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Developmental Impact of Inclusion Classrooms on Autism Spectrum Disorder: A Systematic Review

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Developmental Impact of Inclusion Classrooms on Autism Spectrum Disorder: A Systematic Review

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The Clinical Research Project is a graduation requirement for MSW students at St. Catherine University - University of St. Thomas School of Social Work in St. Paul, Minnesota and is conducted within a nine-month time frame to demonstrate facility with basic social research methods. Students must independently conceptualize a research problem, formulate a research design that is approved by a research committee and the university Institutional Review Board, implement the project, and publicly present the findings of the study. This project is neither a Master's thesis nor a dissertation.

Abstract

This systematic review examines the developmental impact inclusion classrooms have on children diagnosed with Autism Spectrum Disorder (ASD). An extensive review of current literature resulted in nine articles included in this study. The common themes identified in the literature include: social interaction; teacher preparedness; impact of age on education; and individuality of education. Results indicated that the educational setting alone does not impact the development of children with ASD. Further research needs to be completed in order to fill the gap in literature regarding the cognitive developmental impact educational settings produce and determinants of the best educational setting for children with ASD.

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Introduction

Autism affects one in forty five children age three through seventeen (Autism Speaks, 2016). The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines autism on a spectrum. Autism can affect people through mild systems to severe, however the overall characteristics of Autism Spectrum Disorder (ASD) include a difficulty communicating, social impairments, repetitive behaviors, and limited interests. (U.S. Department of Health and Human Services, 2016).

Until 1975 children with disabilities were not given the right to attend public school. The policy that changed this requirement was Public Law 94-142 also known as the Education for All Handicapped Children Act of 1975 (Education for All Handicapped Children Act of 1975). This law guaranteed free public education to every child with a disability. The four purposes of P.L. 94-142 (Education for All Handicapped Children Act of 1975) are as follows: all children with disabilities are to receive free public education that meets their individual needs; children with disabilities and their parents' rights are protected; to assist states to provide education to all; and to assure effectiveness of education to children with disabilities.

This research study will focus on how the educational setting can impact development for children with ASD. P.L. 94-142 (Education for All Handicapped Children Act of 1975) explicitly stated that all children should be able to receive the same quality of education and essentially promoted mainstreaming and/or special education classrooms. Current research has shown that inclusion classrooms may do a better job applying P.L. 94-142 to children with disabilities and in this specific case, children with ASD. Unlike the concept behind mainstreaming that children being present in a general

education classroom meets P.L. 94-142 goal of equal education, inclusion classrooms attempt to fully integrate all children and accommodate to specific needs in order to enhance development in all children.

The purpose of this systematic review is to assess, through available literature, how inclusion classrooms affect the social, emotional, and cognitive development of children with ASD and thus what is the best environment for school aged children with ASD.

Background

This background aims to introduce basic ASD development, the history of children with disabilities in the public schools, and the other school-based intervention, special education classrooms. The following is a broad review of the literature, which may overlap the extensive systematic review.

The following terms will be used throughout this paper: ASD, inclusion, mainstream, and typical. In order to better understand the concepts, the terms will be defined. ASD will refer to children who have been diagnosed according to the Diagnostic and Statistical Manual for Mental Disorders (DSM-5) with Autism Spectrum Disorder. For the purposes of this study, the level of ASD will range from mild to severe.

Inclusion refers to the type of classroom that a student is placed in. More specifically it is the placement of children with different levels of abilities in one classroom setting (Barringer, 2009). This background will focus on the inclusion of children with ASD.

Mainstream refers to a school or classroom that does not principally meet the needs of students with special needs (Mainstream, n.d.). This term is not to be confused

with inclusion. Both terms refer to a school or classroom with typically developing children, however mainstream classrooms do not attempt to integrate all levels of development through specific interventions.

Typical is a term used to describe peers who are not diagnosed with ASD. The term typical refers to a neurotypical-developing mind.

ASD Development

Development for children with ASD looks different then that of a typically developing child. Not all development looks the same for each child with ASD just as it does not for a typically developing child, however there are some generalizations that can be made. Social skills are usually low when it comes to children with ASD. At about eight to ten months failure to respond to name, loss of interest in people and delayed babbling can be the first signs of autism (Autism Speaks, 2016).

Communication is also a challenge for children with ASD. While typically developing children usually begin by babbling and increasing language to saying multiple words in toddlerhood, children with ASD usually have delayed language skills (Autism Speaks, 2016). In one study done by Mayo et al. (2013), the results indicated that children who were speaking by twenty-four months usually have higher cognitive and language skills than those whose first words were after twenty-four months (Autism Speaks, 2016). Most children with autism learn to speak on some level. Those who do not learn how to speak have other options such as sign language or alternative augmentative communication devices. For the children who do speak, comprehensive conversations are still difficult and therefore some use generalization skills to converse. Non-verbal cues are also difficult for children with autism to understand (Autism Speaks, 2016). Many

need direct statements such as “I need your help” instead of expecting the person to pick up on subtle hints. Expressive language is also challenging for many with ASD. Failure to communicate needs or wants can cause justified frustration. Frustration can be demonstrated through inappropriate behavior such as hitting or screaming whereas a typical developing child being able to tell you why he or she is frustrated.

Another developmental difference in children with ASD is repetitive behavior (Autism Speaks, 2016). This can include anything that a child is stuck on for hours or days at a time. Most repetitive behavior is different from pretend play. For example instead of riding a bike, the child might sit and spin one of the wheels until told to stop.

Another area of development that presents some challenges for children with ASD is motor development. Liu conducted a study in order to compare motor delays in children with ASD compared to typically developing children. Liu’s (2012) study included many motor milestones including but not limited to: hold head steady, grasp object when sits, crawl, climb, pincer grasp, etc.

The study completed by Liu (2012) found that children with ASD were delayed on all twenty-six motor milestones that were tested. Currently motor skills are not assessed in order to diagnose ASD. Liu’s (2012) study shows that including motor skills can provide for an earlier diagnosis of ASD because they begin before language comes into play. The benefit of an earlier diagnosis includes beginning treatment earlier, which has been shown to increase development in children with ASD.

Improving the challenges that children with ASD face is crucial at an early age and throughout life. Social, communication, motor, and repetitive behaviors are important

to know in order to determine the needs for children as they head off to school whether it be inclusion school settings or special education settings.

Educational History to Children with Disabilities

History. Before Public Law 92-142, originally referred to as the Education for All Handicapped Children Act, was enacted in 1975 the priority of education for disabled children was low. Many disabled children did not even receive an education prior to this law. Often times children with disabilities were sent to live in institutions, which only adhered to basic human needs such as food and clothing (U.S. Department of Education, 2010). Even disabled children who lived at home did not always receive quality educations or any education at all. Before the Education for All Handicapped Children Act, states were allowed to deny a child an education because of a disability (U.S. Department of Education, 2010).

The idea of improving educational opportunities for children with disabilities began in the 1950's. A large supporter of this movement was the National Association for Retarded Citizens (NARC), which has since been renamed Arc and removed the word retarded (The Arc, n.d.). In order to combat the large task of a complete overhaul of the educational system for children with disabilities, the federal government got involved. Five specific laws passed in the 1950's and 1960's paved the way for the Education for All Handicapped Children Law: the Training of Professional Personnel Act of 1959 (P.L. 86-158), which trained teachers how to work with children with disabilities; Captioned Films Act of 1958 (P.L. 85-905), which allowed for the production and distributions of films; Teachers of the Deaf Act of 1961 (P.L. 87-276), which trained teachers to work with children who were deaf or hard of hearing; the Elementary and Secondary Education

Act (P.L. 89-101) and the State Schools Act (P.L. 89-313) in 1965, both of which gave direct funding to states from the federal government to educate students with disabilities (Department of Education, 2010).

Two Supreme Court Cases also were involved in the creation of the Education for All Disabled Children's Law: Pennsylvania Association for Retarded Citizens v. Commonwealth in 1971 and Mills v. Board of Education of the District of Columbia in 1972. These court cases determined that every child had the right to be education regardless of whether or not disabilities were present due to the equal protection clause in the 14th Amendment of the U.S. Constitution (U.S. Department of Education, 2010).

Public Law 94-142. This law transformed the way that children with disabilities were receiving education. The Education for All Handicapped Children Law made education available to more than one million children who had been left behind in the educational system (U.S. Department of Education, 2010). Although P.L. 94-142 guaranteed that free appropriate public education was available to every child with a disability, it was not perfect. The law only required services to children ages three to twenty-one, which was not the only drawback to the law thus, amendments were made. The most notable amendments included: P.L. 99-457, which required states to provide services beginning at birth and P.L. 98-199, P.L. 101-476, and P.L. 105-17, which all centered around the idea of providing services to children with disabilities through the transition from High School to adult living (U.S. Department of Education, 2010). In 1990, P.L. 101-476 also changed the name from the Education for All Handicapped Children to the Individuals with Disabilities Education Act (IDEA).

Inclusion Classrooms

Students with ASD can thrive in inclusive school settings. Although, there is limited research on school based behavioral intervention, one study by Grindle et. al. (2012) found that students who spent more time in the inclusion classrooms progressed faster than those in one-to-one interventions.

Structure. Inclusion teachers have added responsibilities in order to include a vast array of development levels. They also must be willing and able to be adaptable to all different types of learning and behaviors. Crosland and Dunlap (2012) suggest several strategies to increase the success of inclusion including antecedent procedures, delayed contingencies, self-management strategies, peer-mediated interventions, and a standardized model for individualized interventions.

Antecedent procedures are important to take into consideration in order to reduce the prevalence of certain behaviors. Delayed contingencies assist children with ASD learn to become more academically independent. Self-management strategies allow the student with ASD to be involved in their behavior and academic goals. These strategies allow a growth of independence for the student and thus can shift the student's focus from the teacher to be more aware of what is going on the with other students (Crosland & Dunlap, 2012). Peer-mediated interventions are the responsibility of the teacher to establish. These can be simple pairing projects that allow the child with ASD to work with a typically developing classmate, which provides social learning. Lastly, Crosland and Dunlap (2012) describe the importance of having a standardized model for individualized interventions. These interventions would be in place for when and if a student displayed any of his or her problem behaviors.

Barton et. al. (2012) also suggested certain interventions for young children in inclusive settings. Similar to Crosland and Dunlap (2012), Barton (2012) explains the importance of the classroom setting and preventative measures. Both authors suggest using visual cues such as a schedule for children with ASD. Visual cues provide a highly structured environment allowing the child gain independence from the teacher. Barton (2012) recommends the use of reinforcements or motivators throughout the day. The reinforcement could be anything that motivates a child to do whatever is expected such as food (Barton, 2012). Barton (2012) is specifically giving effective strategies for young children in preschool settings however, the same concept could be applied to an elementary aged student as with the examples in the article by Crosland and Dunlap (2012).

Special Education Classrooms

Applied Behavior Analysis. The majority of mainstream schools have special education classrooms. It is important to understand the impact and types of services special education classrooms have in order to differentiate from inclusion classrooms. Grindle et al. (2012) completed a study in the United Kingdom on the influence of Applied Behavior Analysis (ABA) incorporated into special education classroom for children with ASD.

ABA is not a technique that is usually implemented in the schools. It is a concept that is often present in home-based programs and center-based settings. Grindle et al. (2012) explained that home-based programs involve the child spending the majority of his or her time learning the skills necessary to go to a school setting. In this particular study home-based programs refer to a child learning ABA skills at home versus school. A

center setting is any location that specifically deals with autism. In comparison to a school-based setting and a home-based setting, parents are expected to learn the techniques and use them at home (Grindle et al., 2012).

Grindle et al. (2012) found that after the first year of ABA instruction in a school special education classroom setting, positive changes were seen through standardized tests. The research was more expansive for the second year as the focus was heavily on social and self-help skills as opposed to communication in the first year. In conclusion, this study found benefits of ABA being located in a school setting including opportunities to socialize with typically developing peers and teachers as well as exposure of ABA to general education teachers.

Early Intensive Behavioral Intervention. The term Early Intensive Behavioral Intervention (EIBI) is sometimes used interchangeably with ABA. While EIBI uses ABA, it is not the only method, thus the distinction for the purposes of this literature review.

In one study done by Eldevik et al. (2012), the effects of EIBI on children ages two to six in a mainstream setting were compared to children receiving treatment as usual (TAU). In this case TAU refers to children with ASD receiving treatment in a location other than in a mainstream school setting. Comparable to the study completed by Grindle et al. (2012), Eldevik et al. (2012) found that the increase in communication and socialization skills were statistically significant as opposed to the TAU group. Eldevik et al.'s study (2012) went beyond Grindle et al. (2012) to find that the increase in IQ and adaptive behavior were also statistically significant to the TAU group after two years of treatment in the school setting. Similar to Grindle et al.'s (2012) results, Eldevik et al.'s

(2012) study concluded that having EIBI services in a mainstream setting enhanced social skills due to engagement with typically developing peers.

Both studies done by Grindle et al. (2012) and Eldevik et al. (2012) found that incorporating special education services to students with ASD at an in school setting had benefits that other settings did not. Those benefits were improved socialization, communication, IQ, and adaptive behavior skills.

Research has shown the benefits and challenges of inclusion classrooms and the impact they have on development for children with ASD. The purpose of the systematic review is to examine inclusion classrooms effect on social, communication, and cognitive development for children with ASD. The goal is to help educators and families determine the best learning environment for children with ASD.

Conceptual Framework

Literature suggests multiple perspectives on how best to educate children with special needs. The theoretical framework that has influenced this research study is the social constructivist theory. Introduced by Lev Vygotsky, it argues that social interactions play a big role in cognitive functioning (McLeod, 2014). The theory explains that knowledge and experiences are not separate from one another and essentially the latter controls the outcome of the former.

Vygotsky's theory of social constructivism centers on the role sociocultural factors play. Vygotsky believed that culture has a big influence on learning. The four main abilities that Vygotsky believed infants were born with but needed enhancements through culture to fully form were: attention; sensation; perception; and memory (McLeod, 2014). Even though those functions could be argued individually, the social

constructivist view is that the ways in which infants learn how to pay attention or what to pay attention to are shaped through culture. Mallory and New (1994) provide the examples of children learning how to hold a pencil and the appropriate age one should be reading, both being culturally specific and learned in a school setting.

Two of Vygotsky's main principles that guide this research are, the More Knowledgeable Other (MKO) and the Zone of Proximal Development (ZPD). Both principles are similar in that other people are used to influence a learner. The MKO is someone who knows more about a topic than the learner such as a teacher (McLeod, 2014). McLeod (2014) also points out that a MKO could be a peer depending on the concept i.e. a video game.

The ZPD refers to educating children on unfamiliar topics while allowing some degree of self-discovery to occur. This method has been shown to be successful with teacher interaction as well as peer interaction meaning more competent children helping their peers (McLeod, 2014). A study completed by Palincsar and Brown (1998) found that when a group of children with diverse comprehensive skills were compared to a group of children with similar comprehensive abilities, the group with diverse comprehension learned the material faster than the homogenous group. The outcome of this study can be explained by the social constructivist theory. The group of children with diverse comprehensive skills had deeper discussions and was more likely to ask for input from the teacher thus, the children were more involved in the experience of learning than the group of children with similar comprehensive abilities. Therefore, according to Vygotsky's social constructivist theory, learning in an environment with people who have higher or different ability levels is essential for optimal learning.

Children with ASD are not classified as cognitively limited or having an overall lower learning ability. The concept of MKO and ZPD can however, still be applied to children with ASD specifically supporting inclusion settings. Modeling is an approach that is typically used with children who have ASD. It is used to demonstrate anything from eating to playing and can be done by adults or peers. MKO and ZPD are essentially different types of modeling. Those concepts illustrate how classroom settings with peers who may have higher abilities either cognitively or socially can help children with ASD develop especially with the assistance of a teacher. Social constructivism would determine that children with ASD would gain knowledge through their experiences in school. In this case social and cognitive development would be enhanced according to this theory.

Language is another key role in social constructivism. Vygotsky believed that language was developed through social interactions (McLeod, 2014). Through language people are able to verbalize thoughts. The point in time that thoughts are presented verbally is around age three (McLeod, 2014). Vygotsky believed in two different kinds of speech, one for the purpose of communication and one for self-regulation known as "private speech". There is evidence that children who engage in private speech have greater cognitive development than others. Private speech is used to regulate children who may be having a difficult time with a task such as homework (McLeod, 2014).

Children with ASD often struggle with communication and language. The level at which a child with ASD struggles with communication varies in degree from using augmentative and alternative communication (AAC) such as a speech device to communications that may appear slightly different than average. Some children with

ASD will never verbalize their thoughts however, as mentioned before AAC can be used to aide communication. Vygotsky's belief around the importance of language supports the ideas of inclusion settings. He believed that social interactions perpetuated development, which can be applied to children with ASD. Observing other children use language to self-regulate is a huge benefit to inclusion settings. Children with ASD can get frustrated when it comes to communication often due to lack of knowledge in regards to expressing oneself, thus placing children with ASD in inclusion settings would have an impact on their communication development through social learning.

Contemporary education in the United States of America (USA) has begun to introduce aspects of the social constructivist theory as early as the 1990's however, are still primarily individualistic in assessments. One teaching method based on Vygotsky's theory of social constructivism is reciprocal teaching through summarizing, questioning, clarifying, and predicting (McLeod, 2014). The purpose is to have all students in a classroom participate thus, facilitating collaborative learning which enhances cognitive development.

Other ways that the social constructivist theory has been implemented in U.S.A schools through teaching practices are: activity based learning, parent participation in the classroom, adult and child input on lesson plans, group work, and problem solving curriculum (Palincsar, 1998). Research completed by Matusov et al. (1997) suggests that children who attend schools with those teaching practices have a more collaborative approach to learning which has been shown to increase cognitive learning.

In an article written by Lam (2010), it is argued that children with disabilities have a right to learn in mainstream settings due to the IDEA. The author stresses that all

students should be allowed to, "meet their special educational needs, to the degree that is possible" (Lam, 2010, p. 22) implying individual needs will need to be taken into consideration. This perspective is more on assimilation versus adaptation. The practice of mainstreaming is one that has been studied extensively and why this research focuses on inclusive settings. Inclusive classrooms strive to meet the needs of all students versus mainstream, which essentially asks the child to mold his or her needs to fit with the other children.

The school system in the U.S.A. has already been implementing ideas from the social constructivist theory for typically developing children, thus it would not be a stretch to apply aspects to all children. Inclusion classrooms support the very definition of the social constructivist theory, learning through social experiences. Vygotsky's belief in cognitive development through integration of all levels of comprehension and the use of language to self-regulate demonstrates that inclusion classrooms promote not only social development but cognitive development as well.

Methods

Research Design

According to Cochrane Collaboration, a systematic literature review is, "A review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyze data from the studies that are included in the review" (Siddaway, n.d.). The goal of this type of study is to address the vast amount of research that exists on a topic and synthesize the findings to answer a specific research question (Siddaway, n.d.).

A majority of the research has focused on social development rather than all areas of development including cognitive, emotional, etc. This systematic review aims to explore all types of development impacted by inclusion classrooms and thus what is the best environment for school aged children with ASD.

Search Strategies

This research began with a preliminary search of academic journals through the University of St. Thomas online database. The databases used are as follows: SocINDEX; PsycINFO (PsycNet); Social Work Abstracts; and Child Development and Adolescent. The targeted searches included a combination of the following key words: education; Autism; inclusion classrooms; adolescents; cognitive development; development; teacher; and parent.

Criteria of Inclusion

To identify articles that were used in the systematic review, certain specifications were applied to the search process. All articles were peer reviewed empirical articles and published in 2007 or after. Qualitative and quantitative studies were both considered in order to illustrate the statistical and teacher standpoints of the developmental impact of inclusion classrooms on children with ASD. The years 2007 to present were chosen in order to find enough research on the topic while also remaining current.

Data Abstraction & Analysis

The purpose of this study is to identify the developmental impact inclusion classrooms have on children diagnosed with ASD. The articles that were used for this study illustrate the statistical data as well as teacher opinions about the developmental impact. Once the articles were found, certain information was identified and tracked. The

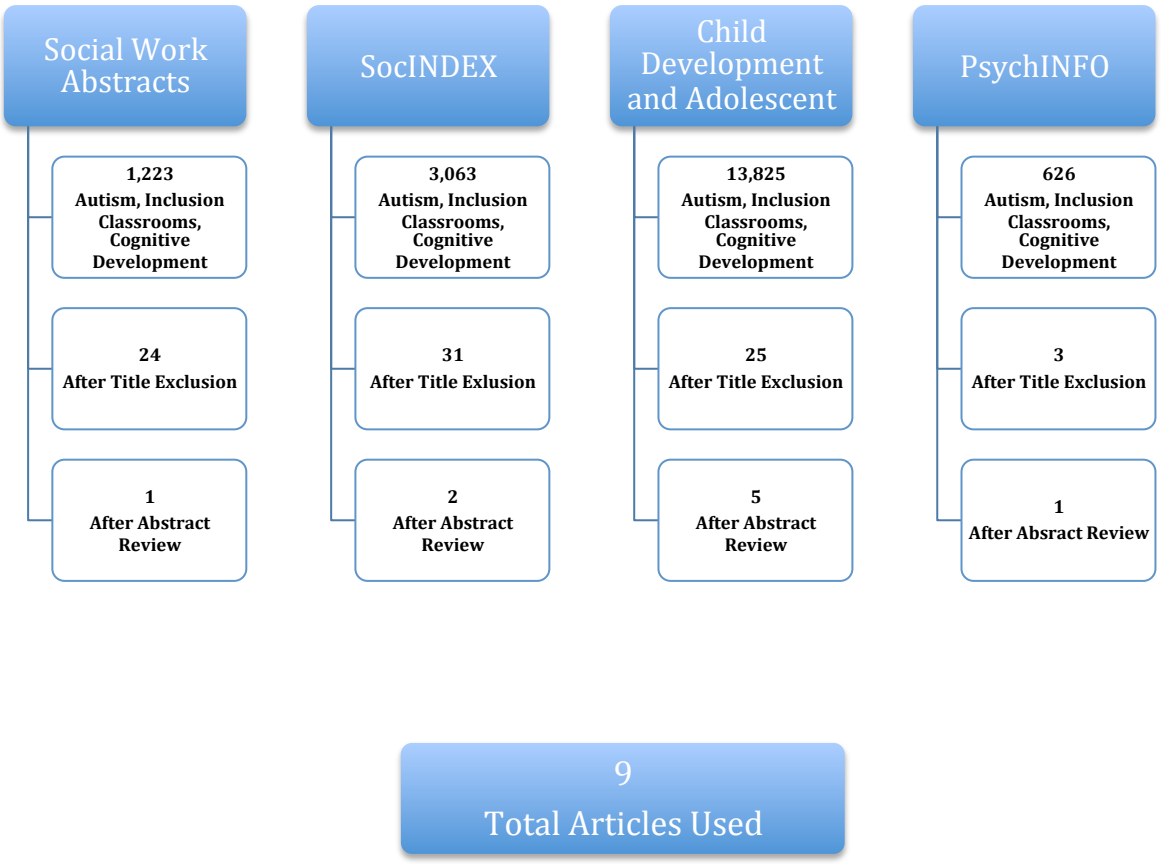
information gathered was: the database, author and year, sample size, topic, study type, and the findings.

The information was collected and placed onto a grid. The grid provided a clear and organized presentation for the analysis. The summary of findings was then reviewed for common themes or trends. This process also informed the researcher of the gaps in literature with regards to this topic.

The initial search of current research was reviewed based on which studies met inclusion and exclusion criteria for this study. Of the 18,737 articles found through the databases that met inclusion and exclusion criteria, 18,654 were excluded based on the titles not containing the chosen key words. There were a total of eighty-three articles that were reviewed further for relevance. After abstracts were reviewed, thirty-eight articles remained. After final review, there were nine articles used in this research study.

Table 1

Search Strategy


Social Work Abstracts
1,223
Autism, Inclusion Classrooms, Cognitive Development
24
After Title Exclusion
1
After Abstract Review
SocINDEX
3,063
Autism, Inclusion Classrooms, Cognitive Development
31
After Title Exlusion
2
After Abstract Review
Child Development and Adolescent
13,825
Autism, Inclusion Classrooms, Cognitive Development
25
After Title Exclusion
5
After Abstract Review
PsychINFO
626
Autism, Inclusion Classrooms, Cognitive Development
3
After Title Exclusion
1
After Absract Review
9
Total Articles Used

Findings

The goal of this systematic review was to explore current research on the developmental impact of inclusion classrooms on children diagnosed with ASD. Twenty-five articles met inclusion criteria and were thoroughly examined for this research project. Four common themes were identified and include: Social interaction; teacher preparation; age; and individuality.

Table 2

Study Comparison

Article	Participants	Design	Data Analysis	Results	Limitations
Addressing the Needs of Adolescents With Autism Spectrum Disorder: Considerations and Complexities for High School Interventions	28 homogenous focus groups including: parents of individuals with ASD, young people with ASD, general educators, special educators, administrators, related service providers, and community members for a total of 152 participants.	Qualitative. Random sample fliers, emails, snowball sampling.	Transcripts of five focus groups were selected, analyzed, and coded by all researchers in pairs and then individually.	Belief that secondary schools were insufficiently addressing the educational needs of adolescents with ASD. Existing interventions ineffective or inconsistent. Suitable programs and transition services few and far between.	Views of stakeholders were not accompanied by direct observation of classrooms and schools. Unlikely any of the participants had any experience implementing comprehensive intervention models.
Individual Education Plan Goals and Services for Adolescents With Autism: Impact of Age and Educational Setting	Five special education teachers and fifteen adolescents with autism. Seven students from inclusive settings and eights students non-inclusive	Quasi-experimental design	Cumulative IEP records from kindergarten through middle school were analyzed. Topics analyzed were, number and types of goals, curricular standards for	IEP teams have lesser expectations of student ability to participate in the core general education curriculum over time. With more goals, students become less likely to make sufficient	Small sample size and limited geography prohibits broad generalizations of findings. Unable to determine why participants were placed in inclusion or non-inclusion settings.

	settings (less than 50% of day in general education setting).		goals, and adaptations and services.	educational progress to meet their goals regardless of educational setting. Teachers may consider classroom settings and age of students as important factors in student IEP development.	
Article	**Participants**	**Design**	**Data Analysis**	**Results**	**Limitations**
Using trial-based functional analysis to design effective interventions for students diagnosed with autism spectrum disorder	Four students diagnosed with ASD with challenging behaviors impacting existent education.	Multiple baselines across participants. (Experimental)	Single-case designs were analyzed used multi-element design, comparing the effects of multiple conditions on behaviors outcomes with pairwise comparisons of the test-control for each conditions assessed.	Function based interventions are useful within schools because they have the ability to identify a function for challenging behaviors and thus address them in order for children with ASD to be successful in school.	Risk of assessment conditions themselves increasing or decreasing the display of behaviors. Only four data points were collected during the withdrawal phase when the standards state there should be at least five for each stage.

The deployment, training and teacher relationships of teaching assistants supporting pupils with autistic spectrum disorders (ASD) in mainstream secondary schools	Fifteen teaching assistants who supported pupils with ASD from four secondary schools in north-west England.	Qualitative	Semi-structured interviews addressing deployment and training of teaching assistants and their relationships with the teachers with whom they worked.	Most teaching assistants had no prior experience working with pupils with ASD. They felt more training on ASD would not help because no two children are alike. Having a teaching assistant can negatively impact a child with ASD's	

				social interactions.	
Priming for Social Activities: Effects on Interactions Between Children With Autism and Typically Developing Peers	Four children with autism between 6 and 8 years of age. Peer participants were typically developing male and female volunteers ranging from 5-8 from each child's inclusive extracurricular setting.	Multiple baseline across participants design. Experimental.	Rate of initiations by child with autism to typically developing peers, rate of statements reflecting target child competence made by the child with autism or typically developing peers, and child with autism and peer affect were videotaped for analysis.	Priming effective intervention to promote social interactions between children with autism and typically developing peers in inclusive settings.	Small sample size limiting findings to apply to broad population of children with autism. Criteria of children with autism impact the ability to show same effects for differing functional levels of children with autism.
Article	**Participants**	**Design**	**Data Analysis**	**Results**	**Limitations**
Improving Social Engagement and Initiations Between Children With Autism Spectrum Disorder and Their Peers in Inclusive Settings	Three children diagnosed with autism before age three.	Non-concurrent multiple-baseline across-participants design. (Experimental)	Dependent measures coded in vivo. Data collected for 15 minutes during each session, five minutes after free play period had begun. Collected by undergraduate university students. Engagement with peers and unprompted verbal initiations were studied.	Developing activities that incorporate the child with autism's interested resulted in increases in social engagement between child with autism and typically developing peers in inclusive settings.	Cannot be used to determine the effects of a functional relationship between the dependent variable and any of the tested independent variables. Resentful demoralization: individuals' behaviors during subsequent baseline conditions might be negatively affected by resentment over having the treatment withdrawn.
Teachers' Perceptions	228 Greek teachers.	Qualitative Random	Structured questionnaire	There is a need for an	Limited previous

Regarding the Management of Children with Autism Spectrum Disorders		sampling	evaluated on nature and characteristics of ASD, assessment of kids with ASD, management of ASD kids, and the teacher's role in the education of kids with ASD.	interdisciplinary educational background with solid training on ASD teaching approaches.	research on this topic. Sample size was cut down to be more manageable.

Social Interaction

Three studies addressed the role social interaction plays in inclusive settings for children diagnosed with ASD. Watkins et. al. (2014) found, through a systematic analysis of fourteen studies, that peer-mediated interventions (PMI) is "a promising treatment for increasing social interaction in children, adolescents, and young adults with ASD in inclusive settings, with positive generalization, maintenance, and social validity outcomes," (p. 1079). The results suggest that in order to provide the best outcome for the growing number of children with ASD being place in inclusive settings, PMI can help increase social interactions between children with and without ASD thus, promoting full inclusion.

Gengoux (2014) studied brief priming sessions related to the increase of initiations made by children with ASD to peers without ASD in inclusive settings. The study consisted of a multiple baseline across participants design including four children diagnosed with ASD ages six to eight and typically developing peers ages five-eight in each child's inclusive setting (Gengoux, 2014). The study found that, "priming sessions could successfully increase the rates of initiations made by children with ASD," (p.188).

The research argued that there is a link between social initiations and positive long-term outcomes for children with ASD (Gengoux, 2014).

Koegel et al. (2012) utilized a non-concurrent multiple-baseline across-participants design to assess the change in social behavior of three children diagnosed with ASD. The study found that activities centered on the child with ASD's interests resulted in increased social initiations (Koegel et al., 2012). Koegel et al. (2012) argue that this information along with other research indicates that socially successful outcomes involve children without ASD alongside children with ASD.

Impact of Teacher Preparation

Three articles discussed the role of teacher preparation and the effects on ASD inclusion in general education classes. Majoko's (2016) research discussed teachers' reactions to inclusion of children with ASD. His qualitative study consisted of twenty one regular primary teachers in one province in Zimbabwe. Through interviews Majoko's (2016) study concluded that teachers believed, "Social rejection, communication impairments, and behavioral challenges of children with ASD interfered with inclusion in mainstream classrooms", (p. 1429). The main argument that Majoko makes due to his findings is that, "Teachers' training, stakeholder collaboration and institutionalization of social support services and programs would facilitate inclusion", (p. 1429).

Symes' and Humprey's (2011) qualitative study included fifteen teaching assistants who supported pupils with ASD from four secondary schools in north-west England. Each teaching assistant was interviewed and two main conclusions came to light: most teaching assistants hired in schools had no prior experience working with pupils with ASD; and the teaching assistants did not believe that lack of experience

should be combated by more training. The general consensus found that no two children were alike so only experience would help; lack of time for planning between teachers and teacher assistants created concerns; and having a teaching assistant can negatively impact a child with ASD's social interactions (Symes & Humphrey, 2011).

Syriopoulou-Delli et al. (2011) conducted a qualitative study designed to examine Greek teachers' perceptions on the management of children with ASD in inclusive settings. 228 teachers completed a survey with questions related to: the nature and characteristics of autism; assessment of children with ASD; management of children with ASD; and the teacher's role in education of children with ASD (Syriopoulou-Delli, 2011). The results of this study concluded that previous education and/or experience on autism were found to be fundamental in supporting teachers dealing more efficiently with students diagnosed with ASD, (Syriopoulou-Delli, 2011). The study therefore argued that an interdisciplinary educational background with solid training on ASD teaching approaches is needed.

Impact of Age on Education

Two articles discussed how age impacts educational settings and success of children with ASD. Kucharczyk et al. (2015) completed a qualitative study, which consisted of twenty-eight homogenous focus groups including: parents of individuals with ASD; young people with ASD; general educators; special educators; administrators; related service providers; and community members for a total of 152 participants. This study aimed to determine the complexities of meeting the needs of adolescents with ASD in secondary education settings. Results indicated: that there was a belief secondary schools were insufficiently addressing the educational needs of adolescents with ASD;

existing interventions were ineffective or inconsistent; and suitable programs and transition services were few and far between (Kcharczyk et al., 2015).

Kurth and Mastergeorge (2010) completed a quasi-experimental design that consisted of five special education teachers and fifteen adolescents with autism. Seven of the students were from inclusive settings and eights students were from non-inclusive settings, meaning less than 50% of the day is spent in a general education setting. This experiment was designed to examine how Individual Education Plans (IEP) of students with ASD impacted their education despite educational setting. The results of this study found that, "With more goals, students become less likely to make sufficient educational progress to meet their goals regardless of educational setting", (p. 155). The study also found that as students get older IEP teams have lesser expectations of student ability to participate in the core general education curriculum.

Individuality of Education

Three of the articles addressed how recognizing individuality is the key to success for students with ASD in inclusive settings. Larkin, Hawkins, and Collins (2016) designed a multiple baselines across participants experiment containing four students diagnosed with ASD with challenging behaviors impacting existent education in order to assess the function of those challenging behaviors. The study found that function based interventions are useful within schools because they have the ability to identify a function for challenging behaviors and thus address them in order for children with ASD to be successful in school (Larkin, Hawkins, & Collins, 2016).

Watkins' et al. (2014) systematic analysis additionally supports the idea that individual characteristics of children with ASD are important to take into consideration in

inclusive settings. Watkins' et al. (2014) finding that aligns with this view is that, "PMI that promotes use of the desired social behavior by, for example, using a peer proximity strategy and incorporating highly preferred interests or increasing the number of peer initiations directed toward a participant would be appropriate", (p. 1080).

In addition to age effecting IEP development, Kurth and Mastergeorge (2010) discovered that educational setting also affects IEP's. Despite educational ability, Kurth and Mastergeorge (2010) found that most IEP's were designed around the common symptoms of ASD instead of educational goals. The research further found that while IEP's are designed for individual children, placement setting is often considered when developing goals. Kurth and Mastergeorge (2010) discovered that there are significant differences in IEP goals for students in inclusive settings and non-inclusive settings.

Discussion

The purpose of this systematic review was to explore the current research on the developmental impact of inclusion classrooms on children diagnosed with ASD. Nine studies were reviewed resulting in the conclusion that the educational setting alone, for children with ASD, does not impact a child's overall development. The findings suggest that social interaction, teacher preparedness, age, and individuality of education play a role in the development of children with ASD and their overall success in school and life.

Current research has illustrated that positive social interaction helps to fully include children into the classroom regardless of setting. Results of this study found that inclusive settings benefit the social development of students with ASD. Teachers have a role in promoting activities and lessons that target both kids with and without ASD's

interests. The research found that when students with ASD have a personal interest in a specific topic they are more likely to initiate social interactions with peers.

The findings of this study indicate that teachers do not feel confident instructing students with ASD without a prior educational background specifically in ASD. Thus, teachers find it difficult to manage behaviors in class limiting the success of the inclusive setting. This study found that support and education of teachers around ASD would benefit the instruction of children with ASD in inclusive settings therefore, it can be concluded that the development of the children would be enhanced.

Results of this study also suggest that age affects the educational process. As children with ASD get older general education teachers expect less of them academically and there are fewer in school services. That finding indicates a decline in education as children with ASD get older, which could affect them developmentally.

Lastly, this review found that IEP development can impact students developmentally. Results illustrate that the number of goals in IEP's make them impossible to reach by students and be tracked by teachers. The educational setting impacts whether the goals are focused around basic functioning or education. The findings of this study suggest that in order for students with ASD to be more successful, IEP goals should put more emphasis on the individuality of each student versus the classroom setting.

Limitations

The limitations of this study need to be addressed. The current research on the overall developmental impact of inclusion classrooms on children with ASD is slim. While some research did address cognitive development, most addressed social

development. Considering the implementation of IDEA, it has been assumed that the issue of educational placement of children with ASD has been settled. That fact could contribute to the lack of research in the best educational setting for children with ASD for overall development. The researcher did not discover any current literature on the perspective of parents of children with ASD on their overall development through education.

The research was limited to peer-reviewed articles that were written in English. Translation of articles was not available thus, narrowing the articles searched to studies written in English. Not allowing the use of gray literature resulted in limiting the number articles. Although both were necessary and unavoidable, beneficial articles could have been excluded from this study.

The question of developmental impact of inclusion classrooms on children with ASD was challenging for this study because of the lack of agreement on the definition of "inclusion". The articles perceived inclusion differently, which does not allow the findings of this study to be generalized.

Implications for Social Work Practice

This research and continued knowledge is important to social work due to the increasing number of children diagnosed with ASD. The purpose of this review was to explore the developmental impact of inclusion classrooms and therefore help determine the best educational setting for children with ASD. Social workers need to understand the factors that play into the assignment of educational setting and the developmental benefits of each. This research is specifically important to social work because it illustrates the need to look at all of the aspects of each setting including: teacher

preparedness; individuality of education; social inclusion practices; and how age is dealt with.

Social workers have a duty to advocate for their clients and promote social justice for all including children with ASD. It is important that social workers are aware of the development the educational settings have in order to help families determine what the best setting is for their child and advocate for that setting.

Implications for Research

Due to the lack of research on the overall development that education settings impact, future research needs to be conducted. One area that could be further evaluated is how cognitive development is impacted by inclusive versus non-inclusive settings for children with ASD. Most of the research focuses on communication and social development when examining the how educational setting impacts children with ASD.

Including parent perspective on the educational placement of children with ASD would also be beneficial for future research. Parents have a perspective on their child that nobody else does therefore, having input from them regarding benefits and disadvantages of the educational setting on development is crucial. It would also be a good idea to explore what role parents have in deciding the educational setting for their child.

Future research on the determination of education setting for children with ASD is needed. Despite the practice of least restrictive environment, research is not clear on what that specifically entails and varies between states and even school districts. That research could enlighten educators and professionals with what is working and what is not working in regards to determining placement.

Conclusion

The purpose of this research was to determine the developmental impact that inclusion classrooms have on children with ASD and therefore the best educational setting. A systematic literature review was completed with a total of nine articles that met criteria for examination. The results indicated that educational setting alone does not does not impact the development of children with ASD. Other factors that should be taken into account when determining the best educational setting to promote development for children with ASD are as followed: Social interaction; teacher preparation; age; and individuality.

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