical words to me. But after several weeks I noticed that between a string of indecipherable sounds she would use a word or two that I understood. With careful listening and trying hard to understand her, I started hearing her differently; then I realized that if I listened for and connected her recognizable words, I could understand what she was telling me. From then on, when we engaged in conversation, she grasped my hand as a way of showing how grateful she was to be heard and understood.

Stanbeck (2015), who writes about the limitations and difficulties of articulation, suggests that unconventional human communication should be held in the same esteem as poetry—an art form that also, at times, is structured in highly unconventional ways. In hindsight I recognize that my students and I were lucky at WOI in that we were never informed of the participants' specific

diagnoses, the titles of their disabilities, or the nature of their limitations. Thus the pre-service teachers and I had no choice but to learn from the participants. As we learned from them and about them, we became better able to communicate and interact with them, and to guide them in art making.

Toward the end of the semester, as we began our final discussions about our experiences at WOI, I invited the program's associate director to address the class. I assumed, as did many of my students, that her lecture would include information about participants' specific disabilities. But we were wrong. Instead, she told us about spring romances at WOI, crushes experienced by participants, and their interests in sports and other hobbies. We were delighted by her reminiscences about taking participants on cruises and about how much fun they had had while swimming, dancing, socializing, and even drinking. We also listened, in disbelief, to heartbreaking stories about participants—some of whom we now knew—who had been raised in institutions where they were lonely and treated poorly, not least because their disabilities had not been accepted or understood. She talked about their sorrow and isolation after being separated from their families and communities. There were happy endings too, however: some of the people whose lives began so roughly were working at WOI and in the community; others had fallen in love; some had even married.

The pre-service teachers and I listened with empathy and compassion to all of these stories. Our guest used her storytelling, in a way that only stories can accomplish, to very effectively connect us—her listeners—to the human qualities of the participants we had worked with. From this experience, I as well as my students learned that the social activity of storytelling, as well as the stories themselves, have the power to change how people with disabilities are identified. Medical models label people and can objectify them, but a story humanizes them (Bloom, 2014). For people who have disabilties, personal stories that capture their lives and experiences can introduce affirmative perspectives, particularly that of "survivor rather than sufferer" (Bloom, 2014 p. 187).

In our discussion about the associate director's visit, the pre-service teachers expressed very clearly how deeply moved they were by her presentation. In a typical comment, one student called it "one of the most valuable experiences I've had this semester… I had never heard anyone open up like that before." Another commented: "I had never really thought about how adults with special needs live their lives or about what my peers with special needs would be doing outside of the environment."

My students also realized that storytelling in K–12 classrooms can help create the empowerment and equality that children with disabilities need. This process, which is referred to by Mossman as "authentification," coincides with and depends on "normalization" (Corbett, 2015, p. 462). In this case, normalization occurred when my students began to understand physical disabilities as normal conditions and to accept them just as any other difference between people could be accepted.

Starting with the connections and relationships we established with the adult participants at WOI, and continuing through the deepening of these relationships by the stories they heard, ultimately my students and I acquired an authentic view of this group of people with disabilities. By the end

of the semester, I was gratified to see how the pre-service art teachers saw these disabled adults not as handicapped but as normal people who had lived through and experienced some of the same things they themselves had done, albeit differently. This journey to understanding and acceptance underscores the assertion that there is nothing wrong with being disabled, and that when disability is normalized, people with disabilities are empowered (Bloom, 2014, p. 184). When this assertion is grasped through interactions with disabled people, it affirms that "there is more than one way to move through space, to access a text, to process information, to communicate—more than one way to be a human being" (Bloom, 2014, p. 184)

As an art teacher and trainer of art teachers since 2005, I believe that from the experience of crossing boundaries and building relationships with the WOI participants, this group of pre-service teachers gained more than they possibly could have from any textbook or hypothetical situation. They listened to, understood, and learned from these adults despite having entered into these relationships with the assumption that they would be the teachers and the disabled adults would be the learners. In addition, they built these paradigm-shifting connections in spite of initial self-doubts and uncertainties. Perhaps the most valuable outcome will be their ability to transfer and use what they learned at WOI in their careers as art teachers, for the benefit of students who have disabilities as well as those without.

Comments on the end-of-semester evaluations reflected the value and utility of this learning experience. One referenced "valuable understandings of how to interact and treat people with disabilities as equals," and another spoke of "a huge gain in my knowledge about the lives and experiences of people with disabilities." Another, who declared that "this was the most relevant course I have taken for my major [art education]," also praised the "authentic [and] liberating experience" of working with the disabled learners. Still another "walked away more confident in my ability to build relationships and connections with everyone despite our different experiences and different needs…. [w]hich will in the longer run help me to be a more conscious and effective teacher for all of my students."

Conclusion

In order for people without disabilities to become aware of their fears, ignorance, misconceptions, and biases, as well as for such people to reduce and even alleviate these issues, it is necessary for them to have social interaction with people with disabilities. As the pre-service art teachers in my class learned from direct experience, it is not through medical language or diagnostic labels that one person learns to understand another. Crossing boundaries, engaging in dialogue across differences, and building personal connections and relationships are the activities that create mutual understanding. If standard curricula for pre-service teachers (in all subjects, not just art) included this type of social engagement, the results would include more affective/effective teaching and learning and more fully inclusive classrooms. Increased social interaction between pre-service teachers and people with disabilities has the potential to widen the teachers' perspectives; in turn, this widening feeds their professional and personal acceptance of and respect for different kinds of abilities and for all people who learn and encounter the world differently. When all teachers develop these attitudes, inclusion will be truly realized in classrooms. At that point, when inclusive experiences are positive for all students in school, a

creative spark that can result in positive and inclusive experiences for all people in American society will have been ignited.

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Student Engagement in an Online Special Education-General Education Graduate Program

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Abstract

Engagement is a key factor for student learning, participation, and retention in a distance education course and programs. The Online Student Engagement Scale (OSE) was developed as a tool to measure student engagement in online courses. This study investigated student engagement in a graduate-level online special education-general education program to get students' perceptions about their (a) level of engagement and (b) factors contributing to their engagement. Following the OSE survey, students participated in a focus group to gain greater understanding of students' engagement in their online course and program. Results indicated that student engagement in the online program was highly rated and several themes emerged as reasons students believed that the newly minted online program was engaging. Based on these findings, implications for strengthening practice regarding engagement in online courses and programs are discussed.

Student Engagement in an Online Special Education-General Education Graduate Program

There has been a rapid growth of online programs, with many higher educational institutions offering online courses and graduate programs to better serve the students. Enrollment in online courses has increased over the years (Allen & Seaman, 2013), with about 22% of graduate students exclusively enrolled in online programs in 2012, that increased to 27.1 % in 2013 (National Center for Education Statistics, 2016). Although there are numerous advantages of online learning, there is also increased concern about student retention, engagement and interaction in online courses (Levy, 2004; Gayton & McEven, 2007; Park & Choi, 2009; Street, 2010; Xie, 2013). There is evidence in literature that the dropout rates in online courses are greater compared to traditional face-to-face courses (Chyung, Winiochi & Fenner, 1998; Xenos, 2004; Heyman, 2010; Street, 2010). Student engagement is a key factor in ensuring students' successful completion of their degree, at the same time making online learning productive for the institution (Ivankova, 2014; Stott, 2016).

There have been multiple attempts to better understand engagement from a variety of perspectives resulting in many theoretical models of student persistence. Most show that retention increases with growing levels of academic and social engagement (King, 2014). Axelson and Flick (2011) have defined student engagement as a description of how involved or interested students appear to be in their learning and how connected they are to their classes, to each other and to their institution. Dixson (2010, 2015) agrees and has described engagement as being composed of individual attitudes, thoughts, and behaviors and communication with others. Thus, student engagement involves both affective and behavioral components like skills engagement, participation/interaction, emotional and performance engagement (Handelsman et

al., 2005). The framework for this study is based on the dimensions of student engagement by Handelman et al., (2005) and the best practices that students find engaging in online courses. Dixson (2010, 2015) based the Online Engagement Scale (OSE) on the student engagement dimensions by Handelsman et al., (2005). The authors intended to measure student engagement in a newly minted online Master of Special Education-General Education (M.EdSE) in add to research on online course choices. By using the OSE (and other data collection procedures described later) this study aims to both replicate the use of the OSE scale by Dixson (2015) and gather insightful information about student engagement in the online program that will be useful to the program and informative to other teacher preparation programs, particularly special education preparation programs.

Literature Review

Student engagement is a major factor in predicting dropouts in online courses. In an online survey comparing undergraduate and graduate students who dropped out from an online course to those who completed the course, it was found that dropout students reported to have significantly lower satisfaction with online learning courses (Levy, 2004). As per the USA National Survey of Student Engagement (NSSE, 2002), engagement is seen to comprise of active and collaborative learning, participation in challenging academic activities, communication with instructor and peers, and feeling legitimized and supported by university learning communities (Coates, 2007). Recent studies on student satisfaction and engagement focus on several best practices including – student interaction, active learning environment, instructor presence and feedback, the course design, and technology (Astin, 1993; Ewell & Jones, 1996; Tinto, 1993; Lundberg & Sheridan, 2015; Pascarella & Terenzini, 2005; Kuh et al., 2007; Salazar, 2010; Chakraborty & Muyia Nafukho, 2014; Young & Bruce, 2011; King, 2014; Levy, 2004; Sun, Tsai, Finger, Chen & Yeh, 2008; & Wong, 2013). The following paragraphs provide a summary of the existing literature for each of the factors.

Student Interaction

Student interaction with faculty and peers are critical to learning, with a strong association between formal and informal contact enhancing learning outcomes (Astin, 1993; Ewell & Jones, 1996; Tinto, 1993; NSSE, 2000, 2002; Lundberg & Sheridan, 2015). Learning outcomes are enhanced when students become active and purposeful participants in their learning (Astin, 1993). The results from Dixson's (2010) study on online engagement indicated that student-student and instructor-student communication were correlated with higher student engagement and student's access to multiple communication channels and interaction among students and between the student and instructor led to increased levels of engagement. Students also develop into autonomous learners through the practice of engagement and interaction with faculty and peers, leading to critical thinking and personal development (Pascarella & Terenzini, 2005). Rabe-Hemp, Woollen and Humiston (2009) in a study comparing autonomous learning in an online setting and traditional classroom setting, found that students in online courses were more reflective in their learning practices, and more involved in their class discussions with higher levels of student-instructor interaction.

Active Learning Environment

Kuh et al., (1997) recommended opportunities for active learning, with collaboration and interaction with other learners increase engagement (Astani, Ready & Duplaga, 2010; NSSE, 2000, 2002). Students develop into autonomous learners through the process of student-centered teaching, involving interaction, reflection, analysis and discussion, leading to better academic performance (Pascarella &Terenzini, 2005). Similarly research demonstrates that student participation in a learning community is positively linked to perceived engagement (Young & Bruce, 2011). Student's engagement in educationally purposeful activities are positively related to both grades and persistence, and increased graduation rates are correlated to engaging pedagogies like active and collaborative learning (Kuh et al., 2007). Dixson (2010, 2015) found that students did not report any particular activity as increasing engagement but a variety of activities as effective. Multiple activities like discussion forum, labs and group projects, and research papers were engaging as part of active learning (Dixson, 2010). Researchers recommend that collaborative activities need to be embedded in online learning to avoid a lack of student engagement and isolation in online learning (Chakraborty & Muyia Nafukho, 2014; Salazar, 2010).

Instructor Feedback and Presence

In their quantitative study of 1,410 undergraduate and graduate students across five colleges to examine the correlates of online classroom community and student engagement, Young and Bruce (2011) found that the instructor presence was important to create a sense of community and that the instruction needs to be designed to actively involve learners in meaningful tasks to elevate student engagement. In this case, classroom community was defined as the connections among students and between students and instructor that lead to increased learning (Young et al., 2011). Feedback given by the instructor as part of the coursework is useful and has a positive impact on the student's success in online courses (Chakraborty & Muyia Nafukho, 2014; Kupczynski, Ice, Wiesenmayer & McCluskey, 2010) that relates to extrinsic motivation (Handelsman et al., 2005). Chakraborty et al., (2014) based their findings on a review of literature through a systematic and thorough search of empirical studies focusing on online engagement strategies. Feedback that relate to clarification and understanding the key points from the course materials, and assignments are important as there is a common concern in the literature that interaction between the student and the instructor maybe limited in an online learning environment (Gillingham & Molinari, 2012; King, 2014). Timely feedback was crucial to success and engagement (Young & Norgard, 2006). Dixson (2010) had reported that students who received feedback on assignments scored higher on engagement levels. Student-instructor interaction also led to increased learner satisfaction (Abdous & Yoshimura, 2010) thus emphasizing the importance of the role of the instructor in facilitating channels of communication and feedback to improve satisfaction (Gillingham & Molinari, 2012; King, 2014; Robinson & Hullinger, 2008; Simon, Jackson & Maxwell, 2013; Young & Bruce, 2011; Young & Norgard, 2006).

Course Design

Design of the online course was also a significant factor for student satisfaction and engagement with online courses (Ivankova, 2014; Levy, 2004), with students wanting a common structure for the courses (Young & Norgard, 2006). In a quantitative study exploring student perceived satisfaction in relation to course content, instructor feedback and attitude towards e-learning,

course flexibility and technology quality, and diversity in assessments, it was found using regression analysis that course quality had the strongest association with satisfaction, which included factors like course design, ease of use of course website and navigation, teaching materials, diversified assessments, and interactive discussion (Sun, Tsai, Finger, Chen & Yeh, 2008).

Technology

Student's knowledge and perception of technology was also found to shape student satisfaction and engagement with higher levels of experience with online learning leading to more favorable perceptions about online courses (Astani et al., 2010). The resources used for online learning in these courses also had an impact on the student engagement (Wong, 2013). Sun and Rueda (2012) found that online activities and tools like multimedia may increase the emotional engagement in online learning.

From the student's perspective, online courses offer several benefits, like increased flexibility, and more work-life balance; however, creating meaningful interaction is of paramount importance to engage an online student (Sun & Rueda 2012). The online instructor must develop the course with a structured online platform, establish and maintain an online presence, provide timely feedback, facilitate interaction among the students and themselves, distribute information in an efficient manner and incorporate various multimedia and active learning in learning resource tools, and facilitate multiple channels of communications (Kupczynski et al., 2010; Salazar, 2012). Thus, since student engagement is a key element that connects students with their course and learning, it is necessary to measure student engagement.

Measuring Engagement

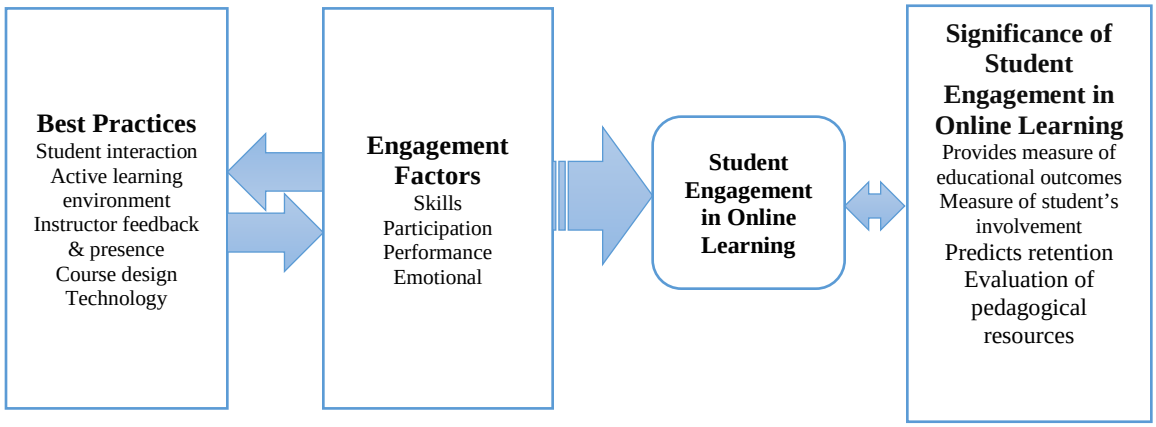
Numerous measures of student engagement have been developed and used in research. Handelsman et al., (2005) developed the Student Course Engagement Questionnaire (SCEQ) that contends that student engagement consists of four factors: skills engagement (what students "do" like staying up on reading, putting forth effort); emotional engagement (how connected they feel to the course/content, how applicable they feel it is like making the course interesting, applying it to my life); participation/interaction engagement (interacting with others, enjoying the course like having fun, participating in small group discussions), and performance engagement (student's desire or goal to succeed in the course like doing well on tests, getting a good grade).

Dixson (2010, 2015) modified the SCEQ to create the Online Engagement Scale, an instrument to measure student engagement in online courses. The Online Engagement Scale (OSE) was created using a four step process that included reviewing the existing measures of student engagement, conducting a focus group discussion of online instructors, a pilot study to test the initial instrument and finally a test for the instrument. Dixson (2010), in their pilot test of the 30 items conducted with 31 online students, found that the reliability was strong (Cronbach's alpha = 0.95) with the scale correlating with two global items on engagement with the course ($r = 0.73$; $p < 0.01$), one global item of social presence (getting to know other students), and one global item of teacher presence (getting to know instructor) ($r = 0.38$; $p < 0.05$).The engagement scale was then tested with a larger sample of 186 students across 38 courses from six campuses of a large Midwestern university. Factor analysis to validate the scale measurement yielded four

factors of 19 items loading 0.60 or higher: skills, emotional, participation, and performance (Dixson, 2010). The 19 items indicated a strong reliability with a Cronbach alpha of 0.91 and a significant correlation with the global course engagement item ($r = 0.67$; $p < 0.001$). Just as in the pilot test, these 19 items were significantly correlated with both instructor presence and student presence (Dixson, 2010). Hence only these 19 items were used for the OSE scale. To externally validate engagement, Dixson (2015) conducted a study to correlate the OSE with actual online student behaviors as tracked by the course management software, wherein the tracked behaviors included reading posts, reading/viewing content (reading posted documents or emails, viewing links or videos, writing posts or emails, and taking quizzes. Dixson (2015) divided online behavior into observation (taking in content) learning behaviors and application (producing/demonstrating learning) learning behaviors. The study found that the application learning behavior was significantly correlated with the OSE scale, thus supporting the validity of the scale in measuring the engagement of the students.

Figure 1 (shown below) illustrates the relationship between the best practices and the four factors of student engagement (Handelsman et al., 2005) forming the structure of the OSE (Dixson 2010, 2015).

Figure 1. Student Engagement in Online Learning



Thus, since the number of students taking online courses is increasing, understanding factors which contribute to student engagement is important (Stott, 2016) and getting information about student engagement will measure the student's involvement in key educational processes (Kuh et al., 1997) and help in focusing consideration of the quality of education (Astin, 1985). To understand the features of online learning pedagogy that may affect student engagement, this study explores the perspectives of graduate students in a newly started M.EdSE online course in a mid-Atlantic public university on increasing their engagement in the four factors of student engagement namely, skills, emotional, participation/interaction and performance engagement (Handelsman et al., 2005). Specifically, given the four factors of student engagement and importance of student engagement in online programs and the concern about student retention and interaction in online courses (Levy, 2004; Gayton & McEven, 2007; Park & Choi, 2009;

Street, 2010; Xie, 2013) the purpose of this study was to utilize the OSE to answer the following research questions:

1. To what extent are candidates enrolled in the online M.EdSE program engaged in their courses/program?
2. What factors/activities contribute to students' engagement in the online courses/program?
3. To what extent do candidates enrolled in the online M.EdSE program perceive engagement as a factor for success and retention in the program?

Method

This research study explores the perspectives of graduate students in a new master of education in special education (M.EdSE) online program in a mid-Atlantic public university. The online M.EdSE program is designed to prepare graduates with the professional knowledge and skills needed to work in a variety of settings with students identified with high incidence-disabilities (e.g., learning disability, EBD, OHI). The program can lead to an endorsement in the special education curriculum and is designed for students that work or plan to work in general education classrooms wherein children with special needs are being collaboratively taught either in self-contained, residential, or various community environments. The program is a total of 40 credit hours (14 courses) and can be taken entirely online. Through the online coursework, students will engage in curriculum that will incorporate a broad concept of education, research, development, related disciplines and special education to build on professional knowledge and understanding. The program offers field experiences that can take place in the students' classroom. There are placement opportunities outside of the candidates' classroom or schools as well. Students are required to complete a full-time internship (student teaching) during the final semester of the program. This internship/externship requires that students demonstrate competency in the program's curriculum through classroom practice and regular supervision (in-person or online) by faculty. Students can complete the program full-time in about two years and part-time in less than four years.

Universal Design for Learning

Universal Design for Learning (UDL) became an integral component of developing the coursework for online M.EdSe program. UDL is an important set of guidelines that allow for all students to access learning, based on their needs and interests (CAST, 2008). The main goal of UDL is to help educators address the learning differences for all students, from those with learning disabilities to those with significant academic proficiencies (Mangiatordi & Serenelli, 2013). UDL guidelines and principles provide a necessary framework to address learner variability, and provide instructor/student interaction, student engagement, and ongoing student feedback all designed to provide effective instruction (Watwood, Nugent, & Diehl, 2009). The researchers developed the following table that not only lists each of the principles and guidelines of UDL, but provides examples of how each is featured in our online courses. The UDL framework emphasis on engagement was of interest in developing the online M.EdSe program.

Seminars

Other integral components of our program were the monthly seminars conducted by faculty. Seminars were held in-person and streamed online, but were optional for students enrolled in the

online master's program. The seminars focused on expanding learning opportunities by engaging students in professional development activities that were covered in the online courses. The seminars provided in-depth practice and support on how to build relationships with students with disabilities and their families; equitable teaching practices; navigating the pressures and expectations of the first few years of teaching; analyzing the Individuals with Disabilities Education Act (IDEA) and other legislative and policy language so that teachers can learn the nuances of that language and engage in effective practice.

Survey Implementation and Procedures

As described earlier, the Online Student Engagement scale (OSE) (Dixson, 2015) was used by the authors to assess graduate students' perception of engagement in the online program. Dixson (2010) based the OSE on the Student Course Engagement Questionnaire (SCEQ) (Handelsman, Briggs, Sullivan & Towler, 2005) and modified it for online courses. This measure was used since its creators contend that student course engagement consisted of four factors: skills engagement (including staying current with reading and putting forth effort), emotional engagement (including making the course interesting, and applying it to the learner's life), participation/interaction engagement (having fun, participating actively in group discussion), and performance engagement (doing well on tests, getting good grades) (Dixson, 2010; Handelsman et al., 2005). The scale ranged from 1 to 5 where lower scores would indicate lower engaging behaviors related to the survey item and higher rating would indicate greater characteristic of the engaging behavior. As mentioned in the previous section, the Dixson (2010, 2015) studies showed that the OSE exhibited face and expert jury, along with concurrent and external validity. The OSE also exhibited reliability and thus could serve as a reliable indicator of student engagement in the online environment.

The authors also conducted a semi-structured focus group to reveal additional information about the factors that contributed to students' engagement in the online M.EdSE program. The focus group interviews lasted approximately 45 minutes and took place at the university. There were three open-ended questions asked to the focus group: (a) what factors contributed to your active participation in your online program? (b) What recommendations do you have for improving active involvement your online program?, and; (c) Would you recommend this online program to others? Why or Why not?

The survey was distributed to all participants enrolled in the online M.EdSE program through the university email and survey system during the second week in April, 2016, using Google Forms. The authors requested that the participants complete the survey. The authors also sent a follow-up/reminder email after approximately two weeks, and again after four weeks. This method resulted in 33 responses out of the total 42 participants in the program, of which 31 (73.8%) were fully completed and used for this study. The author also contacted participants via email to recruit participants to form a focus group to gather additional data regarding students' perceptions of engagement and the factors for success in the online program. Five participants agreed to join the focus group which was held approximately one week after the survey was closed to participants.

Data analysis

A mixed data collection approach was used to gather and analyze the quantitative and qualitative data. The quantitative data were analyzed using descriptive statistics (i.e., mean and standard deviation) for each item on the OSE scale. The focus group consisted of five students enrolled in the program. The focus group was based on three open-ended questions probing participants' perception about their level of engagement given the online and program course designs and activities. The qualitative data were analyzed using the 'framework analysis" process described by Ritchie and Spencer (1994) which comprises five stages of data collection and analysis of focus-groups: familiarization; identification of the thematic framework; indexing, charting, mapping an interpretation. The quantitative and qualitative feedback generated useful information.

Results

Demographics

At the time of this study there were a total of 42 students enrolled across the online M.EdSE program. Graduate students that enrolled in the program when it began in summer 2014 were asked to complete the survey. All students were in-state. In all, most of the participants were identified as female (*n* = 26; 83.9%) and male participants were (*n* = 5; 16.1%). Most of the participants were in the 20-29 age group (*n* =14; 45.2%) and were identified as white (*n* = 21; 67.7%). Participants were asked about their current employment status and whether they have ever enrolled in an online course before this program. Overwhelmingly, participants stated that they worked full-time (*n* = 25; 80.6%) and a clear majority had taken an online course before being enrolled in this program (*n* = 29; 93.5%). Approximately, seventy-one percent of participants had a grade-point-average that was 3.6 or above and a majority (*n* = 17; 54.8%) on average enrolled in at least 2 online courses per semester.

Quantitative and Qualitative Analysis

The means and standard deviations were calculated for each survey item. Mean scores ranged from 3.19 to 4.39. Overall participants mean scores were moderately high for the skills engagement factor category (*M* = 3.62 overall). The results for the emotional engagement factor also indicated a moderately high level of engagement by participants (*M* = 3.88). The range of mean scores for participation/interaction engagement were greater than other factors, but there was no significant difference on the average score for the category (M=3.61). Finally, the results for the performance engagement factor (M=4.18) were slightly higher than other categories, though still within the moderately higher range; which is consistent with other factors for the survey. Results are displayed in Table 2.

Table 2
Online Engagement Perceptions of Participants (*N=31*)

Engagement Skills	Mean	Standard Deviation
Skills engagement factor		
Making sure to study on a regular basis	3.39	.989
Staying up on the readings	3.23	.920
Looking over class notes between getting		

online to make sure I understand the materials	3.52	1.12
Being organized	3.84	1.00
Taking good notes over readings, PowerPoints, or video lecture	3.84	1.13
Listening/reading carefully	3.94	1.09
Emotional engagement factor		
Putting for effort	4.03	.983
Finding ways to make the course material relevant to my life	3.97	1.08
Applying course material to my life	4.06	.963
Finding ways to make the course interesting to me	3.57	1.10
Really desiring to learn the material	3.77	1.04
Participation/Interaction engagement factor		
Having fun in online chats, discussions or via email with the instructor or other students	3.23	1.15
Participating actively in small-group discussion forums	3.68	1.05
Helping fellow students	3.97	.983
Engaging in conversations online	3.65	.854
Posting in the discussion forum regularly	3.94	.854
Getting to know other students in the class	3.19	1.14
Performance engagement		
Getting a good grade	4.39	.919
Doing well on the tests/quizzes	3.97	.983

In open-ended questions, the focus group was asked to describe factors/activities that contributed to their active engagement in their online courses and the online program. Many of the areas that were identified as factors that contributed to active engagement were like skill engagement strategies that were rated high on the survey by participants (e.g., being organized; notes and video lectures; applying course material to my life). To be more specific, the common themes that emerged from the responses were: (a) the interactive capabilities of the course and how it was designed, allowing them to have easy access to course information, tools, and resources, (b) how applicable the material was to their current careers, and (c) the interaction that took place in the discussion boards. (See Table 3 for examples of participants' replies that helped to form each theme).

Table 3. Open-ended question response and themes

Skill engagement topics	Participants' quotes
Factors/activities that contributed to their active engagement	"clicking through the course settings and easy use of the technology resources made me more active in the course" "the instructional modules were easy to use." "the assessment and reading classes provided me with content that I needed right away to help my students" "UDL class with using the technology resources, I was able to use those technology resources right away in my classroom" "and I liked when the professors had a question and answer session, that was really helpful"
Improve active involvement in online courses and program	
	"I liked having the seminars because of the in-person contact." "group assignments were not as meaningful until I was able to meet the people in the group"
Recommend the online M.EdSe Program: why or why not	
	"the schedule of the online program allowed me to make my own routine and I like the freedom; and distance was not an issue" because I work, "4-6:40 classes do not fit in to my work and family schedule; the online course and program is what I needed" "structure of the courses and program allowed her to be engaged and created a positive and meaningful experience" "I have taken online courses before and this structure just works for me." "the fact that we do not have traditional assessments, instead we have many project-based activities and are assessed in multiple ways was necessary for me to show my knowledge"

Focus group respondents were also asked what recommendations they must improve active involvement in their online courses and program. Participants indicated that having more in-person contact to increase collaboration to help improve engagement. This is consistent with survey results that indicated lower engagement levels under the participation and interaction engagement factor. Many of the participants discussed how the program seminars were meaningful and contributed to their active participation in courses and within the program. (See Table 3 above for example replies).

As a final inquiry, participants were asked would they recommend the online M.EdSE program to other and why or why not. Overwhelmingly, participants agreed that they would recommend this program to other students. The major themes emerging from this question centered on (a) flexible programming, (b) easy course design and (c) rigor. As with the survey responses may be linked to emotional engagement and participation/interaction engagement factors that received higher ratings. (See Table 3 above for examples of participants' replies that helped to form each theme for this question).

Discussion

As indicated earlier, the importance of engagement in supporting the retention and active learning of students—mostly those in an online program—has been recognized in the literature (Gayton & McEven, 2007; Park & Choi, 2009; Street, 2010). It is generally understood that a reduced focus on engagement may adversely affect a student's involvement, learning, and retention in an online course (Ivankova, 2014; Stott, 2016). Namely, both the social and academic success of a student in an online program may very well be dependent on the level of engagement—how connected the student is, how she interacts with peers and instructor, and how she interacts in the course, and with learning activities. Engagement signifies one of the most critical parts of an online course, and is essential across disciplines, and both for face-to-face and online learning environments (Azvedo, 2015).

Though the correlation between engagement and retention and learning is well recognized, there is limited research on what students perceive as engaging for academic and social success and retention in an online course (Dixson, 2015). This study was an attempt to build off Dixson's (2015) online student engagement measure to assess graduate student's perceptions of engagement in a newly minted online M.EdSE program, and to acquire knowledge and understanding about the activities that create a sense of engagement for students to support academic and social success, and retention in the program. This study measured graduate-level special education students enrolled after their first year in the online program. The students were asked to rate whether each behavior, thought, or feeling (four factors of engagement) in the survey was characteristics of her, and to describe the activities and other factors that contributed to engagement in course and in programming. In the Dixson study, the OSE was validated and student behaviors were tracked using an online course management system; however, the experiences of these students and whether engaging activities and other related factors play a role in student retention in these online courses or a program was not considered. However, consideration of the relationship between engagements of students in online courses/programs is critical to ensure success in learning and retention.

Overall, the results provide empirical support in the interpretation of student engagement in terms of the online engagement scale measuring the four factors - skills engagement, emotional engagement, participation/interaction engagement and performance engagement (Dixson, 2015; Handelsman et al., 2005). Specifically, the investigators found that students indicated are emotionally engaged as is reflected by the highest rated engagement items on the OSE scale of "applying course material to my life," and "putting forth effort, and finding ways to make the course material relevant to my life." The themes that emerged from the first open ended question in the focus group interview is directly related to emotional engagement as the participants could

generate discussion that centered on how applicable the course material was to their current roles. The participants stated that having an instructor who was knowledgeable about the content, could understand where they were in their careers, and make this information applicable was motivating and allowed them to use the material in their current settings. The results found here are like those found by Rabe-Hemp et al., (2009), Pascarella & Terenzini (2005), Kuh et al., (1997) and Handelsman et al., (2005). This finding may suggest that educationally purposeful activities (e.g., reflective research projects, discussion board with peer-to-peer interaction, labs) may create a strong agreement in emotional and active engagement and learning in online courses.

Additionally, the participation/interaction engagement factor generated interesting findings. As stated earlier, student engagement can depend on the course design and instruction, assessments, technology, and the creation of an active online environment (Sue et al., 2008; Young & Bruce, 2011). In the present study, students identified "helping fellow students," "posting in the discussion forum regularly," and "engaging in conversations online," as higher rated factors for participation/interaction. This finding resonates with the focus group that discussed how they valued online discussion interaction. Participants in the focus group perceived the discussion boards as interactive sessions facilitated by the instructors, and were valuable in building relations, and critical thinking. In comparison, the other items on the OSE that correlated to participation such as "having fun in online chats, discussion or via email with the instructor or other students" and "getting to know other students in the class" were rated lower. This finding might be explained by the feedback from the focus group where the students wanted more in-person contact along with online interaction with fellow students to increase collaboration and meaningful relations, and emphasized the significant role that the monthly seminars had on their engagement levels. Furthermore, this finding may suggest that although there are activities identified by the students as interactive (e.g., online discussion boards), students may need additional opportunities, perhaps hybrid-like opportunities, to interact with peers and instructors. It has been found in earlier studies that students may feel isolated in the online environment and will value interaction with instructor and collaborative activities with other students (Chakraborty et al., 2014; Salazar, 2010).

Using multiple forms of online activities and tools increases online engagement (Sun & Rueda, 2012). Also, purposeful collaborative activities are positively related to both grades and persistence leading to meaningful learning and increased graduation rates (Kuh et al., 2007). Respondents in this study valued having multiple project-based activities and being assessed in multiple ways, which is consistent with previous research. In the present study students also valued "engaging in conversation online (e.g., chat, discussion, email)". This result is in alignment with Dixson's (2010) findings that students valued multiple ways of interacting with peers and instructors and being involved in multiple activities resulted in higher engagement in their course.

For the skills engagement factor, the highest ratings received were "listening/reading carefully," "taking good notes over readings, PowerPoints, or video lecture," and "being organized." The higher ratings of these skills are aligned with suggestions by several researchers regarding the importance of course design, with students wanting a common structure for organization of online courses (Young & Norgard, 2006) and what drives the development of autonomous

learning through the practice of engagement (Pascarella & Terenzini, 2005). These findings may suggest that students perceive that links in the course design and other factors allow for more opportunities for organization, but they are less motivated with "staying up on the readings," "studying on a regular basis," and "looking over class notes between getting online to make sure I understand the materials" (autonomous learning practices). Justification for this finding may be hinted at in the focus group as some students indicated that while online programming is flexible, at times one must remain motivated to keep up with the routine responsibilities (e.g., readings).

Finally, in the performance engagement factor of the survey, students indicated that the two items "doing well on the tests/quizzes," and "getting a good grade", were both important. This suggests that the students are motivated by extrinsic rewards like "good grades" that relates to doing well in the courses and is consistent with instructor feedback and presence that relates to extrinsic motivation (Handelsman et al., 2005) and improved student satisfaction with online course and online programs. These results suggest that students are likely to highly engage when extrinsic rewards (e.g., timely feedback, verbal and social activities that produce rewards, approval, or validation) are present in online courses or programs.

Limitation and Future Research

Findings from this study provide insight on student's perceptions of engagement in an online M.EdSE program. However, interpreting these findings should be viewed with caution, based on limitations within the study. First, the numbers of participants are limited by the nature of the program's population; therefore, studies on this topic will warrant a larger sample of participants to assist with generalizability. Second, this study focused on one university's program which also limits the generalizability of the findings. Third, a survey was used to collect a portion of the information. Therefore, the study has its typical limitation associated with survey methodologies to collect information (Visser, Krosnick, & Lavrakas, 2000). Another limitation is that this study used interviews through focus groups to report data. Self-reporting can elicit a biased response by the participant (Crewsell, 2007) and can be biased based on the presence of the researcher and/or the nature of the topic. The author attempted to eliminate any bias by defining the nature of the study for participants and following up with participants if there were misunderstandings or clarification needed about a response. The authors also discussed any apparent correlation between the survey and focus group responses to justify the findings reported from the survey. However, it is recommended that additional research on this topic should consider other data collection methods that will examine the perceptions and experiences of students enrolled in online courses and programs. Overall, we believe the findings reported are of value to the literature about online student engagement, particularly to new and developing online special education teacher preparation programs.

Future research should attempt to increase the participant pool for greater impact on stakeholders and consider collecting information from students, instructors, and other academic stakeholders. While the qualitative data in this study helped to highlight apparent links in students' perception of engagement in the online program (e.g., applying course material to life); this data also helped to note continued challenges for students (e.g., interaction with other students). Future quantitative and qualitative investigations may go deeper in addressing some of the following questions: What activities correlate to which engagement factor and creates meaningful activities

and learning experiences for students in online programs? What types of activities do both students and instructors in an online program value as engaging and meaningful? Does student academic performance increase when it is linked to student engagement? Are special education teachers better prepared to work with students with disabilities when engagement is higher in their preparation programs? And, does using a UDL framework approach to online courses truly increase student engagement and outcomes? Finally, the findings from this study suggest that teacher training programs, particularly in special education, should support programs that are *currently* online or *seeking* to go online. Therefore, future investigations should review distance education programs to help predict retention in online learning courses. Most importantly, engagement in online courses should be understood to enhance student learning.

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Mindfulness Meditation with High School Students who Receive Special Education Services: Research Recommendations from a Pilot Study

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Abstract

Research has shown evidence that mindfulness-based meditation practices are effective treatment interventions for mental, emotional, and medical disabilities in the adult population. There has been a limited number of research studies showing the effectiveness of meditation practices with high school students who receive special education services. This randomized waitlist control pilot study was designed to assess the effect of mindfulness meditation practice with 10 secondary students who receive special education services. The independent variable was a mindfulness meditation technique that was delivered as an afterschool program. Analysis of the dependent variable measurement of perceived stress demonstrated a medium effect size with Cohen's d = -.46 and a low effect size for anxiety with d = -.22 between the pretest and posttest measurements. Lastly, the paper concludes with research recommendations when studying mindfulness meditation with high school students who receive special education services. These recommendations include implementing a contemplative program versus a contemplative technique with ample interaction time exceeding 700 minutes and a group discussion for the participants to process their experiences related to mindfulness.

Mindfulness Meditation with High School Students who Receive Special Education Services: Research Recommendations from a Pilot Study

Mindfulness is a form of awareness that is practiced by our inner ability to relax, pay attention, and be aware of our inner thoughts and outward actions (Kabat-Zinn, 1990). Mindfulness is based on seven principles defined by Kabat-Zinn (1990) as (a) non-judging, (b) patience, (c) beginner's mind, (d) trust, (e) non-striving, (f) acceptance, and (g) letting go. The practice of mindfulness is often learned through a structured program called, Mindfulness-Based Stress Reduction (MBSR). MBSR was developed by Kabat-Zinn (1990) as an experiential contemplative program that uses a pedagogical approach through weekly group sessions, a curriculum embedded with the principles of mindfulness, guided meditations, and group discussion as a tool for the practitioner to manage his or her daily stress. Since MBSR's inception in the early 1990's, many mindfulness-based programs have been developed and validated for use with children and adolescents (Biegel, Brown, Shapiro, & Schubert, 2009; Burke, 2010; Lee, Semple, Rosa, & Miller, 2008; Meiklejohn et al., 2012; Thompson & Gauntlett-Gilbert, 2008).

In the Garrison Institute Report on Contemplation and Education, the authors used the structure of Kabat-Zinn's MBSR program and mindfulness principles to provide a distinction between a contemplation (mindfulness) program and a contemplation (mindfulness) technique. A contemplative program uses a pedagogical approach that specifically emphasizes mindfulness

and improving a person's capacity for self-awareness; such as, MBSR (Schoeberlein, Koffler, & Jha, 2005).

Two important components of a structured contemplative program, like MBSR, is the practice of a guided meditation and group discussions. Guided meditation is defined as the process of leading an individual (via an outside source, teacher or recording) through a visualization exercise to use his or her imagination to engage in relaxation or problem solving strategy (Hart, 2004). For example, a guided meditation may begin with the instructor asking the participant to sit or lie down comfortably with eyes closed. The instructor then asks the participant to visualize a lake. The instructor then provides guidance for the practitioner to mentally perform while visualizing the lake. These instructions may include bringing awareness to the physical act of breathing, or visualize throwing an object that represents a stressful event into the lake as a way of releasing that stressful moment.

The practice of a group discussion after meditating gives the practitioner an opportunity to share his or her experience of the meditation related to using the seven principles of mindfulness in everyday life. The group discussion typically happens at the beginning of each session and after the guided meditation practice. In this way, the instructor can help the participants connect how to use the principles of mindfulness in relation to real-world experiences (Kabat-Zinn, 1990).

Whereas, according to the Garrison Institute Report on Contemplation and Education, contemplative techniques include attention training, meditation, and yoga without using a pedagogical approach (Schoeberlein et al., 2005). For example, a contemplative technique may be the practice of meditating for 20 minutes twice a week or attending a yoga class.

Mindfulness research with children and adolescents. In recent years, contemplation programs, such as MBSR, and contemplation techniques have started to penetrate into classroom settings from elementary schools all the way to higher education. Randomized research studies of various contemplation programs and techniques have shown significant outcomes for adolescents with stress and anxiety-related disorders (Carmody & Baer, 2008; Carmody et al., 2009; Reibel, Greeson, Brainard, & Rosenzweig, 2001; Semple, Reid, & Miller, 2005; Lee et al., 2008) and Attention Deficit and Hyperactivity Disorder (ADHD; Semple, Lee, Rosa, & Miller, 2010; Smalley et al., 2009), which are common struggles of students who receive services for special educational services. Based on these research findings with effect sizes ranging from small to large (Cohen's d = -.2 - 1.2), mindfulness-based meditations, a contemplative technique, may enhance adolescents' ability to cope with stress-related symptoms and behaviors (Burke, 2010; Carmody et al., 2009; Grossman, Niemann, Schmidt, & Walach, 2004).

Mindfulness for Students with a Disability

Mindfulness is intentionally paying attention to one's thoughts as they surface without making judgments about them (Kabat-Zinn, 2003), and it is also the state of being fully present to one's thoughts and actions without reacting out of habit (Salzberg and Goldstein, 2001). Through the use of a contemplative technique such as mindfulness meditation, a student with a disability may learn how to objectively observe his or her own moment-to-moment experiences and decrease their sense of "going through the motions". For example, a student with Specific Learning Disability (SLD) due to a reading comprehension deficiency may become automatically stressed

and anxious, which is his or her typical moment-to-moment response, when given a reading assignment. Through mindfulness practices, the student may learn to reduce these automatic feelings of stress and anxiety and become more open to employing strategies that can improve the outcome of the reading assignment.

The number of quantitative research studies measuring the effectiveness of contemplative techniques; such as mindfulness, with secondary students with a disability is very limited. Therefore the significance of this pilot study is to determine the extent to which a guided mindfulness meditation practice can provide secondary students who receive special education services additional skills for managing stress and anxiety related to everyday academic and social challenges faced in the school setting. Mindfulness meditations are designed to reduce stress, enhance attention, and decrease negative self-judgments (Semple et al., 2010), which can break the counterproductive cycle of stress, anxiety, and self-blame that many secondary students who receive special education services face on a daily basis. Through the practice of mindfulness-based meditation each student who receives special education services will learn to (a) cultivate patience and acceptance towards one's self, (b) react nonjudgmentally to events and emotions, and (c) release positive and negative emotions connected to events.

The following questions were asked to guide this study:

1) After a student is taught how to use guided mindfulness meditation, is there a statistically significant increase in his or her level of mindfulness awareness?

2) From the pretest measurements to the posttest measurements, is there a statistically significant change in the student's perceived stress levels and anxiety?

3) Do the teachers involved in this study observe a statistically significant (a) decrease in concentration problems, (b) decrease in disruptive or aggressive behavior in the classroom, and/or (c) an increase in positive social interactions from the beginning to the conclusion of the intervention?

The purpose of this paper is to discuss the parameters of the research project, the results of the study, and the findings of the study based on the results compared to current research. Lastly, this paper will offer recommendations based on the findings of the study that would benefit future research conducted with the use of contemplative techniques; such as mindfulness, and secondary students who receive special education services.

Materials and Methods

This pilot study employed a quantitative, experimental, randomized, pretest-posttest, waitlist control group design to assess the impact of guided mindfulness meditation on secondary students who receive special education services in a public school setting. This design was chosen because "true experiments comprise the most rigorous and strong experimental design because of equating the groups through random assignment" (Creswell, 2008, p. 313). The benefits of using this type of research design minimizes threats to internal and external validity

(Dimitrov, 2008) and uses the same research methodologies and scientific methods as other fields of research (Gersten et al., 2005, Klingner & Boardman, 2011).

Setting

The mindfulness meditation intervention took place as an after-school program that was located in a secondary public school in a suburban community in the mid-Atlantic region of the United States. The meditation intervention was not part of the existing school program. A classroom in the school was utilized to provide adequate space and privacy for the participants to receive the intervention and was large enough to accommodate the students.

Participants

All of the students who were eligible to participate in the study were from the same suburban secondary school and received the same curriculum and instruction. The inclusion criteria for a student to be selected to participate in the study included (a) the student must already be identified as currently receiving special education services under the classification of an emotional disability (ED) or a specific learning disability (SLD), (b) the student must have a current individualized education program (IEP), and (c) the student must have be attending the targeted secondary public school.

Recruitment

The researcher completed a Human Subjects Review Board application from the supporting university and for the participating school district to obtain permission to conduct the meditation intervention. When final approval was granted, the researcher identified eligible applicants by contacting the Assistant Principal who oversaw the Special Education Program, within the targeted secondary school.

The Assistant Principal provided a list of students meeting the outlined criteria. Based on this list of identified students, the researcher mailed home a recruitment package to the parents or guardians of the 101 identified students. Twenty students agreed to participate in the study.

Group Selection

With research that implements a waitlist control design, participants are identified into two different groups. The treatment group is designated to receive treatment first and receives the intervention immediately. The group not receiving treatment immediately is designated as the waitlist control group and is required to wait a specified amount of time before receiving the intervention. The specified time that the waitlist control group participants wait to receive treatment is usually the same amount of time it takes to administer the intervention to the first group (Goodwin, 2009; McKay, 2007). "The optimal method for assigning participants to study conditions is through random assignment" (Gersten et al., 2005, p. 155). Randomization of participants to treatment conditions creates "a more sensitive measure of the experimental manipulation" (Field, 2009, p. 17). Thus, the 20 participants were randomly selected to be in either the treatment group or the waitlist control group. Each group consisted of 10 participants.

Independent Variable

The independent variable was the contemplative technique of guided mindfulness meditation. Even though the intervention is based on a contemplative technique, each intervention session was structured to follow a sequence of events. The intervention occurred after-school, twice a week for 45 minutes per session for a total of ten sessions per group. During intervention sessions, participants received a five-minute overview of the upcoming meditation, participated in a 20-minute mindfulness meditation, and completed a five-minute journaling activity. Ten minutes were allotted for the participants to gather and put away their intervention materials and ask questions at the beginning and the end of each session.

The mindfulness meditations chosen for this pilot study were to instruct participants on how to better understand the purpose of sitting or lying quietly without falling asleep and how to focus on one event at a time (Kabat-Zinn, 2005). Each of the mindfulness meditations had been developed and narrated by Kabat-Zinn (2005) for use in the practice of a mindfulness meditation program. Each meditation was designed to be practiced, or heard, while in a seated or lying position, and each meditation was 20-minutes long. The guided mindfulness meditation was administered via individual mp3 players for each participant.

When the meditation ended the participants were prompted to use his or her notebook to write down or draw any thoughts or feelings they may have experienced during or after the meditation. Due to the time constraints of the study, the journaling activity was intended to replace the common mindfulness practice of a group discussion after the meditation.

Completers v. non-completers. The participants were expected to attend all 10 intervention sessions. However, if the participants did not attend all of the sessions it was necessary to determine how many sessions a participant could complete to have received the intervention. Bogels, Hoogstad, van Dun, de Schutter, and Restifo (2008) considered a participant to have received the full dosage of treatment and to be a completer of the program if they attended at least five out of eight intervention sessions. This equates to 63% attendance by the participants. Lee et al. (2008) defined a completer as completing at least eight out of twelve intervention sessions. This equates to 66% attendance by the participants.

Based on the definitions outlined by Bogels et al. (2008) and Lee et al. (2008), for the purpose of this study, participants were considered to have received the full dosage of treatment by completing at least seven of the ten intervention sessions. This equates to 70% attendance by the participants. These participants were considered "Completers". If the participants attended less than seven sessions they were considered "Non-completers."

Dependent Variables

The dependent variables were the participants' mindfulness, perceived stress, anxiety, and classroom behavior. These four dependent variables were measured through three different self-reporting assessments and one teacher assessment. The data from each of these assessments were intended to provide the information necessary to answer the research questions related to this study.

Mindful awareness. The Child Acceptance and Mindfulness Measure (CAMM; Greco, Baer, & Smith, 2011; Greco, Dew, & Ball, 2005) was used to assess each participants' mindful awareness. The CAMM is a self-reporting scale which measures the degree of mindfulness related to a child's or adolescent's acceptance of internal experiences without judging them (Ciarrochi & Bilich, 2006).

Perceived stress. The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) was used to assess each participants' perceived stress. The PSS is a self-reporting scale which measures the degree to which situations in a person's life over the past month are appraised as stressful. The scale measures the degree to which situations in a person's life over the past month are rated as unpredictable, uncontrollable, and overwhelming (Carmody & Baer, 2008).

Anxiety. The Revised Children's Manifest Anxiety Scale, Second Edition (RCMAS-2; Reynolds & Richmond, 1978; Reynolds, 1985) *was used to assess each participants' anxiety. The RCMAS-2* is a self-reporting 49-item scale which measures the level and nature of a child's anxiety, and can lead to an accurate diagnosis for children and adolescents with social-emotional problems (Denzine, 2010). The revised scale provides a total anxiety score and three sub-domain scales, which include physiological anxiety, worry, and social anxiety (Denzine, 2010).

Classroom behavior. The Teacher Observation of Classroom Adaptation - Checklist (TOCA-C*;* Koth, Bradshaw, & Leaf, 2009) *was used to assess each participants' classroom behavior. The TOCA-C* is a teacher report scale designed to rate a student's classroom behavior in order to assess the impact of school-based preventive interventions on that student's behavior (Koth et al., 2009). The TOCA-C consists of a summary score and three sub-domain scores, which include concentration problems, aggressive and disruptive behavior, and pro-social interaction.

Results

Sample Description

Of the 20 participants who received the mindfulness meditation treatment, 10 (n = 10) of the participants completed seven or more sessions, also defined as a "Completer". The data collected for the Completers were analyzed. The data for the Non-completers were not analyzed because they may not have received a sufficient amount of the intervention.

The Completers of the study (n = 10) consisted of 70% male adolescent and 30% female adolescent. The average age of the participants was 16 years of age. Of the 10 participants, 70% were Caucasian, 20% were African American, and 10% were Hispanic. There was a relatively even distribution of participants across grade level and 10% of participants received free or reduced lunch.

The average percentage of special education services received during a typical school day by the participants was 33.6% (SD = 29.39). Seventy percent of the participants received services for SLD, whereas 30% received services for ED.

Preliminary Analyses of Groups' Scores

Prior to analyses of the research questions the researcher first determined whether the pretest scores between Group A (treatment group, n = 5) and Group B (waitlist control group, n = 5)

were or were not statistically different. Of the 10 participants considered Completers, it was determined by statistical analysis that Group A (treatment) and Group B (waitlist control group) were not statistically different as indicated in Table 1. The researcher therefore combined both groups together into a group of 10 participants for further analysis.

Table 1

Preliminary Analyses of Groups' Scores

	Treatment Group (n = 5)		Waitlist Control Group (n = 5)		Levene's Test for Homogeneity of Variance		ANOVA	
	Mean	SD	Mean	SD	*F*	*P*	*F*	*p*
Measure								
Mindfulness (CAMM)	20.60	5.64	24.80	16.04	(1, 8) = 2.54	.150	(1, 8) = .305	.596
Perceived Stress (PSS)	23.80	4.09	20.60	6.91	(1, 8) = 2.12	.184	(1, 8) = .794	.399
Anxiety (RCMAS)	58.40	6.47	51.80	17.15	(1, 8) = 4.47	.067	(1, 8) = .648	.444
Classroom Behavior – English (TOCA-C)	2.79	.401	2.82	.734	(1, 8) = .593	.463	(1, 8) = .007	.934
Classroom Behavior – Math (TOCA-C)	3.18	.624	2/70	.590	(1, 8) = .526	.489	(1, 8) = 1.54	.250

Data analysis. Using the combined group of participants (n = 10) who completed the intervention treatment, a multivariate ANOVA repeated-measures test was completed to determine if there was a significant difference among the dependent variables from the pretest to the posttest measurements. The multivariate ANOVA repeated-measures test reported no statistically significant difference for any of the dependent variables at the .05 level as indicated in Table 2. Based on the data analysis, this means that for each of the research questions, there was no change in the participants' mindfulness, perceived stress, anxiety, or classroom behavior from the pretest measurement to the posttest measurement as a result of practicing a mindfulness meditation.

Table 2
F-Text with the Greenhouse-Geisser Correction Results

Measure	*F*	*p*	*ES* (SD_{Pooled})
Mindfulness (CAMM)	(1, 9) = .007	.993	.02
Perceived Stress (PSS)	(1, 9) = 1.86	.205	-.46
Anxiety (RCMAS)	(1, 9) = .604	.457	-.22
Classroom Behavior – English (TOCA-C)	(1, 9) = 4.92	.054	-.31
Classroom Behavior – Math (TOCA-C)	(1, 9) = .326	.582	.09

Discussion

Even though the results of the pilot study revealed no significant changes in any of the four dependent variables in the sample population, two of the dependent variables, perceived stress and anxiety, showed promise by evidence of a low to moderate effect size. The following discussion of the dependent variables compares the results from the current research study to similar research studies and possible reasons why statistical significance was not achieved.

Mindfulness. The results from this study did not demonstrate a significant difference in the dependent variable of mindfulness. Which is similar to van der Oord, Bogels, and Peijnenburg (2012), who used a contemplative program, and van de Weijer-Bergsma, Formsma, de Bruin, and Bogels (2012), who used the contemplative technique of mindfulness, also reported no statistical significant difference for mindfulness in both of their studies. In contrast, studies by Lau and Hue (p = .01) (2011), Bogels et al. (d = 0.5) (2008), and Brown, West, Loverich, and Biegel (d = .61) (2011) all demonstrated significant changes in a participant's mindfulness. All three of these research studies consisted of interventions that were structured contemplative programs such as MBSR or Mindfulness-Based Cognitive Therapy (MBCT).

Comparing the results of this study with Lau and Hue (2011), Bogels et al. (2008), and Brown et al. (2011) there is evidence that participants are more successful at increasing their mindfulness with a contemplative program; such as MBSR. As stated earlier, one of the major differences between a structured program like MBSR and practicing mindfulness meditation outside of a structure is the group discussion of experiences. The discussion of the meditation experience helps the practitioner link what he felt to the principles of mindfulness; therefore, possibly leading to an increase in overall mindfulness. The results from this study, which did not include a discussion of the participant's experience, may lead to the conclusion that the group discussion component of a contemplation program increases a person's level of mindfulness.

Perceived stress. With an overall effect size of Cohen's d = -.46 this is an indication that a moderate observable decrease in a participant's stress level occurred from practicing guided mindfulness meditation on a regular basis. Which is similar to Biegel et al. (2009), who reported a significant change with a large effect size of d = .89 in perceived stress. Biegel et al. (2009) used a structured contemplative program, such as MBSR, which included an opportunity for the participants to discuss their meditation experiences. A difference between this research study and the Biegel et al. study was the duration of the intervention interaction time. Interaction time is defined as the number of minutes the participants spend with the researcher or instructor during the intervention. This study included ten sessions at 45 minutes per session for a total of 450 minutes of interaction time. The Biegel et al. study was eight sessions for 120 minutes per session for a total of 960 minutes of interaction time. Resulting in a 510 minute difference between the current study and the Biegel et al. study. Which may indicate that 450 minutes of interaction time is not sufficient to statistically reduce stress with this population of students.

Anxiety. With an effect size of Cohen's d = -.22 there is an indication that a low observable decrease in a participant's anxiety levels occurred from practicing guided mindfulness meditation. Based on the studies reviewed there is inconsistency whether contemplative techniques can reduce anxiety for children and adolescents. Three studies reported no significant change in anxiety (Lau & Hue, 2011; Lee et al., 2008; Liehr & Diaz, 2010), whereas three studies reported significant decreases in anxiety (Beauchemin, Hutchins, & Patterson, 2008; Biegel et al., 2009; Napoli, Krech, & Holley, 2005). More specifically, Biegel et al. (2009) reported a high effect size for state anxiety (d = .70) and trait anxiety (d = .79) and Napolie et al. (2005) reported a small effect size for overall anxiety (d = .39).

A factor that may have contributed to the study not reporting a significant difference in the dependent variable of anxiety may be because the participants did not have clinically elevated T-scores as reported by the RCMAS-2 to indicate a clinical condition of anxiety. This is similar to findings in the Lee et al. (2008) study. Of the 10 Completers in this study, four of the participants could have been considered to have a clinically elevated score for anxiety as reported by the RCMAS-2. Therefore as Lee et al. stated, a reduction in the score "may not be clinically relevant even with the overall trend of decreased symptoms" (2008, p. 24). If the participant did not report signs of anxiety to begin with any further reduction in anxiety symptoms would not be captured by the reporting measure, RCMAS-2.

Classroom behavior. The effect size for classroom behavior in both English (Cohen's d = -.31) and mathematics (Cohen's d = .09) class averages to an overall effect size of Cohen's d = -.11.

This is an indication that the guided mindfulness meditation had no effect on improving a participant's classroom behavior in multiple settings. From the studies reviewed, nine of the studies measured participants' behavior and reported a statistical difference due to learning a contemplative program or contemplative technique. The results from these nine research studies are based on the significant results of the dependent variables related to social skills and impulsivity as reported by a teacher or parent, which are comparable to the three subscales of the TOCA-C; concentration, disruptive behavior, and pro-social skills.

The main difference between these nine studies is that six of the studies employed a sample population of elementary age children. The six studies that used a sample population of elementary age children may support Bradley et al.'s (2008) speculation that students with disabilities may become resistant to interventions as they reach higher grade levels because of the frequency school-based intervention programs change. Regardless of the number of school-based intervention programs a student who receives special education services experiences, he or she still may have a difficult time accepting that a program or an individual can help them. For example, a student with SLD may be too depressed because of poor grades to be open to learning an intervention program (Elbaum & Vaughn, 2003). Or a student with ED may not trust teachers and therefore does not respond positively to a teacher when they try to teach an intervention program (Hallahan & Kauffman, 2006). Therefore, elementary age children in the six studies who did improve classroom behavior may have done so because they had not built up resistance to trying new interventions as compared to older adolescents. This is supported by Bradley, Doolittle, and Bartolotta's (2008) belief that students with disabilities are at risk of becoming resistant to school interventions as they progress through the education system because of the inconsistency intervention programs are implemented.

One study, Beauchemin et al. (2008) did report a statistical difference in social skills ($p < .05$) for adolescents with SLD. The Beauchemin et al. study used a contemplative technique that consisted of the participants meditating for five to ten minutes at the beginning of every class, five days a week, for five consecutive weeks. With the Beauchemin et al. study producing significant results in improving social skills with an adolescent population with SLD it may be that participants in the current study needed to practice the intervention over an extended period of time and on a consistent basis.

Research Recommendations

After closer examination of the results from this pilot study and the studies reviewed, two potential factors may have contributed to why this study did not report significant results. Those two factors may be (a) the intervention interaction time and (b) the type of independent variable.

Interaction time. Based on the studies reviewed, the most successful studies were the independent variables that provided over 700 minutes of interaction time during the intervention. Evidence of a successful study is based on the evidence of a moderate to high effect size as defined by Cohen (1977). For example if the participants were with the researcher or instructor for 120 minutes for eight sessions they received 960 minutes of interaction time as in the Bogels et al. (2008) study that reported an effect size of $d = 0.5$ related to mindfulness and $d = 0.9$

related to externalizing and internalizing behaviors and Biegel et al. (2009) study that reported an effect size of *d* = .89 for perceived stress and *d* = .79 for trait anxiety.

Therefore, the recommendation is to provide a contemplation program or technique that provides over 700 minutes of interaction time with the intervention. This includes the total number of minutes across the entire intervention, number of minutes per session, number of sessions across the entire intervention, and the number of sessions per week. The number of minutes of the intervention should be spread out over a long enough period of time to be delivered on a consistent basis. With the minutes spread out over a consistent time frame, this would provide the participants more time to incorporate what they learn into everyday life situations.

Type of independent variable. In conjunction with the 700 minutes of interaction time, the interventions were also delivered as structured contemplative programs, such as MBSR. As stated earlier there are several differences between a contemplative program and a contemplative technique. One of the major differences is that during a contemplative program the participants engage in a group discussion. During the group discussion the participants are able to ask questions about the principles of mindfulness, discuss their experiences with meditation, and connect the principles of mindfulness to real world scenarios. The evidence from the current study is consistent with Kabat-Zinn's (2003) caution that mindfulness meditation, or contemplative techniques, may have limited effectiveness if contemplative techniques are taught outside of a structured program.

Therefore, the recommendation is two-fold. One, as an intervention, provide a contemplative program as opposed to a contemplative technique. Two, within the intervention provide at least one group discussion for the participants. For adolescents who receive special education services, the group discussion will provide the key ingredient for linking the principles of mindfulness and how those principles relate in everyday life situations.

In conclusion, in order to determine whether adolescents with an emotional disability or a specific learning disability may benefit from a guided mindfulness meditation intervention they may need to participate in a contemplative program with at least 700 minutes of interaction time and participate in a group discussion related to mindfulness. These conclusions echo Flook et al. (2010), when they stated that the format for delivery of the intervention and the optimal time duration of the intervention should be examined to determine the most effective intervention.

Conclusion

The purpose of this pilot study was to examine the effectiveness of mindfulness meditation used by secondary students who receive special education services for an emotional disability or a specific learning disability. The researcher hypothesized that through the use of guided mindfulness meditation the participants would experience an increase in mindful awareness, and lower levels of stress and anxiety, which in turn might increase each participants' classroom performance. Although no statistically significant results were found relevant to each of the research questions, there was evidence indicating that secondary students with emotional disabilities or a specific learning disability experienced lower levels of stress and anxiety. These findings are based on the effect size of Cohen's d = -.49 for perceived stress and d = -.22 for

anxiety. Based on these effect sizes for stress and anxiety, there is evidence that more research should be conducted to establish how mindfulness can benefit adolescents who receive special education services in the school environment.

There is little evidence that secondary students who receive special education services under the classification of an emotional disability or a specific learning disability benefit from learning a contemplative program or technique. Of the studies reviewed, only Cullen-Powell, Barlow, and Bagh (2005) and Powell, Gilchrist, and Stapley (2008) targeted children with a classification equivalent to an emotional disability and only Beauchemin et al. (2008) and Lee et al. (2008) targeted children with a classification equivalent to a learning disability. Out of those four studies, only Beauchemin et al. used a sample population equivalent to the current study, with the participants mean age of 16.61 years old. Therefore, more research will provide sufficient evidence that students who receive special education services can benefit from learning a contemplation program or technique. Researchers must continue to demonstrate how a contemplative program or technique may help improve the academic scores and behavior achievement of high school adolescents who receive special education services for an emotional disability or specific learning disability.

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