



PRACTICUM STUDENTS' VIEWS ABOUT FIELD EXPERIENCE PROGRAM FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS

 Amal Ibrahim

Assistant Professor, Counseling and Special Education Department,
University of Jordan, Jordan.
Email: a_ibrahim@ju.edu.jo



ABSTRACT

Article History

Received: 7 May 2020

Revised: 12 June 2020

Accepted: 14 July 2020

Published: 22 July 2020

Keywords

Autism spectrum disorders
(ASD)

Training

Practicum students

Field experience

Skills

Awareness.

There is very little research about autism spectrum disorder (ASD) in Jordan, and no specific programs to help support these children. In addition, teachers are not equipped with the skills and knowledge needed to work with children with autism in school, so many parents send their children to a private center to get more support. The little research available indicates a lack of qualified teachers and equipment, which negatively affects children. However, many studies have shown that outcomes for children with ASD improve when teachers are provided with specific training that meet children's needs (Browder, Trela, & Jimenez, 2007; Dib & Sturmey, 2007; Jordan, 2003). This study examined the effect of specific training on autism spectrum disorders for practicum students in special education. Based on the hypothesis that educators and school leaders would benefit from specific training and coursework on ASD, this quantitative study obtained data from 45 practicum students who participated in four months of training on different teaching methods and skills specific for children with ASD. The results of this study suggest that the training had a positive impact on the students' views about ASD.

Contribution/Originality: This study documents valuable information about the importance of field experience in improving practicum students' skills, knowledge and experience in working with children and youth with ASD. It may also encourage leaders and educators to plan field training for more than one semester.

1. INTRODUCTION

Autism is a Greek word that comes from the word "autos", which means "self" (Sicile-Kira, 2004). Autism spectrum disorder (ASD) is a complex neuro-developmental disorder characterized by different levels of impairment in social interaction, verbal and non-verbal communication, and restricted and repetitive behavior before three years of age (Napolioni et al., 2011). It is also characterized by impairment in learning abilities and behavior confront (Centers for Disease Control and Prevention, 2019). Practicum students in special education in Jordan do not currently have enough knowledge and experience of ASD to fully support these children in their education. There is no specific class that covers ASD for undergraduate students majoring in special education. Practicum students do not have a solid background in ASD, but still work with children diagnosed with ASD in the field. Teacher preparation programs are important in providing students with the knowledge and experience they need when teaching children with ASD academic and life skills. Field-based experience gives practicum students the opportunity to apply their theoretical knowledge to practical work (Nagro & Bettencourt, 2017) and improves their

skills in support services. A 2018 study indicated that support services have the potential to help students with ASD who face problems with social interactions through role-play and social situation scenarios (Lizotte, 2018).

2. LITERATURE REVIEW

As ASD is a developmental disorder characterized by impairment in communication, social interaction, and restricted and repetitive patterns behavior (Baio et al., 2018), some children with ASD do not develop spoken words, while others develop oral speech by repeating parts of words and sentences that they hear. Other children with ASD develop oral speech and use it almost physiologically (Andreadi, Charitaki, & Soulis, 2018).

Children with ASD face challenges in the ability to socialize and communicate with others, which may lead them to behave in ways that cause self-injury aggression, stereotyping, and repetitive behavior (Goh & Drogan, 2017). Students diagnosed with ASD sometimes act in a violent manner, which leads them to face consequences such as being suspended from school. The violent behavior is often due to the child with ASD trying to communicate with the teacher, but unfortunately teachers do not realize this and more distance is placed between the teacher and the student (Goh & Drogan, 2017). A study showed that 28% of 8-year-old children diagnosed with ASD had evidence of aggressive, self-injurious behaviors (Soke et al., 2017). When children with ASD behave in inappropriate ways, the skills they need such as interaction, communication and socialization maybe negatively affected.

The history of our current understanding of ASD began less than 70 years ago. In 1943, Kanner worked with 11 children: 8 boys and 3 girls. Kanner pointed out that these children did not have the ability to organize themselves and that there was an absence of spontaneous sentence formation and desire for sameness (Kanner, 1943). Kanner used the word "autism" as a distinct neurological condition.

In 1944, Hans Asperger noticed that some children who came to his clinic had the same behavior and the same personality characteristics. Asperger suggested the term "autistic psychopathy" for these children, which describes the child's personality disorder. Asperger conducted a study using four participants, aged between 6 and 11, who had autistic-like characteristics and average or above average intelligence. Although the participants had adequate cognitive and verbal skills, they had deficits in social skills. Asperger found that these children had a lack of empathy, lack of friendships, and one-sided conversations without listening to others when they were talking. They were interested in only one subject. Asperger called these children "little professors" because they had the ability to talk seriously and in great detail about their favorite subject (Attwood, 2008). Asperger noted that the syndrome could be recognized by age three, and was more common among boys than girls (Wing, 1981).

"Refrigerator mother theory" was proposed in the 1950s by Bettelheim, who believed that autism resulted when mothers failed to make a good connection with their child (Psychology Today, 2010). Bettelheim also believed that children could have a good start because most parents had the ability to help and support their children. The "refrigerator mother theory" effects have stayed through the 21st century, although it has been rejected in the research literature.

Initially, medical professionals linked autism with schizophrenia in many research studies; however, by the 1960s there was a different understanding of autism. Rimland is considered the father of recent research on autism, and one of the first scientists who focused his research on the correlation between autism and vaccines (Maugh, 2006). Rimland was interested in social skills research, and developed the first checklist for children with autism. One of his published papers, Rimland, Callaway, and Dreyfus (1978), demonstrated the effect of vitamin B6 in helping children with autism. Many parents agreed with his research after they noticed that this vitamin worked for their children. Some people believe that significant metabolic abnormalities may cause or worsen the symptoms of autism for individuals. These people also believe that the consumption of specific foods that contain vitamin B6 may improve the symptoms of autism. Sadly, most academic research ignored Rimland's results because they believed that he opened up new ideas and challenged people's thinking without sticking to the evidence (Benedict, 2006).

Wing is considered to be the first person who used the term Asperger syndrome, in 1981 (Attwood, 2008). Wing tried to draw attention to the work of Asperger. She believed that early diagnosis and early intervention might help children to make progress in communication skills, social skills, and behavior (Wing, 1981).

It is not easy to diagnose children with ASD because many of the characteristics are similar to other conditions. However, the number of ASD diagnoses is growing fast, affecting more children than other diseases (Kellman, 2010). In the United States, the number of children with ASD who receive educational services has increased (Centers for Disease Control and Prevention, 2014), and general education teachers are reporting more children with autism in their classrooms.

Results of research have shown that the number of children diagnosed with ASD increased from 1 in 150 children in the year 2000 to 1 in 54 in 2018 (Centers for Disease Control and Prevention, 2020). Many studies have shown that as the prevalence of children diagnosed with ASD increases, the challenges in teaching these children also increase. Moreover, the school system falls short in preparing teachers to educate students diagnosed with ASD (Alzaharani & Brigham, 2017; Barnhill, Sumutka, Polloway, & Lee, 2014; Donaldson, 2015; Hart & Malian, 2013). It is essential to provide well-prepared teachers to work with children with ASD to help them acquire vital skills and knowledge (Mazin, 2011). Without training, teachers will not have the confidence and competence to teach children with ASD.

2.1. Special Education Teachers

Teacher education is a fundamental factor of any educational system to facilitate a successful learning experience through preparing teachers (Hkoech & Mwei, 2019). The Ministry of Education in Jordan reported in 2006 that children with disabilities face challenges in reaching goals and objective behaviors that are important to improve their special needs (Bataineh, 2009). For teachers who work with children with disabilities, training in special education was not introduced until 1985, when the University of Jordan realized the great importance of training teachers in the special education system. It established a two-year diploma program in special education, a diploma program in the areas of visual impairment and intellectual impairment, and a master's program for teachers of children with disabilities, which was followed by a bachelor program in 1993 (Hadidi, 1998).

Today, many public and private universities provide teacher education programs in special education. However, teachers need to be more qualified to work with children with disabilities, and the programs that hire special education teachers do not look for the skills or experience needed to work with children with disabilities (Alsoura & Ahamd, 2014). Bataineh (2009) pointed out that providing teachers with training in social skills intervention would be helpful to encourage them to work with children with disabilities. The Individuals with Disabilities Act (IDEA) of 2004 required that special education teachers have to be highly qualified to meet the needs of children with disabilities (Everling, Delello, Dykes, Neel, & Hansen, 2015). To support children with different needs, teachers must have knowledge of children's learning styles and a high level of awareness of how to manage their classroom environment (Sayi, 2018).

2.2. ASD in Jordan

There is limited research in Jordan about children with ASD. One study conducted by Aljabery et al. examined parents' perspectives and experiences regarding the services available for their children (Al Jabery, Arabiat, Khamra, Betawi, & Jabbar, 2012). Sixty parents participated in the study. The study showed that the services available for children with ASD are not related to evidence-based practices; so parents pay for their children's participation but do not receive a good quality of service or specific interventions. In addition, some services are available outside the institution, which means that parents need to pay more money to get these services. The Al Jabery et al. (2012) study also identified a lack in many services such as early intervention, inclusive environment, family services, community awareness, financial support, and autism specialized clinics.

According to the Higher Council for the Affairs of Persons with Disabilities, (HCAPD), the prevalence of autism spectrum disorders is unknown in Jordan (Al Jabery et al., 2012). There is a lack of suitably qualified professionals because of socioeconomic problems and political conflict. According to Al Jabery et al. (2012), 266 special education institutions are available for children with disabilities in Jordan. Four of these institutions specifically provide services for children with ASD. All four institutions are in the private sector (Al Jabery et al., 2012). The four institutions provide different services for children with ASD and their parents. Examples of these services are teaching instruction, speech, occupational and physical therapies, medical or health services, transportation between the institutions and children's homes, parent training workshops, and residential services.

Another study conducted by Masri, Al, and Nasir (2013) included 84 cases of children with autism (64 boys and 20 girls) aged between 14 months and 9 years. The diagnosis was based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM: IV-TR). The characteristics of the 84 participants included speech delay, social delay, stereotyped movements, hyperactivity, agitation, and motor delay. The study pointed out that diagnostic tests were not available for these children because they were too expensive. Examples of these tests include chromosomal microarrays, molecular testing for Fragile X, and sequencing of genes associated with Rett Syndrome (Masri et al., 2013). This study showed that parents need more awareness about ASD, as only 4 parents out of 84 knew that their child had autism.

A study by Abu-Hamour and Muhaidat (2013) was conducted to explore the attitudes of special education teachers towards the inclusion of children with ASD in public schools in Jordan. Ninety-two teachers working in special education centers participated in this study. The results indicated that the majority of special education teachers showed positive attitudes for inclusion; however, participants stated that they did not have enough experience, knowledge, or training about inclusive education for children with ASD (Abu-Hamour & Muhaidat, 2013).

2.3. Study Purpose

Mainstream schools do not provide children with disabilities (specifically children with ASD) adequate educational support. The budget of the Special Education Directorate is limited, and teacher training is not provided to support children with disabilities (Al Khatib & Al Khatib, 2008). Resource capacity is smaller than the number of students with disabilities. There is no clear referral process, with teachers depending on their own observation for student achievement rather than real diagnosis (Al Khatib & Al Khatib, 2008). There is a lack of equipment, assessment tools, materials, collaboration between the school and parents, mentoring child progress, and daily schedules for these students (Al Khatib & Al Khatib, 2008; Alsoura & Ahamd, 2014). Evaluating a child only begins when the child displays an identifiable disability. There is also a lack of service provision for children with disabilities, especially occupational therapists and speech and language pathologists (Al Khatib & Al Khatib, 2008). The purpose of this study was to provide a group of practicum students with the knowledge and experience needed to work with children with ASD.

2.4. Hypothesis

Practicum students in the special education program at the University of Jordan have limited knowledge and experience of ASD. They do not have any specific material about autism spectrum disorders, and depend on their own experience when they start their training. Studies have indicated that the prevalence of ASD is increasing, which should lead educators and school leaders to think about teaching specific classes in ASD for students before practical classes to help them obtain knowledge and experience. This study hypothesizes that specialized training for practicum students would result in greater knowledge of ASD, which would result in more inclusive and efficient teaching methods for children with ASD, as well as early detection of ASD in children.

2.5. Research Question

Does field training affect practicum students in special education programs positively?

2.6. Participants

Nine special education centers that specialize in teaching children with ASD were targeted in this study. A total number of 45 practicum students training in special education centers participated. Some 39 participants were female (87%) and 6 were male (13%).

3. METHOD

Training was conducted at the University of Jordan for two hours every week for 16 weeks (32 hours of training). After every two hours of training, trainees had to apply what they had learned at the centers with ASD children. Trainees worked five hours a day with children with ASD. During the 16 weeks, 27 visits were conducted to the nine centers involved. The supervisor spent four hours in every center during visits, leading to a total of almost 108 hours. At the end of the 16 weeks, after a total of 480 hours of training, the second survey was conducted to see if there were changes in trainees' knowledge and experience regarding ASD.

3.1. Data Collection

This study used a quasi-experimental design on one group (experimental group) and a pre/post-test semi-experimental design on the other group. The survey was designed based on the reviewed literature about autism and the programs provided for a child with autism. It contained 20 questions for the trainees to see if they had knowledge of ASD. Each question was presented via a four-point Likert scale, where a 4 indicates very high knowledge, 3 indicates limited knowledge, 2 indicates simple/basic knowledge, and 1 indicates no knowledge. Participants filled out the same questionnaire twice – once before and once after the fourth (and final) month of training.

3.2. Analysis and Results

The data were coded to keep track of participant responses and information. The Statistical Analysis System (SPSS) package was used for data analysis, with an *a priori* significance level of 0.05 used. Frequency and mean summary statistics were run for all variables. Mean comparison analysis was performed to assess the pre- and post-tests. The survey included two parts. The first part gathered the participants' demographic information. Questions were asked to learn the participants' gender, if they have taken courses in ASD, if they had taken courses with some topics about ASD, and if they had undertaken training in ASD. All 45 students had not taken any courses in ASD, 16 had taken courses with some topics in ASD, and 12 had not taken any course that covered ASD. Six students had training in ASD and 33 did not. The second part of the questionnaire included 20 statements where participants had to rate their knowledge about ASD using the four point Likert scale. This scale contained 20 items with a score range from 20 to 80. The data from both surveys were analyzed with descriptive statistics to determine the mean and standard deviation of trainees' evaluations. Descriptive statistics were computed for all statements, and are presented in the following tables: Table 1 shows the mean of the answers for the questions at the scale 1 to 4, it is evident from the table that there was a mean difference between the pre- and post-test answers. This indicates an improvement of the knowledge of ASD among participants at 1.02 degrees on average. Table 1 also shows the 20 components of the knowledge indicators. Generally, there is a low level of knowledge of ASD among participants prior to the training, and results for most questions increase significantly during the training to around 3 out of 4. The post-test answers showed that respondents generally have a greater knowledge of ASD following the training than they did pre-training.

Table-1. Descriptive statistics, mean and standard deviation.

Test Question No.	Question	Pre			Post	
		N	Mean	Std. Deviation	Mean	Std. Deviation
Q1	I have knowledge of the characteristics of individuals with autism spectrum disorders	45	1.84	0.60	2.62	0.49
Q2	I am able to develop educational environments for children with autism spectrum disorders	45	1.64	0.57	2.62	0.53
Q3	I am able to apply different teaching methods to students with autism spectrum disorder who are between the ages of 13 and 18	45	1.76	0.57	2.58	0.81
Q4	I am able to apply different teaching methods to children with autism spectrum disorder who are between 3 and 12 years old	45	1.67	0.60	3.00	0.80
Q5	I am able to teach living daily skills to children with autism spectrum disorder	45	1.73	0.72	1.69	0.60
Q6	I am able to build transitional plans for students with autism spectrum disorder	45	1.84	0.77	2.44	0.72
Q7	I have knowledge about developing social skills for students with autism spectrum disorder	45	1.69	0.73	2.96	0.71
Q8	I am able to distinguish between effective and ineffective strategies for students with autism spectrum disorder	45	1.98	0.72	3.11	0.75
Q9	I am familiar with research and studies on autism spectrum disorder	45	1.84	0.74	2.27	0.54
Q10	I have knowledge about the ambiguity surrounding autism spectrum disorders	45	1.31	0.47	1.71	0.63
Q11	I have the ability to involve families in an autism spectrum disorder program	45	1.49	0.59	3.07	0.84
Q12	I'm able to use applied behavior analysis for children with autism spectrum disorder	45	1.38	0.53	1.78	0.64
Q13	I can write measurable goals for children with autism spectrum disorder	45	1.62	0.58	3.11	0.83
Q14	I am able to support positive behavior	45	1.60	0.72	2.96	0.80
Q15	I am able to use reinforcement and punishment	45	1.60	0.72	3.00	0.67
Q16	I can use strategies to promote effective inclusion of	45	1.36	0.48	1.76	0.65
Q17	I'm able to implement evidence-based practice	45	1.24	0.43	1.53	0.50
Q18	I am able to answer any questions related to autism	45	1.67	0.77	3.47	0.69
Q19	I am able to deal with children who have autism spectrum disorder within the classes	45	1.36	0.48	3.53	0.73
Q20	I am able to communicate with children with autism spectrum disorder	45	1.24	0.43	3.02	0.97

Primary analysis was found to partly support the research question that field experience increased from pre-test to post-test. The data showed an improvement in practicum students' knowledge and experience about ASD. Results before and after the training were compared for each question, the results in Table 3 reveal strong evidence ($t = 22.047$, $p = 0.000$) that the training improved participants' knowledge of ASD. In this dataset, it improved their skills by approximately 1 point, on average. This confirms that the difference in mean pre- and post-training knowledge is statistically significant, and that the training proved very effective in increasing knowledge in the tested areas (Table 2).

Table-2. Paired samples statistics.

Test		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Mean of Pre Test	1.5533	45	.18103	.02699
	Mean of Post Test	2.5544	45	.17640	.02630

Table-3. Paired samples test.

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Mean of Pre Test - Mean of Post Test	-1.00111	.30460	.04541	-1.09262	-.90960	-22.047	44	.000

4. DISCUSSION

Studies have indicated that special education teachers lack knowledge of the characteristics of ASD and of how to apply different teaching methods for students with ASD (Helps, Newsom-Davis, & Callias, 1999; Mavropoulou & Padelidiadu, 2000; Schwartz & Drager, 2008). This study showed that field experience improved practicum students' knowledge of ASD and of how to deal children with ASD. It also revealed how much practicum students' perceptions changed after spending four months working with children with ASD and receiving weekly training. This supports other studies which have indicated that field experiences the most important and influential experience within teacher preparation (Conderman, Morin, & Stephens, 2005; Connelly & Graham, 2009; Recchia & Puig, 2011). Field experience gives practicum students opportunities to apply the theories and skills they learn in the classroom. The training that practicum students received during the four months focused on providing them with solid knowledge of the characteristics of individuals with ASD. It also focused on the TEACCH program (Treatment and Education of Autistic and Related Communication-handicapped Children), also called structure teaching, which supports individuals with autism in a variety of educational, community, and home settings. The goals of structure teaching are to create an environment that promotes independence, strength, and interest for each student with autism. The five levels of structures are physical organization/visual boundaries, individualized schedules, independent work system, routine and strategies, and visual structure of materials in tasks and activities (Iovannone, Dunlap, Huber, & Kincaid, 2003). The training students received during the four months also focused on applying different teaching methods to children with ASD. Applied Behavior Analysis (ABA), Pivotal Response Training (PRT), Peer-Mediated Instruction and Intervention (PMII), and Social Skills Groups (SSG) are evidence-based practices for children with ASD, according to the National Professional Development Center on Autism Spectrum Disorder(NPDC). Using such evidence-based practice as part of field experience improves the social, communication and behavior skills of children with ASD(Conderman et al., 2005). The training as part of this study also focused on teaching the children life skills, such as personal hygiene, dressing, safety and interpersonal skills, self-feeding, and toileting. The development of social skills was also covered, such as the ability to communicate, play, start or maintain conversations, request, comment, and share a game or activity with peers(Morrison, Kamps, Garcia, & Parker, 2001).

Children with deficits in social skills are more likely to face impairments in social life, academic progress, and delayed early language and communication (Reichow, Volkmar, & Cicchetti, 2008). They also have difficulties in eye contact, joint attention, initiating and maintaining conversations, problem-solving ability, empathy, and interpreting body language (American Psychiatric Association (APA), 2013; Yeo & Teng, 2015). The training therefore focused on providing practicum students with social stories and play strategies, as well as on teaching turn-taking in conversation. It also helped the practicum students develop the ability to distinguish between effective and ineffective strategies through applying different methods, for example: create a classroom

routine, use appropriate technology, and treat them like neurotypical children as much as possible. The training focused on Applied Behavior Analysis (ABA), which is a one-to-one approach used to teach skills in a planned, controlled, and systematic manner in small repeated steps. ABA is used to meaningfully improve social and communication skills, behavior skills, academic knowledge, play skills, motor skills, and self-help skills (Alberto & Troutman, 2009). Data collection in ABA provides teachers and practitioners with information about students' beginning skills level, progress and challenges, skills acquisition and maintenance, and generalization of learned skills or behaviors. ABA deals with socially important behaviors and observable and quantifiable behavior (Alberto & Troutman, 2009). The relationships between the behavior and the intervention must be verified. ABA allows teachers to help their students master functional skills, improve their academic skills, and document their progress for families and professionals. To increase positive behaviors for students with ASD, practitioners must prepare and teach self-management, and create independence. To reduce interfering behaviors and teach positive replacement behaviors through self-management strategies, practitioners have to identify the desired behavior, which has to be measurable and objective; help identify and reinforce the child's needs; help the child to select a self-monitoring device, and then teach them how to monitor the occurrence or absence of the desired behavior; and collect data to see if the child can generalize the self-management system in the school, home, and community (Koegel, Koegel, Hurley, & Frea, 1992). The trainees applied two types of reinforcement and punishment: positive and negative. The result prove that by the end of the training, the trainees were able to answer any question related to autism spectrum disorder and were able to deal and communicate with children who have autism spectrum disorders within the classes. They were also able to write individual education plans and measurable goals for children with ASD, and could involve families in the autism spectrum disorder program.

The training delivered to practicum students in special education had positive impacts on their knowledge and experience. However, there were some limitations. The teachers who worked with these children and young people with ASD were not well-qualified and did not know about the strategies, evidence-based practices, individual education plans, and the importance of including children and young people with ASD in schools. It is important to hire qualified teachers who have a license to work with children and young people with ASD. It was also a challenge to provide the trainees with all of the strategies and evidence-based practice available in four months, so it's important for them to undertake additional classes in ASD as the teaching bachelor program does not have a course on this topic. Finally, the population of the study was small and selected from one of the universities, so it is hard to generalize the results. Addressing these limitations through continuing professional development may impact practicum programs and provide qualified teachers. Further studies could include practicum students from different fields in education, as global trends seek to integrate children with disabilities into mainstream schools.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Acknowledgement: All authors contributed equally to the conception and design of the study.

REFERENCES

- Abu-Hamour, B., & Muhaidat, M. (2013). Parents' attitudes towards inclusion of students with autism in Jordan. *International Journal of Inclusive Education*, 20(44), 1–13.
- Al Jabery, M. A., Arabiat, D. H., Khamra, H. A. A., Betawi, I. A., & Jabbar, S. K. A. (2012). Parental perceptions of services provided for children with autism in Jordan. *Journal of Child and Family Studies*, 23(3), 475–486.
- Al Khatib, J. M., & Al Khatib, F. (2008). Educating students with mild intellectual disabilities in regular schools in Jordan. *Journal of the International Association of Special Education*, 9(1), 109–116.
- Alberto, P. A., & Troutman, A. C. (2009). *Applied behavior analysis for teachers* (8th ed.). Upper Saddle River, NJ: Pearson.
- Alsoura, H., & Ahamd, A. (2014). Review of special education programs in Jordan: Current practices, challenges, and prospects. *Journal of Special Education and Rehabilitation*, 15(3–4), 24–42.

- Alzahrani, A. N., & Brigham, F. J. (2017). Evaluation of special education preparation programs in the field of Autism Spectrum in Saudi Arabia. *International Journal of Special Education*, 32(4), 746-766.
- American Psychiatric Association (APA). (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington: (DSM-V), American Psychiatric Association.
- Andreadi, R., Charitaki, G., & Soulis, S.-G. (2018). The effect of applied behavioral analysis on the communication skills in children with autism spectrum disorder: Perceptions of special educators and psychologists. *Online Submission*, 6(6), 1218-1228.
- Attwood, T. (2008). An overview of autism spectrum disorders. *Learners on the Autism Spectrum: Preparing Highly Qualified Educators*, 18-43.
- Baio, J., Wiggins, L., Christensen, D. L., Maenner, M. J., Daniels, J., Warren, Z., . . . White, T. (2018). Prevalence of autism spectrum disorder among children aged 8 years—autism and developmental disabilities monitoring network, 11 sites, United States, 2014. *MMWR Surveillance Summaries*, 67(6), 1-23. Available at: <https://doi.org/10.15585/mmwr.ss6706a1>.
- Barnhill, G. P., Sumutka, B., Polloway, E. A., & Lee, E. (2014). Personnel preparation practices in ASD: A follow-up analysis of contemporary practices. *Focus on Autism and Other Developmental Disabilities*, 29(1), 39-49. Available at: <https://doi.org/10.1177/1088357612475294>.
- Bataineh, O. (2009). Sources of social support among special education teachers in Jordan and their relationship to burnout. *International Education*, 39(1), 65-78.
- Benedict, C. (2006). Bernard Rimland, 78, scientist who revised view of autism. The New York Times. Retrieved from: <http://www.nytimes.com/2006/11/28/obituaries/28rimland.html>.
- Browder, D. M., Trela, K., & Jimenez, B. (2007). Training teachers to follow a task analysis to engage middle school students with moderate and severe developmental disabilities in grade-appropriate literature. *Focus on Autism and Other Developmental Disabilities*, 22(4), 206-219. Available at: <https://doi.org/10.1177/10883576070220040301>.
- Centers for Disease Control and Prevention. (2014). Data and statistics. Retrieved from: <http://www.cdc.gov/ncbddd/data.html>.
- Centers for Disease Control and Prevention. (2019). Facts about ASD. Retrieved from: <http://cdc.gov/ncbddd/autism/facts.html>. [Accessed April 7, 2019].
- Centers for Disease Control and Prevention. (2020). Data & statistics on autism spectrum disorder. Retrieved from: <http://www.cdc.gov/ncbddd/data.html>.
- Conderman, G., Morin, J., & Stephens, J. T. (2005). Special education student teaching practices. *Preventing School Failure: Alternative Education for Children and Youth*, 49(3), 5-10. Available at: <https://doi.org/10.3200/psfl.49.3.5-10>.
- Connelly, V., & Graham, S. (2009). Student teaching and teacher attrition in special education. *Teacher Education and Special Education*, 32(3), 257-269. Available at: <https://doi.org/10.1177/0888406409339472>.
- Dib, N., & Sturmey, P. (2007). Reducing student stereotypy by improving teachers' implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis*, 40(2), 339-343. Available at: <https://doi.org/10.1901/jaba.2007.52-06>.
- Donaldson, A. L. (2015). Pre-professional training for serving children with ASD: An apprenticeship model of supervision. *Teacher Education and Special Education*, 38(1), 58-70. Available at: <https://doi.org/10.1177/0888406414566995>.
- Everling, K. M., Delello, J. A., Dykes, F., Neel, J. L., & Hansen, B. (2015). The impact of field experiences on pre-service teachers' decisions regarding special education certification. *Journal of Education and Human Development*, 4(1), 65-77. Available at: <https://doi.org/10.15640/jehd.v4n1a8>.
- Goh, A. E., & Drogan, R. R. (2017). Function-based interventions for children with autism spectrum disorders in schools: A review. *International Journal of Special Education*, 32(1), 115-133.
- Hadidi, M. S. (1998). Educational programs for children with special needs in Jordan. *Journal of Intellectual and Developmental Disability*, 23(2), 147-154. Available at: <https://doi.org/10.1080/13668259800033651>.

- Hart, J. E., & Malian, I. (2013). A statewide survey of special education directors on teacher preparation and licentiate in autism spectrum disorders: A model for university and state collaboration. *International Journal of Special Education*, 28(1), 4-13.
- Helps, S., Newsom-Davis, I., & Callias, M. (1999). Autism: The teacher's view. *Autism*, 3(3), 287-298. Available at: <https://doi.org/10.1177/1362361399003003006>.
- Hkoech, C. K., & Mwei, K. M. (2019). How secondary school mathematics teachers perceive the effectiveness of microteaching and teaching practice in their preservice education. *Humanities and Social Sciences Letters*, 7(1), 46-55. Available at: <https://doi.org/10.18488/journal.73.2019.71.46.55>.
- Iovannone, R., Dunlap, G., Huber, H., & Kincaid, D. (2003). Effective educational practices for students with autism spectrum disorders. *Focus on Autism and other Developmental Disabilities*, 18(3), 150-165. Available at: <https://doi.org/10.1177/10883576030180030301>.
- Jordan, R. (2003). Social play and autistic spectrum disorders: A perspective on theory, implications and educational approaches. *Autism*, 7(4), 347-360. Available at: <https://doi.org/10.1177/1362361303007004002>.
- Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child*, 2(3), 217-250.
- Kellman, R. (2010). The autism-thyroid connection. Raphael. *The Exceptional Parent*, 40(4), 16.
- Koegel, L. K., Koegel, R. L., Hurley, C., & Frea, W. D. (1992). Improving social skills and disruptive behavior in children with autism through self-management. *Journal of Applied Behavior Analysis*, 25(2), 341-353. Available at: <https://doi.org/10.1901/jaba.1992.25-341>.
- Lizotte, M. (2018). I am a college graduate: Postsecondary experiences as described by adults with autism spectrum disorders. *International Journal of Education and Practice*, 6(4), 179-191. Available at: <https://doi.org/10.18488/journal.61.2018.64.179.191>.
- Masri, A., Al, N. S., & Nasir, R. (2013). Diagnostic delay of autism in Jordan: Review of 84 cases. *The Libyan Journal of Medicine*, 8(1), 21725-21725. Available at: <https://doi.org/10.3402/ljm.v8i0.21725>.
- Maugh, T. (2006). Bernard Rimland, 78; author was the father of modern autism research. Los Angeles Times. Retrieved from: <http://www.articles.latimes.com/2006/nov/26/local/me-rimland26>.
- Mavropoulou, S., & Padelidu, S. (2000). Greek teachers' perceptions of autism and implications for educational practice: A preliminary analysis. *Autism*, 4(2), 173-183. Available at: <https://doi.org/10.1177/1362361300004002005>.
- Mazin, A. (2011). Preparing teachers in autism spectrum disorders: Reflections on teacher quality. Retrieved from <http://hdl.handle.net/10022/AC:P:13013References>.
- Morrison, L., Kamps, D., Garcia, J., & Parker, D. (2001). Peer mediation and monitoring strategies to improve initiations and social skills for students with autism. *Journal of Positive Behavior Interventions*, 3(4), 237-250. Available at: <https://doi.org/10.1177/109830070100300405>.
- Nagro, S. A., & Bettencourt, D. L. U. (2017). Reviewing special education teacher preparation field experience placements, activities, and research: Do we know the difference maker? *Teacher Education Quarterly*, 44(3), 7-33.
- Napolioni, V., Lombardi, F., Sacco, R., Curatolo, P., Manzi, B., Alessandrelli, R., & Saccani, M. (2011). Family-based association study of ITGB3 in autism spectrum disorder and its endophenotypes. *European Journal of Human Genetics*, 19(3), 353-359. Available at: <https://doi.org/10.1038/ejhg.2010.180>.
- Psychology Today. (2010). Whose fault is autism? A historical view of placing blame. Retrieved from: <http://www.psychologytoday.com/blog/child-myths/201004/whose-fault-is-autism-historical-view-placing-blame>. [Accessed January 30, 2013].
- Recchia, S. L., & Puig, V. I. (2011). Challenges and inspirations: Student teachers' experiences in early childhood special education classrooms. *Teacher Education and Special Education*, 34(2), 133-151. Available at: <https://doi.org/10.1177/0888406410387444>.

- Reichow, B., Volkmar, F., & Cicchetti, D. (2008). Development of an evaluative method for determining the strength of research evidence in autism. *Journal of Autism and Developmental Disorders*, 38(7), 1311-1319. Available at: <https://doi.org/10.1007/s10803-007-0517-7>.
- Rimland, B., Callaway, E., & Dreyfus, P. (1978). The effect of high doses of vitamin B6 on autistic children: A double-blind crossover study. *The American Journal of Psychiatry*, 135(4), 472-475. Available at: <https://doi.org/10.1176/ajp.135.4.472>.
- Sayi, A. K. (2018). Teachers' views about the teacher training program for gifted education. *Journal of Education and Learning*, 7(4), 262-273.
- Schwartz, H., & Drager, K. D. (2008). Training and knowledge in autism among speech-language pathologists: A survey. *Language, Speech, and Hearing Services in Schools*, 39(1), 66-77. Available at: [https://doi.org/10.1044/0161-1461\(2008/007](https://doi.org/10.1044/0161-1461(2008/007).
- Sicile-Kira, C. (2004). *Autism spectrum disorders: The complete guide to understanding autism, asperger's syndrome, pervasive developmental disorder, and other ASDs*. New York: A Perigee Book.
- Soke, G., Rosenberg, S., Hamman, R., Fingerlin, T., Rosenberg, C., Carpenter, L., & Durkin, M. (2017). Factors associated with self-injurious behaviors in children with autism spectrum disorder: findings from two large national samples. *Journal of Autism and Developmental Disorders*, 47(2), 285-296. Available at: <https://doi.org/10.1007/s10803-016-2951-x>.
- Wing, L. (1981). Asperger's syndrome: A clinical account. *Psychological Medicine*, 11(1), 115-129.
- Yeo, K. J., & Teng, K. Y. (2015). Social skills deficits in autism: A study among students with autism spectrum disorder in inclusive classrooms. *Universal Journal of Educational Research*, 3(12), 1001-1007. Available at: <https://doi.org/10.13189/ujer.2015.031208>.

Views and opinions expressed in this article are the views and opinions of the author(s), International Journal of Education and Practice shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.