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## Parents Involvement in Social Interaction Intervention for Children with Autism Spectrum Disorder (ASD): A Review

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### Abstract

Two basic characteristics characterize autism spectrum disorder: a difficulty in social communication and the prevalence of repetitive activities and/or restricted interests. The most frequently cited explanation for insufficient social contact or skill development is a lack of social cognition. Numerous interventions have been utilized to help children with this issue, including social storytelling, scheduled physical exercise programs, and peer-mediated intervention. Typically, interventions are performed in a clinical setting by experts such as occupational therapists. However, research indicates that parents' involvement has a significant contribution to helping children to improve their children's social interactions and skills, particularly those with an autistic spectrum disorder. Thus, this study emphasizes social interaction intervention, its benefits, and the involvement of parents in social interaction intervention with autistic children. According to the previous research, early learning experiences through early intervention with the social contract approach significantly enhance development progress among ASD Children. Autistic children's behavior may improve with parental involvement in the intervention, and it may also reduce parenting stress because of improved behavior.

**Keywords:** Social Skills, Autism Spectrum Disorder, Interaction, Intervention, Parent.

### Introduction

The majority of children diagnosed with Autism Spectrum Disorder (ASD) have difficulty with social interactions, displaying poor social skills when interacting with peers (Chang and Locke, 2016). Social skills are crucial characteristics for someone with ASD. Children and adults alike require social skills to live a normal and healthy existence. Children with ASD, on the other hand, lack this skill. Poor social cognition will affect a lack of social engagement and communication (Keifer et al., 2020). Social skill and interaction are a scientific approach that focuses on individual reactions toward social information (Hunt et al., 2012). When people with Autism deviate significantly from regular people in terms of social communication, aspirations, and expectations, it creates a bad interpersonal experience, making it difficult for

normal people to comprehend and communicate with them. As a result, social interaction intervention is required to help autistic children to communicate effectively and have better personal relationships with others.

There are a variety of interventions available to help children or individuals with ASD with social interaction issues. A social story (Karal and Wolfe, 2018), Group Cognitive Behavior Therapy (CBT) (Spain et al., 2017), structured physical activities (Zhao and Chen, 2018), peer-mediated intervention programs (Rodriguez-Medina et al., 2016), and other interventions program. Intervention programs are aimed at addressing social deficit issues and improving their abilities and knowledge. However, only a few studies have been conducted to determine the relationship between the therapy and social interaction approach giving positive effect on children and persons with ASD (Morrison et al., 2020).

There is also a small number of research on parents' engagement in the social interaction intervention and types of social interaction with ASD individuals, which might help to improve their social interaction. As a result, this study emphasizes these components by examining studies examining social interaction and intervention approaches in autistic persons.

### **Autism Spectrum Disorder**

Globally, one child in every 54 is diagnosed with Autism Spectrum Disorder (ASD), and the number of children diagnosed with ASD has consistently increased since 2002. Autism is more prevalent in male individuals (3.0%) compared to females (0.7%), and it has been discovered to affect individuals of all races and ethnicities globally (Centers for Disease Control and Prevention, 2020). Annually, approximately 9000 children in Malaysia are diagnosed with Autism.

According to Lord et al. (2018), ASD is a group of complicated neurodevelopment disorders characterized by recurrent and repetitive activities and difficulties with social interaction and communication. It is a condition defined by a number of issues in children, including social communication issues, a lack of social interaction and skills, and an odd pattern of repetitive behavior (American Psychiatric Association, 2013). Individuals with ASD prefer a predictable environment and may exhibit signs of tension and anxiety when confronted with an unpredictable or complex circumstance. Due to their inability to deal with the unexpected, these individuals are especially susceptible to environmental or situational changes (Colizzi et al., 2020).

The main concern on ASD symptoms is the absence of social communication skills even though other factors are being identified, such as low social communication skills and repetitive behavior. Social interaction and communication skills are absent due to developmental delay, behavioral performance and academic achievement, and lack of connection ability (Fuller and Kaiser, 2019). ASD individuals may struggle in all categories described above due to a lack of social communication or contact, difficulty in connecting with people, and flourishing in their adult lives. Thus, it shows the importance of intervention should begin at an early stage.

The intervention strategy has a higher rate of success when initiated early, as therapists could be able to establish and implement intervention plans that involve learning experiences and progress toward developmental goals (Bradshaw et al., 2015). When ASD-related problems are addressed earlier, they may potentially be prevented (Johnson, 2018). Numerous empirical research examining the benefits of early intervention demonstrate an urgent need to develop effective early intervention strategies or approaches that increase the likelihood of averting significant deficits in children with ASD. In comparison, if children do

not receive therapy or a proper intervention program or do not attend any interventions session, they will face more serious behavioral disorders and affecting their daily lives. Most families with ASD children are more stressed than households that do not have any ASD children or disabilities (Hastings, 2016). Social interaction and communication skills must be addressed early to prevent ASD children from developing behavioral difficulties as they grow older and to facilitate interactions with other people.

**Social Interaction Intervention**

Social communication and interaction skills are the most worrying symptom in ASD children. There are a variety of interventions applied to address these symptoms, which can become a problem for the child as they grow older if not addressed early on. Table 1 presents an example of some social interaction interventions based on articles from the Scopus database published in 2010.

Table 1  
*Examples of social interaction intervention used based on articles published since 2010*

Types of Intervention	Intervention Provider
Behavior Therapy	Behavioral Therapist
Behavioral Intervention	
Early Start Denver Model	
Early Intervention	Occupational Therapist
Language	Occupational Therapist
Vocalization	
Parent Training	Parents and Occupational Therapists
Parent Mediated Intervention	
Parental Behavior	
	Psychiatrists, Psychologists

Table 1 shows the interventions approach practiced for social interaction skills for autistic children based on articles published from 2010 onward. The result shows there are also some other articles that use technology-based intervention such as games (Whyte et al., 2015), robots (Van Otterdijk et al., 2020; De Korte et al., 2020), Virtual Technology (Ke and Im, 2013; Ke et al., 2020), and many more. Figure 1 show the network visualization map of author based on social skills intervention among autism individuals

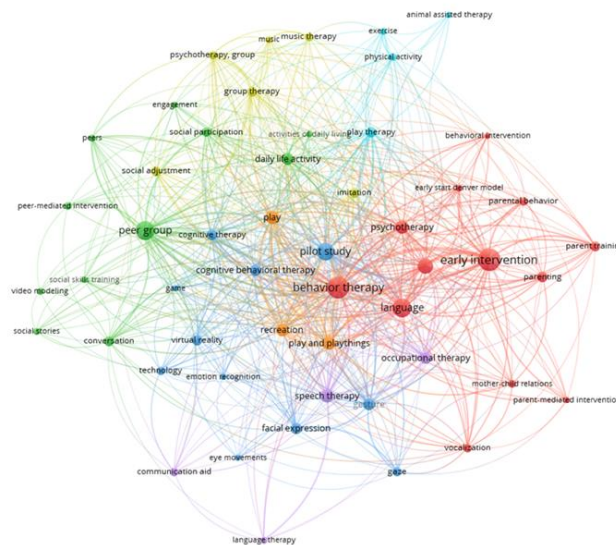


Fig. 1. Network visualization map of author keywords based on social skills intervention among autism individuals

In Figure 1, the network visualization maps show an analysis of author keywords in interventions used for social skills among autism individuals, behavior therapy (164 occurrences), early intervention (175 occurrences), and peer group (126 occurrences) were the most frequently applied interventions for social skills among autism individuals. There were 1,979 documents in the literature that examined approaches to improve social interaction abilities in people with ASD.

Several studies have examined social interaction intervention's effect on children or individuals with ASD. The study by Schiltz et al (2018) found that ASD individuals who received the social skills intervention showed significant improvement in depressive symptoms. This study parallels the study by Healy et al (2018), where the result showed that individuals who received physical activity and social functioning skills interventions performed better than those who did not receive any intervention program. Therefore, the intervention approach shows a positive impact in enhancing individuals with ASD.

Numerous studies indicate that parental involvement during the intervention may prevent children from developing more severe, disruptive behavior (Colizzi et al., 2020). Parents' participation in the intervention of their autistic children has long been acknowledged and demonstrated to be beneficial. According to Vernon et. al (2012), children's social interaction improves significantly due to their mothers' interactions with them. Social interaction skills can alleviate autistic symptoms and behavioral problems. These improvements will reduce parental stress, according to Tarver et al. (2019), which cite improved behavior and decreased autistic symptoms as the reasons for this. Therefore, additional research, particularly in social interaction intervention, is required better to comprehend the effect of parental involvement during the intervention.

### Social Interaction Intervention and Parents' Involvement Research Trends

Intervention programs and parent involvement for autistic individuals are gaining increased attention due to their effectiveness in improving the development of autistic individuals and lowering parental stress. This section summarizes study findings on parents' engagement in

social interaction intervention from 2001. The publication trends detected in the Scopus database are depicted in Figure 2.

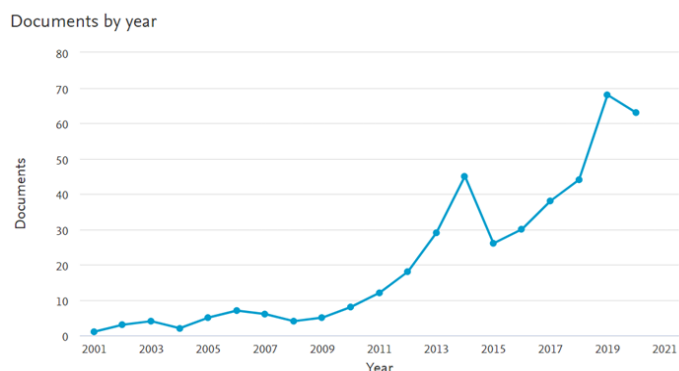


Fig. 2. Publication trends as identified on the Scopus database

(Social Interaction) AND (Intervention) AND (Parental Involvement) are the keywords used to identify publication patterns in the Scopus database illustrated in Figure 2. (Autism OR Autism Spectrum Disorder). The trends indicate an upward trend, with an increase in publication beginning in 2008 and continuing. This trend suggests that the researcher became increasingly interested in examining the efficacy of a parent-mediated intervention on the social interaction skills of individuals with autism spectrum disorders. Figure 3 depicts the total number of publications by nation or territory.

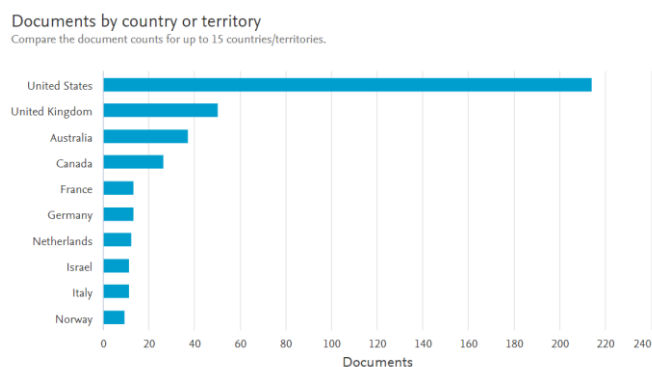


Fig. 3. Number of publications based on country or territory

According to the graph in Figure 3, the United States publishes the most articles in this field, followed by the United Kingdom and Australia. However, there are significant differences between the United States and Britain. This result may be explained by the increased prevalence rate of autism in the United States, which has sparked "fears" of an autism epidemic (Wright, 2017). As the prevalence of autism increases, so does awareness of the disorder. Every two years, professional doctors conduct routine health evaluations on infants and children. In addition, as shown in Figure 3, the percentage of knowledgeable young people in the United States is relatively high (63 percent).

Another study examines the level of Autism awareness in the United States and China (Yu et al., 2020; Huang et al., 2013; Census and Statistical Department of Hong Kong, 2013). According to the study, autism spectrum disorder prevalence estimates, educational opportunities, and life outcomes for autistic individuals differ significantly between China and

the West (Yu et al., 2020). According to the scientists, their research revealed a significant awareness gap between the two nations regarding Autism. Another possible explanation for the disparities is the difference in autism prevalence between the United States and China, where 1 in 59 children in the United States have autism spectrum disorder (ASD), compared to 1 in 225 children in China (Huang et al., 2013). In countries with a high prevalence of autism, individuals, particularly parents, are more likely to increase their knowledge of autism spectrum disorder (Dehn et al., 2014; Neik et al., 2014; Sun et al., 2015; Clark et al., 2018; Hayat et al., 2019). Figure 3 suggests a substantial knowledge gap between the countries that must be addressed and bridged. Using the following search string, the Scopus database was queried for the most cited articles on this subject. TITLE-ABS-KEY ((parents) AND (intervention) AND (social AND interaction) AND (Autism) AND (Autism AND spectrum AND disorder)) was employed to identify the most-cited articles. The following table summarizes the five most frequently cited publications in this field according to a keyword search of the Scopus database.

Table 2

Examples of some interventions used for social interaction based on articles published since 2010

No.	Title	Year	No. of Citation
1.	The UCLA PEERS program	2012	170
2.	Parent-mediated social communication therapy for young children with autism (PACT)	2016	151
3.	Randomized controlled trials (RCT): prospective studies that measure the effectiveness of a new intervention or treatment	2003	140
4.	Relationship-focused intervention approach to enhance the social- skill and emotional functioning of young children with autism spectrum disorders	2003	129
5.	Parent-focused intervention effectiveness for ASD children on parenting stress and competence	2010	127

According to Table 2, the most-cited publications, with a total of 170 citations, were published in 2012. The publications assessed the PEERS Program's efficacy and durability as a parent-assisted social skills group intervention for adolescents with ASD with high-functioning social skills (Laugeson et al., 2012). The teacher documented the changes because of the study's findings, demonstrating the positive impact of parental participation during the intervention. The frequency with which the subjects interacted with their peers increased while their autistic traits diminished. Aside from that, the second-highest cited research paper (151 citations) in this analysis investigated the effect of Parent-mediated social communication therapy for young children with autism (PACT) on parent-child social interaction and whether it is having a lasting impact (Pickles et al., 2016; Lyall et al., 2017). This conclusion demonstrates that the consistency of the intervention sessions resulted in improving autistic symptoms, indicating the success of the intervention.

The third most-cited paper in this analysis was the investigation of the impact of the Early Social Interaction (ESI) Project (Wetherby et al., 2014). Then, Ginn et al (2017) published an article in which he analyzes relationship-focused intervention. This strategy motivates parents to engage every day and communicates with their children to improve their social and interaction skills. The fifth most cited article is Keen et al. (2010), which investigated the effectiveness of a parent-focused intervention on parental stress issues and competence. The results of this study show that the intervention helps parental stress management and increases parenting competence. In addition, the approaches resulted in adaptive behavior among the children.

Parents play a crucial role in preparing and supporting children to participate in an early intervention program at a young age to maximize their development and accelerate their learning performance (Groark et al., 2011; Guralnick, 2016; McCauley et al., 2019). Establishing a positive emotional and motivational bond between a child and parent is crucial to the efficacy of any intervention designed to promote children's development. However, social interaction intervention is essential for children's character development and socialization skills. According to Vousden et al (2018); Petrina et al (2014), positive interaction between parents and children teaches children to participate in social situations and increases their likelihood of maintaining effective and positive relationships with others. This intervention is essential for regulating children's human and social lives, as well as social interaction (Dunst, 2017; Dunst and Hamby, 2017) and adaptation to social contexts (Ginn et al., 2017; Keen et al., 2010).

### **Conclusion**

In summary, this study found that most articles published on social interaction intervention for ASD children for 2010 and above are behavior therapy, early intervention, and peer group. The results of the study also showed that the majority of children who received social interaction intervention showed significant improvement in depressive symptoms. Typically, children with Autism Spectrum Disorder are characterized by their inability to interact socially and communicate effectively and their repetitive behavior. However, their social interaction skills are the most problematic aspect of their development experience. Students may improve their academic performance, behavior, and capacity to form positive relationships by learning to communicate and connect effectively with everyday people. By intervening when children are young, they will have a greater chance of leading a daily life as adults and experience fewer autism symptoms. When familiar parents participate in the intervention, a conducive environment can be created, which increases the intervention's effectiveness. In addition, there is a growing interest in examining the efficacy of parental participation in the therapeutic process of developing social interaction skills in children or adults with ASD. This study suggests that in the future research should investigate the most effective method of involving parents in social interaction interventions for children or adults with ASD. This study also suggests the development of guidelines and frameworks to assist therapists in designing an intervention program to improve social interaction skills. A comprehensive guide or intervention framework can help more effectively in improving social interaction skills and improve quality of life children with ASD.

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## References

- American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (DSM-5®). American Psychiatric Pub.
- Johnson, B. (2018). Autism Spectrum Disorder – Advances in Genomics and Impact of Early Behavioral Intervention. *BMH Med. J*,5(2), 57-62.
- Bradshaw, J., Steiner, A. M., Gengoux, G., & Koegel, L. K. (2015). Feasibility and effectiveness of very early intervention for infants at-risk for autism spectrum disorder: A systematic review. *Journal of autism and developmental disorders*, 45(3), 778-794.
- Centers for Disease Control and Prevention. (2020). Data & Statistics on Autism Spectrum Disorder. Retrieved from <https://www.cdc.gov/ncbddd/autism/data.html>.
- Census and Statistical Department of Hong Kong, (2013). Retrieved on 11/05/2016 from <http://www.censtatd.gov.hk/home/>.
- Chang, Y. C., & Locke, J. (2016). A systematic review of peer-mediated interventions for children with autism spectrum disorder. *Research in autism spectrum disorders*, 27, 1-10.
- Clark, M.L.E.; Vinen, Z.; Barbaro, J.; Dissanayake, C. (2018). School age outcomes of children diagnosed early and later with autism spectrum disorder. *J. Autism Dev. Disord.* 48, 92–102
- Colizzi, M., Sironi, E., Antonini, F., Ciceri, M. L., Bovo, C., & Zocante, L. (2020). Psychosocial and Behavioral Impact of COVID-19 in Autism Spectrum Disorder: An Online Parent Survey. *Brain Sciences*, 10(6), 341.
- Colizzi, M., Lasalvia, A., & Ruggeri, M. (2020). Prevention and early intervention in youth mental health: is it time for a multidisciplinary and trans-diagnostic model for care?. *International Journal of Mental Health Systems*, 14, 1-14.
- De Korte, M. W., van den Berk-Smeekens, I., van Dongen-Boomsma, M., Oosterling, I. J., Den Boer, J. C., Barakova, E. I., ... & Staal, W. G. (2020). Self-initiations in young children with autism during Pivotal Response Treatment with and without robot assistance. *Autism*, 24(8), 2117-2128.
- Dehn, L., Korn-Merker, E., Pfafflin, M., Ravens-Sieberer, U., & May, T. (2014). The impact on family scale: Psychometric analysis of long and short forms in parents of children with epilepsy. *Epilepsy and Behaviour*. 32, 21-26.
- Dunst, C. J. (2017). Early childhood practitioner judgments of the social validity of performance checklists and parent practice guides. *Journal of Education and Training Studies*, 5(3), 176-187. <https://doi.org/10.11114/jets.v5i3.2162>.
- Dunst, C. J., & Hamby, D. W. (2017). Predictors of the social validity judgments of early childhood intervention performance checklists and practice guides. *International Journal of Psychology and Educational Studies*, 4(1), 13-20. <https://doi.org/10.17220/ijpes.2017.01.002>.
- Fuller, E. A., & Kaiser, A. P. (2019). The effects of early intervention on social communication outcomes for children with autism spectrum disorder: A meta-analysis. *Journal of Autism and Developmental Disorders*, 1-18.
- Ginn, N. C., Clionsky, L. N., Eyberg, S. M., Warner-Metzger, C., & Abner, J. P. (2017). Child-directed interaction training for young children with autism spectrum disorders: Parent

- and child outcomes. *Journal of Clinical Child & Adolescent Psychology*, 46(1), 101-109.
- Groark, C. J., Eidelman, S. M., Maude, S., & Kaczmarek, L. (2011). *Early childhood intervention: Shaping the future for children with special needs and their families*. Santa Barbara, CA: Praeger.
- Guralnick, M. J. (2016). Early intervention for children with intellectual disabilities: An update. *Journal of Applied Research in Intellectual Disabilities*, 30(2), 211-229. <https://doi.org/10.1111/jar.12233>.
- Hayat, A., Meny, A., Salahuddin, N. M., Alnema, F., Ahuja, K., Azeem, M. (2019). Assessment of knowledge about childhood autism spectrum disorder among healthcare workers in makkah- saudi arabia. *Pak. J. Med. Sci*, 35, 951–957
- Hastings, R. P. (2016). Do children with intellectual and developmental disabilities have a negative impact on other family members? The case for rejecting a negative narrative. *International review of research in developmental disabilities*, 50, 165-194.
- Healy, S., Nacario, A., Braithwaite, R. E., & Hopper, C. (2018). The effect of physical activity interventions on youth with autism spectrum disorder: A meta-analysis. *Autism Research*, 11(6), 818-833.
- Huang, A. X., Jia, M., & Wheeler, J. J. (2013). Children with autism in the People's republic of china: Diagnosis, legal issues, and educational services. *Journal of Autism and Developmental Disorders*, 43(9), 1991-2001. doi:10.1007/s10803-012-1722-6
- Hunt, C., Borgida, E., Lavine, H. (2012). 'Social Cognition', in Ramachandran, V. S. (2012). *Encyclopedia of human behavior*. Academic Press, pp. 456-462.
- Karal, M. A., & Wolfe, P. S. (2018). Social story effectiveness on social interaction for students with autism: A review of the literature. *Education and Training in Autism and Developmental Disabilities*, 53(1), 44-58.
- Ke, F., & Im, T. (2013). Virtual-reality-based social interaction training for children with high-functioning autism. *The Journal of Educational Research*, 106(6), 441-461.
- Ke, F., Moon, J., & Sokolikj, Z. (2020). Virtual Reality–Based Social Skills Training for Children With Autism Spectrum Disorder. *Journal of Special Education Technology*, 0162643420945603.
- Keen, D., Couzens, D., Muspratt, S., & Rodger, S. (2010). The effects of a parent-focused intervention for children with a recent diagnosis of autism spectrum disorder on parenting stress and competence. *Research in Autism Spectrum Disorders*, 4(2), 229-241.
- Keifer, C. M., Mikami, A. Y., Morris, J. P., Libsack, E. J., & Lerner, M. D. (2020). Prediction of social behavior in autism spectrum disorders: Explicit versus implicit social cognition. *Autism*, 1362361320922058.
- Laugeson, E. A., Frankel, F., Gantman, A., Dillon, A. R., & Mogil, C. (2012). Evidence-based social skills training for adolescents with autism spectrum disorders: The UCLA PEERS program. *Journal of autism and developmental disorders*, 42(6), 1025-1036.
- Lord, C., Elsabbagh, M., Baird, G., & Veenstra-Vanderweele, J. (2018). Autism spectrum disorder. *The Lancet*, 392(10146), 508-520.
- McCauley, James B., Peter C. Mundy, and Marjorie Solomon (2019). Parenting, Family Processes, and Autism Spectrum Disorder. In *Handbook of Parenting*, 3rd ed. Edited by Marc H. Bornstein. New York, NY: Routledge
- Morrison, K. E., DeBrabander, K. M., Jones, D. R., Faso, D. J., Ackerman, R. A., & Sasson, N. J. (2020). Outcomes of real-world social interaction for autistic adults paired with autistic compared to typically developing partners. *Autism*, 24(5), 1067-1080.

- Neik, T., Lee, L., & Chia, N., (2014). Prevalence, diagnosis, treatment and research on autism spectrum disorders (ASD) in Singapore and Malaysia. *International Journal of Special Education*. 29, (3), 1-10.
- Petrina, N., Carter, M., & Stephenson, J. (2014). The nature of friendship in children with autism spectrum disorders: A systematic review. *Research in Autism Spectrum Disorders*, 8(2), 111–126.
- Pickles, A., Le Couteur, A., Leadbitter, K., Salomone, E., Cole-Fletcher, R., Tobin, H., ... & Aldred, C. (2016). Parent-mediated social communication therapy for young children with autism (PACT): long-term follow-up of a randomised controlled trial. *The Lancet*, 388 (10059), 2501-2509.
- Rodriguez-Medina, J., Martin-Anton, L. J., Carbonero, M. A., & Ovejero, A. (2016). Peer-mediated intervention for the development of social interaction skills in high-functioning autism spectrum disorder: a pilot study. *Frontiers in psychology*, 7, 1986.
- Schiltz, H. K., McVey, A. J., Dolan, B. K., Willar, K. S., Pleiss, S., Karst, J. S., ... & Van Hecke, A. V. (2018). Changes in depressive symptoms among adolescents with ASD completing the PEERS® social skills intervention. *Journal of autism and developmental disorders*, 48(3), 834-843.
- Spain, D., Blainey, S. H., & Vaillancourt, K. (2017). Group cognitive behaviour therapy (CBT) for social interaction anxiety in adults with autism spectrum disorders (ASD). *Research in Autism Spectrum Disorders*, 41, 20-30.
- Sun, X., Allison, C., Auyeung, B., Zhang, Z., Matthews, F., Baron-Cohen, S., and Brayne, C. (2015). Validation of existing diagnosis of autism in mainland China using standardised diagnostic instruments. To appear, *Autism Research*.
- Tarver, J., Palmer, M., Webb, S., Scott, S., Slonims, V., Simonoff, E., & Charman, T. (2019). Child and parent outcomes following parent interventions for child emotional and behavioral problems in autism spectrum disorders: a systematic review and meta-analysis. *Autism*, 23(7), 1630-1644.
- Van Otterdijk, M. T., de Korte, M. W., Berk-Smeekens, I. V. D., Hendrix, J., Dongen-Boomsma, M. V., Boer, J. C. D., ... & Barakova, E. I. (2020). The Effects of Long-Term Child–Robot Interaction on the Attention and the Engagement of Children with Autism. *Robotics*, 9(4), 79.
- Vernon, T. W., Koegel, R. L., Dauterman, H., & Stolen, K. (2012). An early social engagement intervention for young children with autism and their parents. *Journal of autism and developmental disorders*, 42(12), 2702-2717.
- Vousden, B., Wilkes-Gillan, S., Cordier, R., & Froude, E. (2018). The play skills of children with high-functioning autism spectrum disorder in peer-to-peer interactions with their classmates: A multiple case study design. *Australian Occupational Therapy Journal*, 66(2), 183-192.
- Wetherby, A. M., Guthrie, W., Woods, J., Schatschneider, C., Holland, R. D., Morgan, L., & Lord, C. (2014). Parent-implemented social intervention for toddlers with autism: an RCT. *Pediatrics*, 134 (6), 1084-1093.
- Whyte, E. M., Smyth, J. M., & Scherf, K. S. (2015). Designing serious game interventions for individuals with autism. *Journal of autism and developmental disorders*, 45(12), 3820-3831.
- Wright, J. (2017). The real reasons autism rates are up in the US. *Scientific American*.
- Yu, L., Stronach, S., & Harrison, A. J. (2020). Public knowledge and stigma of autism spectrum disorder: Comparing China with the United States. *Autism*, 1362361319900839.

Zhao, M., & Chen, S. (2018). The effects of structured physical activity programs on social interaction and communication for children with autism. *BioMed research international*, 2018.